Asset Management Plan

Town of Spanish

2021

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.

This Asset Management Program was prepared by:

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Key Statistics

Replacement cost of asset portfolio

$45.24 million

Replacement cost of infrastructure per household

$102,150 (2016)

Percentage of assets in fair or better condition

51%

Percentage of assets with assessed condition data

4%

Annual capital infrastructure deficit

$0.93 million

Recommended timeframe for eliminating annual infrastructure deficit

20 Years

Target reinvestment rate

2.66%

Actual reinvestment rate

0.61%

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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:

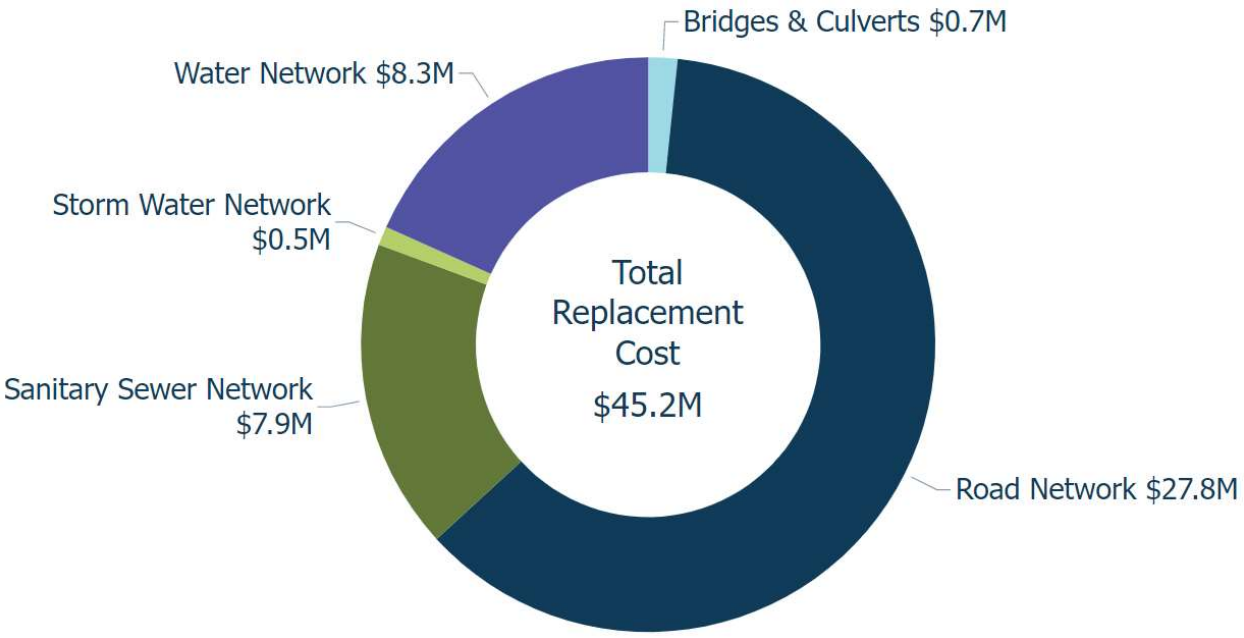
Asset Category

- Road Network
- Bridges & Culverts
- Storm Water Network
- Water Network
- Sanitary

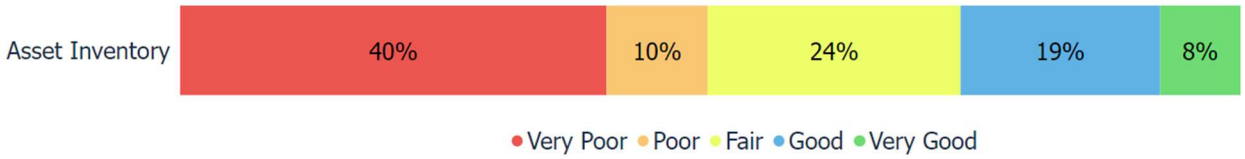
With the development of this AMP the Town has achieved compliance with O. Reg. 588/17 to the extent of the requirements that must be completed by July 1, 2022. There are additional requirements concerning additional asset categories, proposed levels of service and growth that must be met by July 1, 2024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

Findings

The overall replacement cost of the asset categories included in this AMP totals $45.2 million based on the Town's asset inventory as of the end of 2020.



51% 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 accuracy and completeness of the asset inventory is another critical input to accurate asset management planning. It is important to review and update the primary asset inventory to ensure that it is at a higher level of data maturity for the next iteration of the AMP and that all assets have been accounted for.

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

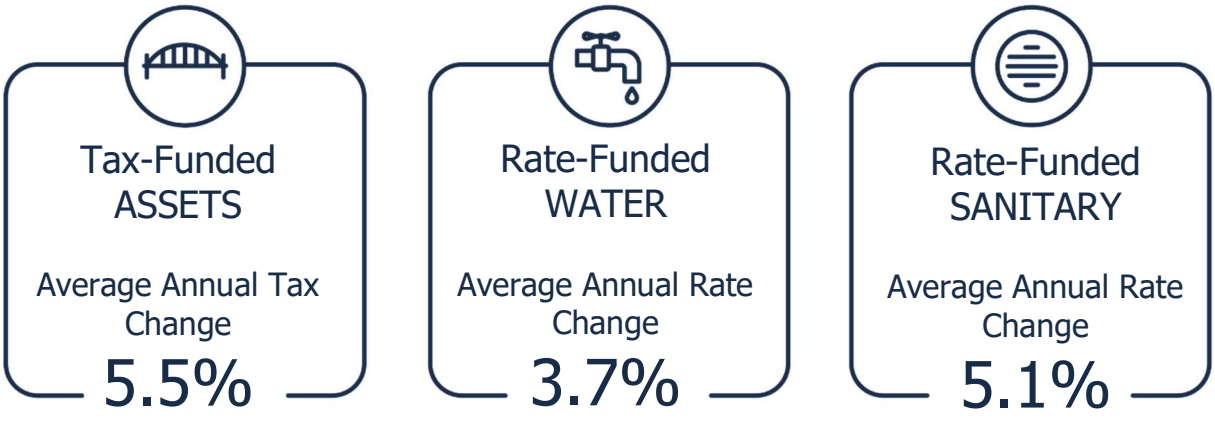
To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the Town's average annual capital requirement totals $1.2 million. Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $0.28 million towards capital projects or reserves per year. As a result, there is currently an annual capital requirements funding gap of $0.93 million.

Annual Infrastructure Deficit Per Household

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 20-year plan:



Recommendations to guide continuous refinement of the Town's asset management program have been incorporated into this plan. These include:

- Reviewing asset data to update and maintain a complete, accurate and centralized asset inventory
- Developing a condition assessment strategy with a regular schedule
- Reviewing and updating lifecycle management strategies
- Developing and regularly reviewing short- and long-term plans to meet capital requirements
- Continuing to measure current levels of service and identifying 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

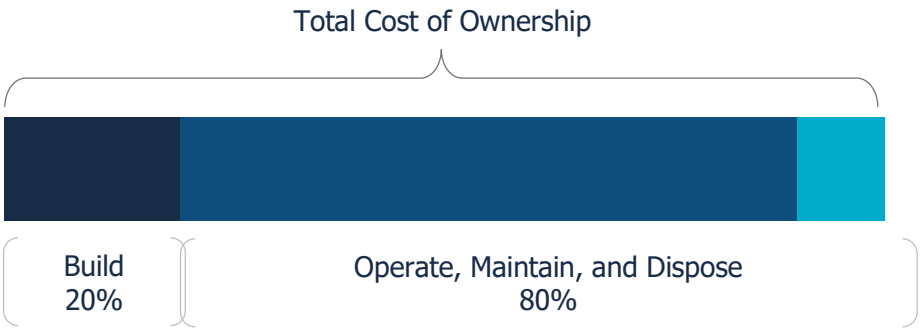
- An asset management plan is a living document that should be updated regularly to inform long-term planning

- 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

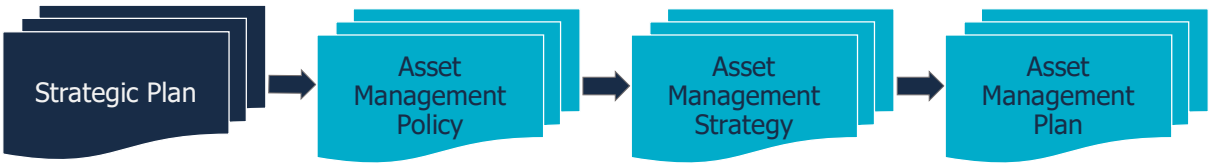
Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets to deliver services to the community. The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers 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 fiscal 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 diagram below depicts an industry standard approach and sequence developing a practical asset management program. Beginning 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 municipality'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 Town developed a Strategic Asset Management Policy in July 2019 in accordance with Ontario Regulation 588/17.

The stated objectives of the policy are to:

- Provide a consistent framework for implementing asset management throughout the organization,
- Provide guidance to staff responsible for asset management, and
- Provide transparency and accountability and to demonstrate to stakeholders the legitimacy of decision-making processes which combine strategic plans, budgets, service levels and risks

The policy provides the foundation for the development of an asset management program within the Town. It covers the key components that define a comprehensive asset management policy:

- The policy's principles dictate the use of asset management practices to ensure all assets meet the agreed levels of service in the most efficient and effective manner;
- the policy commits to, where appropriate, incorporating asset management in the Town's other plans;
- there are formally defined roles and responsibilities of internal staff and stakeholders;
- the policy includes the use of a cost/benefit analysis as well as the acknowledgement of climate change in the management of risk; and
- the policy principles are well defined.

This document meets the definition of an asset management plan defined in the policy which,

> "*refers to a strategic document that states how a group of assets are to [be] managed over a period of time. The plan describes the characteristics and condition of infrastructure assets, the levels of service expected from them, planned actions to ensure the assets are providing the expected level of service, and financing strategies to implement the planned actions*."

1.1.2 Asset Management Strategy

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

The strategy provides a long-term outlook on the overall asset management program development and strengthening key elements of its framework. While not a static document, the strategy should not evolve and change frequently - unlike the asset management plan.

The Town's Strategic Asset Management Policy contains some elements of an asset management strategy and may be expanded on in future revisions or as part of a separate strategic document.

1.1.3 Asset Management Plan

The asset management plan (AMP) presents the outcomes of the municipality's asset management program and identifies the resource requirements needed to achieve a defined level of service. 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 municipality to re-evaluate the state of infrastructure and identify how the organization's asset management and financial strategies are progressing.

The Town's previous iteration of the AMP was prepared in 2013 by BDO Canada LLP, with an update made in 2018 to incorporate a refined road asset inventory.

This document is an AMP that uses the most recent asset inventory and has been prepared in accordance with O. Reg. 588/17.

1.2 Key Concepts in Asset Management

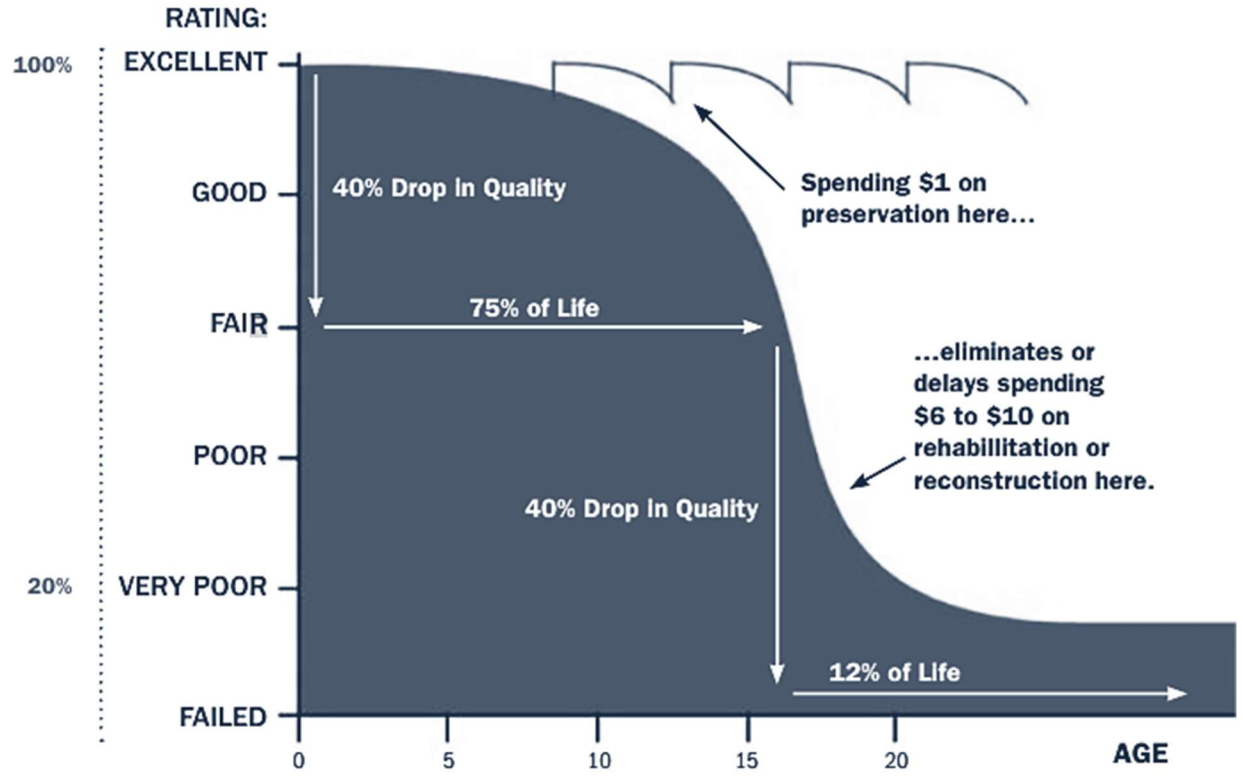
Effective asset management integrates several key components, including lifecycle management, risk management, and levels of service. These concepts are applied throughout this asset management plan and are described below in greater detail.

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. Since costs to rehabilitate tend to increase towards the end of life of an asset, proactive and timely intervention will lead to lower lifecycle costs.

This concept is further illustrated by the graphic below, highlighting the cost impact of a maintenance activity contrasted by the cost impact of a rehabilitative activity later in the life of the asset.



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
Preventative Maintenance	Activities that prevent defects or deteriorations from occurring	Crack Seal	$
General Maintenance	Activities that focus on current defects or inhibit deterioration	Pothole Repairs	$
Rehabilitation/ Renewal	Activities that rectify defects or deficiencies that are already present and may be affecting asset performance	Mill & Re-surface	$$
Replacement/ Reconstruction	Asset end-of-life activities that often involve the complete replacement of assets	Full Reconstruction	$$$
Replacement Upgrade	Asset end-of-life activities that involve the replacement of an asset to an asset with an upgraded design or capacity	Gravel Road to a Surface Treated Road	$$$

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

The Town's approach to lifecycle management is described within each asset category outlined in this AMP. Developing and implementing a proactive lifecycle strategy will help staff to determine which 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 & Culverts, Water, Sanitary, Storm Water) 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 will define the qualitative descriptions that will be used to determine the community level of service by the July 2024 deadline.

Technical Levels of Service

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

For core asset categories (Roads, Bridges & Culverts, Water, Sanitary, Storm Water) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP.

For non-core asset categories, the Town will define the technical metrics that will be used to determine the technical level of service by the July 2024 deadline.

Current and Proposed Levels of Service

This AMP focuses on measuring the current level of service provided to the community for core assets. 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 with the following components:

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

2025

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

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

1.3.1 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
Current performance measures in each category	S.5(2), 2	4.1.6 - 5.2.6	Complete
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.1.4 - 5.2.4	Complete
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix 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 5 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 Spanish is produced in compliance with Ontario Regulation 588/17. The July 2022 deadline under the regulation—the first of three AMPs—requires analysis of only core assets (roads, bridges & culverts, water, wastewater, and stormwater).

The 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 Water Network	
Water Network	User Rates
Sanitary Sewer 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 per 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
- **Historical Cost Inflation**: 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 Deriving Annual Capital Requirements

By dividing the replacement cost of an asset with the asset's estimated useful life and factoring in the cost and impact of any lifecycle activities, the average annual capital requirements can be derived. The average annual requirement is calculated as follows:

$$Annual\ Capital\ Requirement\ (Lifecycle\ Scenario) = \\ = \frac{(Replacement\ Cost + Cost\ of\ Lifecycle\ Activities)}{(Estimated\ Useful\ Life\ (EUL) + Impact\ of\ Lifecycle\ Activities)}$$

$$Annual\ Capital\ Requirement\ (Replacement\ Only\ Scenario) = \frac{Replacement\ Cost}{Estimated\ Useful\ Life\ (EUL)}$$

2.5 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:

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

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

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

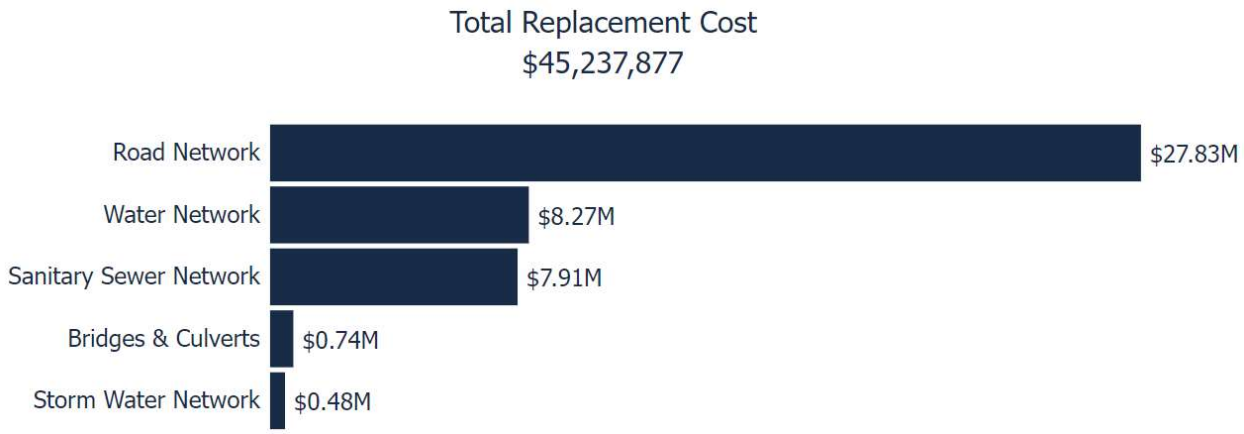
3 Portfolio Overview

Key Insights

- The total replacement cost of the Town's asset portfolio is $45.2 million
- The Town's target re-investment rate is 2.66%, and the actual re-investment rate is 0.61%, contributing to an expanding infrastructure deficit
- 51% of all assets are in fair or better condition
- 35% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total $1.2 million per year across core assets
- Annual capital funding by the Town totals $0.28 million across core assets

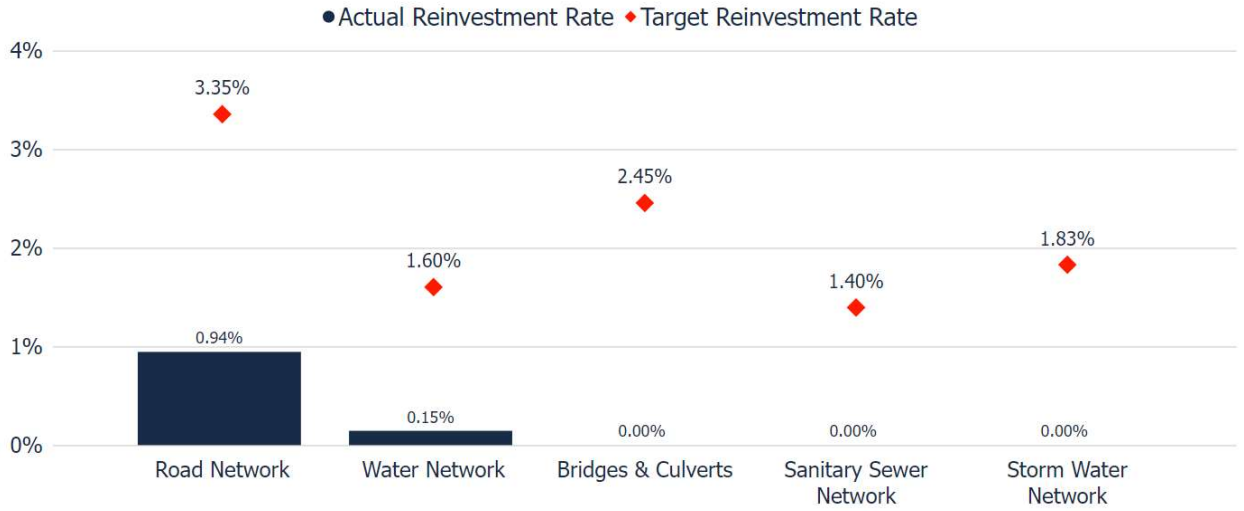
3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $45.2 million based on inventory data from 2020. 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.



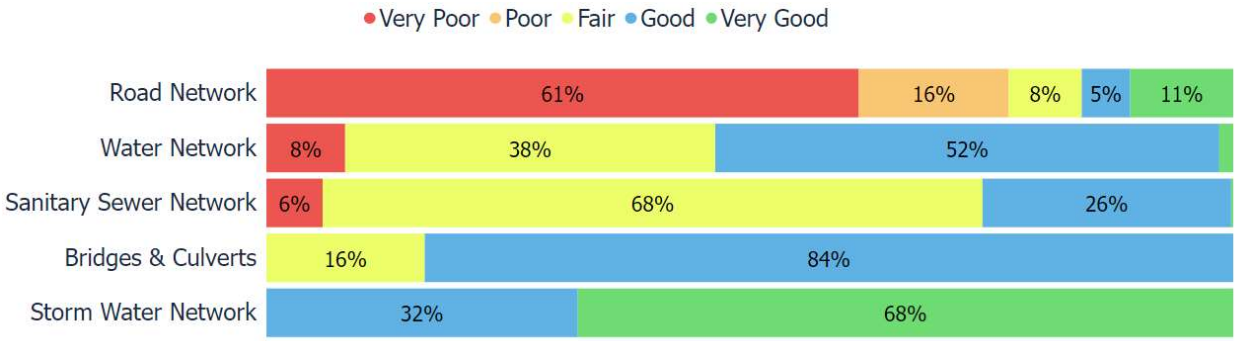
3.2 Target vs. Actual Reinvestment Rate

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 $1.2 million annually, for a target reinvestment rate of 2.66%. Actual annual spending on infrastructure totals approximately $0.3 million, for an actual reinvestment rate of 0.61%.



3.3 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 51% of assets in the Town are in fair or better condition. This estimate relies on both age-based and field condition data.

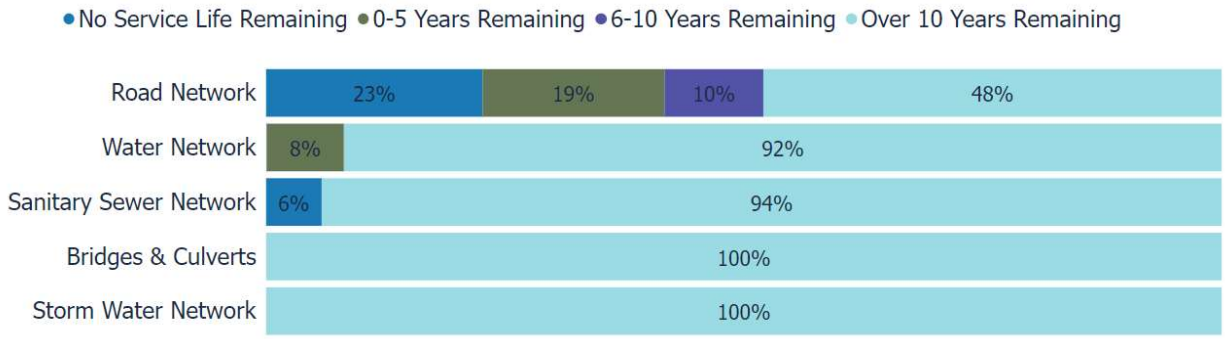


This AMP relies on assessed condition data for 4% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table 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	All	0%	N/A
Bridges & Culverts	Bridges	100%	2020 OSIM Report
	Structural Culverts	100%	2020 OSIM Report
Storm Water Network	All	0%	N/A
Water Network	All	10%	Staff Assessments
Sanitary Sewer Network	All	0%	N/A
Overall		**4%**	

3.4 Service Life Remaining

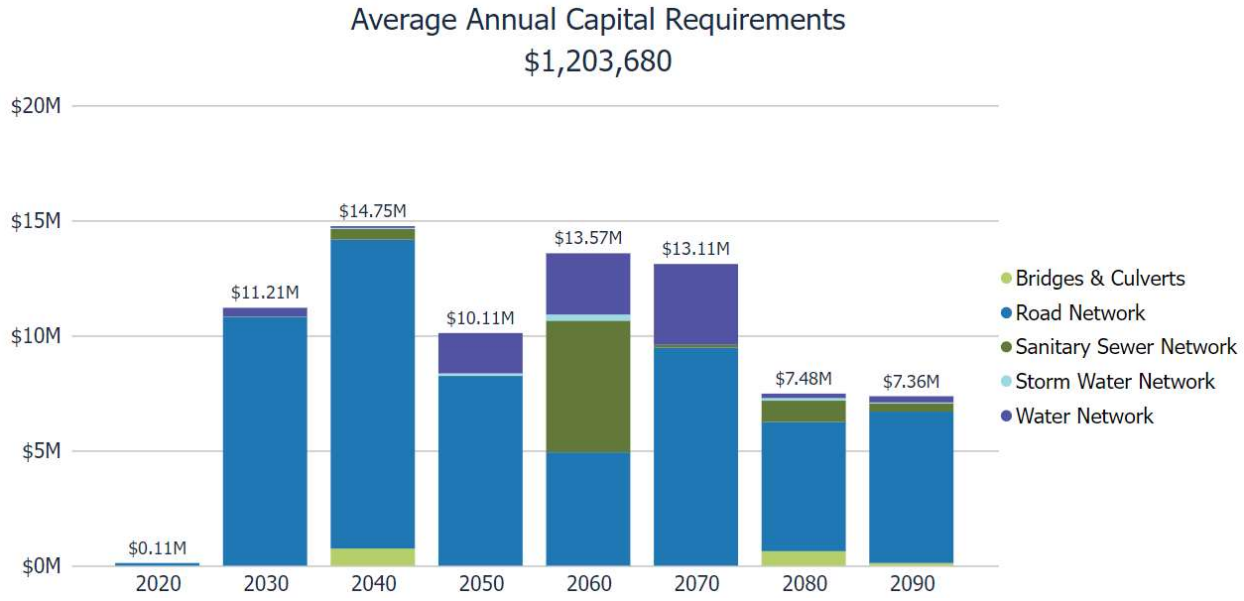
Based on asset age, available assessed condition data and estimated useful life, 35% of the Town's assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix A.



3.5 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 the average capital requirements over the next 70 years. This projection is used as it ensures that every asset has undergone one complete lifecycle. The forecast is based on the Town's inventory as of 2020 and does not include assets that may be required for growth.



4 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at $29.1 million
- 45% 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 $0.96 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options
- To reach sustainability, tax revenues need to be increased by 5.5% annually for the next 20 years

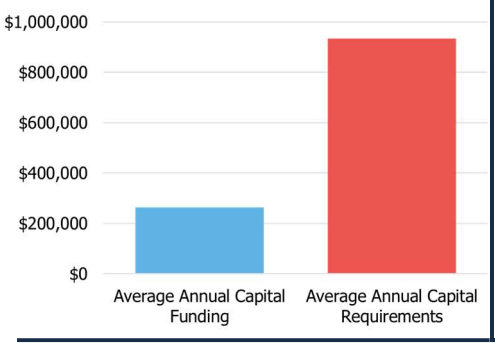
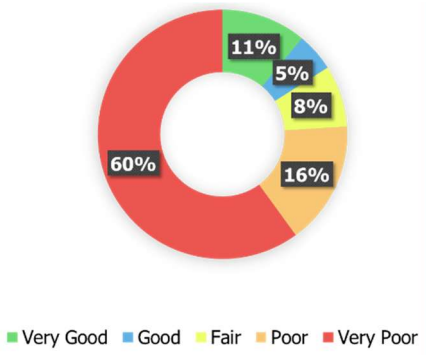
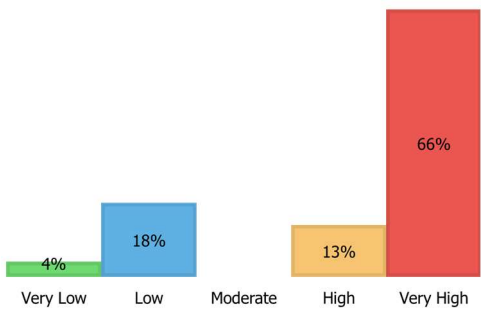
4.1 Road Network

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 Town's asset portfolio. It includes all municipally owned and maintained roadways in addition to supporting roadside infrastructure including sidewalks, signage, and streetlights.

Municipal roads distribute traffic from Highway 17 to different parts of the municipality and provide for direct access to properties. The Town controls road construction, access, parking, truck routes and traffic signalization as measures to ensure the efficient and safe movement of traffic, including cycling and pedestrian movement.

The Town'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.

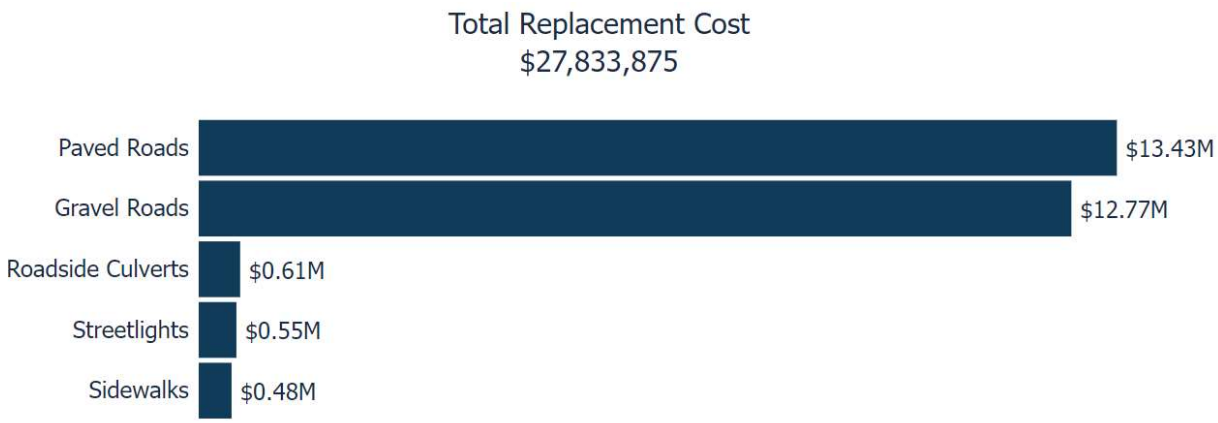
The table below outlines high-level service indicators for the Road Network.

Cost	Performance (Average Condition)	Risk
		

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.

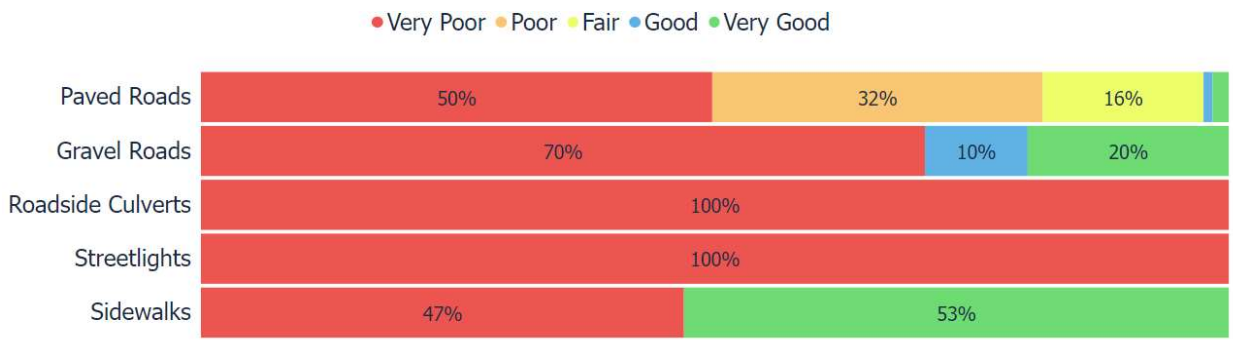
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Paved Roads	14 km	Cost per Unit	$13,430,300
Gravel Roads	23 km	Cost per Unit	$12,765,000
Roadside Culverts	1,274 m	CPI Tables	$606,392
Streetlights	118	CPI Tables	$551,563
Sidewalks	4,190 m	CPI Tables	$480,620
			$27,833,875



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
Paved Roads	23%	Poor	Age-Based
Gravel Roads	34%	Poor	Age-Based
Roadside Culverts	0%	Very Poor	Age-Based
Streetlights	15%	Very Poor	Age-Based
Sidewalks	50%	Fair	Age-Based
	28%	**Poor**	



Current Approach to Condition Assessment

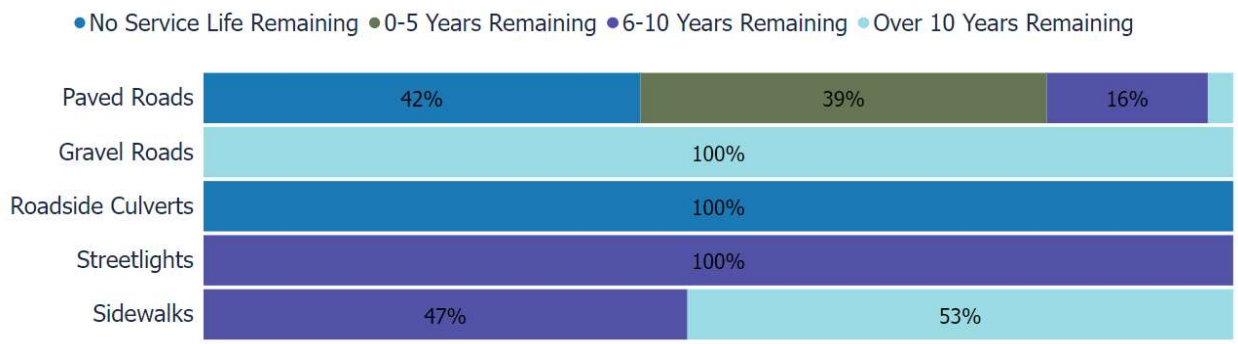
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Road patrols are completed on a weekly basis, where a visual inspection is used to determine deficiencies such as potholes, washouts, blockages, rideability, etc.

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. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Paved Roads	10 - 20 Years	36.3
Gravel Roads	75 Years	48.1
Roadside Culverts	45 Years	51.0
Streetlights	60 Years	51.0
Sidewalks	60 Years	40.1
		48.3



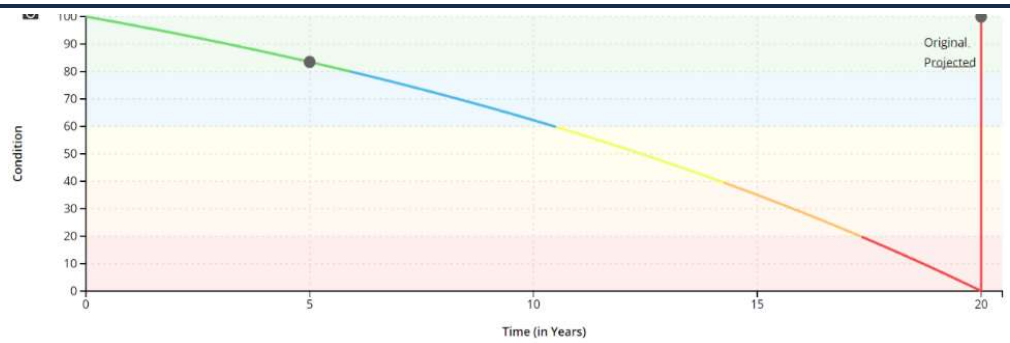
Each asset's Estimated Useful Life should be reviewed periodically to determine whether adjustments need to be made to better align with the observed length of service life for each asset type.

4.1.4 Lifecycle Management Strategy

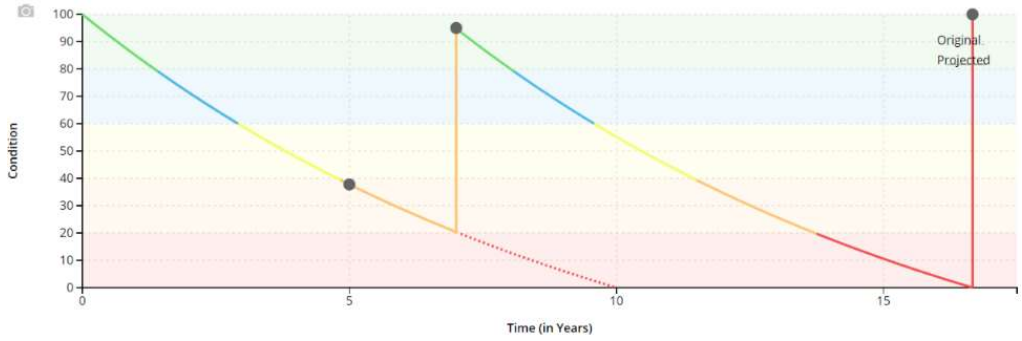
The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment.

The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of HCB and LCB 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 (HCB)		
Event Name	**Event Class**	**Event Trigger**
Crack Sealing	Maintenance	Year 5[1]
Full Reconstruction	Replacement	20 Years



Paved Roads (LCB)		
Event Name	**Event Class**	**Event Trigger**
Cold Patching	Maintenance	Year 5[1]
Double Surface Treatment	Rehabilitation	20 Condition
Full Reconstruction	Replacement	Year 17[2]



[1] Activities are expected to be completed at least once during the life of the asset; the exact timing may vary.
[2] LCB roads are usually perpetually surface treated. 17 years assumes only one treatment cycle.

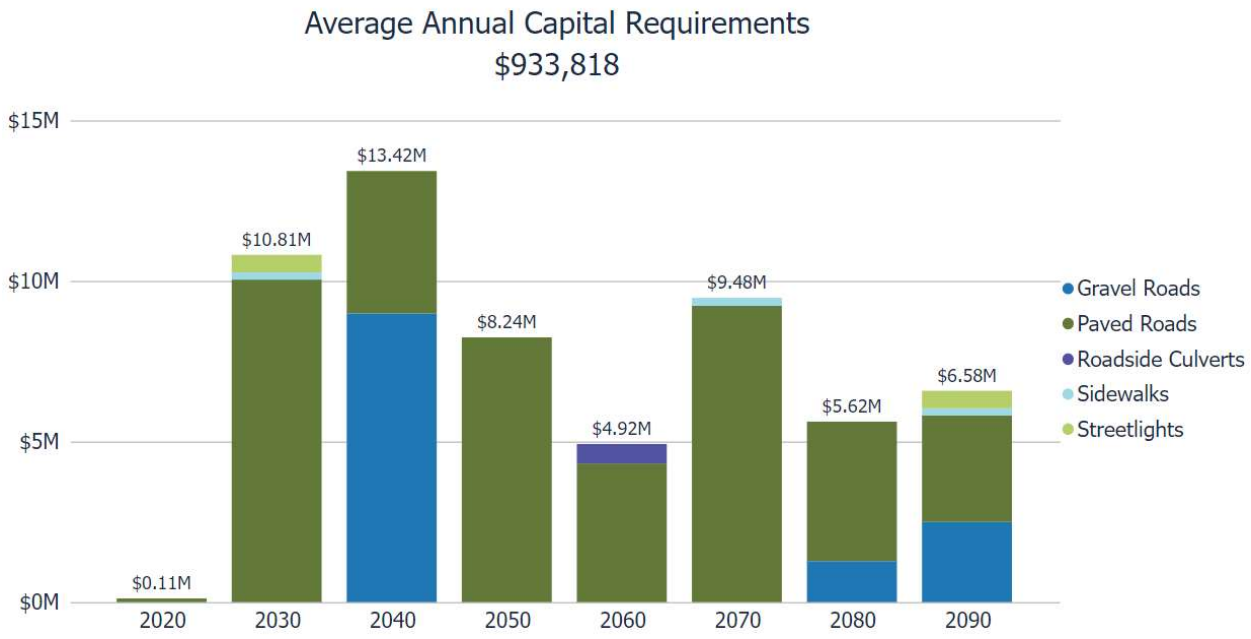
The following table outlines the Town's current lifecycle management strategy. While annual budgets are commonly completed, there is a move to a 5-year planning horizon. One of Council's goals has been to upgrade gravel roads to paved surfaces when appropriate.

Activity Type	Description of Current Strategy
Maintenance	Gravel roads have regular grading throughout the season, dust suppressants are applied annually, and gravel is applied on an as needed basis
	Approximately $3000 per year is dedicated to gravel maintenance
	Crack sealing, pothole patching, and cold patching is applied routinely based on the staff's observations and recommendations
	Sidewalks swept in Summer, annual winter control activities to meet Minimum Maintenance Standards including snow removal and sanding
	Other roadside maintenance includes annual cutting and brushing, and there's a gradual increase in ditching efforts
Rehabilitation	Single and double surface treatment is considered as paved surfaces deteriorate
Replacement	Staff have noted that in areas where the road sub- base is clay material where there are high water tables that surface treated roads fare better than asphalt roads
	Asphalt roads are prioritized in busier areas while surface treated roads are more common in residential areas
	Some roads identified have been converted to other road surface types depending on local context. Key factors in this decision include the underlying material and condition of the road base (E.g., clay and water level), road traffic, and budget
	Starting in 2020, streetlight bulbs have been replaced with LEDs – 23 were replaced last year. They are done in batches, with a minimum of 3 to be replaced prior to contacting vendor to reduce costs

Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for Paved Roads, and assuming the end-of-life replacement of all other assets in this category, the following graph forecasts long-term capital requirements for the Road Network.

The average annual capital requirements represent the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs in order to meet future capital needs.



A 70-year projection has been used as it ensures that every asset has gone through full iteration of replacement and does not include assets that may be required for growth.

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 relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2020 inventory data.

Consequence	1	2	3	4	5
5	1 Asset $2,497,500.00	1 Asset $1,276,500.00	5 Assets $5,970,600.00	0 Assets $0.00	8 Assets $8,623,600.00
4	0 Assets $0.00	0 Assets $0.00	1 Asset $448,400.00	0 Assets $0.00	9 Assets $3,279,100.00
3	2 Assets $330,400.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	18 Assets $2,992,200.00
2	1 Asset $142,534.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	8 Assets $677,100.00
1	2 Assets $106,779.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	156 Assets $1,476,095.00

Probability

See Appendix C for the criteria used to determine the risk rating of each asset.

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 (2020)
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	**Extremely Poor**: Widespread signs of deterioration. Requires remedial work to bring road up to standard. Service is affected **Poor:** Large portions of road exhibiting deterioration with rutting, potholes, distortions, longitude and lateral cracking. Road is mostly below standard. **Fair:** Some sections of road starting to deteriorate. Requires some remedial work and surface upgrade in near future. **Good:** Road is in overall good condition. Few sections are starting to show signs of minimal deterioration. **Excellent:** Road is well maintained and in excellent condition. Surface was newly or recently upgraded. No signs of deterioration or remedial work required.

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 (2020)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0 km / 109 km^2
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0 km / 109 km^2
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	37 km / 109 km^2
Quality	Average pavement condition index for paved roads in the municipality	23%
	Average surface condition for unpaved roads in the municipality (e.g., excellent, good, fair, poor)	Poor

4.1.7 Recommendations

Asset Inventory

- Review road culverts and sidewalk inventory to determine whether all municipal assets within these asset segments have been accounted for.
- Continue to consolidate critical asset information from other data sources into the Town's primary asset inventory

Condition Assessment Strategies

- Consider completing an assessment of all roads to consolidate condition data in the asset inventory.
- Identify condition assessment strategies for high value and high-risk road network assets.

Lifecycle Management Strategies

- Gather unit costs for assets that have relied primarily on historical inflation and review periodically to ensure a higher level of accuracy and within the context of current market condition.
- Implement the identified lifecycle management strategies for HCB and LCB 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.

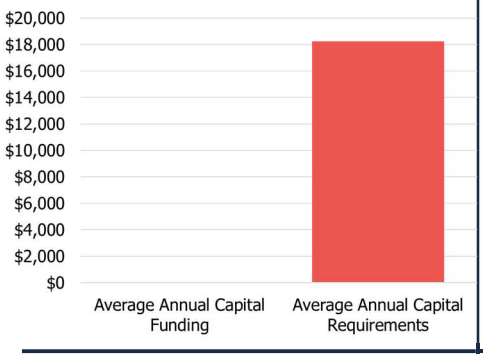
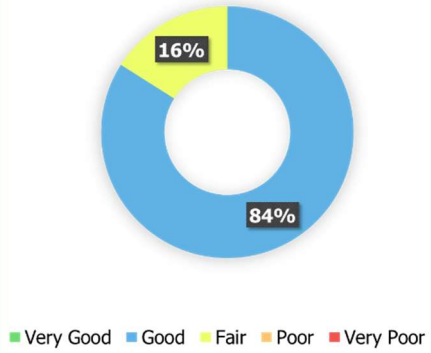
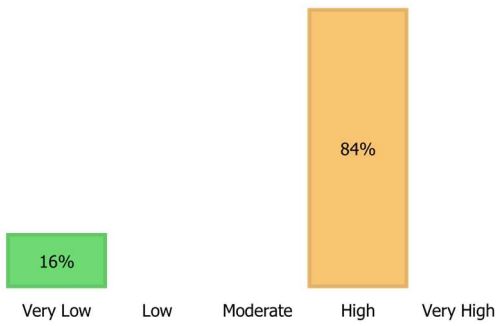
4.2 Bridges & Culverts

Bridges & Culverts represent a critical portion of the transportation services provided to the community. Public Works staff are responsible for the maintenance of all bridges and culverts located across municipal roads with the goal of keeping structures in an adequate state of repair and minimizing service disruptions.

The Town's bridges and culverts comprise of 4 structures that have a span of 3 meters or more and are therefore categorized as a bridge or a structural culvert asset.

Based on the requirements outlined by the Ministry of Transportation, the most recent inspection was conducted in 2020 by Tulloch Engineering.

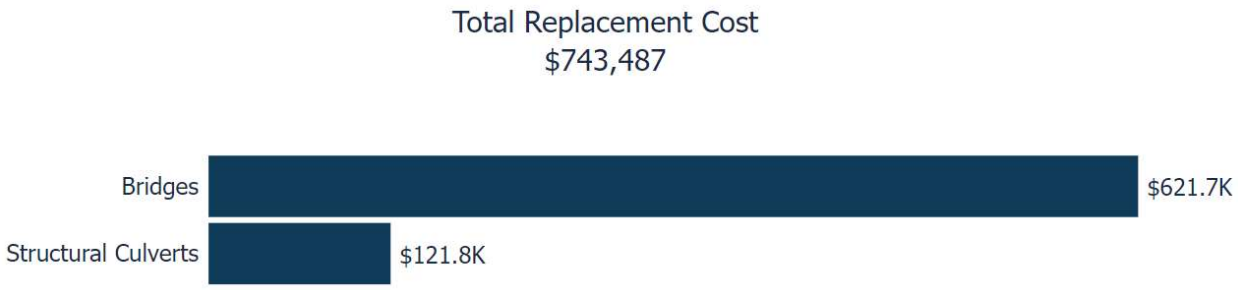
The table below outlines high-level service indicators for Bridges & Culverts.

Cost	Performance (Average Condition)	Risk
		

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 & Culverts inventory.

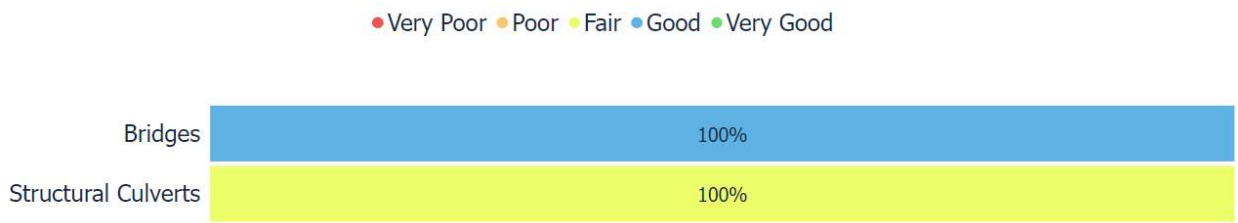
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Bridges	1	CPI Tables	$621,723
Structural Culverts	3	CPI Tables	$121,764
			$743,487



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	68%	Good	100% Assessed
Structural Culverts	56%	Fair	100% Assessed
	65%	**Good**	



To ensure that the Town's Bridges & Culverts 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 Bridges & Culverts.

Current Approach to Condition Assessment

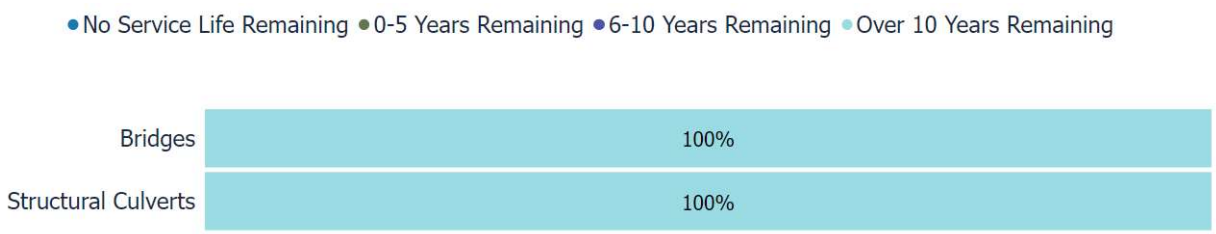
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Condition assessments of all bridges and culverts with a span greater than or equal to 3 meters are completed every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM)
- Internal staff visual inspections are completed on an annual basis, typically in Spring

4.2.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Bridges & 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. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age[3] (Years)
Bridges	40 Years	13.9[3]
Structural Culverts	45 Years	21.4[3]
		19.5[3]



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.

[3] Unlike the other categories in this AMP that use the estimated useful life to determine the average age, the average age for this category has been derived from the assessed condition data provided by the 2020 OSIM inspections.

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.

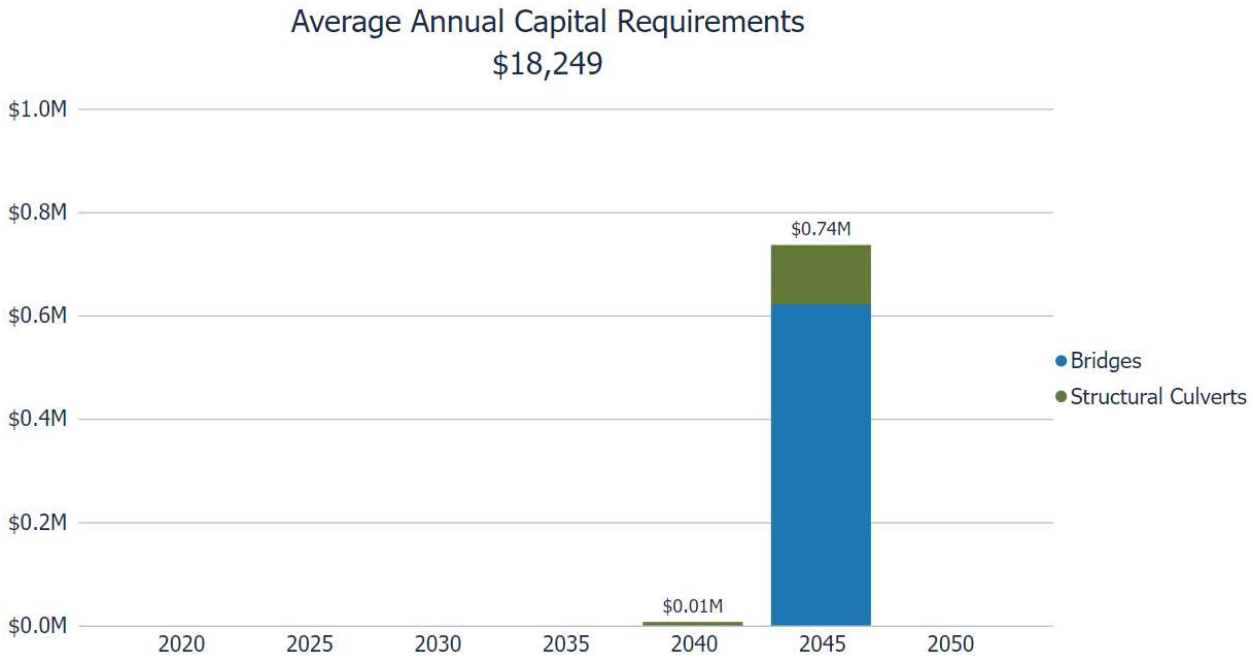
The following table outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Typical maintenance includes: • Obstruction removal • Cleaning/sweeping • Erosion Control • Brush/tree removal These activities are completed along with a visual inspection by staff during the spring and summer seasons
	Biennial OSIM inspections include a list of recommended maintenance activities that the Town considers and completes according to cost and urgency.
Rehabilitation / Replacement	Biennial OSIM inspection reports include a Capital Needs List identifying recommended rehabilitation and replacement activities with estimated costs that the Town considers and completes according to cost and urgency.
Inspection	The most recent inspection report was completed in 2020 by Tulloch Engineering

Forecasted Capital Requirements

Based on the current bridges and culverts inventory and assuming end-of-life replacement for all assets, the following graph forecasts long-term capital requirements for bridges and culverts.

The average annual capital requirements represent the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs in order to meet future capital needs.



A 30-year projection has been used as it ensures that every asset has gone through full lifecycle and does not include assets that may be required for growth.

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 relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2020 inventory data.

See Appendix C for the criteria used to determine the risk rating of each asset.

Consequence	1	2	3	4	5
5	0 Assets $0.00	1 Asset $621,723.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00
4	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00
3	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00
2	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00
1	0 Assets $0.00	0 Assets $0.00	3 Assets $121,764.00	0 Assets $0.00	0 Assets $0.00

Probability

While the risk matrix attempts to capture key considerations that are quantifiable, some factors are difficult to assign a value, but that may influence overall risk and decision making. One example for this asset category is climate change. Given the potential of increased frequency of extreme weather events, increased scouring poses a risk for abutments and overall bridge structure. Some of this is captured under the probability of failure under location/environmental sensitivity consideration, but some uncertainty will remain.

4.2.6 Levels of Service

The following tables identify the Town's current level of service for Bridges & 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 & Culverts.

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Motor vehicles, emergency vehicles, and school transportation. No logging/industrial/agricultural.
Quality	Description or images of the condition of bridges and how this would affect use of the bridges	The Crab Lake Road Bridge remains in fair to good condition. Some of the defects listed in the 2020 OSIM Inspection Report have been addressed since the date of inspection. The cracking of the asphalt at the ends of the bridge and along the centerline have been sealed and the bridge has been pressure washed and cleaned of debris. The edges of the bridge are free of encroaching brush and vegetation, and the beaver dam upstream of the bridge has been removed. The fiberglass wrapped timber decking is somewhat new and will be monitored regularly with future inspections. The condition of the Crab Lake Road bridge does not currently affect the transportation services of this structure.

Description or images of the condition of structural culverts and how this would affect use of the structural culverts	The three structural culverts located in the municipality are all in good condition with some corrosion starting at the waterline. The lack of guardrails across two of the structures creates a hazard near the water crossings. Since the date of inspection, new guardrails have been installed across one of the culverts that was lacking traffic protection. The current lack of traffic protection on one of the culverts may affect its use due to its potential to be a water hazard. There is also a possibility that stray vehicles may be able to damage the exposed ends of the culvert.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of bridges in the Town with loading or dimensional restrictions	0%
Quality	Average bridge condition index value for bridges in the Town	68%
	Average bridge condition index value for structural culverts in the Town	56%

4.2.7 Recommendations

Asset Inventory

- Continue to review and validate inventory data, assessed condition data and replacement costs for all bridges and structural culverts upon the completion of OSIM inspections every 2 years.
- All replacement costs in this category 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.

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

- 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 for bridges and culverts and integrating these costs into long-term planning.

Levels of Service

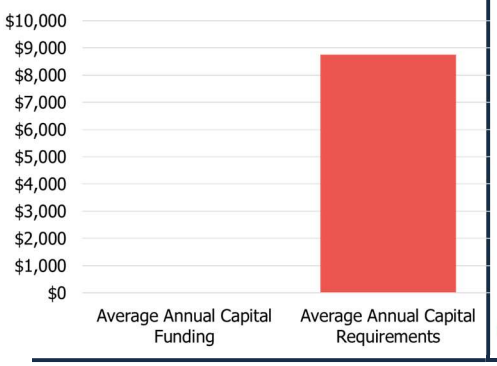
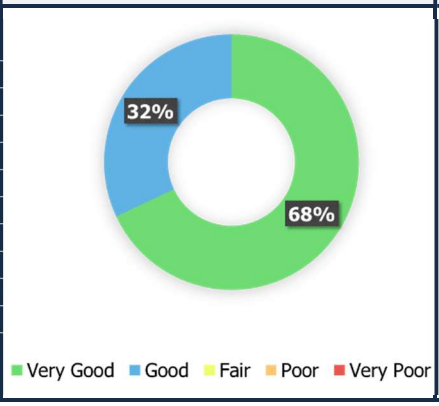
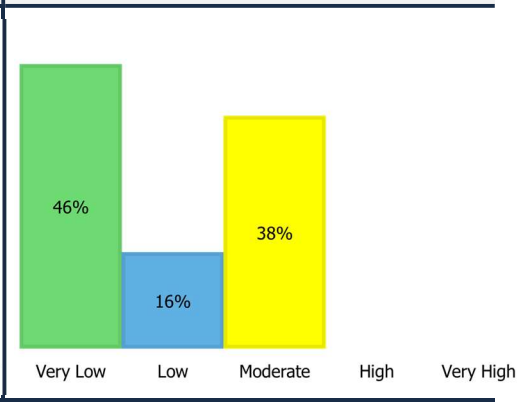
- Continue to measure current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the Town believe to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of service as per O. Reg. 588/17 and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

4.3 Storm Water Network

The Town is responsible for owning and maintaining a number of storm assets on Public Road, Spanish Street, and Garnier Road. Assets include catch basins, maintenance holes, storm sewers, laterals, etc.

Storm Water Network infrastructure generally poses the greatest uncertainty for municipalities, including this Town. Staff have expressed a lack of confidence in the accuracy and completeness of the current inventory. However, they are working towards improving the accuracy and reliability of the inventory to assist with long-term asset management planning.

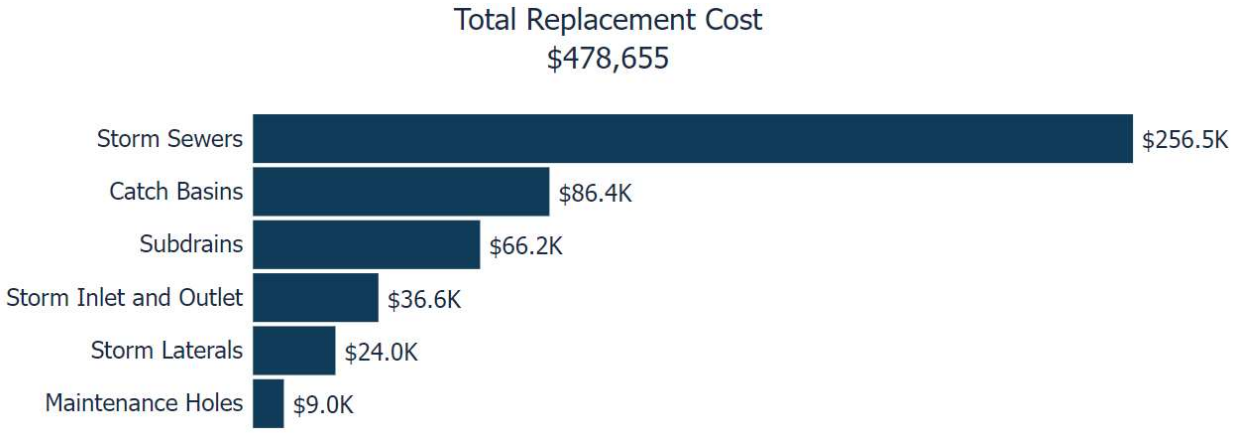
The table below outlines high-level service indicators for the Storm Water Network.

Cost	Performance (Average Condition)	Risk
		

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 Water Network inventory. Replacement costs were estimated based on the limited information available.

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Storm Sewers	586 m	Cost per Unit	$256,470
Catch Basins	27 Quantity, 108 m	Cost per Unit	$86,400
Subdrains	1,655 m	Cost per Unit	$66,200
Storm Inlet and Outlet	6 Quantity, 57 m	Cost per Unit	$36,555
Storm Laterals	64.3 m	Cost per Unit	$24,030
Maintenance Holes	3	Cost per Unit	$9,000
			$478,655



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
Storm Sewers	80%	Very Good	Age-Based
Catch Basins	72%	Good	Age-Based
Subdrains	84%	Very Good	Age-Based
Storm Inlet and Outlet	76%	Good	Age-Based
Storm Laterals	76%	Good	Age-Based
Maintenance Holes	70%	Good	Age-Based
	78%	**Good**	

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

Current Approach to Condition Assessment

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

- There are no formal condition assessment programs in place for the stormwater network at this time

4.3.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Storm Water Network assets has been assigned according to industry standards and knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Storm Sewers	60 Years	12.0
Catch Basins	40-50 Years	11.2
Subdrains	70 Years	11.0
Storm Inlet and Outlet	50-70 Years	12.0
Storm Laterals	50 Years	12.0
Maintenance Holes	40 Years	12.0
		11.8

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.

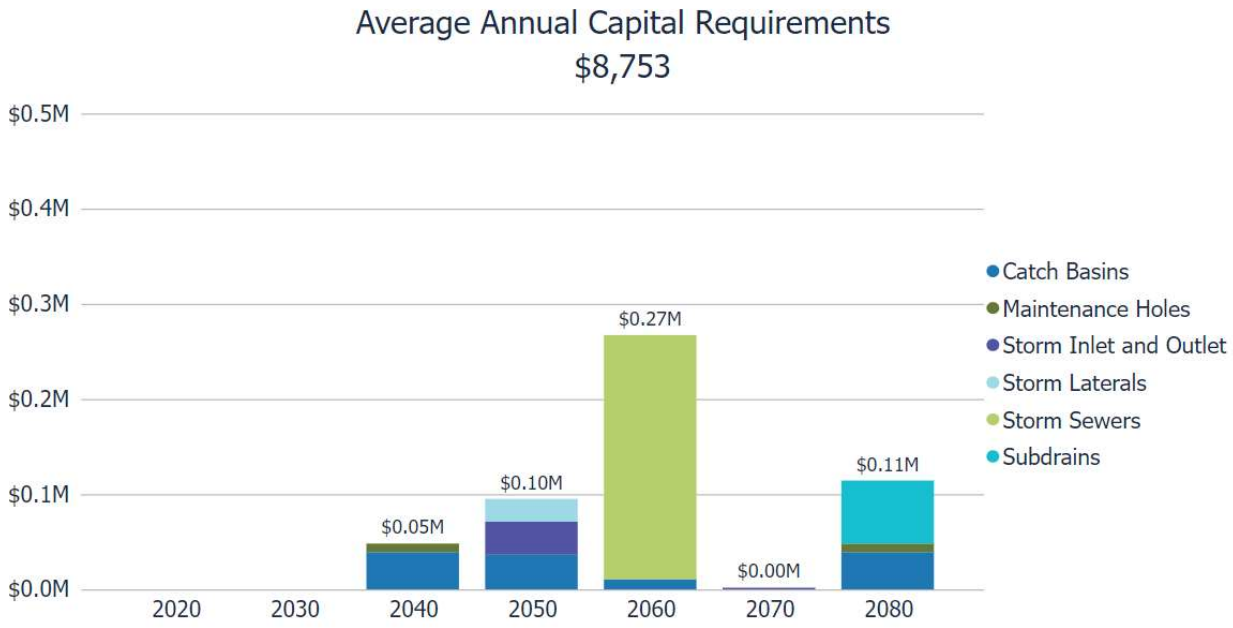
The following table outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Remove snow and ice build up from catch basin grates in winter and spring
	Remove leaves and debris from catch basin grates in summer and fall
	Cut grass around ditch inlet catch basins and storm sewer outlets
Replacement	Replace cracked and/or damaged catch basin grates as required
	Without the availability of up-to-date condition assessment information replacement activities are reactive in nature

Forecasted Capital Requirements

Based on the current storm water inventory and assuming end-of-life replacement for all assets, the following graph forecasts long-term capital requirements for storm water assets.

The average annual capital requirements represent the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs in order to meet future capital needs.



A 60-year projection has been used as it ensures that every asset has gone through one full lifecycle and does not include assets that may be required for growth.

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 relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2020 inventory data.

Consequence	1	2	3	4	5
5	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00
4	3 Assets $181,475.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00
3	2 Assets $74,995.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00
2	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00
1	3 Assets $68,000.00	13 Assets $154,185.00	0 Assets $0.00	0 Assets $0.00	0 Assets $0.00

Probability

See Appendix C for the criteria used to determine the risk rating of each asset.

4.3.6 Levels of Service

The following tables identify the Town's current level of service for Storm 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 Storm Water Network.

Service Attribute	Qualitative Description	Current LOS (2020)
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	The Town of Spanish's stormwater network is located in parts of the municipality that are most susceptible to flooding (low lying areas close to the Spanish River). The system is fairly small (approximately 2.5km) and is located on sections of three municipal roads. It is comprised of linear networks of catch basins, ditches, storm sewer pipes, outlets and waterways that use gravity to direct the storm water back into the natural environment. Also see Appendix B for map.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of properties in municipality resilient to a 100-year storm	TBD[4]
	% of the municipal stormwater management system resilient to a 5-year storm	TBD[3]

[4] The Town does not currently have data available to determine this technical metric. Staff are working to gather this metric for the next iteration of the AMP that is required in 2024.

4.3.7 Recommendations

Asset Inventory

- The Town's Storm Water Network inventory remains at a basic level of maturity and certain key parameters like replacement costs and estimated useful life are industry estimates. The refinement of this data will improve future decision making.

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 Storm Water network.

Risk Management Strategies

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

Lifecycle Management Strategies

- Document and review lifecycle management strategies for the Storm Water 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.

5 Analysis of Rate-funded Assets

Key Insights

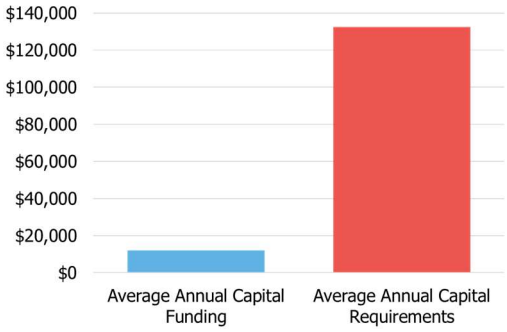
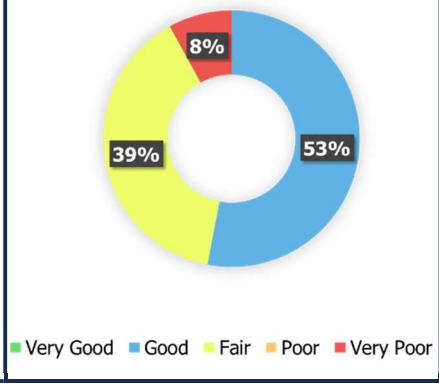
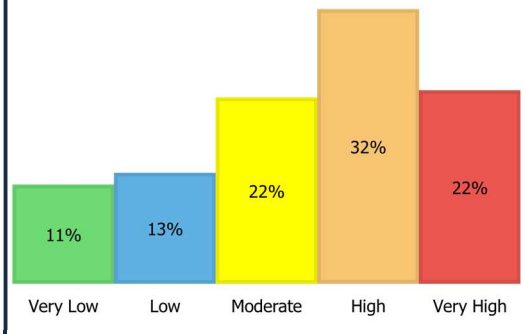
- Rate-funded assets are valued at $16.2 million
- 93% of rate-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for rate-funded assets is approximately $0.24 million
- Critical assets should be evaluated to determine appropriate risk mitigation activities and treatment options
- To reach sustainability for the Water Network, water rates need to be increased by 3.7% annually for the next 20 years to eliminate annual deficits
- To reach sustainability for the Sanitary Sewer Network, sanitary rates need to be increased 5.1% for the next 20 years to eliminate annual deficits

5.1 Water Network

The Town of Spanish has a permit to take water. From the 2017 Official Plan, the average water flow per year was 78,216,530 L per year, with a three-year average flow of 103,036,400 L per year. The water use was running at 39.6% of its design capacity of 712,000 L per day (or 259,880,000 L per year).

The water services provided by the Town are overseen by the Public Works Staff in partnership with Ontario Clean Water Agency (OCWA).

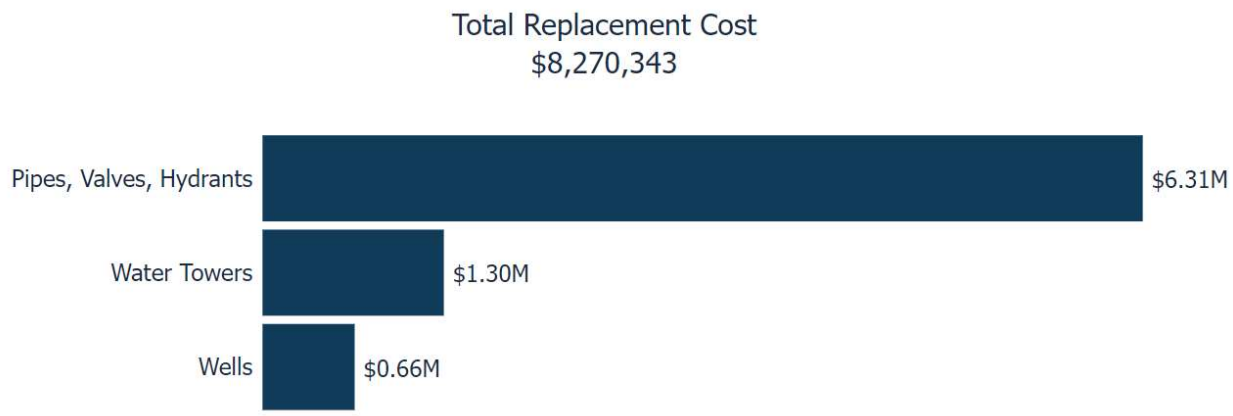
The table below outlines high-level service indicators for the Water Network.

Cost	Performance (Average Condition)	Risk
		

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.

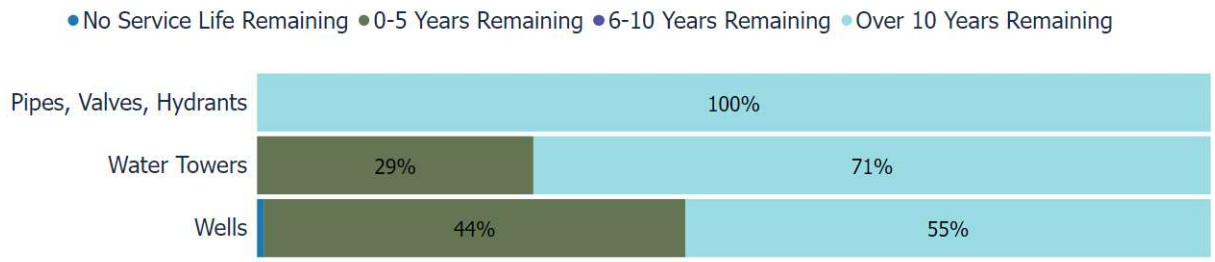
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Pipes, Valves, Hydrants	12,886 m	CPI Tables	$6,309,854
Water Towers	1	CPI Tables	$1,299,900
Wells	3	CPI Tables	$660,589
			$8,270,343



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
Pipes, Valves, Hydrants	58%	Fair	Age-based
Water Towers	64%	Good	29% Assessed
Wells	56%	Fair	69% Assessed
	59%	**Fair**	



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

Current Approach to Condition Assessment

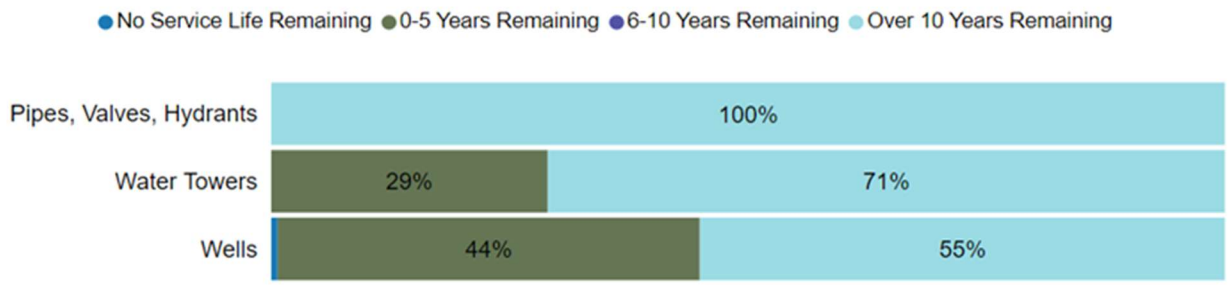
Accurate and reliable condition data allows staff to more confidently determine the remaining service life of assets and identify the most cost-effective approach to managing assets. The following describes the municipality's current approach:

- Pump houses and the water tower are inspected by OCWA
- An annual inspection is also completed by the Ministry of Environment, Conservation and Parks

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. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Pipes, Valves, Hydrants	75 Years	31.0
Water Towers	20-80 Years	27.0
Wells	20-80 Years	32.5
		31.1



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.

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.

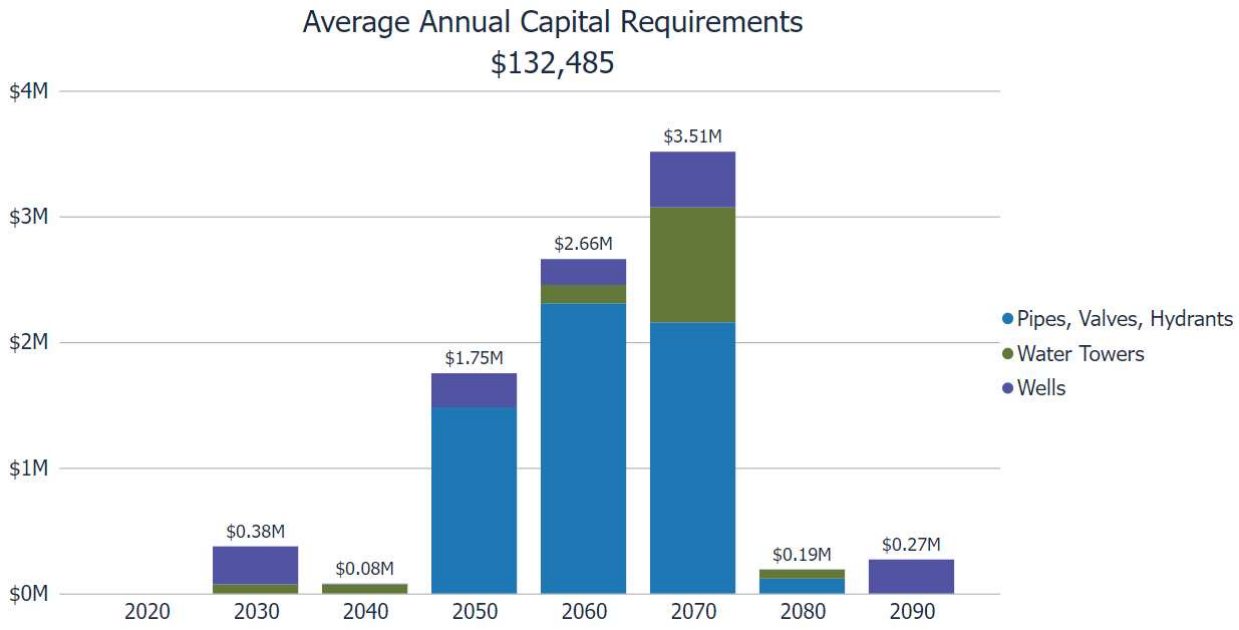
The following table outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Hydrants are flushed twice per year
	Curb stops and main shuts off valves are regularly exercised
	Water leaks are repaired internally with OCWA oversight
	OCWA manages maintenance on pump houses and the water tower
Rehabilitation & 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
	OCWA provides a 5-year capital requirement forecast which is generally followed

Forecasted Capital Requirements

Based on the current water network inventory and assuming end-of-life replacement for all assets, the following graph forecasts long-term capital requirements for water network assets.

The average annual capital requirements represent the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs in order to meet future capital needs.



A 70-year projection has been used as it ensures that every asset has gone through one full lifecycle and does not include assets that may be required for growth.

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 relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2020 inventory data.

Consequence	1	2	3	4	5
5	0 Assets $0.00	8 Assets $2,171,804.00	7 Assets $1,790,121.00	0 Assets $0.00	0 Assets $0.00
4	1 Asset $118,441.00	6 Assets $1,523,191.00	1 Asset $141,882.00	0 Assets $0.00	0 Assets $0.00
3	0 Assets $0.00	13 Assets $829,073.00	2 Assets $150,450.00	0 Assets $0.00	0 Assets $0.00
2	0 Assets $0.00	8 Assets $227,070.00	1 Asset $28,270.00	0 Assets $0.00	1 Asset $303,277.00
1	0 Assets $0.00	1 Asset $167,174.00	3 Assets $184,110.00	0 Assets $0.00	9 Assets $369,493.00

Probability

See Appendix C for the criteria used to determine the risk rating of each asset.

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 (2020)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system	The Town of Spanish's water system supplies residents and businesses with treated water. The ground water is treated and pumped from the Noranda and Goderich St. wells to the Town's Water Tower and is then delivered to the rest of the system via a network of pipes, water valves, and fire hydrants. See Appendix B.
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	All customers that are connected to Town's water system have adequate supply for fighting fires, in addition to the 90 fire hydrants that are located throughout the municipality. See Appendix B.
Reliability	Description of boil water advisories and service interruptions	The Town of Spanish did not experience any boil water advisories or service interruptions during the year 2020. However, a sample boil water advisory notice from 2018 can be found in Appendix B as a reference.

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 (2020)
Scope	% of properties connected to the municipal water system	54%
	% of properties where fire flow is available	54%
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
	# 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

5.1.7 Recommendations

Asset Inventory

- Continue to refine and consolidate asset data into the primary asset inventory to ensure all relevant assets are accounted for.
- All replacement costs in this category 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 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.

Levels of Service

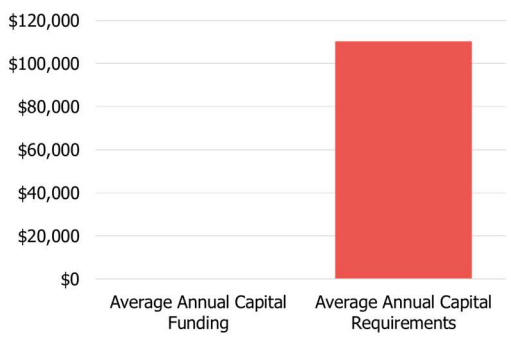
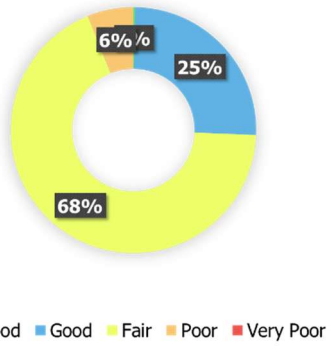
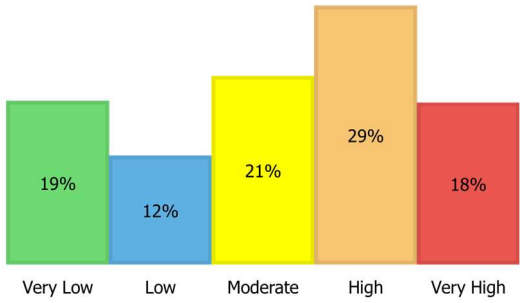
- Continue to measure current levels of service in accordance with the metrics that the Town has established in this AMP. Additional metrics can be established as they are determined to provide meaningful and reliable inputs into asset management planning.
- Work towards identifying proposed levels of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

The Town's sewage lagoon is located in the south and west portion of the Urban Settlement Area close to the marina. It was designed to accommodate a population of 1600 persons. However, the sewer lines do not service the entire Urban Settlement Area.

Similar to the water network, the sanitary services provided by the Town are overseen by the Public Works Staff in partnership with Ontario Clean Water Agency (OCWA).

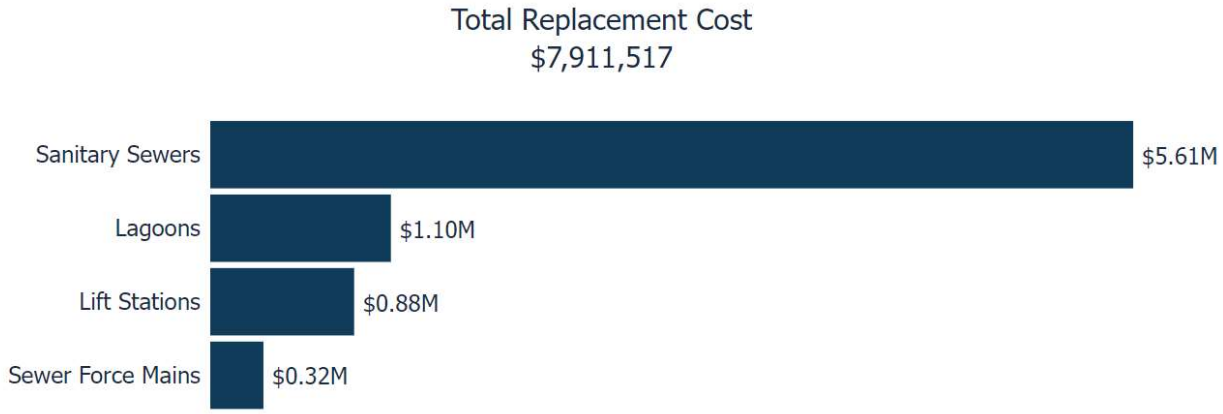
The table below outlines high-level service indicators for the Sanitary Sewer Network.

Cost	Performance (Average Condition)	Risk
		

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 Sewer Network inventory.

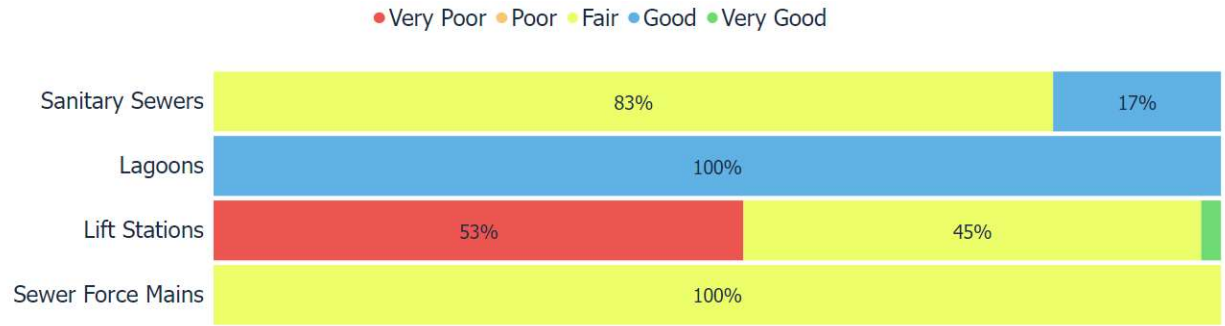
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Sanitary Sewers	8,337 m	CPI Tables	$5,614,370
Lagoons	1	CPI Tables	$1,098,669
Lift Stations	2	91% CPI Tables, 9% Cost per Unit	$875,167
Sewer Force Mains	999 m	CPI Tables	$323,311
			$7,911,517



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
Sanitary Sewers	56%	Fair	Age-based
Lagoons	77%	Good	Age-based
Lift Stations	29%[5]	Poor	Age-based
Sewer Force Mains	51%	Fair	Age-based
	56%	**Fair**	**Age-based**



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

Current Approach to Condition Assessment

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

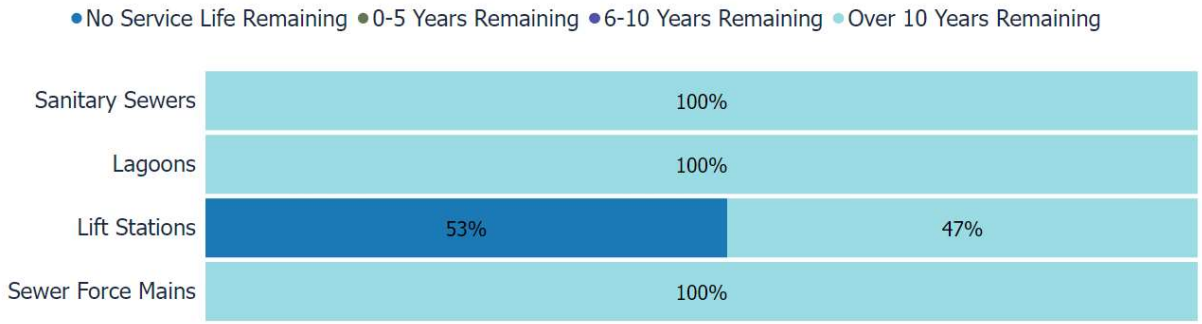
- Staff check manholes to determine if there are any blockages
- Outside of inspections that OCWA may perform, there is no formal inspection program in place for the Town's assets; it is primarily driven on a complaint basis

[5] The Garnier Road Sewage Lift Station underwent some rehabilitation and improvements in 2017 that have not been factored into this calculation.

5.2.3 Estimated Useful Life & Average Age

The Estimated Useful Life for Sanitary Sewer Network assets has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service. Finally, the Average Service Life Remaining represents the difference between the Estimated Useful Life and the Average Age, except when an asset has been assigned an assessed condition rating. Assessed condition may increase or decrease the average service life remaining.

Asset Segment	Estimated Useful Life (Years)	Average Age (Years)
Sanitary Sewers	75 Years	33.9
Lagoons	60-200 Years	22.8
Lift Stations	20-80 Years	32.0
Sewer Force Mains	75 Years	37.0
		32.8



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. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment. 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.

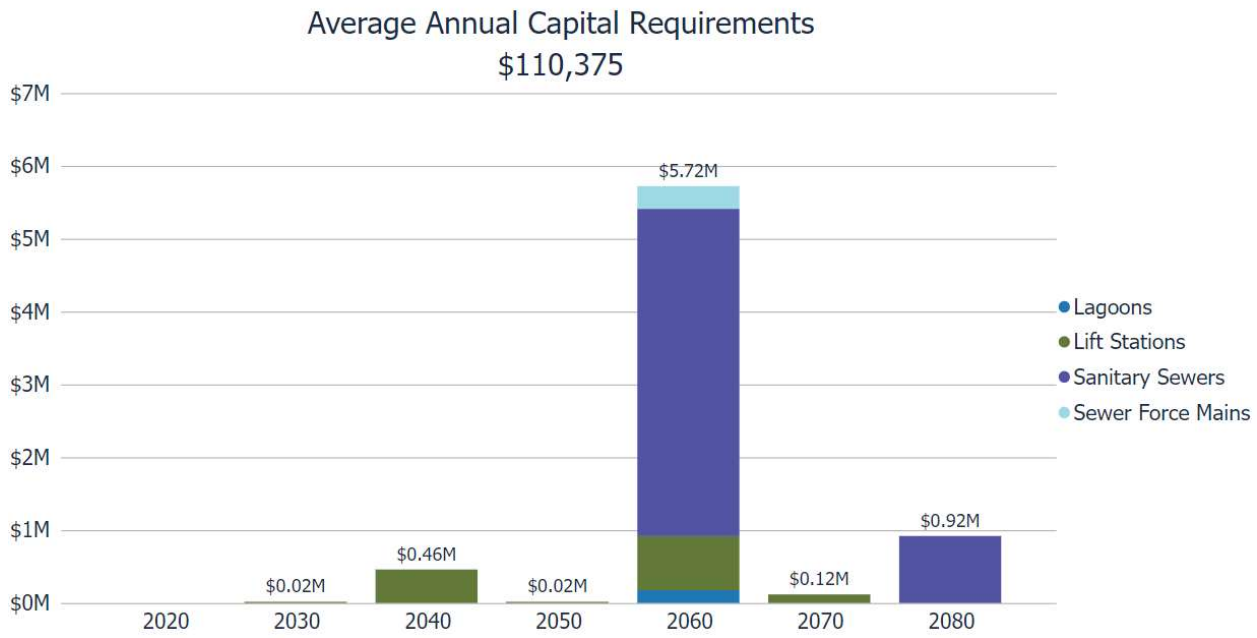
The following table outlines the Town's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Public Works staff clean out the solids from the tank in the step-up system every 3 years
	OCWA manages the lagoon and lift stations
Rehabilitation / 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
	OCWA provides a 5-year capital requirement forecast which is generally followed

Forecasted Capital Requirements

Based on the current sanitary sewer network inventory and assuming end-of-life replacement for all assets, the following graph forecasts long-term capital requirements for sanitary assets.

The average annual capital requirements represent the average amount per year that the Town should allocate towards funding rehabilitation and replacement needs in order to meet future capital needs.



A 60-year projection has been used as it ensures that every asset has gone through one full iteration of replacement and does not include assets that may be required for growth.

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 relationship between the probability of failure and the consequence of failure for the assets within this asset category based on 2020 inventory data.

Consequence	1	2	3	4	5
5	0 Assets $0.00	0 Assets $0.00	4 Assets $1,392,691.00	0 Assets $0.00	0 Assets $0.00
4	0 Assets $0.00	5 Assets $920,344.00	13 Assets $2,230,316.00	0 Assets $0.00	0 Assets $0.00
3	0 Assets $0.00	0 Assets $0.00	9 Assets $705,485.00	0 Assets $0.00	0 Assets $0.00
2	0 Assets $0.00	1 Asset $831,904.00	14 Assets $475,468.00	0 Assets $0.00	0 Assets $0.00
1	1 Asset $16,746.00	5 Assets $176,437.00	2 Assets $382,660.00	0 Assets $0.00	6 Assets $460,243.00

Probability

See Appendix C for the criteria used to determine the risk rating of each asset.

5.2.6 Levels of Service

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

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2020)
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system	The Town of Spanish's wastewater system collects sewage from residents and businesses and transfers it to the two holding cells at the municipality's lagoon via a network of sewer pipes, force mains, manholes, and Algoma St. and Lagoon lift stations. Also refer to 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 own any combined sewers
	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 own any combined sewers
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes	Stormwater can enter into sanitary sewers due to cracks in sanitary mains or through joints. It can also enter through manhole and maintenance hole cover during rainfall or snow melt. In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its

Service Attribute	Qualitative Description	Current LOS (2020)
		designed capacity. In some cases, this can cause water and/or sewage to overflow.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	To minimize stormwater inflow into the wastewater system, the municipality ensures that all manhole and sanitary sewer covers are correctly in place and free of cracks and holes. Manholes and lift station wells are regularly inspected for signs of groundwater infiltrations and repairs are performed as necessary.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system	The effluent from the Town of Spanish's Lagoon is regularly sampled and must be within compliance limits before being discharged back into the natural environment. Some of the criteria that the effluent is tested for and must adhere to includes pH, Biochemical Oxygen Demand (BOD5), Total Suspended Solids, Phosphorus, Nitrogen, Ammonia and Ammonium.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2020)
Scope	% of properties connected to the municipal wastewater system	44%
Reliability	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	N/A
	# 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

5.2.7 Recommendations

Asset Inventory

- Continue to refine and consolidate asset data into the primary asset inventory to ensure all relevant assets are accounted for.
- Some replacement costs in this category 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 sanitary sewer 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

- 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 the Town to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure

- Population is projected to slightly decline when not accounting for external factors

- The built up Urban Settlement Area has the capacity to provide water and sanitary services to more users without expansion

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

6.1.1 Spanish Official Plan (December 2017)

The Town of Spanish is a single-tier municipality in the District of Algoma. The Town developed its Official Plan and was given approval by the Ministry of Municipal Affairs and Housing in December 2017 with modifications. The Official Plan spans a 20-year time and will be revised no less frequent than 10 years after it has come into effect and every five years thereafter.

Much of the information used to develop the Official Plan originated from the Spanish Community Profile 2013 reference document. The document analyzed population trends that noted the Town of Spanish, and the overall District of Algoma, was expected to have a declining population. However, this projection does not take into account multiple factors such as future economic development initiatives suggested in the Strategic Plan or the demand for seasonal waterfront development. Despite the declining trend, the population in the Town grew as reported by the 2016 StatsCan Census.

The following table summarizes the historical and projected population, employment, and household based on available information from the Official Plan, the 2013 Community Profile document and StatsCan Census.

Year	2011	2016	2035
Population	696[4]	712[6]	548 – 667[7]
Employment	N/A	215[4]	N/A
Households	316[4]	335[4]	N/A

Housing composition changes are expected due to an aging population, increasing the need for smaller unit sizes and housing geared toward seniors. A potential opportunity can be made by marketing Spanish as a senior-friendly, rural lakeside retirement destination to future retirees seeking a permanent home in a scenic location.

The recent years has seen the vast majority of development in Rural Lands in the form of housing starts for waterfront residential development. By comparison, only about one third of development has located within the Urban Settlement Area. Moving forward, the Official Plan

[6] Figure from Statistics Canada Census
[7] Figure from 2017 Official Plan

targets 60% of new development to the built-up area of Spanish for the purposes of intensification and redevelopment.

Given the Town's current population, the water and sanitary infrastructure have more than enough capacity to accommodate growth. As a result, there are no immediate plans to expand sewer services in the community. Municipal roads are not planned for expansion unless driven by proposals for development that do not have an undue negative financial impact to the Town. The railway and Highway 17 together have been cited as the genesis of development in the Town.

While natural resources are no longer the backbone of Spanish's economy, the Strategic Plan notes a recent expansion of tourism and service-related industries and the need to promote small business and commercial expansion along Highway 17 in Spanish. The Strategic Plan also speaks of the need to undertake economic development initiatives in conjunction with neighbouring First Nations and municipalities. Indigenous communities are an integral part of the cultural and development mosaic at the Town.

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 may require the expansion of existing infrastructure and services. As growth-related assets are constructed or acquired, they should be integrated into the Town's AMP. While the addition of residential units will add to the existing assessment base and offset some of the costs associated with growth, the Town will need to review the lifecycle costs of growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to, at a minimum, maintain the current level of service.

7 Financial Strategy

Key Insights

- The Town is committing approximately $275,000 towards capital projects per year from sustainable revenue sources

- Given the annual capital requirement of $1,203,000, there is currently a funding gap of $928,000 annually

- For tax-funded assets, we recommend increasing tax revenues by 5.5% each year for the next 20 years to achieve a sustainable level of funding

- For the water network, we recommend increasing rate revenues by 3.7% annually for the next 20 years to achieve a sustainable level of funding

- For the sanitary sewer network, we recommend increasing rate revenues by 5.1% annually for the next 20 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 Spanish to identify the financial resources required for sustainable asset management based on existing asset inventories, desired levels of service, and projected growth requirements.

This asset management plan includes 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:

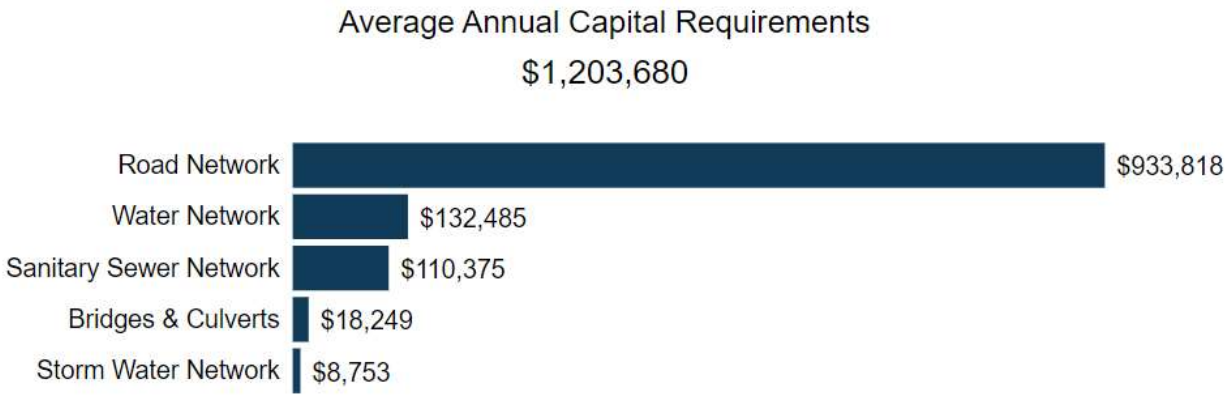
1. In order to reduce financial requirements, consideration has been given to revising service levels downward.

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 $1.2 million annually to address capital requirements for the assets included in this AMP.



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

However, for the Road Network, lifecycle management strategies have been developed to identify capital costs that are 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:

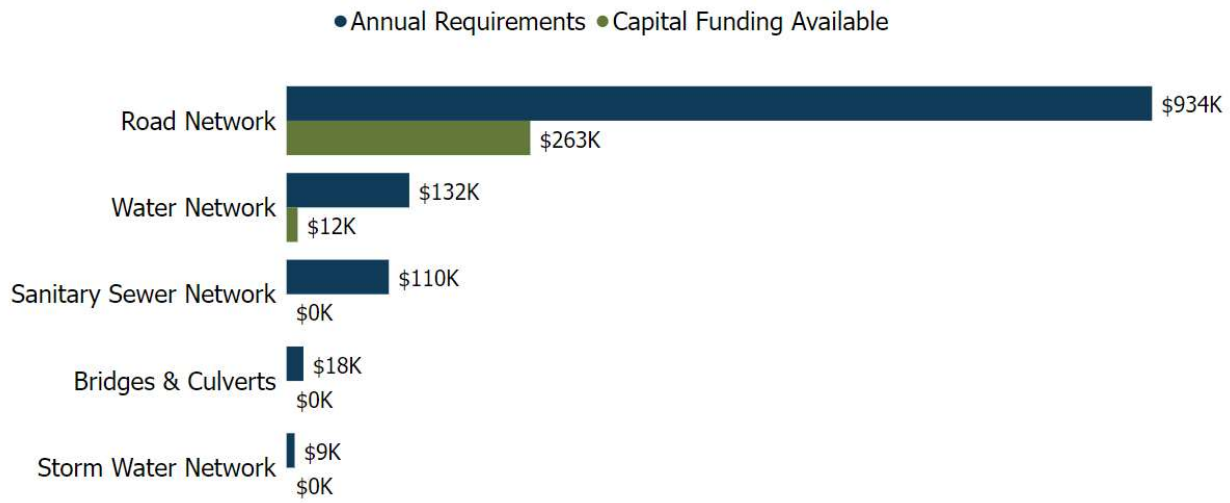
1. **Replacement Only Scenario**: Based on the assumption that assets deteriorate and – without regularly scheduled maintenance and rehabilitation – are replaced at the end of their service life.
2. **Lifecycle Strategy Scenario**: Based on the assumption that lifecycle activities are performed at strategic 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	$1,137,398	$933,818	$203,580

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of $203,580 for the Road Network. This represents an overall reduction of the annual requirements by 18%. As the lifecycle strategy scenario represents the lowest cost option available to the Town, we have used these annual requirements in the development of the financial strategy.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Town is committing approximately $275,000 towards capital projects per year from sustainable revenue sources. Given the annual capital requirement of $1,203,680, there is currently a funding gap of $928,680 annually.



7.2 Funding Objective

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

1. **Tax Funded Assets:** Bridges & Culverts, Road Network, Storm Water Network
2. **Rate-Funded Assets:** Water Network, Sanitary Sewer 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, Spanish's average annual asset investment requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Taxes to Reserves	Gas Tax	OCIF	Total Available	
Bridges & Culverts	$18,000	$0	$0	$0	$0	$18,000
Road Network	$934,000	$128,000	$43,000	$92,000	$263,000	$671,000
Storm Water Network	$9,000	$0	$0	$0	$0	$9,000
	$961,000	**$128,000**	**$43,000**	**$92,000**	**$263,000**	**$698,000**

The average annual CapEx requirement for the above categories is $961,000. Annual revenue currently allocated to these assets for capital purposes is $263,000 leaving an annual deficit of $698,000. Put differently, these infrastructure categories are currently funded at 27% of their long-term requirements.

7.3.2 Full Funding Requirements

In 2021, Town of Spanish had budgeted annual tax revenues of $636,000. 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
Bridges & Culverts	2.8%
Road Network	105.5%
Storm Water Network	1.4%
	109.7%

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:

	Without Capturing Changes				With Capturing Changes			
	5 Years	**10 Years**	**15 Years**	**20 Years**	**5 Years**	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	$698,000	$698,000	$698,000	$698,000	$698,000	$698,000	$698,000	$698,000
Change in Debt Costs	N/A	N/A	N/A	N/A	-	-	-	-
Change in OCIF Grants	N/A	N/A	N/A	N/A	-	-	-	-
Resulting Infrastructure Deficit	$698,000	$698,000	$698,000	$698,000	$698,000	$698,000	$698,000	$698,000
Tax Increase Required	109.7%	109.7%	109.7%	109.7%	109.7%	109.7%	109.7%	109.7%
Annually	**21.9%**	**11.0%**	**7.3%**	**5.5%**	**21.9%**	**11.0%**	**7.3%**	**5.5%**

7.3.3 Financial Strategy Recommendations

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

a) when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above.
b) increasing tax revenue by 5.5% 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.
c) allocating the current gas tax and OCIF revenue as outlined previously.
d) allocating the scheduled OCIF grant increases to the infrastructure deficit as they occur.
e) reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
f) 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 applicable OCIF formula-based funding since this funding is a multi-year commitment[8].

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 pent-up investment demand of $6,306,000 for the Road 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.

[8] 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. This review may impact its availability.

7.4 Financial Profile: Rate Funded Assets

7.4.1 Current Funding Position

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

Asset Category	Avg. Annual Requirement	Annual Funding Available				Annual Deficit
		Rates	To Operations	OCIF	Total Available	
Water Network	$132,000	$164,000	-$152,000	$0	$12,000	$120,000
Sanitary Sewer Network	$110,000	$108,000	-$108,000	$0	$0	$110,000
	$242,000	**$272,000**	**-$260,000**	**$0**	**$12,000**	**$230,000**

The average annual CapEx requirement for the above categories is $242,000. Annual revenue currently allocated to these assets for capital purposes is $12,000 leaving an annual deficit of $230,000. Put differently, these infrastructure categories are currently funded at 5% of their long-term requirements.

7.4.2 Full Funding Requirements

In 2021, Spanish had annual sanitary revenues of $110,000 and annual water revenues of $132,000. 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	Tax Change Required for Full Funding
Water Network	73.2%
Sanitary Sewer Network	101.9%
	84.6%

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 Sewer Network			
	5 Years	**10 Years**	**15 Years**	**20 Years**	**5 Years**	**10 Years**	**15 Years**	**20 Years**
Infrastructure Deficit	$120,000	$120,000	$120,000	$120,000	$110,000	$110,000	$110,000	$110,000
Rate Increase Required	73.2%	73.2%	73.2%	73.2%	101.9%	101.9%	101.9%	101.9%
Annually:	**14.6%**	**7.3%**	**4.9%**	**3.7%**	**20.4%**	**10.2%**	**6.8%**	**5.1%**

7.4.3 Financial Strategy Recommendations

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

a) when realized, reallocating the debt cost reductions to the infrastructure deficit as outlined above.
b) increasing rate revenues by 3.7% for the Water Network, and 5.1% for the Sanitary Sewer Network each year for the next 20 years
c) These rate revenue increases are solely for the purpose of phasing in full funding to the respective asset categories covered in this AMP.
d) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. This periodic funding should not be incorporated into an AMP unless there are firm commitments in place.

2. We realize that raising rate revenues for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.

3. Any increase in rates required for operations would be in addition to the above recommendations.

Although this strategy achieves full CapEx funding for rate-funded assets over 20 years, the recommendation does require prioritizing capital projects to fit the annual funding available. Current data shows a pent-up investment demand of $5,000 for the Water Network and $460,000 for the Sanitary Sewer Network.

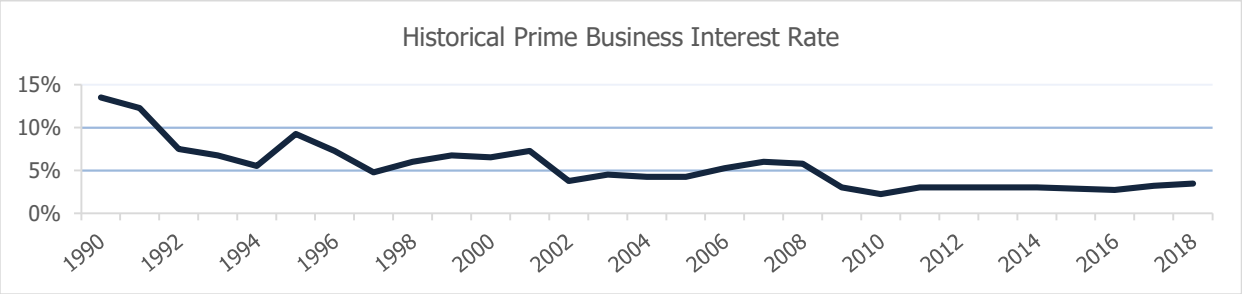
Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

7.5 Use of Debt

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a $1M project financed at 3.0%[9] over 15 years would result in a 26% premium or $260,000 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.

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%

It should be noted that current interest rates are near all-time lows. Sustainable funding models that include debt need to incorporate the risk of rising interest rates. The following graph shows where historical lending rates have been:



A change in 15-year rates from 3% to 6% would change the premium from 26% to 54%. Such a change would have a significant impact on a financial plan.

There is currently no debt outstanding for the assets covered by this AMP.

[9] Current municipal Infrastructure Ontario rates for 15-year money is 3.2%.

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 the Town.

Asset Category	Balance on December 31, 2020
Bridges & Culverts	$0
Road Network	$186,000
Storm Water Network	$0
Total Tax Funded:	**$186,000**
Water Network	$82,000
Sanitary Sewer Network	$69,000
Total Rate Funded:	**$151,000**

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 take into account 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 Spanish'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 the Town 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 identifies the criteria used to calculate risk for each asset category
- Appendix D provides additional guidance on the development of a condition assessment program

Appendix A: 10-Year Capital Requirements

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

Asset Portfolio											
Asset Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Road Network	$6,305,792	$0	$981,500	$0	$114,400	$0	$0	$0	$0	$26,000	$0
Bridges & Culverts	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Water Network	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Network	$4,572	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sanitary Sewer Network	$378,783	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$6,689,147	**$0**	**$981,500**	**$0**	**$114,400**	**$0**	**$0**	**$0**	**$0**	**$26,000**	**$0**

Road Network											
Asset Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Gravel Roads	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Paved Roads	$5,699,400	$0	$981,500	$0	$114,400	$0	$0	$0	$0	$26,000	$0
Roadside Culverts	$606,392	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sidewalks	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Streetlights	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$6,305,792	**$0**	**$981,500**	**$0**	**$114,400**	**$0**	**$0**	**$0**	**$0**	**$26,000**	**$0**

Bridges & Culverts											
Asset Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Bridges	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Structural Culverts	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

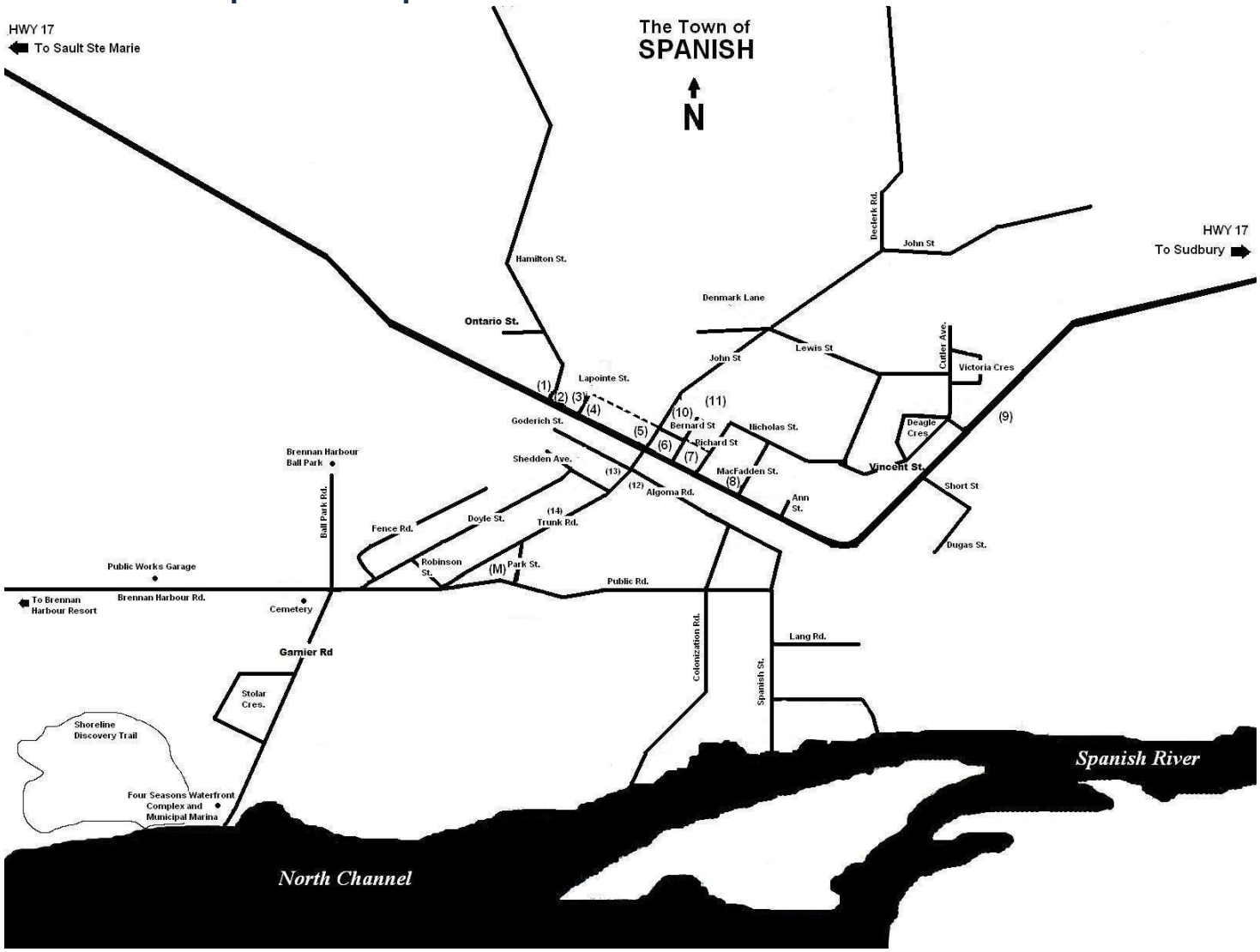
Storm Water Network											
Asset Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Catch Basins	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Maintenance Holes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Inlet and Outlet	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Laterals	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Storm Sewers	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Subdrains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$0	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Water Network											
Asset Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Pipes, Valves, Hydrants	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Water Towers	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Wells	$4,572	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$4,572	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

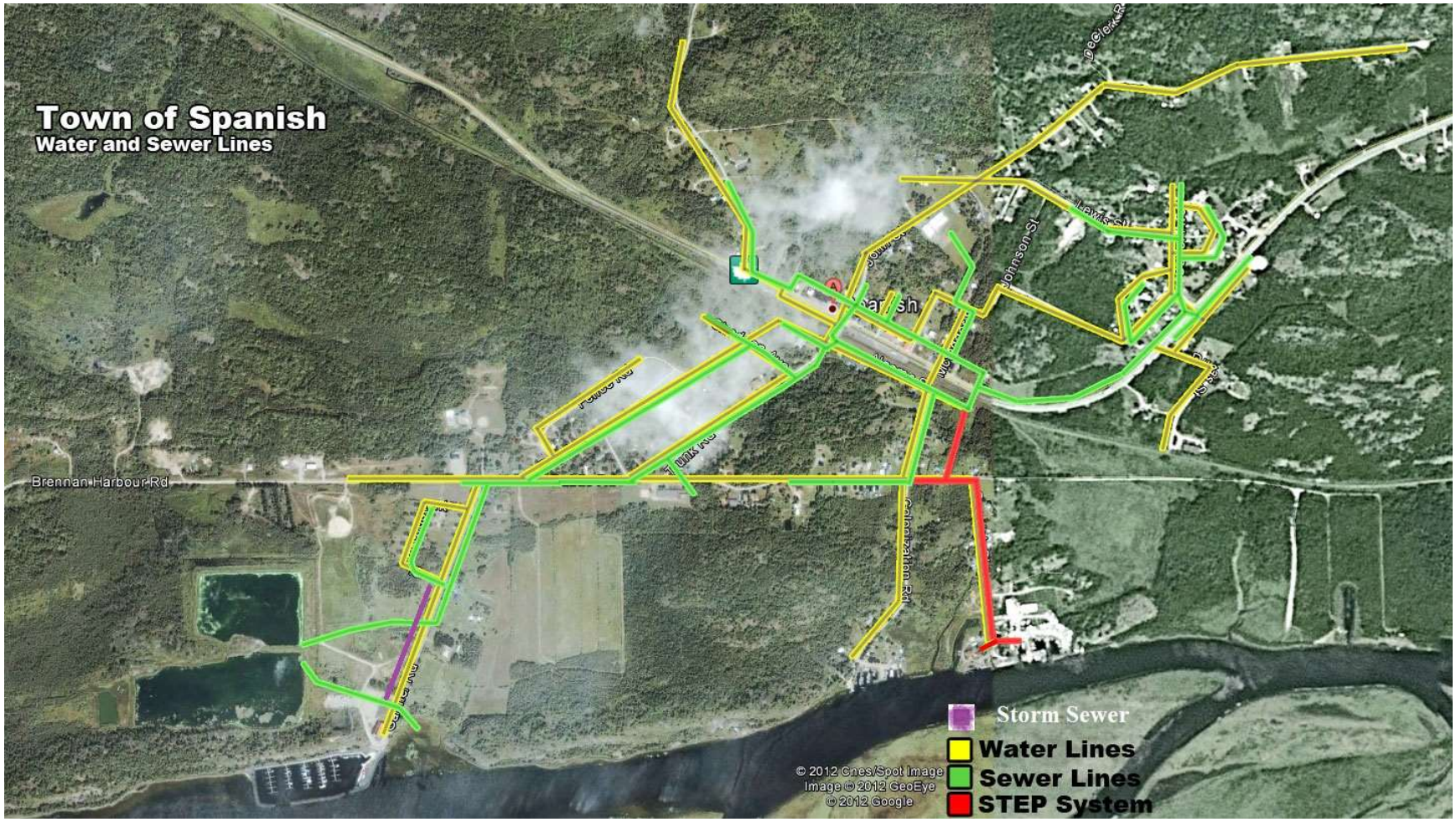
Sanitary Sewer Network											
Asset Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Lagoons	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Lift Stations	$378,783	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sanitary Sewers	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sewer Force Mains	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
	$378,783	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Appendix B: Level of Service Maps

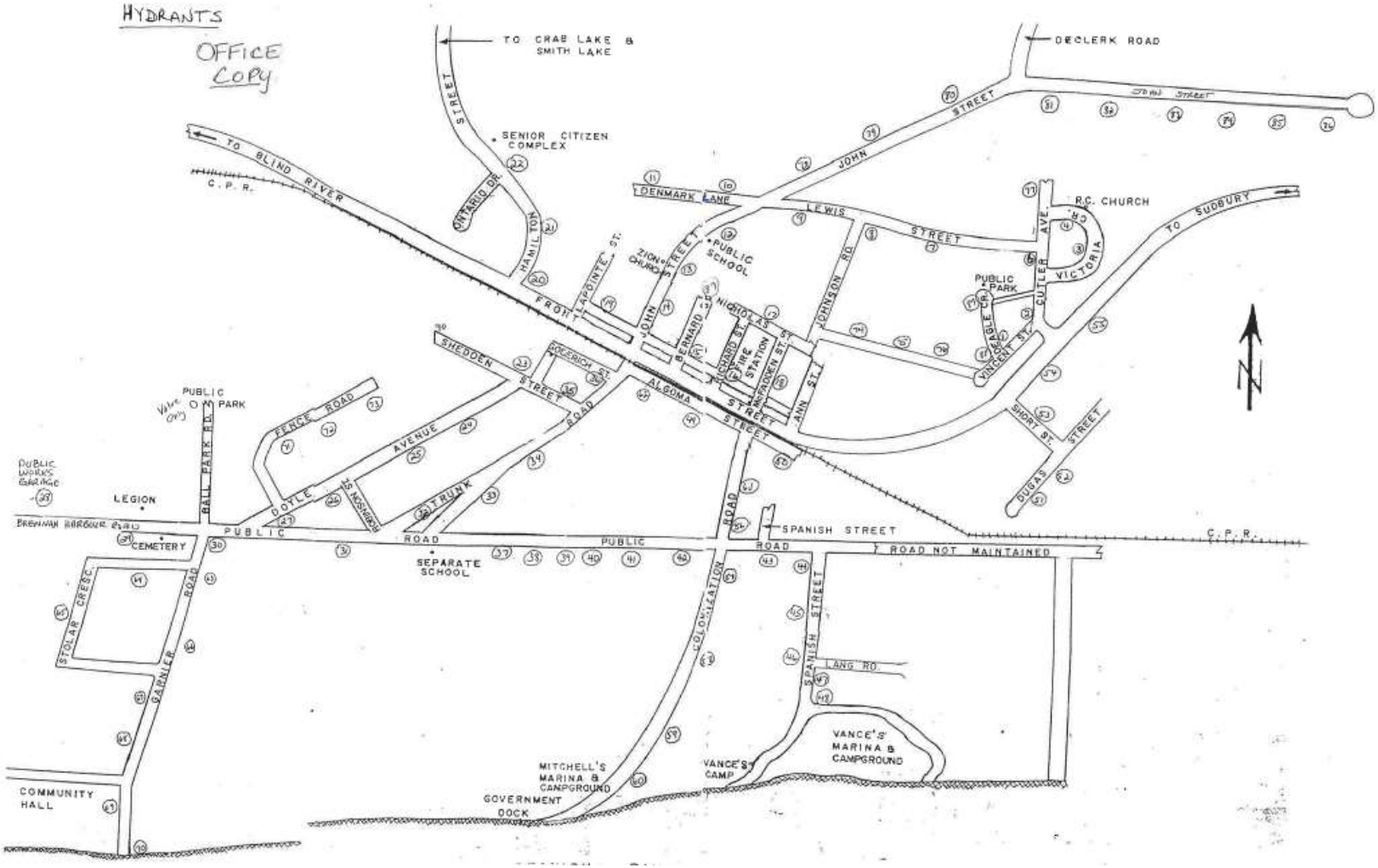
Road Network Map – Town of Spanish



Town of Spanish Water, Stormwater and Sanitary Lines



Town of Spanish Hydrant Map



Town of Spanish Sample Boil Water Advisory

Algoma
PUBLIC HEALTH
Santé publique Algoma
www.algomapublichealth.com

Precautionary Boil Water Advisory

Effective September 10, 2018

A Precautionary Boil Water Advisory has been issued for the area of **John Street, Denmark Street, and Lewis Street affecting 46 homes in Spanish, ON.**

Whenever any kind of repair or construction on the water supply system either planned or an emergency, there is a risk of soil or other contaminants entering the water supply. Although this risk is very low, a Precautionary Boil Water Advisory (PBWA) is issued to all residents, businesses and public facilities located along that area of the water supply system.

Until further notice, Algoma Public Health advises that you boil water for any activity where water may be ingested. This includes;

- Drinking
- Brushing teeth
- Washing fruits and vegetables
- Drinking water from public drinking fountains in this area.

Please follow these instructions:

- Bring water to a rolling boil
- Continue to boil for at least 1 minute
- Let water cool before using

If you do not wish to boil your water, use an alternate water supply known to be safe (ie. bottled water).

This Precautionary Boil Water Advisory will remain in effect until work on the system is complete and microbiological samples confirm the safety of the water. This is a localized problem, and only households and businesses in the affected area will receive this notice.

WHAT TO DO WHEN THE WATER RETURNS

When the water service is restored, we advise that you open each cold water tap, one at a time, and let them run for about 20 seconds each. This should release any air trapped in your water lines. If the water is cloudy or contains grit, continue to run the cold water taps until the water runs clear.

If you have any questions, please contact your local Algoma Public Health office.

Blind River
P.O. Box 194
9B Lawton Street
Blind River, ON P0R 1B0
Tel: 705-356-2551
TF: 1 (888) 356-2551
Fax: 705-356-2494

Elliot Lake
302-31 Nova Scotia Walk
Elliot Lake, ON P5A 1Y9
Tel: 705-848-2314
TF: 1 (877) 748-2314
Fax: 705-848-1911

Sault Ste. Marie
294 Willow Avenue
Sault Ste. Marie, ON P6B 0A9
Tel: 705-942-4646
TF: 1 (866) 892-0172
Fax: 705-759-1534

Wawa
18 Ganley Street
Wawa, ON P0S 1K0
Tel: 705-856-7208
TF: 1 (888) 211-8074
Fax: 705-856-1752

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Appendix C: Risk Rating Criteria

Probability of Failure

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Road Network (Roads)	Condition	70%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Services Under Road	30%	No	2
			Yes	4
Bridges & Culverts	Condition	75%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Location / Environmental Sensitivity	25%	Very Low Sensitivity	1
			Low Sensitivity	2
			Moderate Sensitivity	3
			High Sensitivity	4
			Very High Sensitivity	5
Storm Water Network (Pipes)	Condition	100%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Water Network (Mains)	Condition	80%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5
	Number of Past Water Main Breaks	20%	0	1
			1	2
			2 to 3	3
			4 to 5	4
			6+	5
Sanitary Sewer Network (Mains)	Condition	100%	80-100	1
			60-79	2
			40-59	3
			20-39	4
			0-19	5

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network (Roads)	Economic (70%)	Replacement Cost (100%)	>$500,000	5
			$250,000 - $500,000	4
			$100,000 - $250,000	3
			$50,000 - $100,000	2
			$0 - $50,000	1
	Social (15%)	Alternative Access (100%)	No	4
			Yes	2
	Health and Safety (15%)	Development Served by Road (100%)	Major	5
			Moderate	3
			Minor	2
Bridges & Culverts	Economic (100%)	Replacement Cost (100%)	>$450,000	5
			$400,000 - $450,000	4
			$250,000 - $400,000	3
			$150,000 - $250,000	2
			$0 - $150,000	1
	Health and Safety (15%)	Alternative Access (100%)	No	4
			Yes	2
Storm Water Network (Pipes)	Economic (75%)	Replacement Cost (100%)	>$50,000	5
			$20,000 - $50,000	4
			$10,000 - $20,000	3
			$5,000 - $10,000	2
			$0 - $5,000	1
	Social (25%)	Pipe Size (100%)	> 450 mm	5
			375mm - 450mm	3
			< 375mm	2

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Water Network (Mains)	Economic (70%)	Replacement Cost (100%)	>$150,000	5
			$100,000 - $150,000	4
			$50,000 - $100,000	3
			$10,000 - $50,000	2
			$0 - $10,000	1
	Social (30%)	Location (100%)	Businesses	5
			Schools	5
			Other	3
Sanitary Sewer Network (Mains)	Economic (70%)	Replacement Cost (100%)	>$250,000	5
			$100,000 - $250,000	4
			$50,000 - $100,000	3
			$10,000 - $50,000	2
			$0 - $10,000	1
	Environmental (20%)	Environmental Spill / Contamination Sensitivity (100%)	High	5
			Medium	3
			Low	1
	Health & Safety (10%)	Number of Incidents	4 or higher	5
			1 to 3	3
			0	1

Appendix D: 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