Asset Management Plan

Township of North Algona Wilberforce

2022

Document Revision History

2022-06-01 Version 1
2022-07-01 Version 2

This Asset Management Plan was prepared by:

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

Key Statistics

Replacement cost of asset portfolio

$59.2 million

Replacement cost of infrastructure per household

$33,668 (2021 Census)

Percentage of assets in fair or better condition

20%

Percentage of assets with assessed condition data

98%

Target reinvestment rate

2.9%

Annual Capital Requirements

$1.7 million

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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.

Background

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). Following this regulation, every municipality shall prepare an Asset Management Plan (AMP) in respect of its core municipal infrastructure assets by July 1, 2022, The municipalities shall report on specific current levels of service being provided by core municipal infrastructure assets, determined in accordance with qualitative descriptions and technical metrics defined by the regulation. The data reported should be from at most the two calendar years prior to the year in which all information required is included in the asset management plan. Therefore, a need to update the Municipality’s asset management plan has been identified.

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 Township of North Algona Wilberforce can ensure that public infrastructure is managed to support the sustainable delivery of municipal services.

This AMP include the following asset categories:

Asset Category

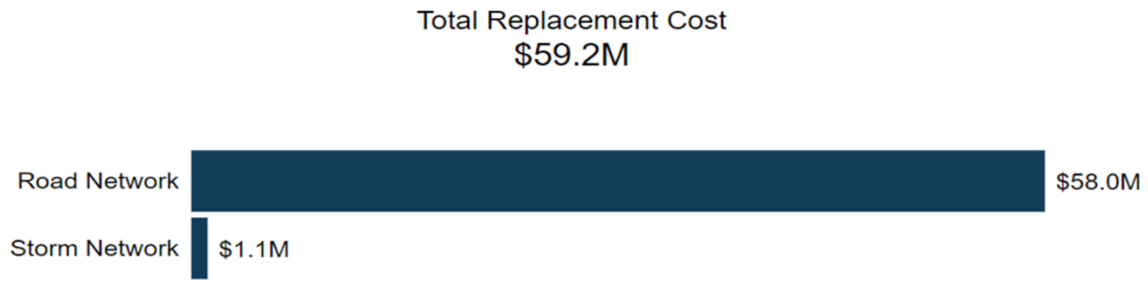
Road Network

Storm Network

With the development of this AMP the Township of North Algona Wilberforce 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 non-core assets, levels of service, and growth that must be met by July 1, 2024 and 2025.

Findings

The overall replacement cost of the asset categories includes in this AMP totals to $59.2 million. This is based on asset information in the portfolio as of the end of 2020.



About 20% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 98% of assets. For the remaining 2% 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.

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 (for Roads) and replacement only strategies (for 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 Municipality's average annual capital requirement totals $ 1.7 million.

Annual Capital Requirements 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 Municipality. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

Recommendations

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

- Reviewing asset data to update and maintain a complete and accurate 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 identify sustainable proposed levels of service

1 Introduction & Context

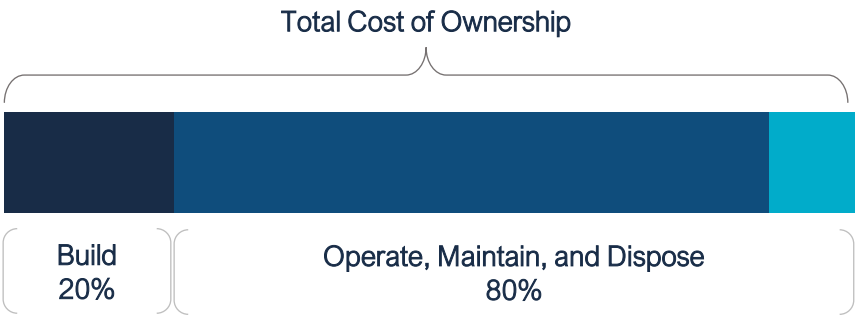
Key Insights

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio
- A municipal asset management program is a combination of several disciplines or business functions, including management, financial and economic analyses, engineering and operations and maintenance
- The Municipality's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management
- An asset management plan is a dynamic document that should be updated regularly to inform long-term planning
- Ontario Regulation 588/17 outlines several key milestone and requirements for asset management plans in Ontario between July 1, 2022 and 2025

1.1 An Overview of Asset Management

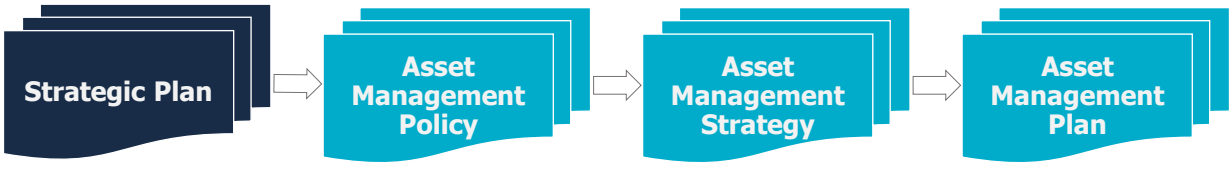
Municipalities are responsible for managing and maintaining a broad portfolio of infrastructure assets to deliver services to the community. The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, manage the associated risks, while maximizing the value ratepayers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

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



These costs can span decades, requiring planning and foresight to ensure financial responsibility is spread equitably across generations. An asset management plan is critical to this planning, and an essential element of broader asset management program.

The 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 Township of North Algona Wilberforce adopted a Strategic Asset Management Policy on along with this asset management plan, in accordance with accordance with Ontario Regulation 588/17.

The stated purpose of this policy is to:

- Provide a framework for implementing asset management to enable a consistent and strategic approach to all levels of the organization
- Demonstrate Council's commitment to support the implementation of asset management methods that are consistent with their priorities and objectives
- Provide guidance to staff responsible for asset management
- Provide transparency and accountability and demonstrate the validity of decision-making process which combine strategic plans, budgets, service levels and risks

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

- The policy's objectives 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 Municipality's other plans;
- there are formally defined roles and responsibilities of internal staff and stakeholders;
- the policy statements are well defined.

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. Unlike the asset management plan, the asset management strategy should not evolve and change frequently

The Municipality's Strategic Asset Management Policy contains many of the key components 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 (AMP)

The 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.

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

1.2 Key Concepts in Asset Management

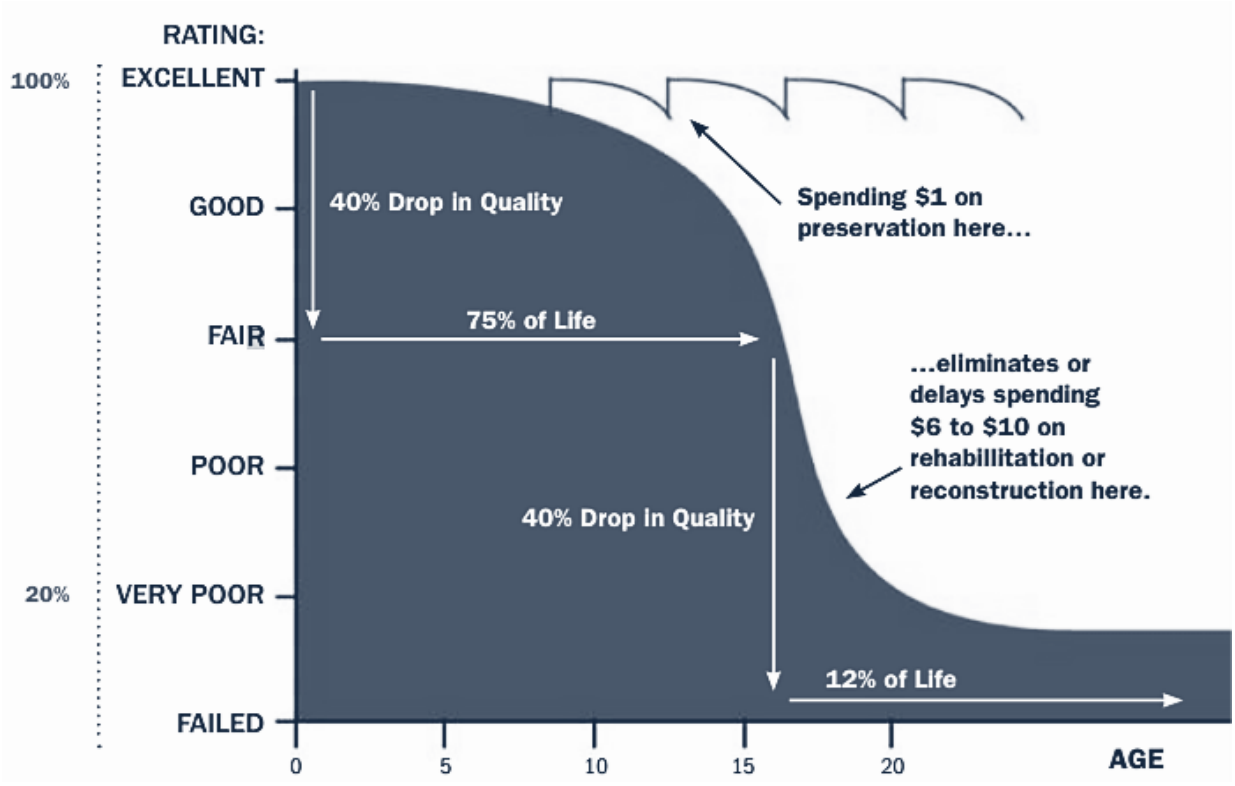
Effective asset management integrates several key components, including lifecycle management, risk management, and levels of service. These concepts are applied throughout this asset management plan and are described below in greater detail.

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 'upgraded' asset	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 Municipality's approach to lifecycle management is described within each asset category outlined in this AMP. Developing and implementing proactive lifecycle strategies 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 Municipality is providing to the community and the nature and quality of that service. Within each asset category in this AMP, technical metrics and qualitative descriptions that measure both technical and community levels of service have been established and measured as data is available.

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

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives.

For core asset categories (Roads, Bridges & 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 (Buildings, Machinery & Equipment, Vehicles, as well as Parks & Land Improvements), the Municipality 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, Wastewater, Stormwater) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP.

For non-core asset categories (Buildings, Machinery & Equipment, Vehicles, as well as Parks & Land Improvements), the Municipality 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. Once current levels of service have been measured, the Municipality plans to establish proposed levels of service over a 10-year period, in accordance with O. Reg. 588/17.

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

1.3 Ontario Regulation 588/17

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

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

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

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

2024

Asset Management Plan for Core and Non-Core Assets (same components as

2025

A Strategic 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 - 4.2.1	Complete for Core Assets Only
Replacement cost of assets in each category	S.5(2), 3(ii)	4.1.2 - 4.2.2	Complete for Core Assets Only
Average age of assets in each category	S.5(2), 3(iii)	4.1.4 - 4.2.4	Complete for Core Assets Only
Condition of core assets in each category	S.5(2), 3(iv)	4.1.3 – 4.2.3	Complete for Core Assets Only
Description of municipality's approach to assessing the condition of assets in each category	S.5(2), 3(v)	4.1.5 – 4.2.5	Complete for Core Assets Only
Current levels of service in each category	S.5(2), 1(i-ii)	4.1.7 - 4.2.7	Complete for Core Assets Only
Current performance measures in each category	S.5(2), 2	4.1.7 - 4.2.7	Complete for Core Assets Only
Lifecycle activities needed to maintain current levels of service for 10 years	S.5(2), 4	4.1.5 – 4.2.5	Complete for Core Assets Only
Costs of providing lifecycle activities for 10 years	S.5(2), 4	Appendix A	Complete for Core Assets Only
Growth assumptions	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	5.1-5.2	Complete

2 Scope and Methodology

Key Insights

- This asset management plan includes 2 asset categories and is divided between tax-funded and rate-funded categories
- Asset data from various data sources was consolidated into the Municipality's tangible capital asset inventory to establish it as the primary asset inventory
- 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 Township of North Algona Wilberforce 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 under the ownership of the municipality (roads, and storm infrastructure).

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

Asset Category	Source of Funding
Road Network	Tax Levy
Storm Network	

2.2 The Asset Inventory

The asset information presented in this AMP has been developed from the asset inventory in CityWide Asset Manager™.

The asset inventory was restructured through the establishment of an industry standard asset hierarchy, and critical asset fields were standardized. In addition to this, and where possible, duplicate data was removed and asset data gaps were addressed.

2.3 Deriving Replacement Costs

There are a range of methods to determine the replacement cost of an asset, and some are more accurate and reliable than others. This AMP relies on two methodologies:
User-Defined Cost and Cost/Unit: Based on costs provided by municipal staff which could include average costs from recent contracts; data from engineering reports and assessments; staff estimates based on knowledge and experience
Cost Inflation/CPI Tables: Historical/Adjusted cost of the asset is inflated based on Consumer Price Index or Non-Residential Building Construction Price Index
User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or

constructed assets where the total cost is reflective of the actual costs that the Municipality incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.4 Estimated Useful Life and Service Life Remaining

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

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

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

2.5 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:

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

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

2.6 Reinvestment Rate

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

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

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

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

2.7 Deriving Asset Condition

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

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

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

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

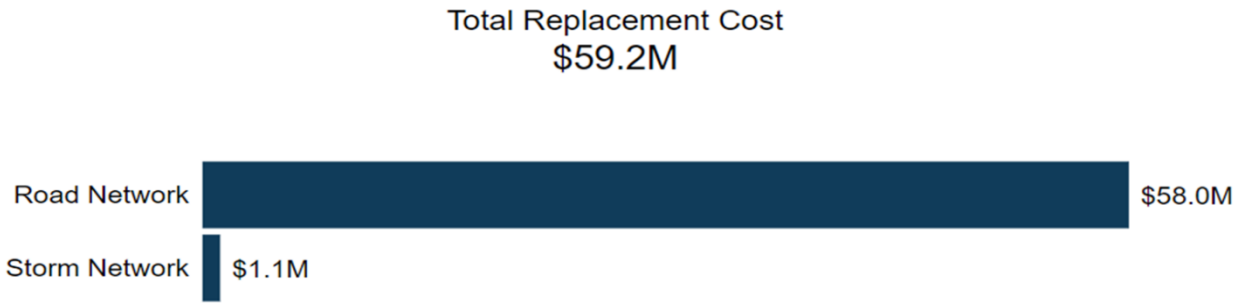
3 Portfolio Overview

Key Insights

- The total replacement cost of the Municipality's asset portfolio is $59.2 million
- The Municipality's target re-investment rate is 2.9%
- 20% of all assets are in fair or better condition
- 68% of assets are projected to require replacement in the next 10 years
- Average annual capital requirements total $1.7 million per year across all assets

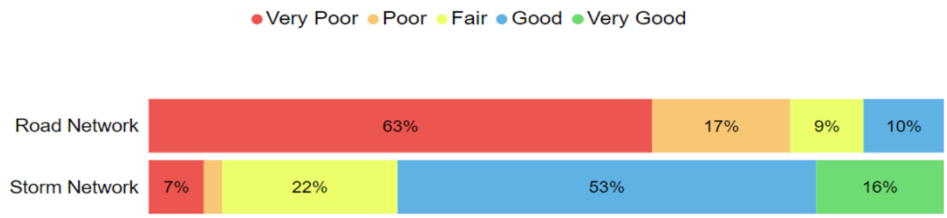
3.1 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $59.2 million based on inventory data at the end of 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 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 20% of assets in North Algona Wilberforce are in fair or better condition. This estimate relies on both age-based and field condition data.

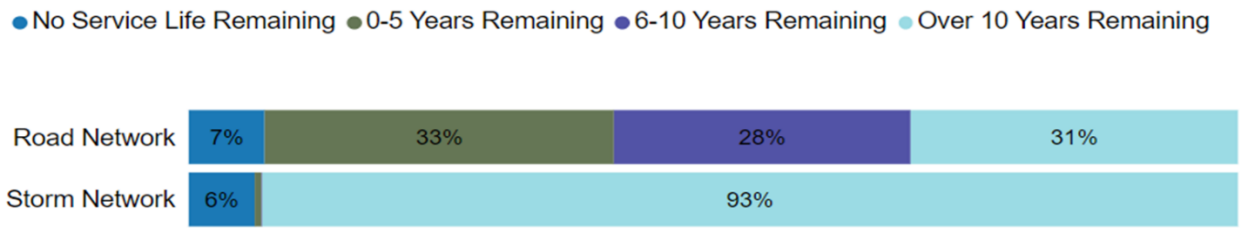


This AMP relies on assessed condition data for 98% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	% of Assets with Assessed Condition	Source of Condition Data
Road Network	100%	Staff Assessments 2022
Storm Network	0%	Age-based

3.3 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 68% of the Municipality's assets will require replacement within the next 10 years. Capital requirements over the next 10 years are identified in Appendix B.



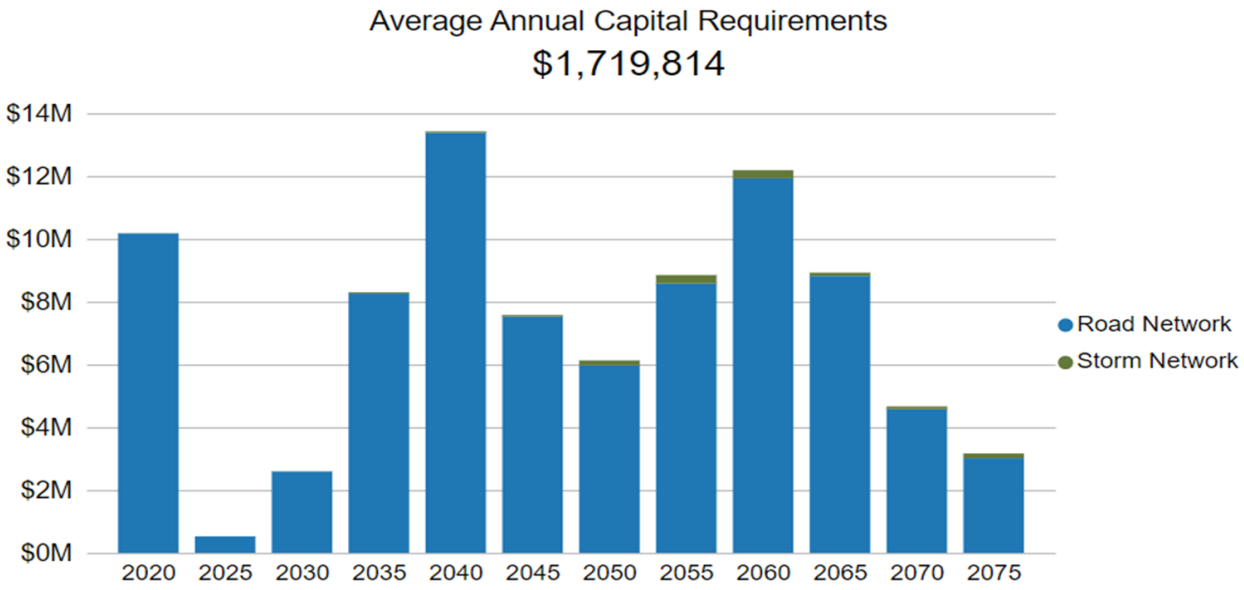
3.4 Annual Capital Requirements

Based on the replacement cost of the assets, the estimated useful life, the cost and impact of lifecycle activities, the average annual capital requirements can be calculated for each category in the asset portfolio. This is the average annual amount required to maintain the current level of service that the Municipality is providing. The average annual capital requirements for the asset categories included in this report is about $ 1.7 million.

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 and the refinement of the asset inventory, the Municipality can produce an accurate short- and long-term capital forecast.

The following graph identifies the average annual capital requirements required over the next 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and are based on the Municipality's asset inventory as of 2020 and do not include assets that may be required for growth.



The specific 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.

3.6 Risk & Criticality

Advanced risk models for core linear assets and high-level risk models for all other assets were developed as part of this asset management plan. The following risk matrix provides a visual representation of the relationship between the probability of failure and the consequence of failure for the asset portfolio based on 2020 inventory data.

Municipal staff also identified and grouped assets based on service areas, including those that support the delivery of fire and emergency services, with a higher risk rating attribute to ensure that a prioritization process is in place.

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

4 Analysis of Tax-funded Assets

Key Insights

- Tax-funded assets are valued at $59.2 million
- 20% of tax-funded assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for tax-funded assets is approximately $1.7 million

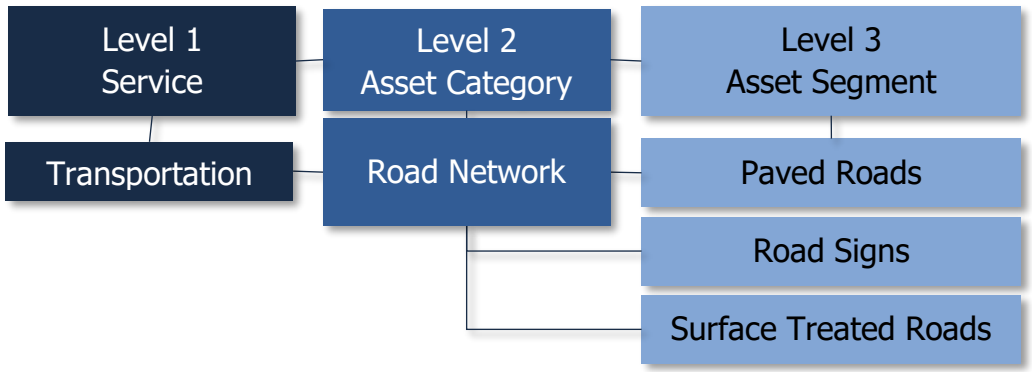
4.1 Road Network

The Municipality's Road Network inventory is managed in CityWide™ and comprises of about 108 kilometres of paved and surface treated roads, as well as roadway appurtenances such as street signs.

The North Algona Wilberforce Public Works Department is responsible for planning and managing the Road Network.

4.1.1 Asset Hierarchy and Segmentation

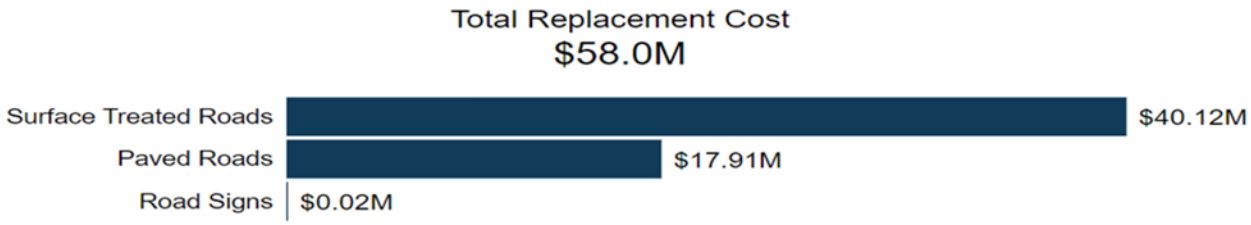
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Most reports and analytics presented in this AMP are summarized at the Asset Segment and/or Asset Category Levels.



4.1.2 Asset Inventory & Replacement Cost

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

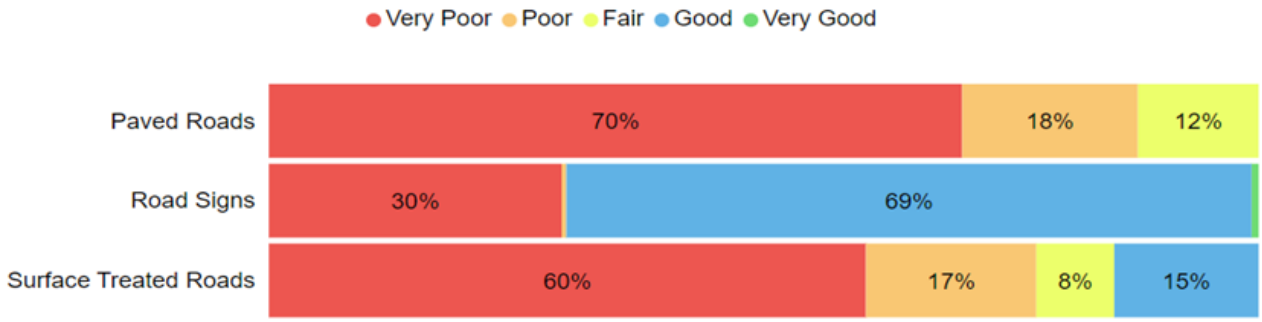
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Paved Roads	31.98 km	User-Defined Cost	$17,908,800
Road Signs	500	User-Defined Cost	$18,630
Surface Treated Roads	76.12 km	User-Defined Cost	$40,115,240
			$58,042,670



4.1.3 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%	Very Poor	100% Assessed
Road Signs	49%	Fair	30% Assessed
Surface Treated Roads	30%	Poor	100% Assessed
	28%	**Poor**	**100% Assessed**



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:

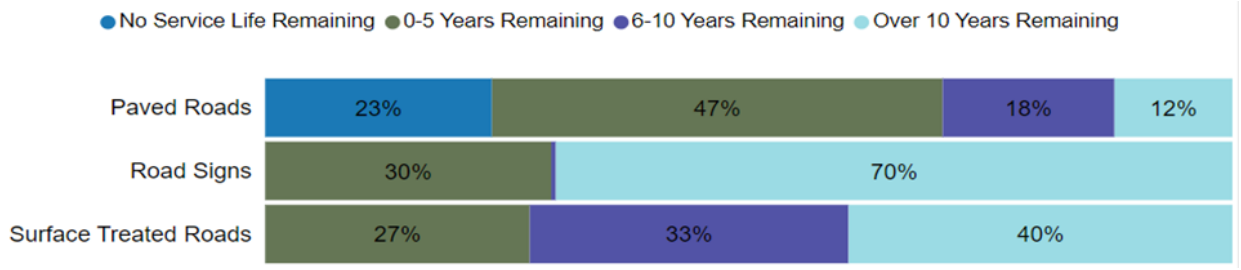
- Route patrols and inspections occur on all our roads weekly. In winter, the frequency of inspection increases to three times a week.
- A major inspection completed by staff every year.
- In 2015/2016 JP2G (external staff) completed an assessment for roads resulting in better planning for which roads should be prioritized for rehab/replacement.
- In the last 15 years, there have been 3 external assessments.

4.1.4 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)	Average Service Life Remaining (Years)
Paved Roads	30 Years	22.9	3.3
Road Signs	25 Years	14.6	10.4
Surface Treated Roads	20 Years	18.8	5.8
		15.1	**9.9**

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.



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.

4.1.5 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 Municipality's approach is considered reactive as the staff effort is mainly focused on fixing roads that are in poor condition rather than being pro-active about rehabilitation and maintenance.

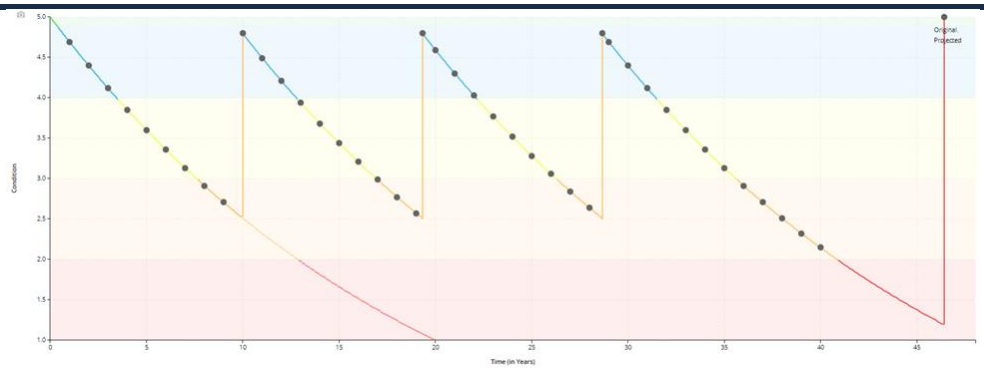
The following table outlines the Municipality's current lifecycle management strategy.

Activity Type	Description of Current Strategy
Maintenance	Municipal roads crews apply cold patching on an as needed and severity basis for paved roads and surface treated roads. The yearly budget for this maintenance activity is about $40,000. Gravel roads receive grading as much as possible when needed. Ditching and brushing activities are applied to roads whenever needed. Hot mix asphalt treatment is sometimes applied to large roads.
Rehabilitation	Surface treated roads are not currently planned to do surface treatment. Pulverizing and resurfacing activities are being applied to roads in very poor condition. Full reconstruction has not occurred within that last 15 years, partial reconstruction or consistent patching are the only strategies employed.
Replacement	Road reconstruction projects are identified based on road conditions and traffic volumes.

The following lifecycle strategies have been developed to formalize the current approach to manage the lifecycle of paved 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.

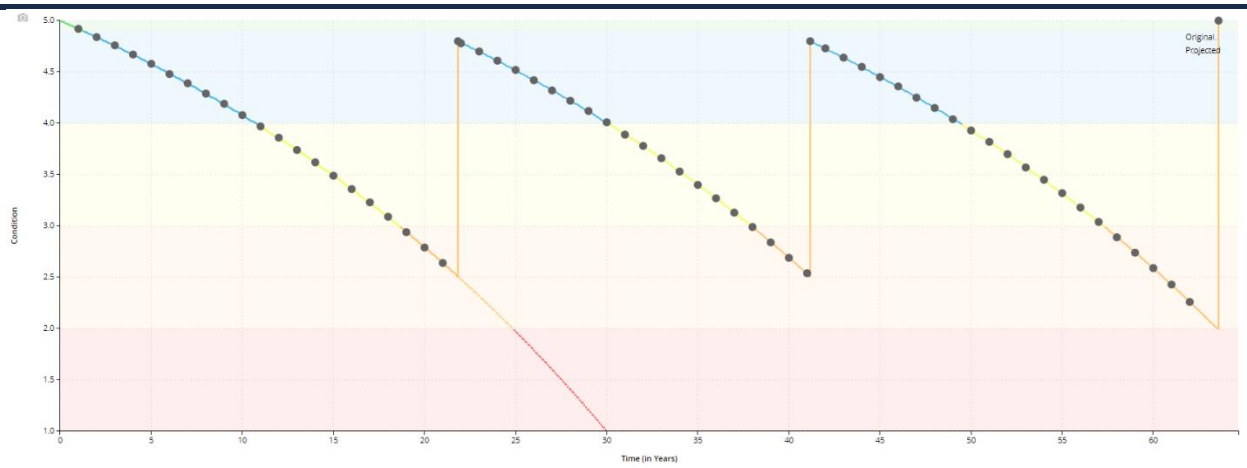
Surface Treated Roads

Event Name	Event Class	Event Trigger
Cold Patching	Maintenance	Every year
Resurfacing - Double Surface Treatment	Rehabilitation	Condition: 2.5
Full Reconstruction	Replacement	Condition: 1.2



Paved Roads

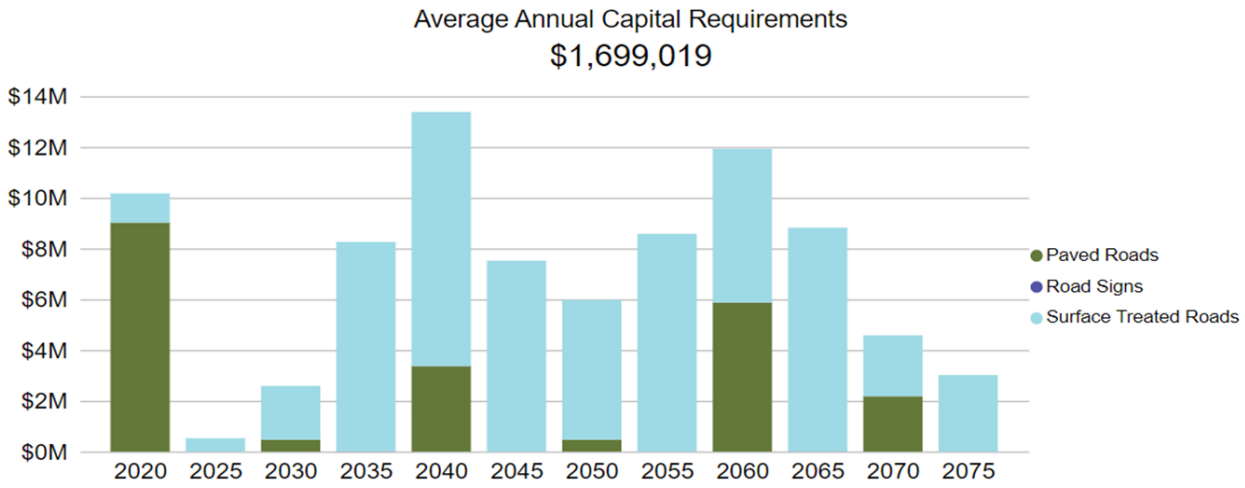
Event Name	Event Class	Event Trigger
Cold Patching	Maintenance	Every year
Resurfacing - Double Surface Treatment	Rehabilitation	Condition: 2.5
Full Reconstruction	Replacement	Condition: 2



Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for surface treated roads, and assuming the end-of-life replacement of all other assets in this category

The following graph identifies the average annual capital requirements required over the next 55 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year bins and are based on the Municipality's asset inventory as of 2020 and do not include assets that may be required for growth.



The specific 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.

4.1.6 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.

Risks to Current Asset Management Strategies

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

Climate Change & Extreme Weather Events

Flooding and extreme weather events like increased freeze and thaw cycles can cause damage the Municipality's roads. Water levels and storm intensity have caused roads to wash out due to heavy rainfall and release of beaver dams. Numerous properties and roads have been flooded. The minimum maintenance requirements are not always met due to response delays caused by extreme weather events.

Growth

Outskirts areas withing the municipality are gaining more traffic as population grows. Meeting public expectations for newer demographic moving in is a challenge.

Infrastructure Re-investment

The Municipality is always looking for acquiring grants/additional external funding for the Road Network capital projects. Some roads have never been repaired and some roads are getting transformed to gravel roads again due to limited funding. In the past, not enough money has been put into reserves. However, this is a priority for the years to come.
Some projects have been cancelled in the past due to insufficient funding.

Lifecycle Management Strategies

The Municipality have invested in PSD CityWide™ and is working towards developing asset lifecycle strategies. However, as of now no formal lifecycle strategy has been adopted. Currently, the main focus is fixing the roads that are in very poor condition rather than engaging in adopting proactive strategies.

Infrastructure Installation and Design

Water pools on road because of driveway water diversion. Some of these roads deteriorate more quickly.

4.1.7 Levels of Service

The following tables identify the Municipality'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 Municipality has selected for this AMP.

Community Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include maps, of the Road Network in the municipality and its level of connectivity	A map is available (Appendix B) for the roads inside the municipality.
Safety and Regulatory Compliance	Description of minimum maintenance standards for road network (road surfaces)	All roads meet the minimum maintenance standards set by the province (MMS) except The weather and staffing levels play a role in postponing some of the activities.
Quality	Description or images that illustrate the different levels of road class pavement condition	The rating numbers were assigned on a scale of 1 to 5 with the lower numbers describing those roads with the most structural distress or poorest shaped road cross section. (1-3) Road surface exhibits moderate to significant deterioration and requires improvement. (3-5) Road surface is in generally good condition, with localized deficiencies.

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area (km/km^2)	0 km/km2
	Lane-km of collector roads (MMS classes 3 and 4) per land area (km/km^2)	0 km/km2
	Lane-km of local roads (MMS classes 5 and 6) per land area (km/km^2)	0.928 km/km2
Quality	Average pavement condition index for paved roads in the municipality	Poor
	Average surface condition for unpaved roads in the municipality (e.g., excellent, good, fair, poor)	Poor

4.1.8 Recommendations

Asset Inventory

- Review inventory to determine whether all municipal assets within all asset segments have been accounted for.
- Continue to consolidate critical asset information from other asset data sources into the Municipality's centralized asset inventory.

Lifecycle Management Strategies

- Evaluate the efficacy of the proposed Municipality'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 Municipality 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.

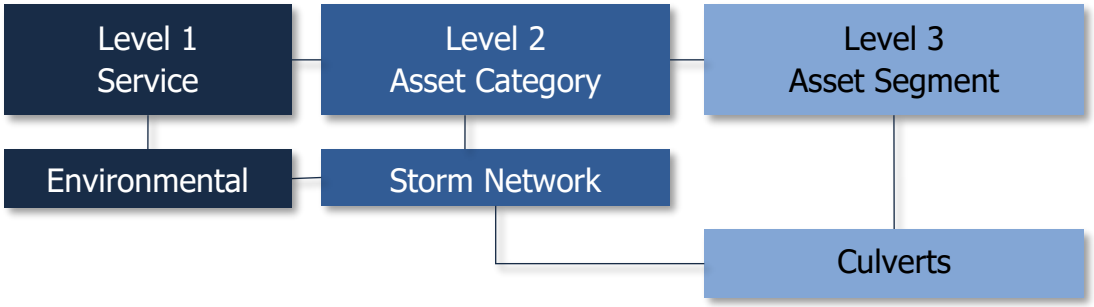
4.2 Storm System

The Municipality's Storm Sewer inventory is managed in CityWide™ and comprises of 10.6 km storm culverts.

The Public Works department is responsible for planning and managing the Storm Network.

4.2.1 Asset Hierarchy and Segmentation

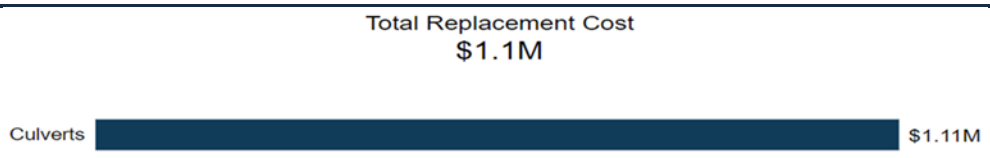
Asset hierarchy explains the relationship between individual assets and their components, and a wider, more expansive network and system. How assets are grouped in a hierarchy structure can impact how data is interpreted. Assets were structured to support meaningful, efficient reporting and analysis. Most reports and analytics presented in this AMP are summarized at the Asset Segment and/or Asset Category Levels.



4.2.2 Asset Inventory & Replacement Cost

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

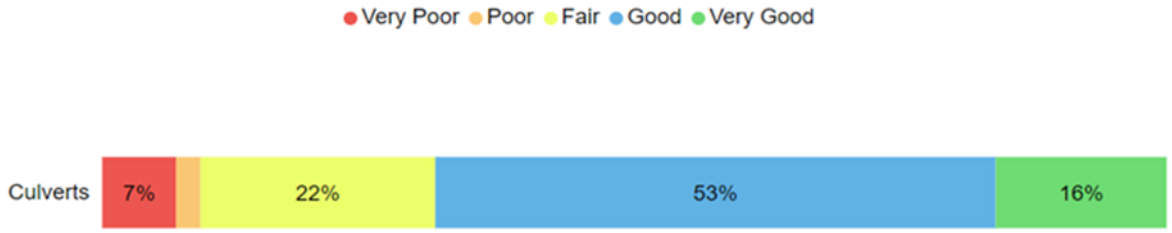
Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Culverts	10.6 km	User-Defined Cost	$1,112,257
			$1,112,257



4.2.3 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
Culverts	53%	Fair	Age-Based
	53%	**Fair**	**Age-Based**



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

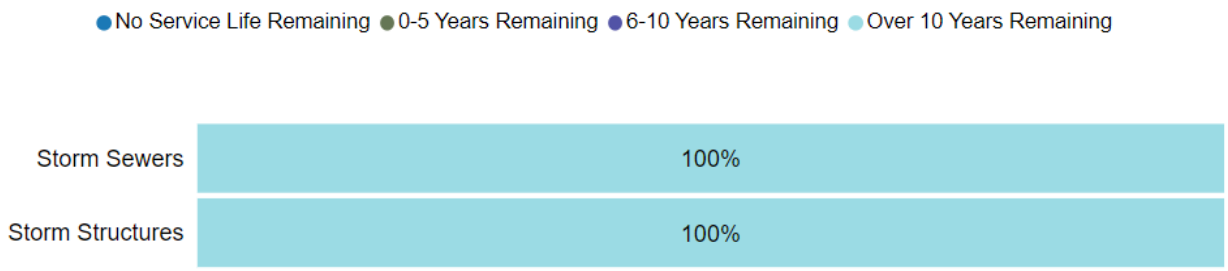
- The storm assets receive inspections as part of the routine road patrolling.
- Complete assessments are completed on a yearly basis.

4.2.4 Estimated Useful Life & Average Age

The Estimated Useful Life for Storm 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)	Average Service Life Remaining (Years)
Culverts	35-55 Years	25.5	28.3
		25.5	**28.3**



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.

4.2.1 Lifecycle Management Strategy

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

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

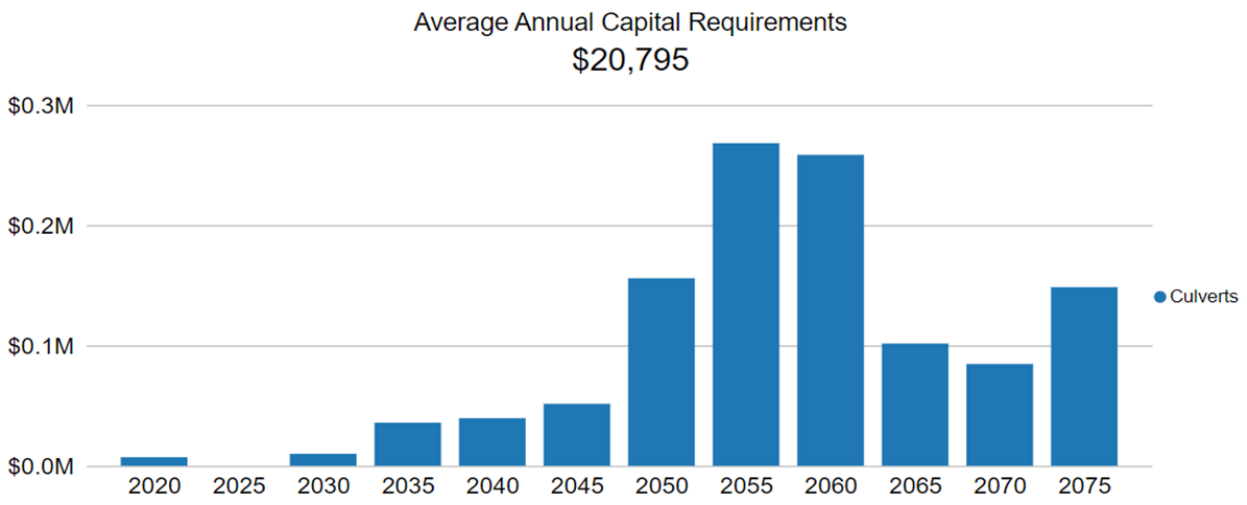
Activity Type	Description of Current Strategy
Maintenance	Cleaning is performed on an annual basis. Culverts are usually inspected to make sure that there are no blockage issues. 10% of culverts suffer from issues every year. Usually, 100% of these are cleaned on a yearly basis. There is no budget for cleaning as the cost falls under regular service hours.
Rehabilitation	As needed or identified within a capital project. Road and culvert condition are main decision-making attributes. Culverts are considered for replacement every 10-15 years. Currently, about 10% of culverts may require replacement.
Replacement	As needed or identified within a capital project The total budget to purchase new culverts is $20k/year.

Forecasted Capital Requirements

Assuming end-of-life replacement for all assets, the following graph forecasts short- and long-term capital requirements for the Storm Network category.

The annual capital requirement represents the average amount per year that the North Algona Wilberforce should allocate towards funding rehabilitation and replacement needs to meet future capital needs.
The specific 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.

The graph below provides a 55-year forecast. This projection is 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 forecasted requirements are aggregated into 5-year bins and are based on the Municipality’s asset inventory as of 2020.



4.2.1 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.

Risks to Current Asset Management Strategies

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

Climate Change & Extreme Weather Events

Same as roads, water levels and storm intensity have caused damages to storm assets due to heavy rainfall and release of beaver dams.

4.2.2 Levels of Service

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

Service Attribute	Qualitative Description	Current LOS (2021)
Scope	Description, which may include map, of the user groups or areas of the municipality that are protected from flooding, including the extent of protection provided by the municipal stormwater System	A map is available (Appendix B) for the culverts inside the municipality.
Safety and Regulatory Compliance	Description of the level of storm intensity that the municipal stormwater network is designed to handle (e.g. 1 in 5-year)	Most of the culverts are designed for 1–100-year storm because of the high water level

Technical Levels of Service

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

Service Attribute	Technical Metric	Current LOS (2021)
Scope	% of properties in municipality resilient to a 100-year storm	To Be Determined[1]
	% of the municipal stormwater management system resilient to a 5-year storm	To Be Determined
Performance	% of culverts cleaned annually	100% of culverts are cleaned on yearly basis. 10% of culverts experience issues that require maintenance on average. Usually, the same culverts. Some of them are cleaned a few times a week, especially in the spring and the fall

[1] Currently, this data is not available. Staff will be working towards collecting this information. The properties that are at high risk are the properties located by the lakefront (10%-15% of total properties.

4.2.3 Recommendations

Asset Inventory

- Review inventory to determine whether all municipal assets within all asset segments have been accounted for.
- Continue to consolidate critical asset information from other asset data sources into the Municipality's centralized asset inventory.

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 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 Network on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.

Levels of Service

- Begin measuring current levels of service in accordance with the metrics identified in O. Reg. 588/17 and those metrics that the Municipality 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.

5 Impacts of Growth

Key Insights

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

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

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

5.1.1 County of Renfrew Official Plan (March 2020)

As a result of amalgamations many municipalities within the County do not have Local Official Plans that encompass their entire municipality. The County's Official Plan has been designed to provide a consistent and detailed set of policies across Renfrew County that respond to local conditions. North Algona Wilberforce is amongst the municipalities that have indicated that they will utilize the County Official Plan as their detailed Official Plan.

The Township of North Algona Wilberforce intends to promote and accommodate recreation community development (recreational and residential) areas within the municipality while at the same time having regard for the natural environment and the financial and servicing needs of the municipality

The following table outlines the population and employment forecasts allocated to North Algona Wilberforce.

	2011	2016	2021	2026	2031	2036
Actual Population	2,873	2915[2]	3111[3]	-	-	-
Project Population – Low	-	2916	2960	3005	3050	3096
Projected Population - High	-	2946	3020	3096	3174	3255

According to the 2021 Census, The population in North Algona Wilberforce is aligned with the initial population projections. A factor that may have contributed to the population growth is the recent migration trends from urban centres to rural communities due to remote working options and cheaper cost of living.

[2] 2016 Census
[3] 2021 Census

5.2 Impact of Growth on Lifecycle Activities

By July 1, 2025, the Township'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 Township's AMP. While the addition of residential units will add to the existing assessment base and offset some of the costs associated with growth, the Township will need to review the lifecycle costs of growth-related infrastructure. These costs should be considered in long-term funding strategies that are designed to, at a minimum, maintain the current level of service.

6 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

6.1 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.

Road Network

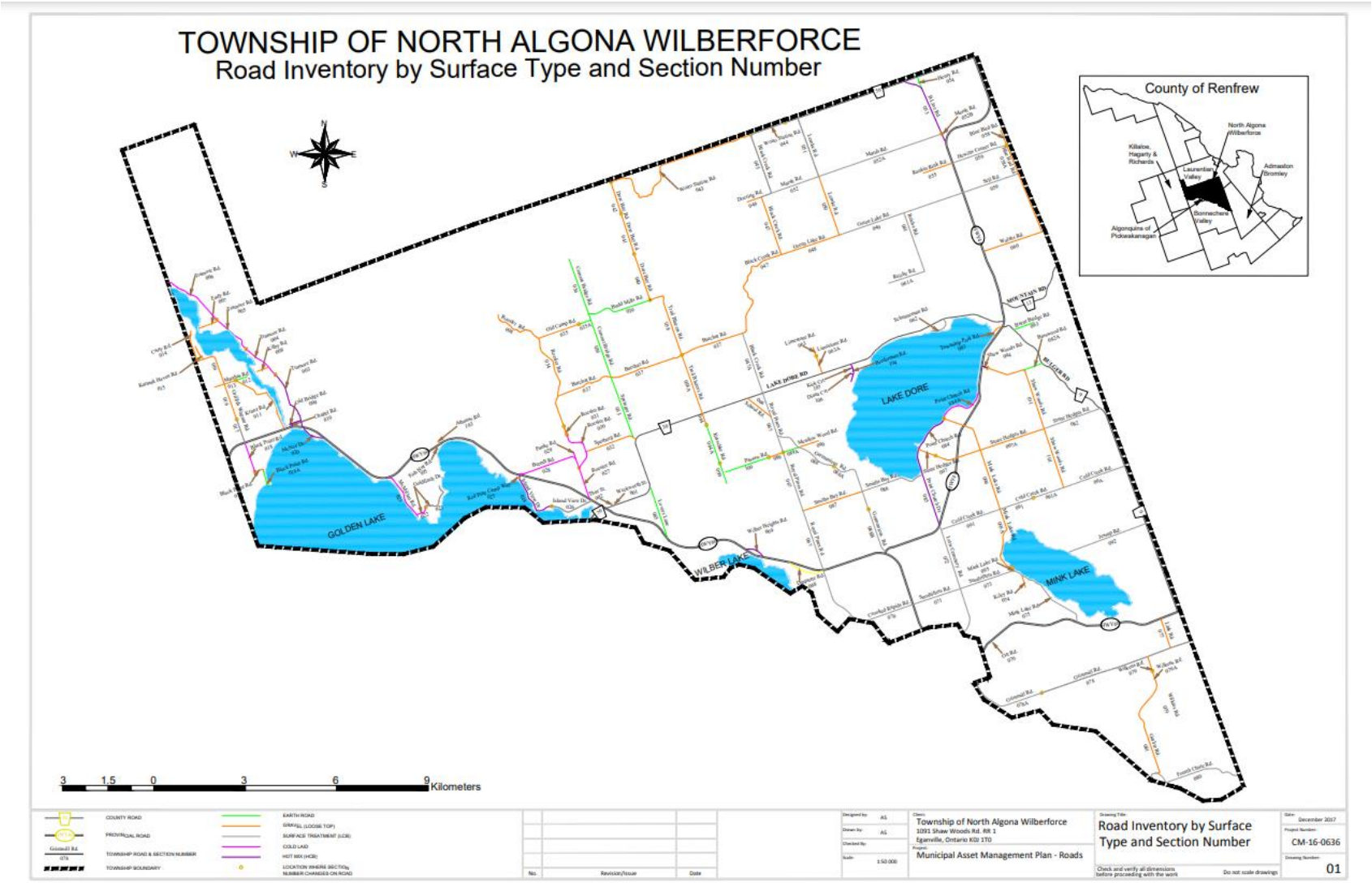
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Paved Roads	$4,200,000	$8,344,000	$0	$681,600	$0	$0	$0	$0	$0	$0	$0
Road Signs	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Surface Treated Roads	$0	$0	$1,149,394	$0	$0	$0	$526,440	$0	$0	$0	$973,914
	$4,200,000	**$8,344,000**	**$1,149,394**	**$681,600**	**$0**	**$0**	**$526,440**	**$0**	**$0**	**$0**	**$973,914**

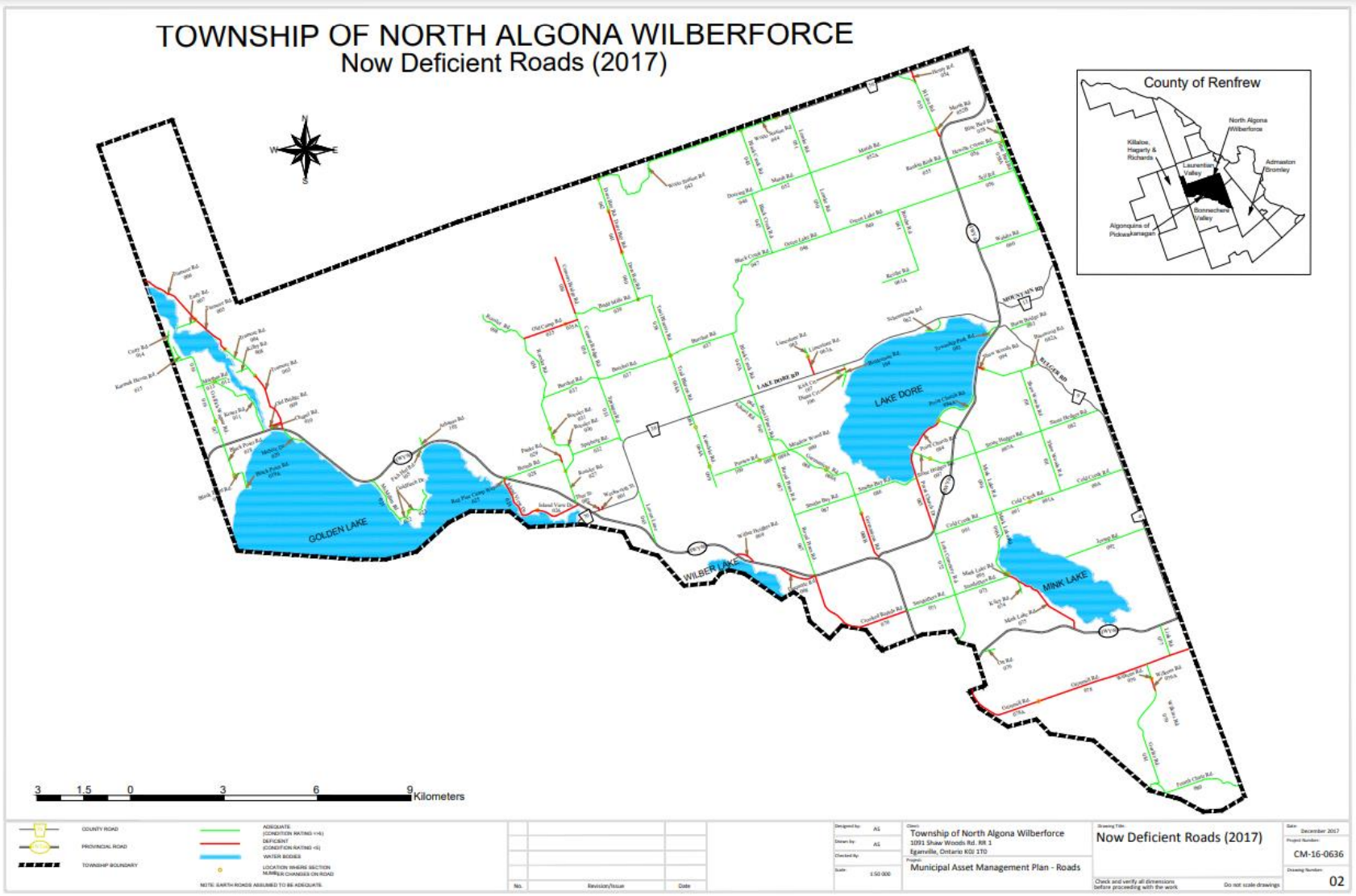
Storm Network

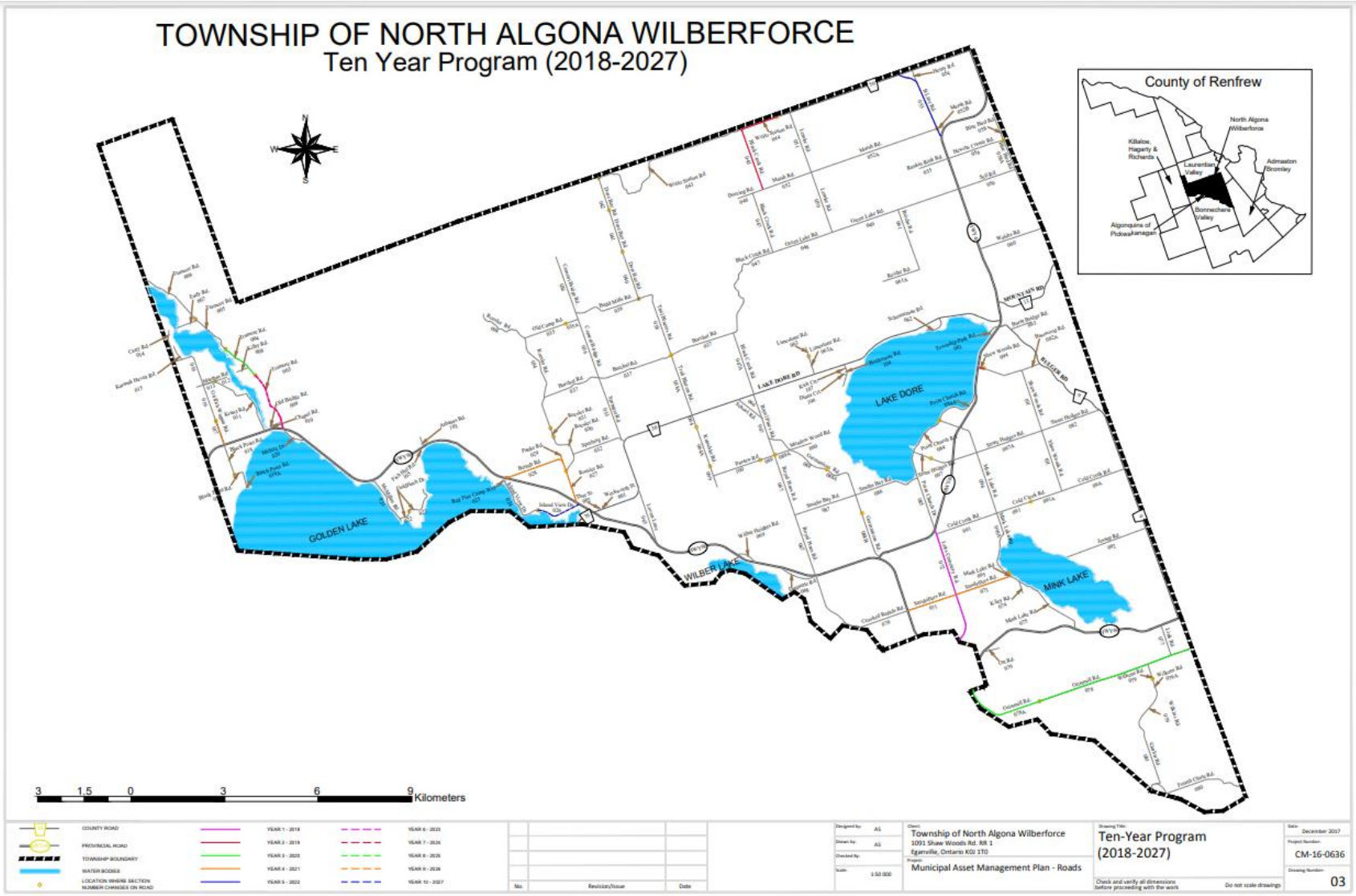
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Culvert	$69,948	$0	$0	$0	$7,141	$0	$0	$0	$0	$0	$830
	$69,948	**$0**	**$0**	**$0**	**$7,141**	**$0**	**$0**	**$0**	**$0**	**$0**	**$830**

6.2 Appendix B: Level of Service Maps/Images

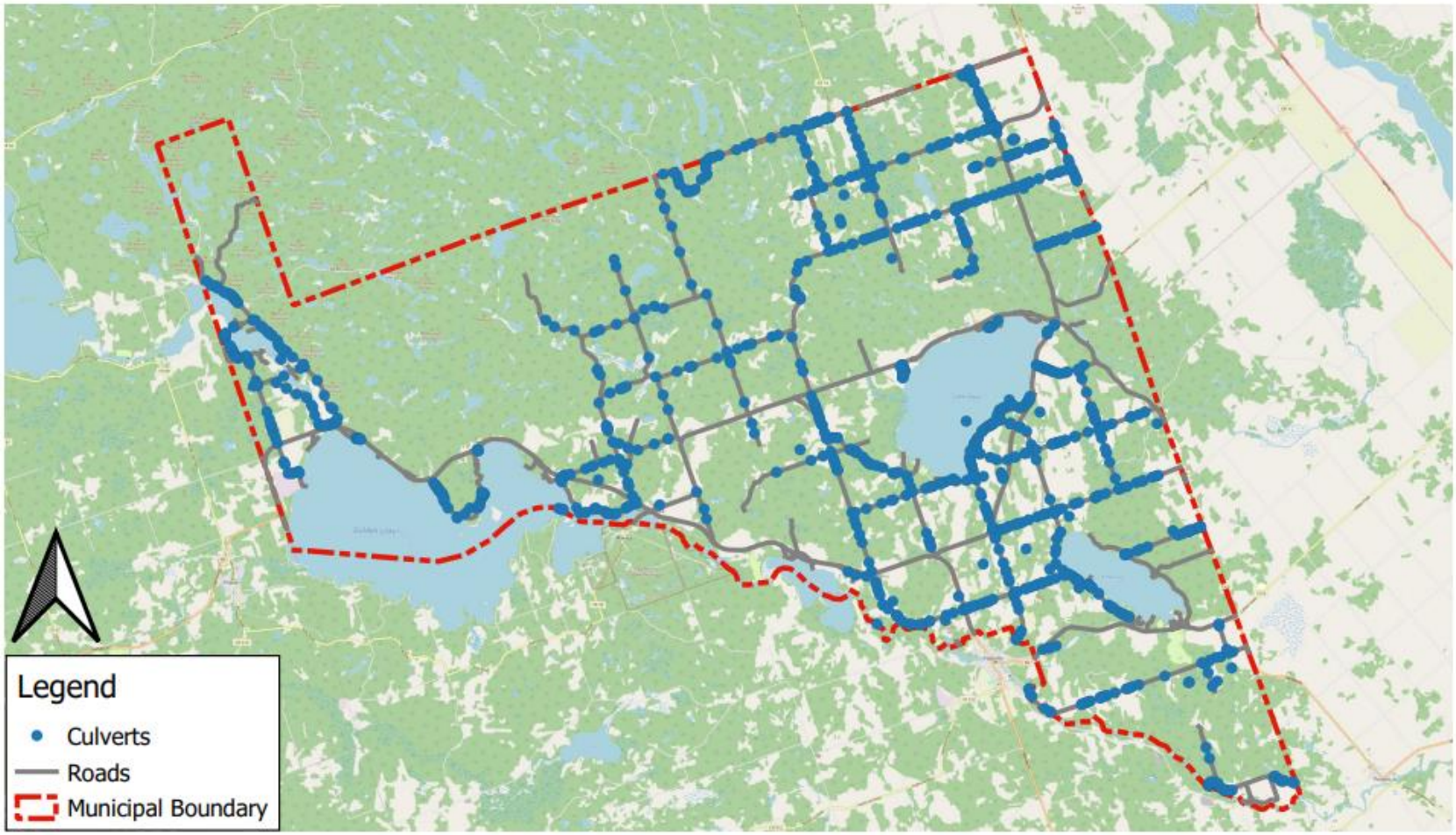
Road Network Maps




TOWNSHIP OF NORTH ALGONA WILBERFORCE
Now Deficient Roads (2017)
County of Renfrew
North Algona Wilberforce
Killaloe, Hagarty & Richards
Laurentian Valley
Admaston Bromley
Bonnechere Valley
Algonquins of Pikwakanagan
LAKE DORE
GOLDEN LAKE
WILBER LAKE
MINK LAKE
3 1.5 0 3 6 9 Kilometers
COUNTY ROAD
PROVINCIAL ROAD
TOWNSHIP BOUNDARY
ADEQUATE (CONDITION RATING >=6)
DEFICIENT (CONDITION RATING <6)
WATER BODIES
LOCATION WHERE SECTION NUMBER CHANGES ON ROAD
NOTE: EARTH ROADS ASSUMED TO BE ADEQUATE.
No.
Revision/Issue
Date
Designed by: AS
Drawn by: AS
Checked By:
Scale: 1:50 000
Client: Township of North Algona Wilberforce
1091 Shaw Woods Rd. RR 1
Egansville, Ontario K0J 1T0
Project: Municipal Asset Management Plan - Roads
Drawing Title: Now Deficient Roads (2017)
Date: December 2017
Project Number: CM-16-0636
Drawing Number: 02
Check and verify all dimensions before proceeding with the work.
Do not scale drawings.


TOWNSHIP OF NORTH ALGONA WILBERFORCE
Ten Year Program (2018-2027)
County of Renfrew
North Algona Wilberforce
Killaloe, Hagarty & Richards
Laurentian Valley
Admaston Bromley
Bonnechere Valley
Algonquins of Pikwakanagan
LAKE DORE
GOLDEN LAKE
WILBERT LAKE
MINK LAKE
3 1.5 0 3 6 9 Kilometers
COUNTY ROAD
PROVINCIAL ROAD
TOWNSHIP BOUNDARY
WATER BODIES
Township of North Algona Wilberforce
1091 Shaw Woods Rd. RR 1
Egansville, Ontario K0J 1T0
Municipal Asset Management Plan - Roads
Ten-Year Program
(2018-2027)
December 2017
CM-16-0636
03

Storm Network Maps



6.3 Appendix C: Risk Rating Criteria

PROBABILITY OF FAILURE

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Road Network	Condition	100%	4.9-5	1
			4-4.9	2
			3-4	3
			2-3	4
			0-2	5
Storm Network	Condition	80%	80-100	1
			70-79	2
			60-69	3
			40-59	4
			0-39	5
			20-39	4
			0-19	5

Consequence of Failure

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network	Economic (100%)	Replacement Cost (100%)	$0-$10,000	1
			$10,000-$30,000	2
			$30,000-$50,000	3
			$50,000-$100,000	4
			$100,000+	5
Storm Network	Economic (100%)	Replacement Cost (100%)	$0-$10,000	1
			$10,000-$30,000	2
			$30,000-$50,000	3
			$50,000-$100,000	4
			$100,000+	5

6.4 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 Municipality's condition assessment strategy should outline several key considerations, including:

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

Role of Asset Condition Data

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

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

Guidelines for Condition Assessment

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

Condition assessments must include a quantitative or qualitative assessment of the current condition of the asset, collected according to specified condition rating criteria, in a format that can be used for asset management decision-making. As a result, it is important that staff adequately define the condition rating criteria that should be used and the assets that require a discrete condition rating. When engaging with external consultants to complete condition assessments, it is critical that these details are communicated as part of the contractual terms of the project.
There are many options available to the Municipality to complete condition assessments. In some cases, external consultants may need to be engaged to complete detailed technical assessments of infrastructure. In other cases, internal staff may have sufficient expertise or training to complete condition assessments.

Developing a Condition Assessment Schedule

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

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