



Asset Management Plan 2025

Town of Niagara-on-the-Lake

September 2026



Key Statistics

\$1.07b	2024 Replacement Cost of Asset Portfolio
79%	Percentage of Assets in Fair or Better Condition as of 2024
\$8 m	Total Annual Capital Infrastructure Deficit to meet Proposed LOS
20 Years	Recommended Timeframe to meet Proposed LOS Target Funding (Tax Funded & Storm)
5 Years	Recommended Timeframe to meet Proposed LOS Target Funding (Water & Wastewater)



Table of Contents

1. Executive Summary.....	3
2. Introduction & Context.....	7
3. Portfolio Overview	23
4. Portfolio Risk & Criticality.....	30
5. Proposed Levels of Service.....	34
6. Financial Strategy Overview.....	66
7. Recommendations & Key Considerations	79
Appendices	81
Appendix A – Resident Survey	82
Appendix B – 10-Year Capital Investment and Allocations to Assets	95
Appendix C – Proposed LOS Models: Results	97
Appendix D – Risk Rating Criteria	115
Appendix E – Maps	121

1. Executive Summary

Municipal infrastructure delivers critical services that are foundational to the economic, social, and environmental well-being and growth of a community. The goal of asset management is to enable infrastructure to deliver appropriate levels of service in the most cost-effective manner. This involves the ongoing review and update of infrastructure information and data alongside the development and implementation of asset management strategies and long-term financial planning.

1.1 Scope

This Asset Management Plan (AMP) evaluates proposed Level of Service (LOS) options and selects a preferred option based on risks, costs, and achievability. Projected LOS metrics over a ten-year period and the estimated capital costs and delivery risks are outlined. A financial strategy is provided that identifies the funding required to meet the proposed LOS, the Town of Niagara-on-the-Lake's current projected sustainable funding, and strategies to address funding shortfalls. The Town of Niagara-on-the-Lake is herein referred to as the "Town". As reported in the [2024 Compliant AMP](#), the Town has identified their asset inventory and associated asset replacement costs, condition, lifecycle management strategies, and forecast capital requirements. The 2025 AMP furthers the Town's asset management program by evaluating proposed LOS options and selecting a preferred option based on risk, affordability, and achievability. This is fundamental to the Town's ability to effectively plan for its public infrastructure and the sustainable delivery of municipal services.

This AMP includes the following asset categories:

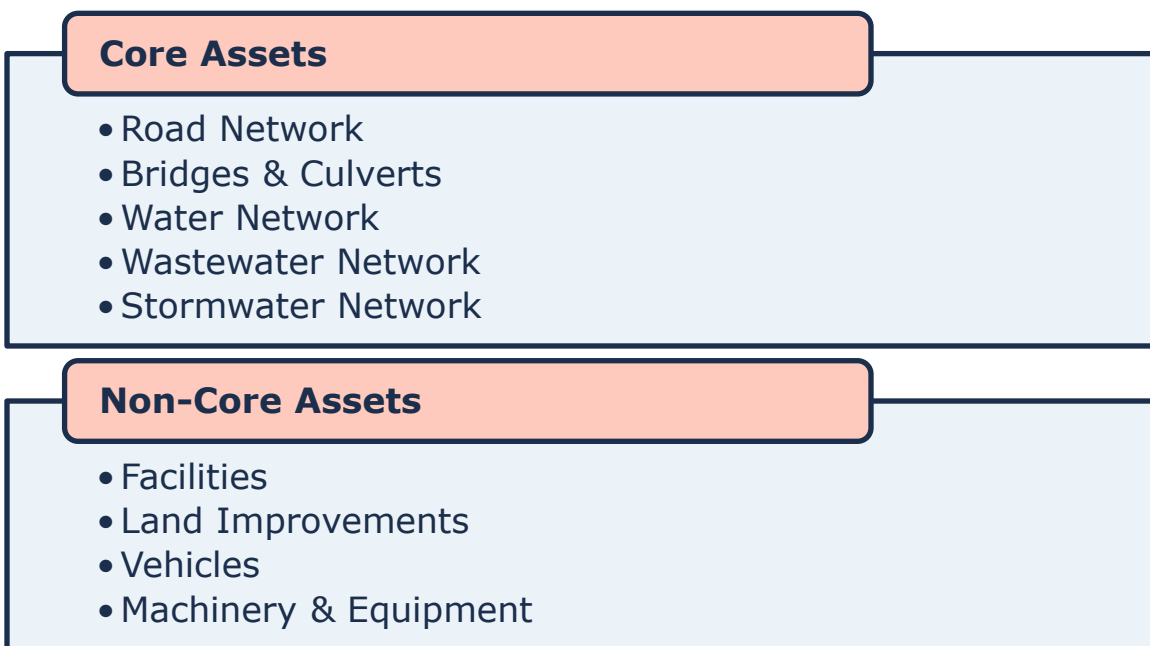


Figure 1 Core and Non-Core Asset Categories

1.2 Compliance

With the development of this AMP, the Town of Niagara-on-the-Lake has achieved compliance with July 1, 2025, requirements of O. Reg. 588/17. This includes the requirement to report on proposed LOS for all asset categories.

This AMP includes some of the Town's green infrastructure assets, which provide ecological and hydrological functions and processes, such as stormwater management ponds. The Town's Asset Management Program is continuously developing to improve the completeness and quality of its asset information through a phased approach. At the time of preparation of this report, the Town was actively developing a more comprehensive inventory of other green infrastructure assets. The Town is working towards a Natural Assets State of Infrastructure report that will include identification and categorization of natural assets, condition and risk evaluations, replacement cost estimations, and mapping. A final report is anticipated in the first quarter of 2027. As natural assets are identified and evaluated, the Town will continue to assess their relevance to future updates of the AMP, where appropriate and consistent with legislative requirements.

1.3 Findings

To determine suitable proposed LOS options, both resident and Council surveys were conducted. The resident survey explored residents' experiences with municipal infrastructure, their infrastructure priorities, their desired service changes and their willingness to pay for changes in service levels. The Council survey explored Council's perception of their constituents' experience with infrastructure, observation of resident complaints, and their willingness to increase investment, and preferred funding strategy. Key findings indicated:

Resident Survey:

- Respondents placed the highest importance on emergency services and safe, well-maintained roads and bridges. The municipal services considered most important by residents were emergency services, followed by stormwater management, and water and wastewater services.
- Respondents indicated high levels of dissatisfaction with the availability, reliability, and condition of the road and stormwater networks. In contrast, respondents reported highest levels of satisfaction across these same factors for buildings (i.e., community centre), bridges, and outdoor open spaces (i.e., land improvements).
- Residents most often sought increased service levels for the road network, stormwater network, and emergency services. They were most willing to pay for service level changes for roads and emergency services.

Council Survey:

- Generally, councillors reported hearing few or an average number of complaints regarding the Town's assets. The exception is the stormwater network.
- All councillors indicated that, to some degree, the Town should strive to meet the target reinvestment rate. A large majority indicated that funding should first be increased to priority categories rather than uniformly across all categories. Councillors identified the stormwater network, road network, bridges and culverts as priorities.
- Most councillors indicated they would support tax increases between 2–5% annually.

Survey findings were considered alongside key details about the Town’s infrastructure assets, namely:

- The overall replacement cost of the asset categories included in this AMP is \$1.07 billion. The average annual capital requirement to replace all assets at the end of their useful life and complete rehabilitations, is \$22.3 million. This represents the investment required under scenario 2 (100% AAR), in which 100% of the AAR is funded for every asset category. Currently, capital investment from sustainable sources is \$9.19 million.
- As of December 2024, 79% of the Town’s infrastructure portfolio was in fair or better condition, with the remaining 21% in poor or worse condition (this is further detailed in Section 3: Portfolio Overview).

Considering all the above, the following three proposed LOS options were selected, modelled, and evaluated:

Table 1: Proposed LOS Options

Scenario	Description
1 (Maintain Current Investment)	Maintain current capital funding levels, as reported in 2024 AMP.
2 (100% AAR)	Apply the 2024 AMPs tax and rate increase recommendation to reach 100% of their Average Annual Requirement (AAR) funded for every asset category within 20 years.
3 (70% AAR)	Fund all asset categories at 70% of their AAR. For water and wastewater, fund at 90% of the AAR.

The three scenarios noted above were analyzed, and the results were reviewed with senior leadership. Based on the information presented, staff recommended Council endorse the following:

- Scenario 3: Tax Funded – 70% AAR investment over 20 years (~1.5% annual increase)
- Scenario 2: Stormwater – 100% AAR investment over 20 years (~4.3% annual increase)
- Scenario 2: Water and wastewater – 100% AAR investment over 5 years (annual increase ~1.9 % and 0.6%, respectively)

In June 2026, Council deliberated on and endorsed **staff’s recommendations noted above.** This selection represents the Town of Niagara-on-the-Lake’s proposed LOS. A financial strategy to fund the selected proposed LOS was developed.

Figure 2: Residents gather at the Town's Strawberry Social



1.4 Recommendations

A financial strategy was developed to address the annual capital funding gap based on meeting the proposed LOS. The following graphics show the annual tax/rate change required to achieve the proposed LOS and fund the associated infrastructure cost. These recommendations are based on a 20-year plan for tax funded and stormwater network assets and a 5-year plan for water and wastewater network assets:

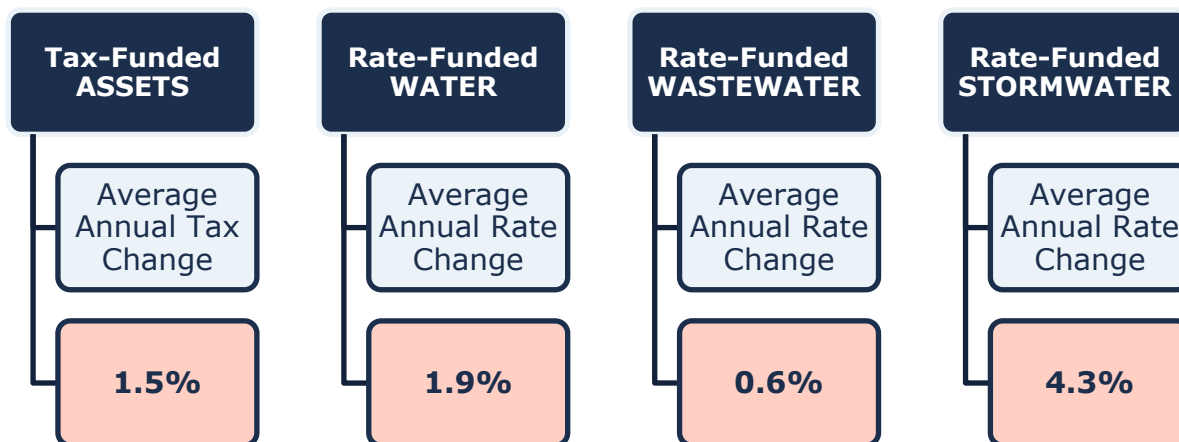


Figure 3 Proposed Tax/Rate Changes to meet the Proposed LOS

2. Introduction & Context

2.1 Community Profile

The Town of Niagara-on-the-Lake is a lower-tier municipality located in the Regional Municipality of Niagara in Ontario. The Town is comprised of several distinct communities, including the historic Old Town, Virgil, Queenston, St. Davids, and Glendale. Positioned at the northern tip of the Niagara Peninsula, it is bordered by Lake Ontario to the north and the Niagara River to the east, with the United States directly across the river.

Niagara-on-the-Lake is known for its scenic countryside, charming downtown core, and significant historic sites. Residents and visitors enjoy beautifully maintained parks and a variety of recreational facilities, schools, and community events, all contributing to the high quality of life in the town. The Town's heritage district, with its 19th-century British Classical architecture and tree-lined streets, offers a unique glimpse into Canada's Loyalist and early colonial past.¹

Niagara-on-the-Lake offers a blend of small-town charm and access to urban amenities, making it an attractive place to live and visit. Its historic sites, including Fort George and the Old Town, provide an insight into the town's rich past, while the abundance of wineries, cultural festivals, and outdoor recreation opportunities ensure a vibrant community life. These events alongside the presence of several community organizations foster a welcoming, family-friendly environment.²



Figure 4: A Gazebo at a Town Park

The Town has experienced steady and above-average population growth. Between the 2016 and 2021 Census years, Niagara-on-the-Lake's population increased by 9.0%, reaching 19,088 residents. A significant portion of the population is made up of seniors, with 36.2% aged 65 years or older. Working-aged adults (15 to 64 years) represent 52.8% of the population, while children aged 0 to 14 years make up 11.0%.³

Census Characteristic	Town of Niagara-on-the-Lake	Ontario
Population 2021	19,088	14,223,942
Population Change 2016-2021	9%	5.8%
Total Private Dwellings	8,578	5,929,250
Population Density	145.3/km ²	15.9/km ²
Land Area	131.35 km ²	892,411.76 km ²

Table 2 Town of Niagara-on-the-Lake Community Profile

¹ Parks Canada. (n.d.). *Niagara-on-the-Lake National Historic Site of Canada*.

² Wikipedia contributors. (n.d.). *Niagara-on-the-Lake*.

³ Census Profile, 2021 Census of Population: Niagara-on-the-Lake, Town

2.2 Climate Change

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

The report revealed that between 1948 and 2016, the average temperature increase across Canada was 1.7°C; moreover, during this time, Northern Canada experienced a 2.3°C increase. The temperature increase in Canada has doubled that of the global average. If emissions are not significantly reduced, the temperature could increase by 6.3°C in Canada by the year 2100. Observed precipitation changes in Canada increased by approximately 20% between 1948 and 2012. By the late 21st century, the projected increase could reach an additional 24%. During the summer months, many regions in Canada are expected to experience periods of extreme weather, including drought, flooding, extreme temperatures, and wildfires, at a higher rate.

The changing climate poses a significant risk to the Canadian economy, society, environment, and infrastructure. The impacts on infrastructure are often a result of climate-related extremes such as droughts, floods, higher frequency of freeze-thaw cycles, extended periods of high temperatures, high winds, and wildfires. Physical infrastructure is vulnerable to damage and increased wear when exposed to these extreme events and climate variabilities. Canadian Municipalities are faced with the responsibility to protect their local economy, citizens, environment, and physical assets.

2.2.1 Town of Niagara-on-the-Lake Climate Profile

Niagara-on-the-Lake is in southern Ontario at the confluence of the Niagara River and Lake Ontario. The town experiences a humid continental climate moderated by the Great Lakes, resulting in milder winters and cooler summers compared to inland areas. The area is expected to experience notable effects of climate change, including rising average annual temperatures, shifting precipitation patterns, and increased frequency and severity of extreme weather events.

Higher Average Annual Temperature

Average annual temperatures in Niagara-on-the-Lake are anticipated to increase steadily over the next several decades. Based on the high-emissions scenario⁴, models project average annual temperature increases to about 11.5°C by mid-century from historical baseline of approximately 8.9°C (1971–2000). Projections estimate further warming, with averages reaching 13.7°C between 2051 and 2080 and potentially climbing to 15.4°C by the end of the century.

Increase in Total Annual Precipitation

Based on a high-emissions scenario, the Town is expected to see a 12% increase (representing an additional 111mm annually) in total yearly precipitation during the 2051–2080 period, with projections indicating a 15% (representing 138mm annually) rise in the final three decades of the century.⁵ In addition to increased total annual precipitation, increased maximum 1-day total

⁴ The high emissions scenario (based on no reduction of greenhouse gas emissions) is selected for reporting to support asset management planning and decision making that considers the worst outcomes and thereby improves treatment and response efficacy.

⁵ ClimateData.ca. (n.d.). *Niagara-on-the-Lake, ON.*

precipitation (largest amount of precipitation, rain or snow, that falls within a 24 hour period) are anticipated over the same period.

Increase in Frequency of Extreme Weather Events

The Town is likely to face more frequent and severe extreme weather events, including heatwaves, heavy rainfall, and variable freeze-thaw cycles, all of which could impact infrastructure, agriculture, and public safety.⁶

2.2.2 Integration of Climate Change and Asset Management

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

To achieve sustainable delivery of services, climate change considerations should be incorporated into asset management practices. The integration of asset management and climate change adaptation observes industry's best practices and enables the development of a holistic approach to risk management. Climate changes can be effectively integrated into asset management decisions throughout an asset's lifecycle. For example, asset acquisition and design decisions (e.g. storm main sizing) that consider climate projections better ensure that assets are appropriate for future weather conditions such as increased total annual and/or maximum 1-day total precipitation.

⁶ Town of Niagara-on-the-Lake. (2022, March 25). *Climate Change Adaptation Plan*

2.3 Asset Management Overview

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.

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

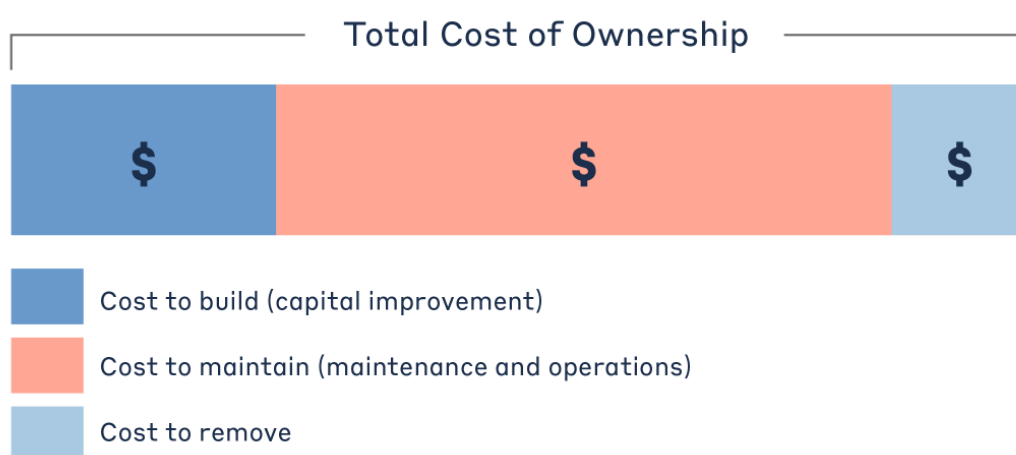


Figure 5 Total Cost of Asset Ownership

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.

2.3.1 Foundational Asset Management Documentation

The industry-standard approach and sequence to developing a practical asset management program begins with a Strategic Plan, followed by an Asset Management Policy and an Asset Management Strategy, concluding with an Asset Management Plan.

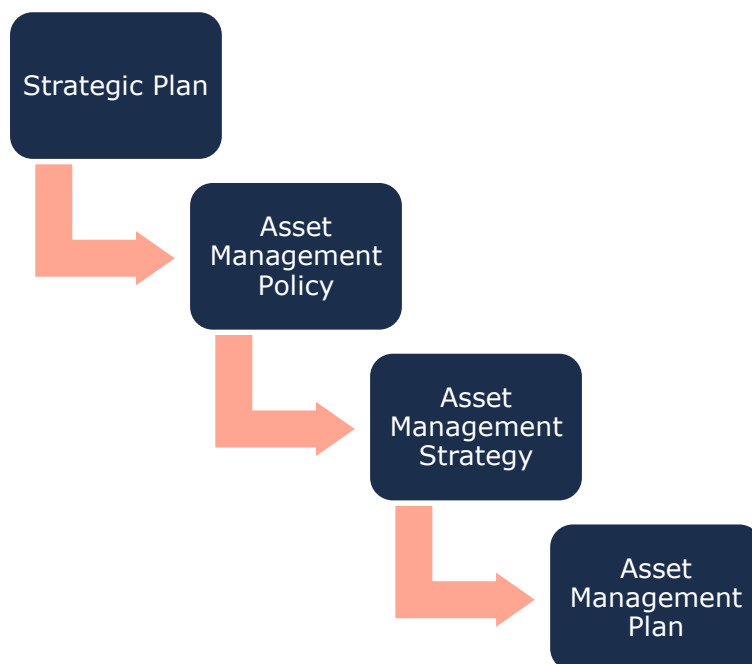


Figure 6 Foundational Asset Management Documents

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.

Asset Management Policy

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

The Town of Niagara-on-the-Lake's [Asset Management Policy](#) outlines their commitment to asset management and details assets in scope, asset data practices, principles and strategies to adopt and apply, and commitments to updates and innovation. Some key details from the policy include the following strategic considerations:

- Cross-asset integration: consideration of assets that may be affected by or may affect other assets (e.g. replacement of mains may affect related roadway assets).
- Programming and Funding Levels Analysis: Understanding the long-term costs of assets over their lifecycle and updating the analysis to reflect the current year's cost estimates.
- Financial Analysis and Planning: lifecycle strategies that are integrated into financial planning analysis; financing strategy that identifies funding shortfalls, funding sources, and explores strategies for addressing the funding gap.

Strategic Plan (2022–2027)

The Town of Niagara-on-the-Lake's [Strategic Plan](#), developed for the period of 2022–2027, advances a mission to deliver a high standard of municipal service. This mission is supported by dependable infrastructure and leadership in planning that supports a healthy and financially sustainable future. Enshrined in this mission are three pillars to support and advance it, these pillars are:

1. Vibrant & Complete Community
2. Good Governance
3. Enrich Community Assets, Environment & Infrastructure

Several associated deliverables and indicators of success are attributed to each pillar. The pillar of Enrich Community Assets, Environment & Infrastructure has several actions and indicators of success of relevance to this asset management plan. These are:

Assets

- **Asset Management (Physical & Green)**
 - Develop Asset Management Plan
 - Collect Data
 - Inventory current levels of service
 - Assess current asset performance and condition
 - Determine lifecycle management plan and financial strategy
 - Develop Natural Assets Plan
 - Create Arts and Culture asset map

Figure 7: Niagara-on-the-Lake, Strategic Plan: Enrich Community Assets, Environment & Infrastructure

This AMP is a culmination of significant efforts to compile asset inventory information into a central database and to complete analysis to understand asset performance and condition, forecasted capital investment needs, and a financial strategy. This AMP supports and advances many of the objectives of the Strategic Plan.

Asset Management Strategy

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

The Town's 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.

Asset Management Plan

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

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

The AMP is a living document that should be updated regularly as additional asset and financial data becomes available. This will allow the Town to re-evaluate the state of infrastructure and identify how the organization's asset management and financial strategies are progressing.

2.3.2 Key Concepts in Asset Management

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

Lifecycle Management Strategies

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

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

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

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.

Lifecycle Activity	Cost	Typical Associated Risks
Maintenance Activities that prevent defects or deteriorations from occurring	\$	♦ Balancing limited resources between planned maintenance and reactive, emergency repairs and interventions; ♦ Diminishing returns associated with excessive maintenance activities, despite added costs; ♦ Intervention selected may not be optimal and may not extend the useful life as expected, leading to lower payoff and potential premature asset failure;
Rehabilitation/Renewal Activities that rectify defects or deficiencies that are already present and may be affecting asset performance	\$\$\$	♦ Useful life may not be extended as expected; ♦ May be costlier in the long run when assessed against full reconstruction or replacement; ♦ Loss or disruption of service, particularly for underground assets;
Replacement/Reconstruction Asset end-of-life activities that often involve the complete replacement of assets	\$\$\$\$\$	♦ Incorrect or unsafe disposal of existing asset; ♦ Costs associated with asset retirement obligations; ♦ Substantial exposure to high inflation and cost overruns; ♦ Replacements may not meet capacity needs for a larger population; ♦ Loss or disruption of service, particularly for underground assets;

Table 3 Lifecycle Management: Typical Lifecycle Interventions

The Town's approach to lifecycle management is described within each asset category outlined in this AMP. Staff will continue to evolve and innovate current practices for developing and implementing proactive lifecycle strategies 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.

Risk & Criticality

Asset risk and criticality are essential building blocks of asset management, integral in prioritizing projects and distributing funds where they are needed most based on a variety of factors. Assets in disrepair may fail to perform their intended function, pose substantial risk to the community, lead to unplanned expenditures, and create liability for the municipality. In addition, some assets are simply more important to the community than others, based on their financial significance, their role in delivering essential services, the impact of their failure on public health and safety, and the extent to which they support a high quality of life for community stakeholders.

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

Formula to Assess Risk of Assets

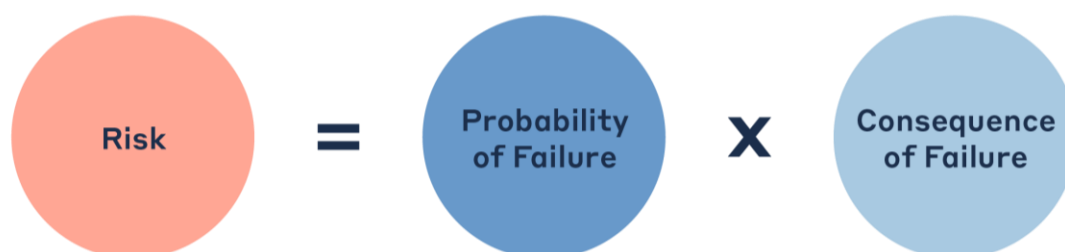


Figure 8 Risk Equations

The approach used in this AMP relies on a quantitative measurement of risk associated with each asset. The probability and consequence of failure are each scored from 1 to 5, producing a minimum risk index of 1 for the lowest risk assets, and a maximum risk index of 25 for the highest risk assets.

Probability of Failure

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

Consequence of Failure

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

Table 4 illustrates the various types of consequences that can be integrated in developing risk and criticality models for each asset category and segments within. We note that these consequences are common, but not exhaustive.

Type of Consequence	Description
Direct Financial	Direct financial consequences are typically measured as the replacement costs of the asset(s) affected by the failure event, including interdependent infrastructure.
Economic	Economic impacts of asset failure may include disruption to local economic activity and commerce, business closures, service disruptions and other. Whereas direct financial impacts can be seen immediately or estimated within hours or days, economic impacts can take weeks, months and years to emerge, and may persist for even longer.
Socio-political	Socio-political impacts are more difficult to quantify and may include inconvenience to the public and key community stakeholders, adverse media coverage, and reputational damage to the community and the Municipality.
Environmental	Environmental consequences can include pollution, erosion, sedimentation, and habitat damage.
Public Health and Safety	Adverse health and safety impacts may include injury or death, or impeded access to critical services.
Strategic	These include the effects of an asset's failure on the community's long-term strategic objectives, including economic development and business attraction.

Table 4 Risk Analysis: Types of Consequences of Failure

This AMP includes a preliminary 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.

These models have been built in Citywide for continued review, update, and refinement. The risk results reported herein reflect the models, which are summarized in Appendix D – Risk Rating Criteria.

Levels of Service

A level of service (LOS) is a measure of the services that the Town is providing to the community and the nature and quality of those services. 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.

The Town measures the level of service provided at two levels: Community Levels of Service, and Technical Levels of Service. At this stage, only those LOS that are required under O. Reg are included.

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 as applicable (Roads, Water, Wastewater Sewer, Stormwater) the province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP.

Technical Levels of Service

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

For core asset categories as applicable the province, through O. Reg. 588/17, has also provided technical metrics that are required to be included in this AMP.

Current and Proposed Levels of Service

A current LOS reflects the technical LOS for (most often) a group of assets as of a defined *past* measurement date. In contrast, a Proposed LOS reflects the Municipality's goal for asset performance by a defined *future* date.

It is important to note that O. Reg 588/17 does not dictate the proposed LOS values required. Meaning, a proposed LOS may be maintaining or even reducing current performance.

Regardless of what the selected proposed LOS is, O. Reg 588/17 requires Municipalities to demonstrate the feasibility of the proposed LOS. This must consider the associated costs, risks, and impact of population and economic activity over the period (O. Reg. 588/17 6,2). The following sections outline O. Reg 588/17 reporting requirements and how the Town of Niagara-on-the-Lake meets them, while noting any additional considerations made.

2.4 Scope & Methodology

2.4.1 Data Effective Date

It is important to note that this plan is based on data as of **December 2024**; therefore, it represents a snapshot in time using the best available processes, data, and information at the Town. Strategic asset management planning is an ongoing and dynamic process that requires continuous data updates and dedicated data management resources.

2.4.2 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.

Cost Inflation / CPI Tables

Historical costs of the assets are 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.

Financial projections are based on the 2024 effective replacement cost of assets. Inflationary adjustments are not incorporated into analysis. As noted under financial recommendation, existing and future infrastructure budgets should be increased by the applicable inflation index on an annual basis in addition to the deficit phase-in value.

2.4.3 Estimated Service Life & 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:



Figure 9 Service Life Remaining Calculation

2.4.4 Reinvestment Rate

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

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



Figure 10 Target Reinvestment Rate Calculation

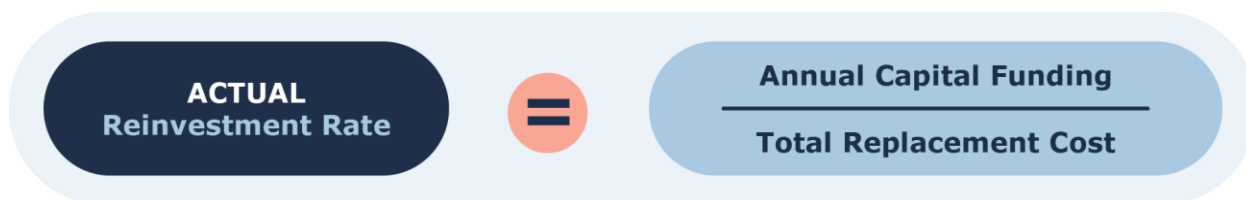


Figure 11 Actual Reinvestment Rate Calculation

2.4.5 Deriving Asset Condition

An incomplete or limited understanding of asset conditions 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
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	40-59.99
Poor	Increasing potential of affecting service	Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration	20-39.99
Very Poor	Unfit for sustained service	Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable	<20

Table 5 Standard Condition Rating Scale

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.

2.5 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)⁷. 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.

Figure 12 below outlines key reporting requirements under O. Reg 588/17 and the associated timelines. This AMP meets the regulatory requirements of Phase III, 2025.

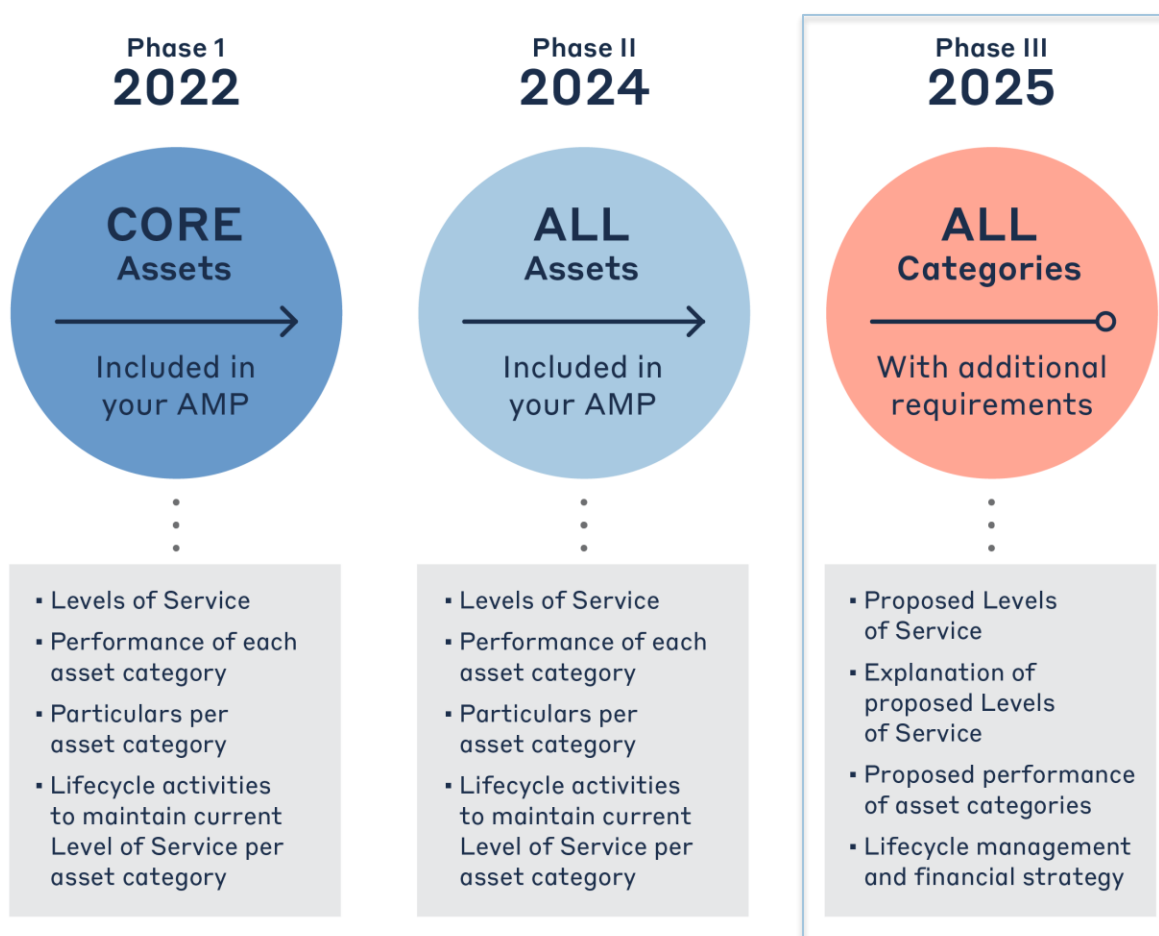


Figure 12 O. Reg. 588/17 Requirements and Reporting Deadlines

⁷ O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure <https://www.ontario.ca/laws/regulation/170588>

2.5.1 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, 2025. Next to each requirement a page or section reference is included in addition to any necessary commentary.

Requirement	O. Reg. 588/17 Section	AMP Section Reference	Status
Growth assumptions and their consideration in proposed LOS	S.5(2), 5(i-ii) S.5(2), 6(i-vi)	4.2	Complete
Proposed LOS over 10 years for each asset category	6 (1) 1,3	5.4.3	Complete
Why the proposed LOS is appropriate	6 (1) 2 (i., ii,iii,iv)	5.2-5.4	Complete
Proposed LOS lifecycle management	6 (1) 4 (i., A, B, C, D)	5.4.1	Complete
Proposed LOS risk management	6 (2), i	5.4.2	Complete
Proposed LOS financial strategy	6 (1) 4 (i., D,ii.,iii.,iv.)	6	Complete

3. Portfolio Overview

The state of the infrastructure (SOTI) summarizes the inventory, condition, age profiles, and other key performance indicators for the Town's infrastructure portfolio. For further details of asset inventory at the asset category level, please review the [Town's 2024 AMP](#).

3.1 Asset Hierarchy & Data Classification

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. Key category details are summarized at asset segment level.



Figure 13 Asset Hierarchy and Data Classification

3.2 Portfolio Overview

3.2.1 Total Replacement Cost of Asset Portfolio

The nine asset categories analyzed in this Asset Management Plan have a total current replacement cost of \$1.07 billion. This estimate was calculated using user-defined costing, as well as inflation of historical costs to the data-effective date. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today. Figure 14 illustrates the replacement cost of each asset category; at nearly half (47%) of the total portfolio replacement value, the road network holds the largest share of the Town's asset portfolio, followed by the water network at 15%.

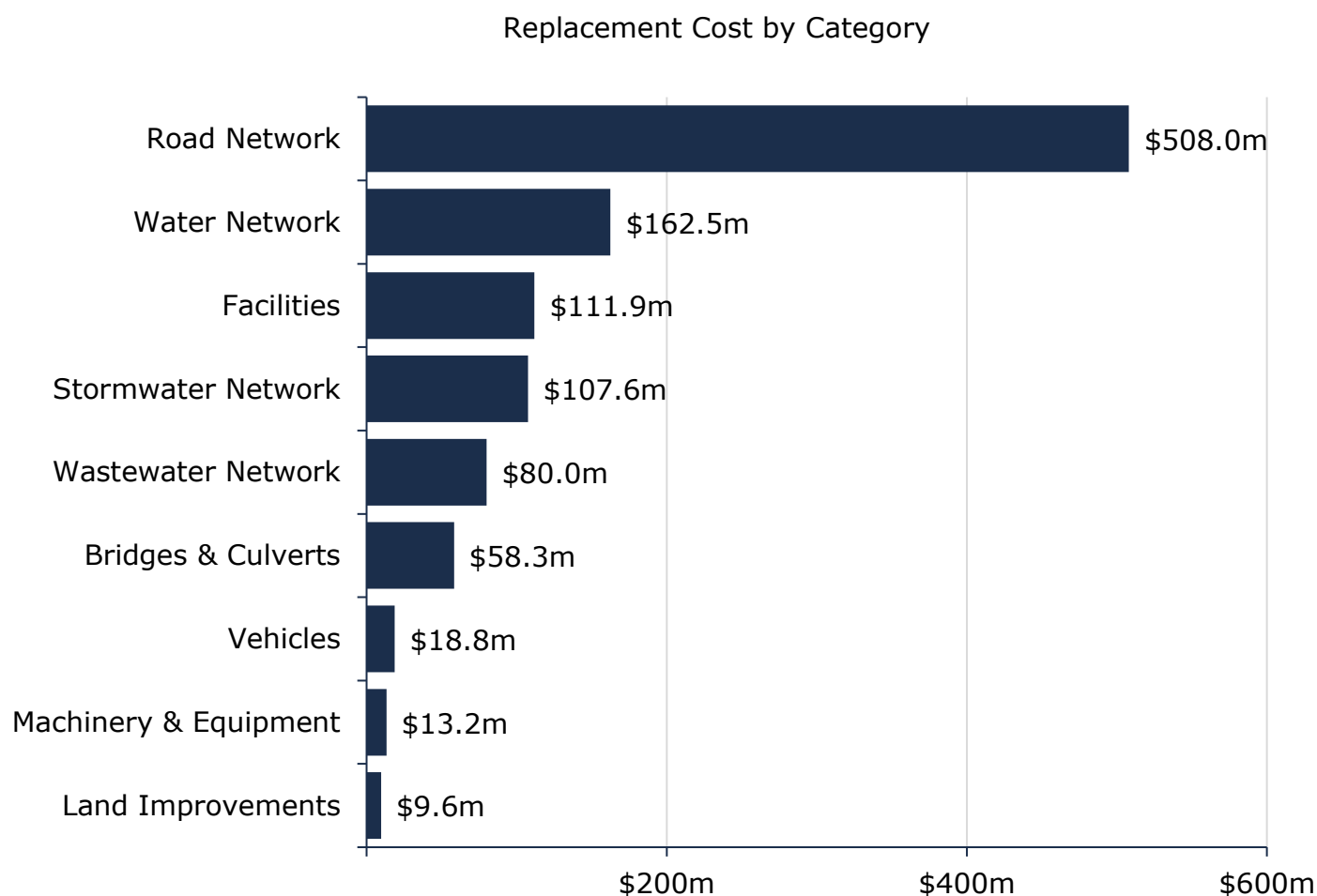


Figure 14 Current Replacement Cost by Asset Category⁸

⁸ As reflected in the consolidated financial statements, Niagara-on-the-Lake owns a share of assets operated by the Niagara District Airport Commission. Niagara-on-the-Lake contributes 6% of the total cost of these assets through an operational funding transfer. The long-term Asset Management Plan for these assets was produced by the City of St. Catherine's and can be found online, [here](#).

3.2.2 Condition of Asset Portfolio

Figure 15 and Figure 16 summarize asset conditions at the portfolio and category levels, respectively. Based on both assessed condition and age-based analysis, slightly more than three-quarters (79%) of the Town's infrastructure portfolio is in fair or better condition, with the remaining portion (21%) in poor or worse condition. Typically, assets in poor or worse conditions may require replacement or major rehabilitation in the immediate or short-term. Targeted condition assessments may help further refine the list of assets that may be candidates for immediate intervention, including potential replacement or reconstruction.

Similarly, assets in fair condition should be monitored for disrepair over the medium term. Keeping assets in fair or better conditions is typically more cost-effective than addressing asset needs when they enter the latter stages of their lifecycle or decline to a lower condition rating, (e.g., poor or worse). Condition data was available for majority of the road network, bridges & culverts, facility, and water network assets while condition data for stormwater and wastewater assets was available for 12% and 20% of assets respectively. For all remaining assets, age was used as an approximation of condition for these assets. Age-based condition estimations can skew data and lead to potential under- or overstatement of asset needs.

Assessed condition data was collected between 2017 and 2024. Where assessed condition data was available, it was projected to current year-end (2024). Figure 15 below summarizes the portfolio condition breakdown. As indicated, most assets are in fair or better condition.

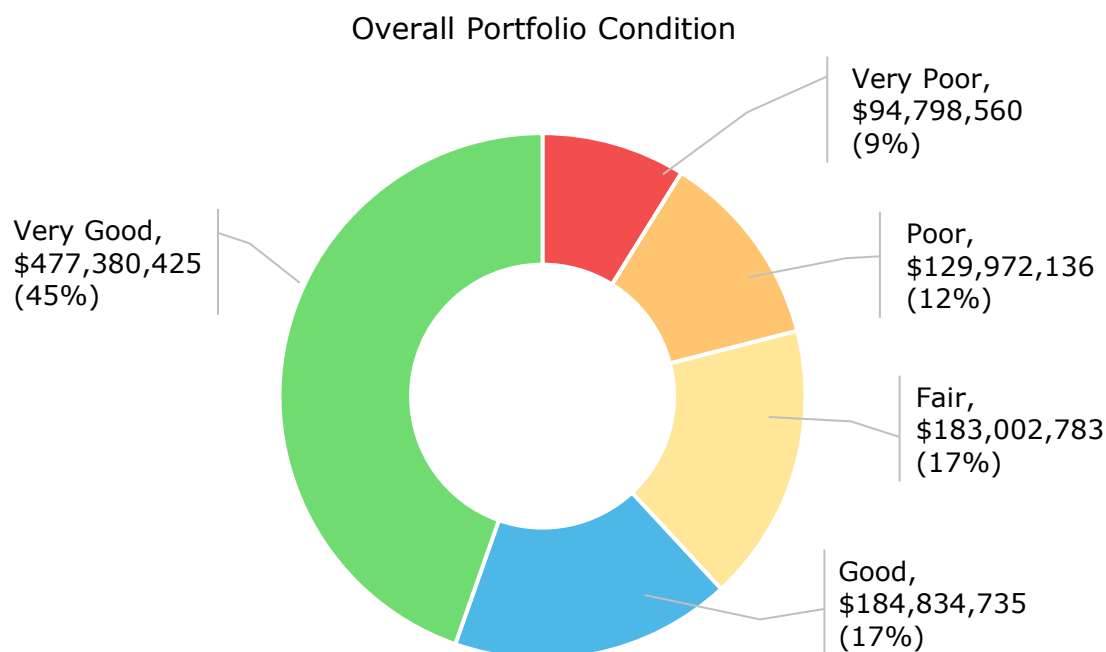


Figure 15 Asset Condition: Portfolio Overview

As further illustrated in Figure 16 at the category level, the majority of all major, core infrastructure including roads, bridges and culverts, water network, stormwater network, and wastewater network are in fair or better condition, based on in-field condition assessment data

and age data. More than half of facilities (57%) are also in poor or worse condition, based on assessments. See Table 6 for details on how condition data was derived for each asset segment.

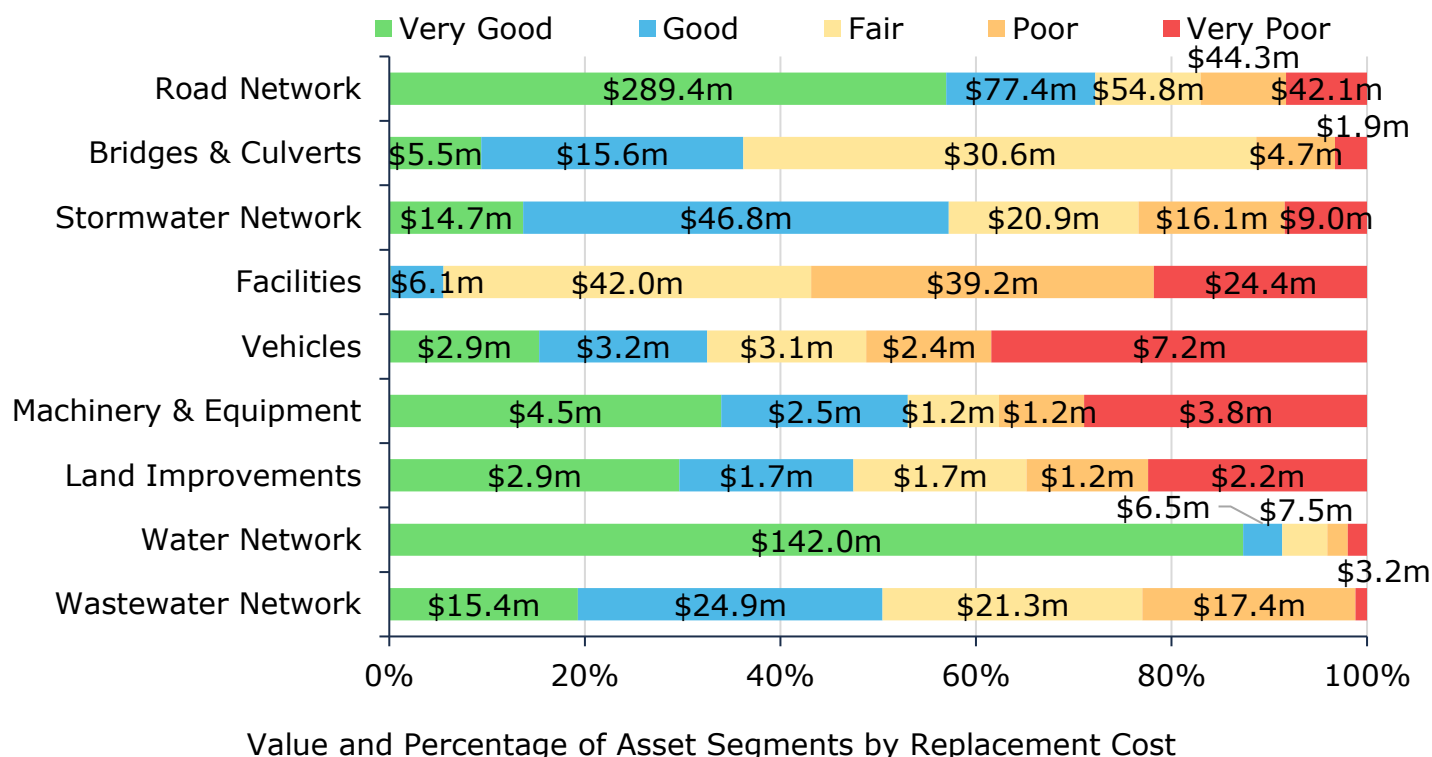


Figure 16 Asset Condition by Asset Category

Facilities are componentized into their major elements and components following the Uniformat II classification standard, allowing condition estimates to be made at both the 'parent' asset level and the individual component level, improving the accuracy and validity of condition assessments.

Source of Condition Data

This AMP relies on assessed conditions for 74% of assets, based on and weighted by replacement cost. For the remaining assets, age is used as an approximation of condition. Assessed condition data tends to significantly improve the accuracy of condition estimates which in turn improves the accuracy of all other analyses (e.g., capital investment requirements, risk calculations). Table 6 below identifies the source of condition data used throughout this AMP. All assessed conditions are projected to the data effective date based on the assets' estimated useful life.

Asset Category	Asset Segment(s)	% of Assets with Assessed Conditions	Source of Condition Data
Road Network	Asphalt Roads	100%	2023 Roads Needs Study
	Surface Treated Roads		
	Gravel & Other Roads		
Road Network	Guiderails	100%	2021 Engineering Firm Assessment
	Sidewalks & Street & Light Fixtures	0%	N/A
Bridges & Culverts	Bridges	100%	2023 OSIM Report
	Culverts	97%	2023 & 2024 OSIM Report
	Pedestrian Bridges	100%	2023 OSIM Report
Water Network Assets	Mains	91%	2024 Condition Assessments: Third Party Engineering Firm
Wastewater Network Assets	Mains	22%	CCTV Assessments completed in 2024.
Stormwater Network	Mains	15%	CCTV Assessments completed in 2024
	Stormwater Management Ponds (SWMP)	85%	Staff Assessments
Facilities	Administration	100%	2017 Facilities Master Plan Assessments
	Fire	99%	
	Operations	100%	
	Recreation	98%	
Land Improvements	All	0%	N/A
Vehicles	All	0%	N/A
Machinery & Equipment	All	0%	N/A

Table 6 Source of Condition Data

3.2.3 Service Life Remaining

Based on asset age, available assessed condition data and estimated useful life, 14% of the Town's assets will require replacement within the next 10 years. Service life remaining by category is summarized in Figure 17 below.

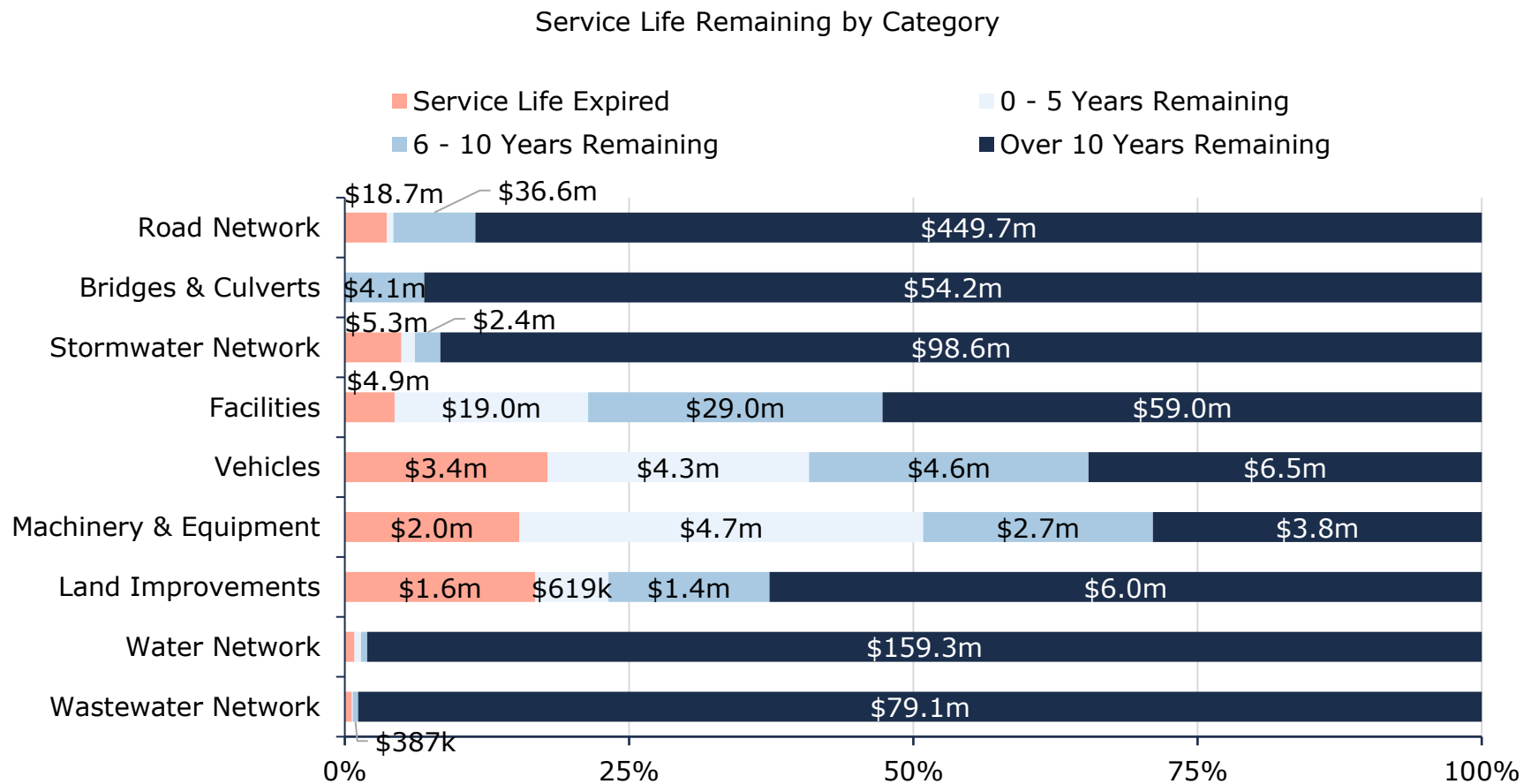


Figure 17 Service Life Remaining by Asset Category

3.2.4 Risk Matrix

Using the risk equation and preliminary risk models, Figure 18 shows the distribution of the Town's portfolio of assets and their level of risk.

1 - 4 Very Low \$536,095,357 (50%)	5 - 7 Low \$125,917,768 (12%)	8 - 9 Moderate \$111,931,417 (10%)	10 - 14 High \$164,694,845 (15%)	15 - 25 Very High \$131,349,253 (12%)
---	--	---	---	--

Figure 18 Risk Matrix: All Assets

The analysis shows that based on current risk models, approximately 12% of the Town's assets, with a current replacement cost of approximately \$131.35 million, carry a very high-risk rating (15 or higher (red) out of 25). However, the largest proportion of assets (50%) hold a very low risk score; in many cases this is due to the assets' good condition and modest replacement cost should it fail.

As new asset attribute information and condition assessment data are integrated with the asset register, asset risk ratings will evolve, resulting in a redistribution of assets within the risk matrix. Staff should also continue to calibrate risk models.

We caution that since risk ratings rely on many factors beyond an asset's physical condition or age, assets in a state of disrepair can sometimes be classified as low risk, despite their poor condition rating. In such cases, although the probability of failure for these assets may be high, their consequence of failure ratings were determined to be low based on the attributes used and the data available.

Similarly, assets with very high condition ratings can receive a moderate to high-risk rating despite a low probability of failure. These assets may be deemed as highly critical to the Town based on their costs, economic importance, social significance, and other factors. Continued calibration of an asset's criticality and regular data updates are needed to ensure these models more accurately reflect an asset's actual risk profile.

4. Portfolio Risk & Criticality

4.1 Qualitative Risk

The Town has noted key trends, challenges, and risks to service delivery that they are currently facing. The most prominent qualitative risks are:

Aging Infrastructure



There is acknowledgement that across several categories, assets are aging and approaching replacement timelines. This is particularly applicable to the road network, the water network, facilities, and vehicle assets. This heightens the need for prioritization in capital works planning, especially where cost-effective rehabilitation may no longer be viable. The ability to execute a large number and/or large-scale projects can be constrained by staff capacity to oversee projects and the availability of sufficient budget to support it.

Lifecycle Management Strategies



Currently lifecycle strategies vary by asset category, and some are more proactive and effective than others. For example, the road network would benefit from increased maintenance to avoid deferment which tends to result in higher long-term costs, emergency repairs, and safety risks. For bridges and culverts trigger points are only “somewhat” reviewed which suggests a partially reactive approach, where repairs or replacements may be initiated based on need rather than proactive forecasting. Fire equipment is operationally proactive but tends to lack a formalized rehabilitation framework. While trigger points for interventions are reviewed regularly, reliance on visual inspections and annual scheduling can still leave room for reactive responses. These examples illustrate that the Town is still in many cases working to advance and formalize lifecycle strategies for their assets. This stage of maturity poses risks to asset reliability and long-term accurate capital forecasting and project planning.

4.2 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 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.

4.2.1 Town of Niagara-on-the-Lake Official Plan

The Town of Niagara-on-the-Lake, guided by the [Niagara Official Plan](#), is planning for responsible growth while protecting its historic charm, rural landscape, and agricultural vitality. The plan supports strategic, sustainable development that enhances the Town's unique character, emphasizing a balance between intensification in appropriate locations and preservation of natural and cultural assets.

Niagara-on-the-Lake is forecasted to grow to a population of 28,900 and 17,610 jobs by 2051 (Table 2-1, Niagara Official Plan). Growth will be directed primarily within the Town's urban area, supported by municipal water and wastewater services, with a strong emphasis on maintaining the distinct heritage and village atmosphere that defines the community. Limited growth will occur in rural settlements, with a focus on residential infill that complements the surrounding rural character.

Housing policies promote the creation of a diverse and attainable housing stock to meet the needs of all residents. Niagara-on-the-Lake is targeting a 25% residential intensification rate within its built-up area, focusing on gentle infill, strategic redevelopment, and maintaining compatibility with established neighborhoods. The Official Plan encourages a mix of housing types and densities to support young families, seniors, and a growing workforce tied to the tourism, agriculture, and service sectors.

Growth in Niagara-on-the-Lake will be influenced by several factors, including its proximity to major urban centers like St. Catharines and the Greater Toronto and Hamilton Area (GTHA), its thriving wine and tourism industries, and its high quality of life. Migration of retirees, second-home owners transitioning to full-time residents, and tourism-driven employment growth are expected to be significant drivers.

To accommodate this growth, the Town will focus on maintaining and enhancing public infrastructure and services, including transportation networks, parks, cultural and heritage facilities, and community hubs. Strategic infrastructure investments will ensure that growth remains sustainable and supports healthy, complete communities. The Official Plan stresses the importance of transit-supportive development where feasible, alongside improvements to active transportation options.

Throughout all growth and development, Niagara-on-the-Lake is committed to preserving its agricultural lands, cultural heritage, and environmental features. The Plan ensures that growth management strategies align with climate change mitigation goals, biodiversity protection, and the maintenance of Niagara-on-the-Lake's renowned rural and historic identity.

4.2.2 Development Charges Study

At this time of this report's publication the Town was in the early stages of developing an updated Development Charges Study, however draft information was not available for incorporation to this plan.

Regardless of the study date, all Development Charge Studies are based on the Development Charges Act (D.C.A), 1997 and identify the forecasted growth-related capital expenditures from new developments. Section 5(1) 6 of the D.C.A. provides that, "the increase in the need for service must be reduced by the extent to which an increase in service to meet the increased need would benefit existing development." Common examples of Benefits to Existing (BTE) include:

- Repair or unexpanded replacement of existing assets in need of repair
- Increase in average service level of quantity or quality
- Providing services where none previously existed
- The elimination of a chronic problem not created by growth

Based on these criteria, the Development Charges Background Study identifies projects with BTE and determines their estimated associated cost share. As these costs cannot be recovered from Development Charges, they are considered a cost of growth and are funded by general capital levy.

Once the 2026 Study is complete, BTE costs will be estimated as applicable. As these are a cost of growth, their funding source (i.e. property tax or user-rates) is to be determined, and their costs added to the identified infrastructure gap for tax or rate funded asset categories respectively.

4.3 Impact of Growth on Lifecycle Activities

Considering the historic and projected future changes in population, it is anticipated that population growth will be moderate over the next decade. As noted in the Official Plan, a portion of this growth is intended to occur in already built-up areas. Where infrastructure is added due to development, it is expected to be funded through permit and development fees. When Benefits to Existing (BTE) costs are determined in the updated Development Charges Study, it is recommended that the Town add these costs to the identified infrastructure gap.

Lifecycle costs in this report, including in proposed LOS, therefore do not reflect any new net infrastructure assets or other growth related financial impacts at this time.

5. Proposed Levels of Service

5.1 Overview

5.1.1 O. Reg. 588/17 Proposed Levels of Service Requirements

Current Levels of Service (LOS) reflects the current technical LOS for (most often) a group of assets as of a defined *past* measurement date. In contrast, proposed LOS reflects the Municipality's *goal* for asset performance by a defined *future* date. It is important to note that O. Reg 588/17 does not dictate the proposed LOS values required. Meaning, a proposed LOS may be maintaining or even reducing current performance.

O. Reg. 588/17 requires Municipalities to report on proposed LOS, including an overview of the following:

1. Proposed LOS options (e.g., increase, decrease, or maintain current LOS) and the risks associated with these options.
2. How the proposed LOS may differ from current LOS.
3. Whether the proposed LOS is achievable.
4. The municipality's ability to afford proposed LOS.

Additionally, a lifecycle management and financial strategy to support the proposed LOS must be identified for a period of 10 years with specific reporting on:

1. Identification of lifecycle activities needed to provide the proposed LOS.
2. Annual costs over the next 10 years to achieve the proposed LOS.
3. Identification of proposed funding projected to be available.

5.2 Proposed LOS Options: Process & Considerations

To determine the proposed LOS for the Town, three suitable proposed LOS options were selected and analyzed. To identify suitable proposed LOS options to analyze, the Strategic Plan was reviewed, and stakeholder feedback was collected. Key information collected is summarized below.

5.2.1 2022–2027 Strategic Plan

Recognizing that the Strategic Plan is subject to change soon, it was reviewed to identify key themes that are less likely to shift over time. This was primarily reflected in aspects such as the mission and vision, which are as follows:

Mission: To efficiently deliver a high standard of municipal services and dependable infrastructure to support the community and to take leadership in planning, decision-making and policy development to ensure a healthy and financially sustainable future.

Vision: Enriching and protecting our heritage, agriculture and natural beauty, while creating a resilient, vibrant and welcoming community for all.

This vision and mission advance three key pillars that work together to deliver and optimize organizational excellence. This is represented in Figure 19 below.



Figure 19: Strategic Plan 2022–2027

Proposed LOS Considerations

- Dependable infrastructure is valued by the Town. Investing in infrastructure based on identified needs and risks is critical to the delivery of dependable infrastructure and associated services.
- Financial planning is critical to the long-term stability of the Town. Understanding the Town's current financial position and the costs of different levels of service options is crucial. Ensuring that options reflect realistic choices is important too.

5.2.2 Resident Engagement

The Town of Niagara-on-the-Lake issued a resident survey in early fall 2025. Surveys were available at the Municipal Office and posted online through the Town's website and social media pages. In total, 84 survey responses were submitted, representing a 0.97% household response rate. The survey contained a total of 15 questions regarding satisfaction levels with various municipal infrastructure assets and provided an opportunity for additional feedback. A copy of the survey is provided in Appendix A – Resident Survey. Key findings of relevance to selecting proposed LOS options include the following:

Survey Response Demographics

- 86% of respondents are full-time residents (property owner) (Figure 20)

- 63% of respondents are over the age of 65 years. In contrast, the 2021 census indicated 36% of the Town's population is over 65 years, indicating a skewed age distribution within the asset management survey responses.
- Over half (60%) of respondents reside in Old Town and one-fifth (20%) reside in Virgil neighborhoods.
- Over half (55%) of the respondents are married with no children and over one-quarter (27%) are married with children (Figure 22).

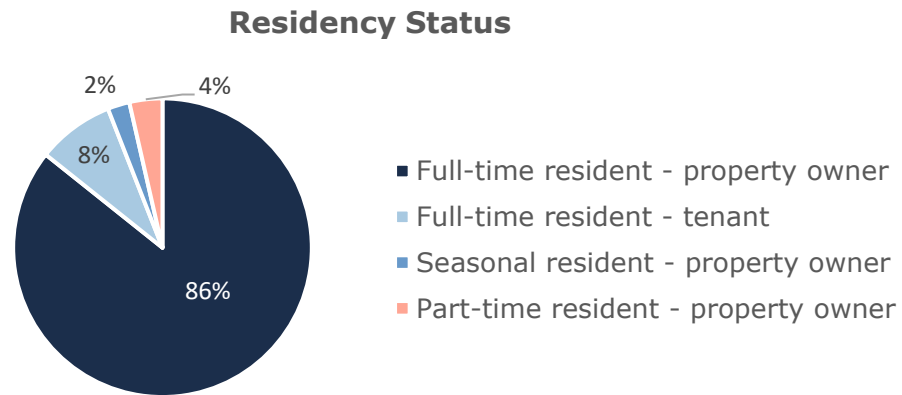


Figure 20: Residency Status of Survey Respondents

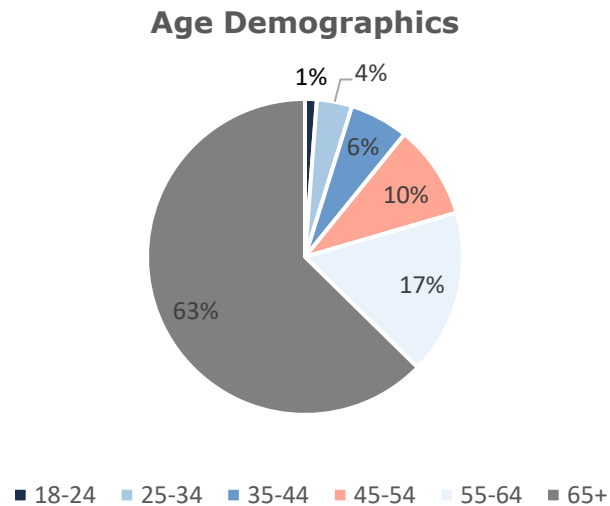


Figure 21: Proposed LOS Survey Respondent Demographics

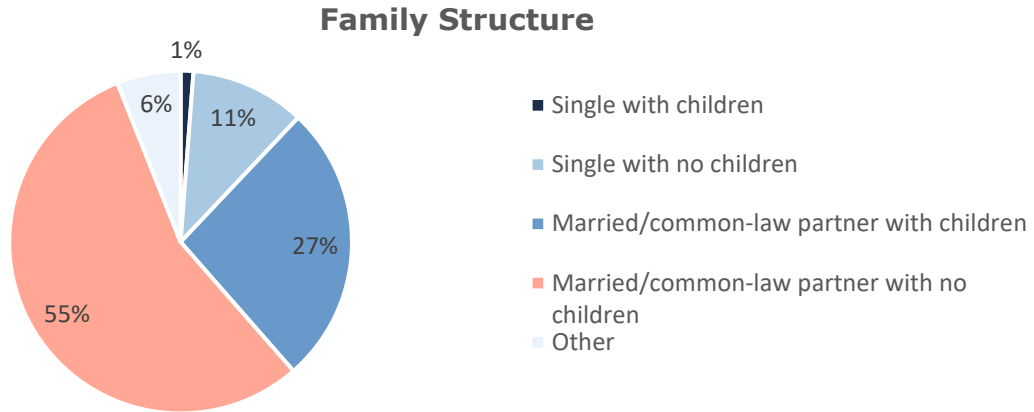


Figure 22: Proposed LOS Survey: Family Structure

When asked to identify the importance of the Town's features, respondents most often cited well-maintained roads and bridges as of high importance (89%), followed by fire emergency services (88%) This is summarized in Figure 22 below:

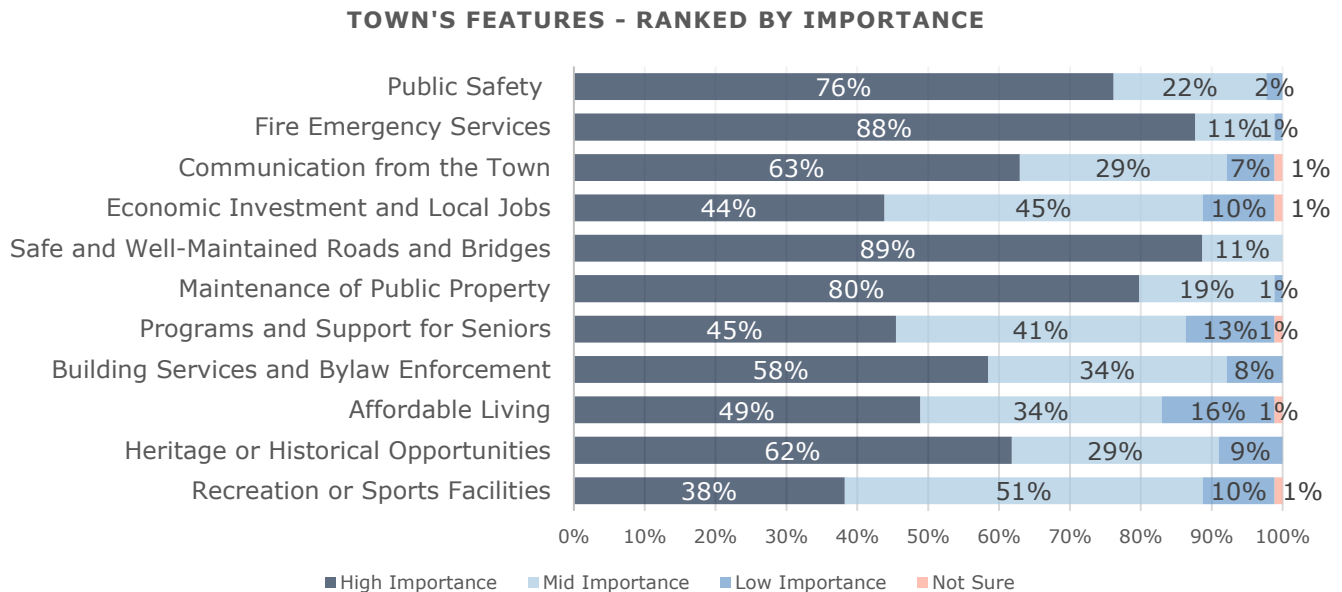


Figure 23: Town's Features Ranked by Importance

The survey also investigated residents experience with infrastructure with respondents ranking their satisfaction level considering the factors of availability, reliability and condition, and safety. As indicated in Table 7 and Table 8 below, considering both satisfaction and dissatisfaction levels, respondents are most positive about the performance of bridges, outdoor assets (i.e. land improvements),

and public-facing buildings and least positive with the performance of road and stormwater network assets.

Table 7: Asset Performance Evaluation (Dissatisfaction rates)

Dissatisfaction Rate (%) by Performance Measure				
Asset Category	Availability	Reliability & Condition	Safety	Combined Average
Bridges	3	1	1	1.9
Community Centre, Libraries, and Recreation	9	7	5	6.8
Emergency Services	10	9	9	9.5
Outdoor Open Spaces, Parks, and Trails	6	3	1	3.4
Roads	27	26	20	24.1
Sidewalks	29	31	28	29.4
Stormwater Management	21	21	16	19.7
Water Systems	10	9	9	9.5
Wastewater Systems	8	14	12	11.0

Table 8: Asset Performance Evaluation (Satisfaction rates)

Satisfaction Rate (%) by Performance Measure				
Asset Category	Availability	Reliability & Condition	Safety	Combined Average
Bridges	58	55	63	59
Community Centre, Libraries, and Recreation	61	60	76	65
Emergency Services	51	49	60	53
Outdoor Open Spaces, Parks, and Trails	53	53	62	56

Satisfaction Rate (%) by Performance Measure				
Asset Category	Availability	Reliability & Condition	Safety	Combined Average
Roads	24	19	21	21
Sidewalks	25	24	28	25
Stormwater Management	35	44	46	42
Water Systems	48	56	54	53
Wastewater Systems	48	52	49	50

Respondents were asked for each asset category what changes in service levels they desired. The results indicate that with small exception most respondents seek to maintain service levels. A stronger desire to increase service levels was identified within the road network and the stormwater network. This is summarized in Figure 24 below.

Public Opinions on Service Levels

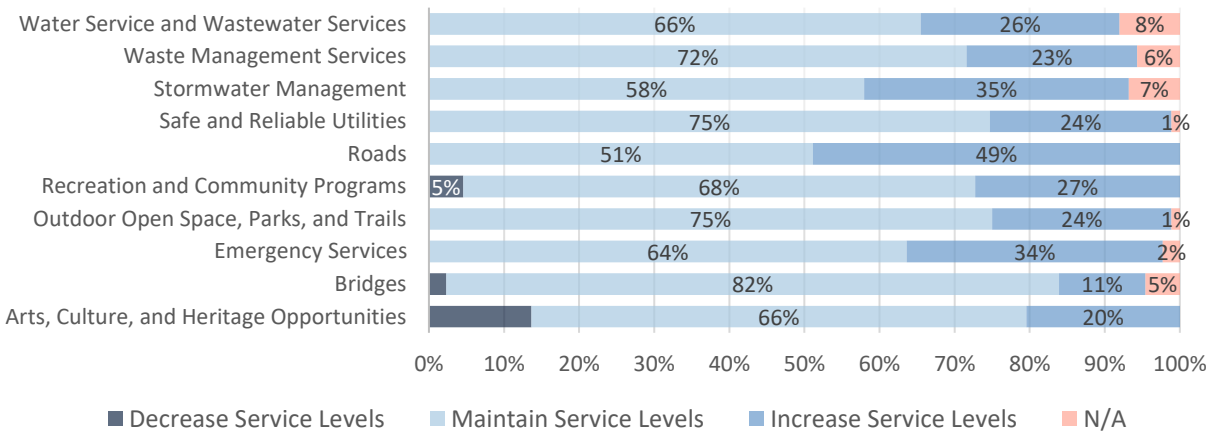


Figure 24: Service Level Changes Preferences

It is crucial to recognize that service level changes hold associated costs. As discussed in the 2024 AMP, the Town's current level of capital investment is significantly less than the capital investment required to optimally fund assets⁹. Therefore, maintaining existing service levels (e.g. average condition) will require increased investment levels. Furthermore, increasing service levels would require

⁹ Optimal funding is based on replacing every asset at the end of its Estimated Useful Life (EUL) and completing recommended rehabilitations for road and bridge assets.

even more substantial investment. With this dynamic in mind, respondents were asked to describe their willingness to pay for service improvements

Figure 25 below indicates that the largest proportion of respondents are willing or somewhat willing to pay for improvements to emergency services (84%), followed by the road network (76%).

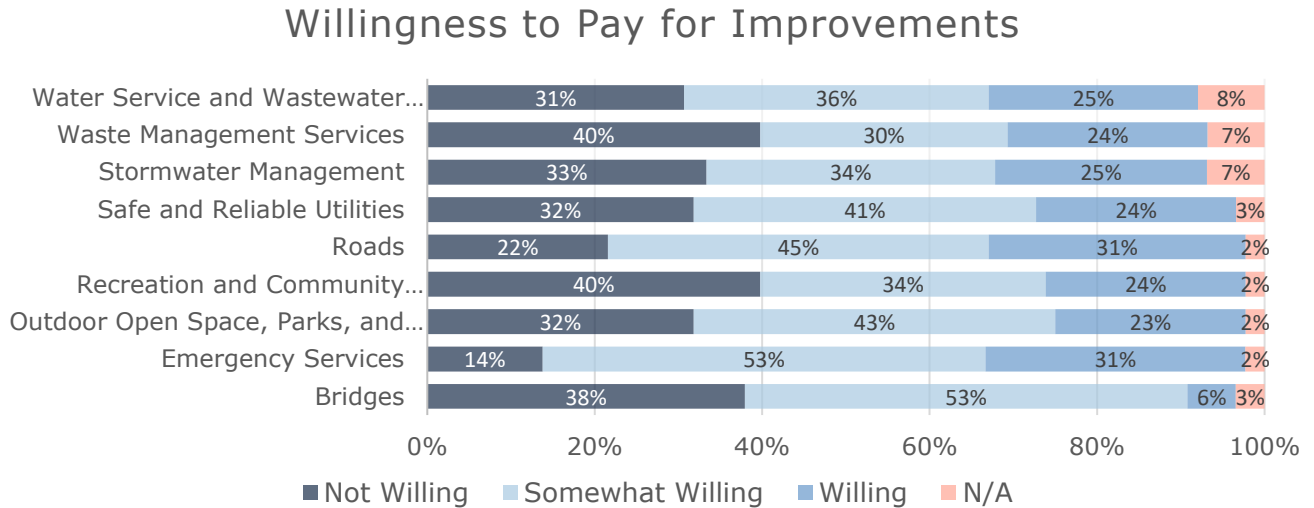


Figure 25: Willingness to Pay for Changes in Service Levels

It is not uncommon for residents to desire improvements more so than they are willing to fund them. This dynamic indicates that to some degree, residents understand that service changes come at a financial cost.

5.2.3 Council Engagement

Members of Niagara-on-the-Lake's Council (2022–2026 term) were also surveyed to inform proposed LOS options. The survey sought to identify high-priority asset categories for capital reinvestment, gauge the tolerance for tax adjustments, and establish a balance between immediate resident expectations and the future sustainability of the Town's service levels.

Figure 26 illustrates councils perception of resident complaint volumes across all asset categories. Councillors indicated that complaints are either received at an expected frequency or are rarely heard. The major exception is the stormwater network where nearly two-thirds of councillors indicated they receive too many complaints. A small minority of councillors indicated they received too many complaints about the wastewater, facilities, and road networks as well. This is summarized in Figure 26 below.

Resident Complaints by Asset Category

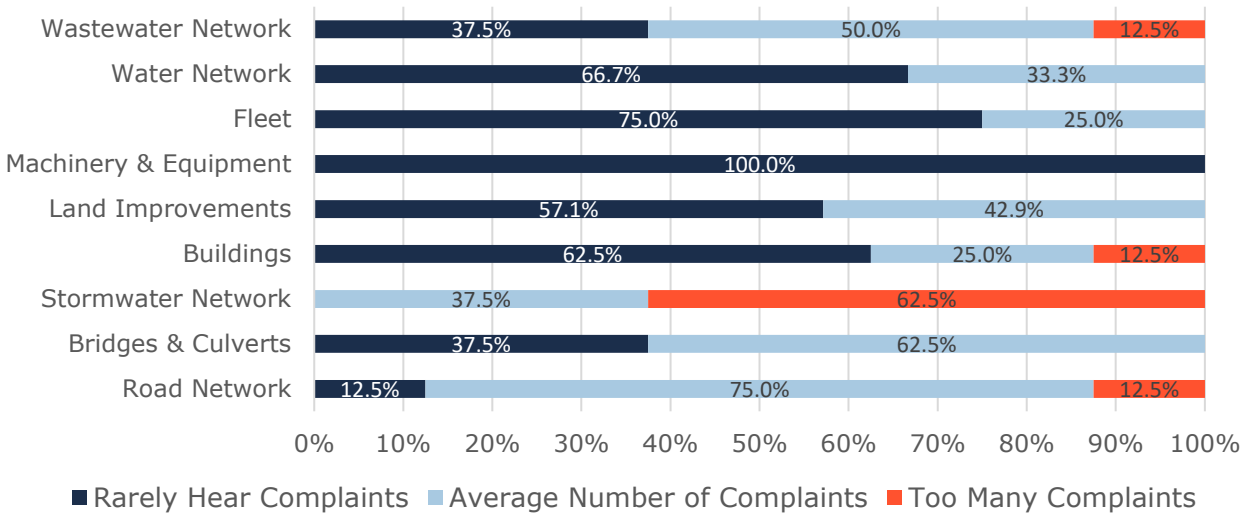


Figure 26: Resident Complaints by Asset Category

In instances where councillors receive complaints, responses were divided between 'great' and 'okay' with a small number of 'poor' responses. For machinery and equipment, wastewater, and land improvement categories one of nine councillors indicated that staff response was poor; for the stormwater network two of nine councillors indicated a poor staff response. This is summarized in Figure 27 below. For most asset categories this indicates general effectiveness in operations as the number of complaints received is considered at least at expected levels and staff responses to complaints are most often great or okay. The exception is the stormwater network where there are notably more complaints and a higher rate of poor staff response.

It is valuable to note, however, that emergency stormwater issues were top of mind at the time of the survey. These events may have increased the rate of negative reporting for the stormwater network.

Staff Responsiveness to Complaints

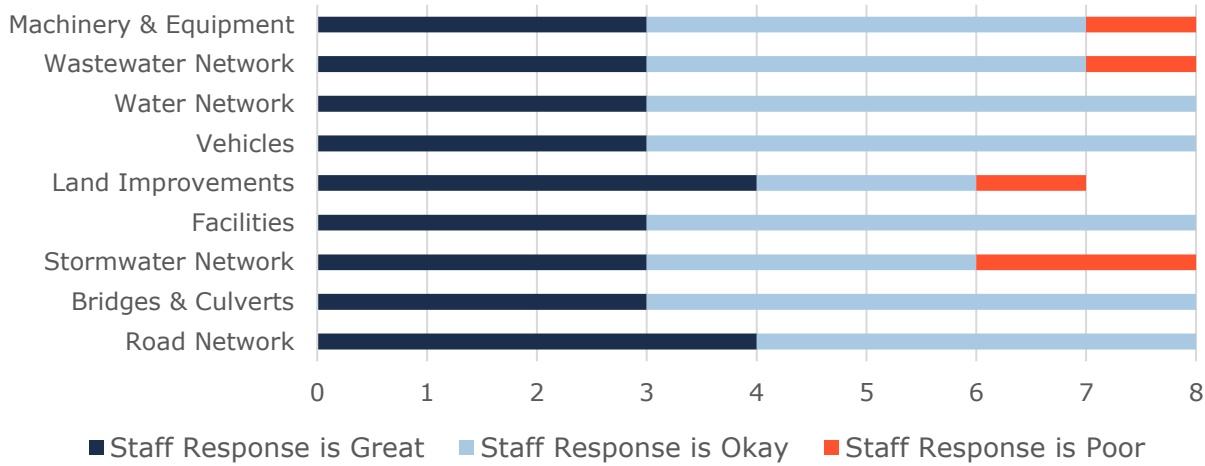
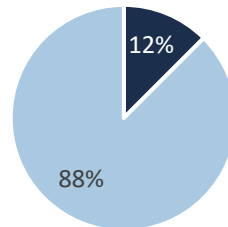


Figure 27: Staff Responsiveness to Resident Complaints¹⁰

Recognizing that the optimal level of funding is significantly greater than the current funding available and that prioritization in investment is required, the survey also sought to understand council's preferred financial approach for changes in capital investment. A clear majority indicated preference to increase funding to priority categories first, instead of uniformly increasing investment across all asset categories. This is indicated in Figure 28 below.

Preferred Funding Strategy



- Increase funding to all categories proportionally, so all asset categories benefit the same amount, slowly over time.
- Increase funding to top priority asset categories first, then fill in the gap with the remaining categories later.

Figure 28: Funding Strategy

Councillors were also asked to rank their priority for capital investment. As indicated in Figure 29 below the stormwater network is the highest priority, followed by the road network and bridges and culverts.

¹⁰ Note: Only 7 responses were received for the land improvements category.

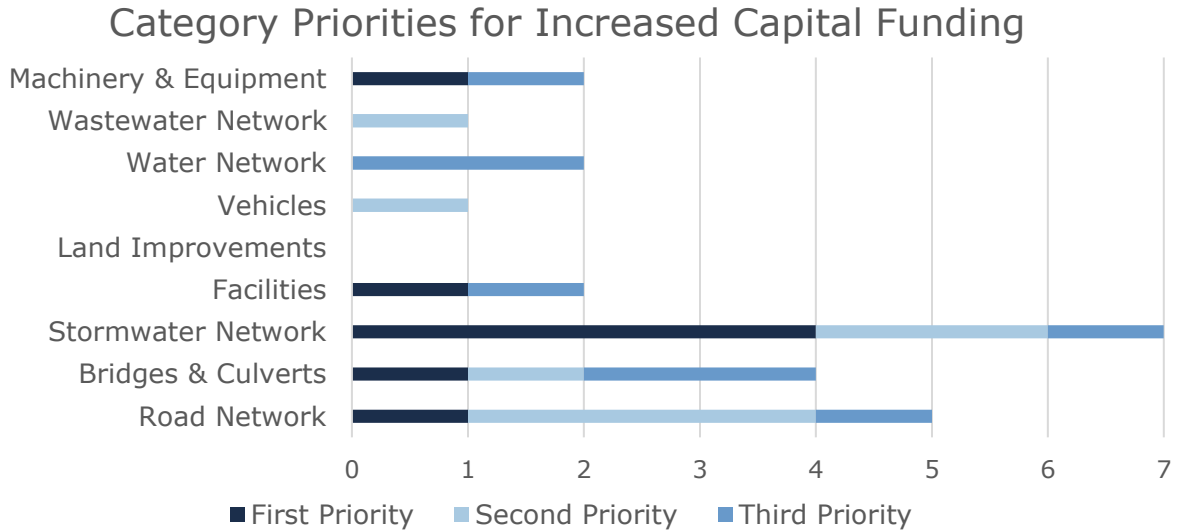


Figure 29: Priority Categories for Capital Investment

The survey also sought to evaluate the annual capital investment increases council would consider acceptable. Figure 30 below indicates that most councillors endorsed a 2–3% annual tax increase for a period of 15 years. One-quarter of councillors endorsed a 4–5% annual increase for 10 years and one councillor accepted a less than 1% annual increase.

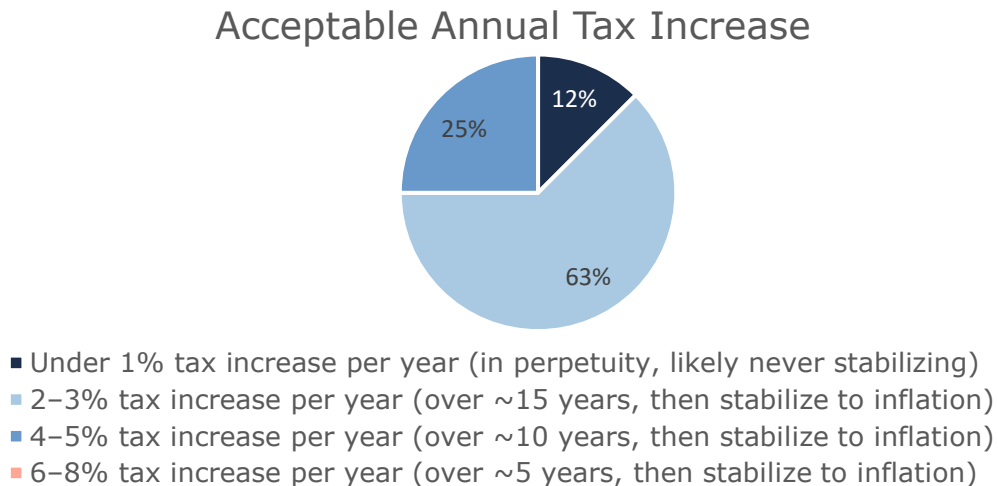
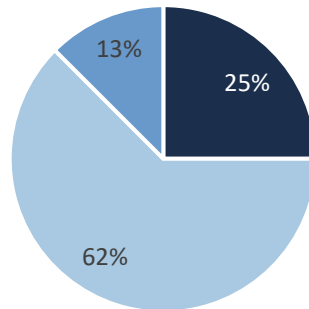


Figure 30: Council's View of Acceptable Annual Tax Increases

Councils' desire to modestly increase taxes is supported by their assessment that most residents are willing to pay more to ensure the services at the Town remain the same. However, a quarter of councillors indicated they believe residents would prefer a service reduction to minimize tax rate changes. This is indicated in Figure 31 below.

Residents' Sentiment



- I would rather services be reduced in quality in order to keep tax and rate increases to a minimum.
- I'm willing to pay more to ensure the services at the Town remain the same.
- I'm willing to pay much more to improve/enhance the services offered by the Town.

Figure 31: Perceived Resident Sentiment of Service Level Changes

5.2.4 Staff Engagement

Staff involved in the daily operations, capital planning, and capital projects for the Town of Niagara-on-the-Lake were surveyed to better understand their assessment of the current performance of assets they work with and what service level changes they felt were appropriate. Key findings from these surveys are:

- Most staff reported high confidence in the data used to calculate LOS, particularly for bridges and culverts. Confidence is low to medium for stormwater and moderate for facilities and vehicles.
- Staff identified that in terms of resource requirements (staff and funding), improvements are needed for all asset categories, except:
 - Land improvements
 - Vehicles
 - Water network
- Across all asset categories, staff identified that 2024 LOS should be increased or maintained; more often the response was to increase.
- Across multiple asset categories comments noted:
 - Budget limitations were identified as a significant barrier
 - Several comments highlighted that maintenance is often reactive and that stronger preventive programs require dedicated funding, which was also identified as a quantitative risk in the 2024 AMP.

This indicates that most staff generally supported maintaining and more often increasing service levels and resources to support. Additionally, it indicates that operational considerations, especially regarding proactive maintenance, are recommended for consideration in operating budgets and associated long-term planning (i.e. hiring, staff duties and other)

5.2.5 Proposed LOS Options

Findings from the resident and council surveys, and the 2024 AMP were consolidated, and a meeting was held with Town staff to review and discuss. Considering all the above, the following three scenarios were selected for analysis and consideration as a proposed LOS option:

Table 9: Proposed LOS Scenarios

Scenario #	Description
1 (Maintain Current Investment)	Maintain current capital funding levels as reported in 2024 AMP.
2 (100% AAR)	Apply the 2024 AMPs tax and rate increase recommendation to reach 100% of their Average Annual Requirement (AAR) funded for every asset category within 20 years.
3 (70% AAR)	Fund all asset categories at 70% of their AAR. For water and wastewater, fund at 90% of the AAR.

For scenarios 2 and 3, capital investment increases were allocated at a larger share to priority asset categories (road network, bridges and culverts, and facilities) as identified in the council and resident surveys.

The above scenarios represent the proposed LOS options which were informed by the following key considerations:

- About one-third of residents indicated an unwillingness to pay for increased service levels (refer to Figure 25). To reflect this, the current capital investment amounts were modelled to understand how asset conditions and risk are anticipated to change over time. This helps to better understand the long-term implications of maintaining current capital investment levels.
- Across all asset categories, at least a third of residents indicated they were “somewhat willing” to pay for service improvements. This suggests that while funding 100% AAR may not be desired by most residents there is an appetite for a modest degree of funding increase.
- Two-thirds of councillors indicated that they would accept a 2–3% annual tax increase. Considering the findings from the 2024 AMP, an investment between current and 100% AAR is anticipated to deliver within that range.
- Staff involved in the daily operations, capital projects, and planning of the Town’s assets most often indicated that proposed LOS should be an increase from current service levels. To deliver this, increased funding is required.
- The 2024 AMP determined the cost to fund 100% of AAR; understanding how condition and risks are anticipated to change based on this level of funding is valuable.

5.3 Proposed LOS Options: Analysis

Several key areas of consideration were applied to the selection of the proposed LOS. These were primarily:

1. Associated Risks
2. Affordability
3. Achievability

The following sections outline the above noted considerations and analysis information.

5.3.1 Risks

Table 10 below details the qualitative risks associated with each of the Proposed LOS and the anticipated relative severity of each scenario.

Table 10: Proposed LOS Option Risks

Risks Associated with Proposed LOS Options			
Scenario	Severity	Risk	Defined
1 (Current)	High	Reliance on grants	The proposed LOS option results in investment amounts being significantly less than requirements and the Town is reliant on conditional grants, as they become available. While grants and senior government funding reduce the burden on ratepayers, they are considered an unsustainable revenue source and often have significant and limiting conditions (e.g., project eligibility).
2 (100% AAR)	Low		
3 (70% AAR)	Moderate		
1 (Current)	High	Increased infrastructure backlog	The average annual capital investment is less than the average annual capital requirement. Therefore, for many years assets are insufficiently funded, and lifecycle management is not optimal. Reduced and/or deferred lifecycle activities threaten reliability and increase the potential for costly (and unbudgeted) repairs to maintain service.
2 (100% AAR)	Low		
3 (70% AAR)	Moderate		
1 (Current)	High	Increased rate of	Underinvestment in assets will result in a lower average condition and an increased rate of

Risks Associated with Proposed LOS Options			
Scenario	Severity	Risk	Defined
2 (100% AAR)	Low	asset failure	asset failure. This will affect the reliability of infrastructure, and the quality of service provided. Increased operational demands are placed on staff due which may become frequent and difficult to address.
3 (70% AAR)	Moderate		
1 (Current)	High	Increased severity of asset failure	Underinvestment in assets is correlated to an increased severity of asset failure. This may mean that assets are beyond the point of repair and require replacement. In some circumstances (i.e. procurement delays; funding constraints), this may result in points in time where the Town does not have functional assets that are critical to their operations.
2 (100% AAR)	Low		
3 (70% AAR)	Moderate		
1 (Current)	Low	Council approval	Capital investment and associated budget investment decisions require council approval. Council members change over time and their propensity to support increased infrastructure investment can also be expected to change. Where increased funding levels are phased in, and consistent annual increases are required, there is a significant chance that the requisite increases are not consistently approved by council. This will most often result in less funding available than needed, posing significant challenge to the ability to meet the proposed LOS.
2 (100% AAR)	High		
3 (70% AAR)	Moderate		

In addition to the above noted qualitative risks, there are measurable risks held by each asset. Risks are quantified based on the respective probability and consequence of asset failure models outlined in Appendix D – Risk Rating Criteria.

Risk scores range from 1 to 25 with 25 being the highest level of risk and 1 being the lowest level of risk. Risks can be grouped into five levels based on their score. These levels and descriptions are described in Table 11 below:

Table 11: Risk Score Ranges and Descriptions

Risk Level & Range	Risk Characteristics
Very Low: 1-4	Very low probability of failure, most often due to being in good or better condition.

Risk Level & Range	Risk Characteristics
	• Very low consequence of failure, most often due to low replacement cost. May also consider asset type, size of population served, and/or health risks associated with asset failure. • Routine monitoring generally sufficient management approach
Low: 5-7	• Low probability of failure, most often due to being in good or better condition. • Low consequence of failure • Routine monitoring with some introduction of proactive maintenance generally sufficient management approach
Moderate: 8-9	• Moderate probability of failure is most often due to mid-ranking conditions and moderate consequences of failure considering replacement cost, scale and severity of impact. • Proactive maintenance alongside increased attention to predict failure generally sufficient management approach.
High: 10-14	• Typically, a moderate to high probability of failure due to assets being in fair or worse condition combined with a moderate to high consequence of failure due to replacement costs, scale and severity of impact, and nature of impacts. • Rehabilitation required and generally a viable alternative to replacement as a management approach
Very High: 15-25	• Typically, a high or very high probability of failure due to assets being in poor or very poor condition combined with a high or very high consequence of failure due to a significant replacement cost, large population impact, and high operational or health risks in the event of failure. • Immediate actions such as asset replacement or significant rehabilitation required to reduce risks held

The average risk and the end risk by scenario are summarized in Table 12. Scenario one (maintain investment) has the highest average risk and the highest end risk. This is primarily due to more assets being in poorer condition and having a higher probability of failure as a result.

Table 12: Average Risk by Scenario

Scenario	Average Risk	End Risk
1: Maintain Current Investment	11.85/25	13.59/25
2: 100% AAR Funding	9.87/25	9.85/25
3: 70% of AAR Funding	10.45/25	10.95/25

Risk and condition are dynamic and change over time. Each scenario has been modelled by asset category; Figure 32 below illustrates how condition scores are forecasted to change over time by scenario for the stormwater network.

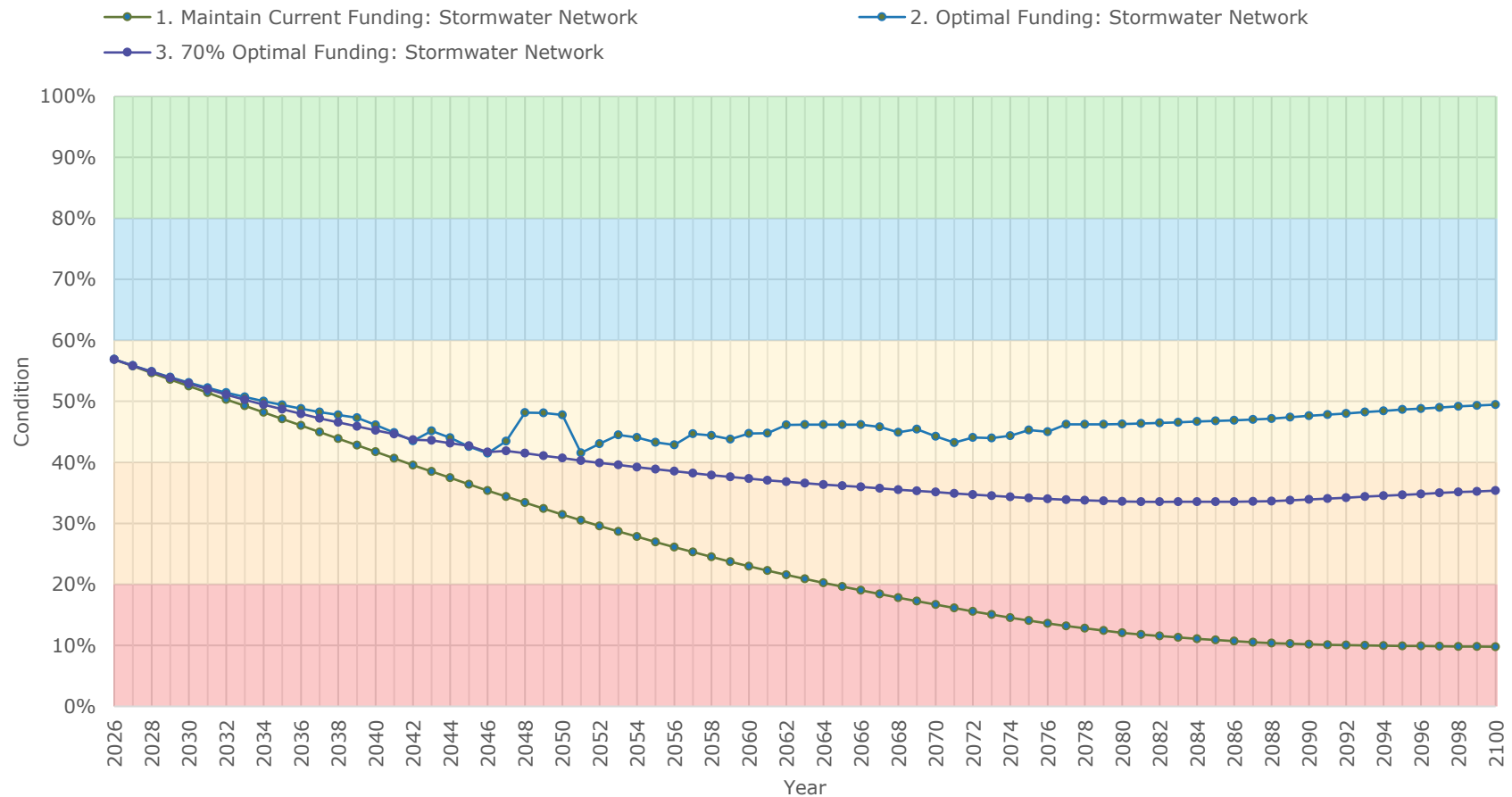


Figure 32: Stormwater Network Projected Condition by Scenario

Typically, risk increases as condition decreases (and vice-versa). Figure 33 indicates that under scenario 1 (maintain funding) risk levels are highest. This is primarily due to assets remaining in service beyond their EUL and asset conditions declining as a result. In comparison, risks are much lower under scenario 2 (100% AAR funded) while scenario 3 (70% AAR funded) produced intermediate risk levels.

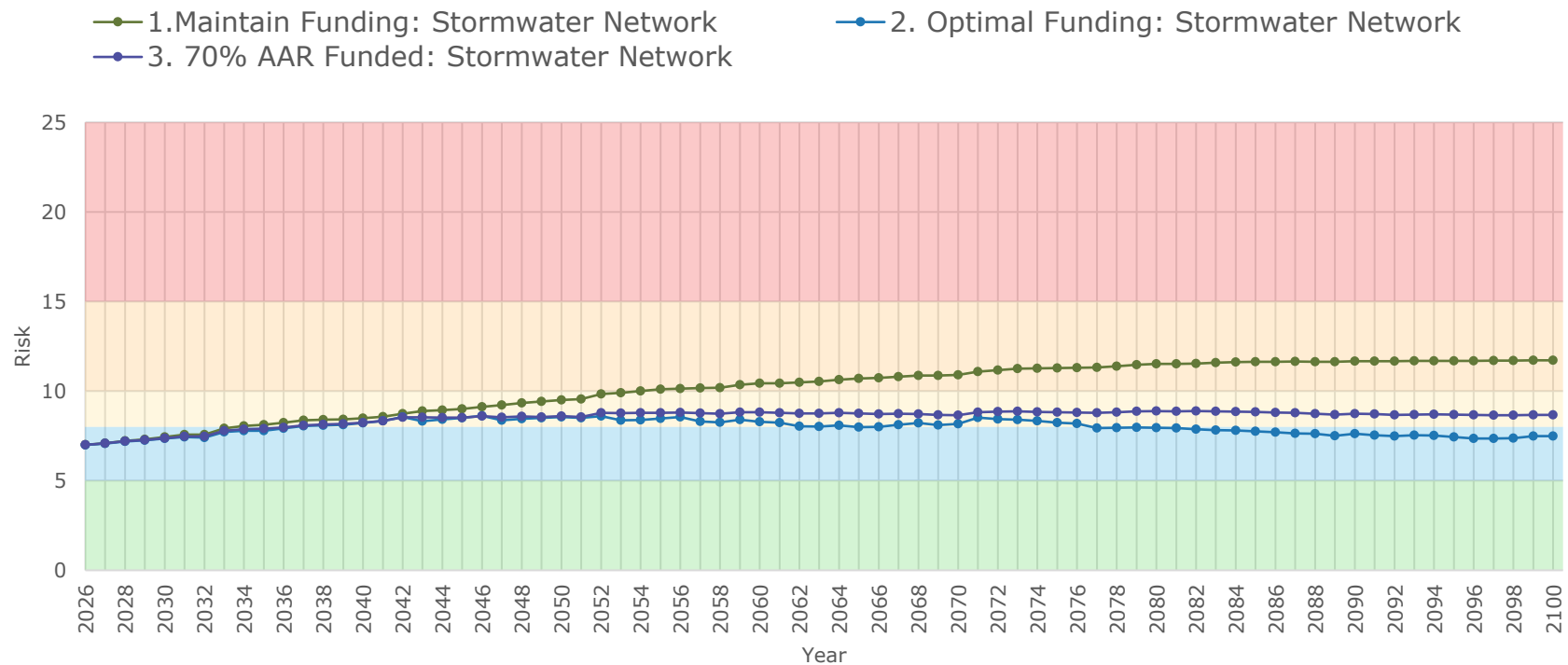


Figure 33: Stormwater Network Risk Projections

Across all asset categories, the patterns between each of the scenarios are generally similar to those illustrated for the stormwater network. Additional graphs are provided for reference in Appendix C – Proposed LOS Models: Results These patterns can be described as follows:

- Conditions decline most significantly and rapidly under scenario 1 (maintain investment). In contrast, conditions tend to stay close to the starting condition under scenario 2 (100% AAR funded). Conditions decline under scenario 3 (70% AAR funded), but much less severely than scenario 1 (maintain investment).
- Risks increase most severely under scenario 1 (maintain investment). In contrast, risks are lowest under scenario 2 (100% AAR funded). This is most often due to assets being in better condition because there are sufficient funds to replace them when they reach their EUL. Scenario 3 (70% AAR funded) offers mid-ranking performance; risks are higher than scenario 2 (100% AAR funded) but lower than scenario 1 (maintain investment).
- **Exception:** Water and wastewater networks. It is important to note that the patterns described above do not apply to the water and wastewater network assets. Comparison graphs are provided in Appendix C of this report. Current sustainable funding from these categories is equal to 75% and 85% of AAR funded. As a result, the scenarios modelled are maintaining funding (i.e. 75% and 85% of AAR), 100% AAR funded (scenario 2), and 90% of AAR funded (scenario 3). The differences between these scenarios are relatively modest. The patterns can be described as follows: Towards the end of the study period conditions are slightly higher under scenario 2 (100% AAR funded) than under scenarios 1 (current funding) and scenario 3 (90% AAR funded). Effectively, performance is the same for scenario 1 (current funding) and scenario 3 (90% AAR funded).

5.3.2 Affordability & Strategic Alignment

The discovery session provided several key insights that guided the proposed LOS options and considerations for affordability and strategic alignment. The selected scenarios reflect a spectrum of options that consider staff, council, and resident impacts alongside asset information, such as optimal investment amounts.

Tax increases required are highest for scenario 2: optimal funding, second highest for scenario 3: 70% of Optimal funding, and lowest for scenario 1: Maintain current investment. The same ranking occurs for rate funded assets. This is summarized in Table 13.

Table 13: Scenario Affordability Comparison

Scenario	Annual Service Level Deficit: Tax	Annual Service Level Deficit: Rate	Affordability Rank
1: Maintain Current Investment	No additional funding required		Most affordable
2: Optimal Funding	\$10,969,000	\$2,109,000	Least affordable
3: 70% of Optimal Funding	\$5,897,000	\$1,266,000	Mid-level affordability

The Financial Strategy (Section 6) provides a financial strategy to meet the selected proposed LOS.

5.3.3 Achievability

The following factors are noted barriers to the achievability of the Proposed LOS options:

- **Resourcing to complete Capital Projects:** This refers to the ability to procure qualified contractors at competitive prices to complete capital projects where they are not within the capacity of Town staff to complete.
- **Sustained Council Support:** This refers to the likelihood of obtaining council approval for the proposed LOS option and the associated capital investment required. It also considers the likelihood of consistent council approval over the phase in period as applicable.
- **Internal Capacity:** This refers to the additional burden of Municipal staff to administer (e.g. issue, review, and action requests for proposal and quotation) and oversee capital projects. It reflects the Town's modest staff complement and the many diverse duties and responsibilities that staff already hold.

Table 14: Achievability Factors

Achievability Factors and Anticipated Severity			
Scenario	Resourcing	Sustained Council Support	Internal Capacity
1: Maintain Current Investment	Low		
2: Optimal Funding	High (tax-funded); Moderate (rate-funded)		
3: 70% of Optimal Funding	Moderate (tax and rate-funded)		

5.4 Selected Proposed LOS

The three above noted scenarios were analyzed and results were reviewed, with consideration for achievability, risks, and affordability, the Town of Niagara-on-the-Lake selected **scenario 3 (70% AAR Funded)** for their **tax-funded** assets and **scenario two (100% AAR Funded)** for their **rate-funded** assets as their proposed LOS. The financial strategy and 10-year capital forecasts reported herein reflect the selected scenarios.

Scenario 2, 100% AAR Funded: Rate-Funded Assets (Water Network, Wastewater Network, Stormwater Network)

Scenario 3, 70% AAR Funded: Tax-Funded Assets

Appropriateness of Selection: Summary comments

Tax Funded Assets:

- Scenario 3 (70% AAR funded) provides significant increases in capital funding in the long term which are projected to result in gradual improvements in asset conditions and reductions in risk when compared with current investment levels (Scenario 1). This is especially notable when considering projected values beginning in years 2040-2045 (refer to Appendix C).
- The selection of Scenario 3 (70% AAR funded) under a 20-year phase in timeline reflects a balanced approach that practically considers financial constraints while providing consistent capital investment increases.

Rate funded Assets:

- Scenario 2 (100% optimal funding) provides the best outcomes in condition and risk. For water and wastewater network assets the financial impacts (outlined in more detail in Section 6) are relatively modest because current funding levels are relatively close to 100% of optimal investment. While the financial increases are slightly more significant for the stormwater network, the resident and council survey indicated a strong priority for investment in stormwater infrastructure. The proposed LOS reflects this prioritization.

5.4.1 Required Lifecycle Strategies

For all asset categories a significant lifecycle change required to reach the proposed LOS is to increase annual capital allocations. Existing lifecycle management practices (as noted under reference information) should continue. Otherwise, lifecycle management strategies should be adopted or expanded as detailed in Table 15.

Table 15: Lifecycle Strategies to Support Proposed LOS

Asset Category	Lifecycle Changes to Support Proposed LOS	Reference Information
Road Network	- Review and update to assessed conditions over time, especially following capital works. - Once obtained, populate assessed condition information for roadside appurtenances	2024 Compliant AMP, Section 4.4
Bridges and Culverts	Review and update assessed conditions over time, especially following bi-annual assessments and capital rehabilitation projects.	2024 Compliant AMP, Section 5.4
Water Network	- Targeted CCTV assessments to water mains where desktop condition assessments indicated relatively lower condition is anticipated to improve investment effectiveness. - Once obtained, populate assessed condition information for hydrants and valves. This may impact proposed LOS values.	2024 Compliant AMP, Section 6.4
Wastewater Network	Updates to the database to reflect condition assessments following CCTV inspections.	2024 Compliant AMP, Section 7.4
Stormwater Network	Updates to the database to reflect condition assessments following CCTV inspections.	2024 Compliant AMP, Section 8.4
Facilities	Updates to database to reflect condition assessment findings upon completion of the next update.	2024 Compliant AMP, Section 9.4
Land Improvements	- Consider introduction of a rehabilitation program of major assets such as playground to support lower total lifecycle costs. - Consider implementing a condition assessment program for high-value/high-liability assets.	2024 Compliant AMP, Section 10.4
Vehicles	No major changes; continue strategies noted in 2024 AMP.	2024 Compliant AMP, Section 11.4
Machinery & Equipment	Consider implementing a condition assessment program for high-value/high-liability assets.	2024 Compliant AMP, Section 12.4

5.4.2 Risk Mitigation Strategies

As noted in section 5.3.1 Risk, the selected proposed LOS carries some risks. The Town has identified the following risk mitigation strategies. These are:

- **Improved & Updated Condition Assessment Information:** Regular assessments of assets improve the Town's extent and accuracy of knowledge about condition and recommended interventions. This generally leads to more effective risk-based decisions, more optimized investment (i.e. avoid unnecessary investments), and reduced rates of asset failure. The Town currently completes regular assessments for their bridges and structural culverts, completes annual assessments of a rolling portion of their wastewater and stormwater networks, recently completed road network assessments and has completed a desktop assessment of their water network. Most of the Town's facilities assessments have received recent assessments. The Town is considering implementing a condition assessment program for other non-core assessments, beginning with the highest value and/or criticality assets first. These actions are anticipated to reduce the risks associated with the selected proposed LOS.
- **Rehabilitation Strategies:** Rehabilitation is often a more cost-effective approach to replacement, while still offering notable condition improvements. The Town believes there are opportunities to implement rehabilitation strategies specifically for bridges and structural culverts (identified through OSIMs), roads (identified through the Town's Roads Needs Study), and wastewater and storm mains (via pipe relining also called trenchless rehabilitation). Further exploration of these opportunities may offer capital cost savings that would mitigate the funding deficit under this scenario.
- **Ongoing Report Integration:** The Town regularly commissions asset studies to better understand and validate the current state of the portfolio and investment requirements. The Town will continue integrating this information into their asset management system. This allows for more dynamic decisions, predicated on the best information and expert recommendations.
- **Financial Strategies:** Recognizing that the selected scenario may result in increased rates of unexpected failure the Town will explore financial strategies to reduce risks by having funds available to resolve unexpected failures. These include long-term capital planning to identify cash-flow challenges and build capital reserves to supplement, and ongoing investment strategies of reserve funds as a strong fiscal management practice. Further, the Town will continue pursuing grant funding opportunities wherever possible.

5.4.3 Proposed LOS Over 10 Years

The following tables reflect current LOS performance for the year 2024 and proposed LOS for a 10-year period thereafter. Comparing these LOS values over time will enable the Town to assess whether service performance and asset conditions are improving, stabilizing, or declining year-over-year.

5.4.4 Community Levels of Service

The following table outlines the qualitative descriptions that determine the community levels of service provided by each asset category.

The Town anticipates that qualitative community LOS will change in this period in parallel with technical LOS. For example, if the average condition of assets declines the community LOS, which describes condition, will reflect a lower average condition. All asset categories will see adjustments to their technical LOS over time, with most changes due to natural degradation of assets and the level of investment they receive.

Table 16 Community Levels of Service

Service Attribute	Qualitative Description	Current LOS (2024)
Road Network		
Scope	Description, which may include maps, of the road network in the municipality and its level of connectivity.	The Town of Niagara-on-the-Lake boasts a network of approximately 523 lane kilometers of roadways, most of which are surface treatment and asphalt. The system mostly consists of collector and local roads. Please refer to Appendix E for a map of the road network.
Quality	Description or images that illustrate the different levels of road class pavement condition.	The condition of the road network ranges from very poor to very good, with most (83%) of the roadway assets being in fair or better condition.
Bridges & Culverts		
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport rolling stock, motor rolling stock,	Bridges and culverts are a key component of the municipal transportation network. All structures besides bridges B4 and B16, do not have loading restrictions, meaning that most types of vehicles, including heavy transport, motor

Service Attribute	Qualitative Description	Current LOS (2024)
	emergency rolling stock, pedestrians, cyclists).	vehicles, and emergency vehicles can cross them without restriction.
Quality	Description or images of the condition of bridges and culverts and how this would affect use of the bridges.	The condition of bridges and structural culverts varies but most assets are in fair or better condition. Please refer to Appendix E for images of some of the Town's bridges and culverts.
Water Network		
Accessible & Reliable	Description, which may include maps of the user groups or areas of the municipality that are connected to the municipal water system.	The Town receives treated water from the Decew Falls Water Treatment Plant and the Niagara Falls Water Treatment Plant, both owned and operated by Niagara Region. The Town distributes this treated water through approximately 207 kilometers of Town-owned watermain. The service area is bounded by Lake Ontario, the Niagara River, the City of Niagara Falls and the City of St. Catharines.
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow	Fire flow is available to properties with municipal water services. This predominantly covers properties within the urban areas of the historic old town, Glendale, Queenston, St. Davids and Virgil.
Reliability	Description of boil water advisories and service interruptions.	There was one water main break in 2024 that occurred on an old section of pipe near a dead-end. Only three properties were impacted, with water unavailable to them for approximately 5 hours in total.
Wastewater Network		
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 owns and operates the essential wastewater collection systems that services the community, managing the conveyance of wastewater from residences, businesses, and institutions. Once collected, the wastewater is transmitted to the Wastewater Treatment Plant owned and operated by the Niagara Region.

Service Attribute	Qualitative Description	Current LOS (2024)
Safe & Regulatory	Description of how stormwater can get into sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes.	Stormwater can enter sanitary sewers due to cracks in sanitary mains. In the case of heavy rainfall events, sanitary sewers may experience a volume of water and sewage that exceeds its designed capacity. In some cases, this can cause water and/or sewage to overflow backup into homes. The use of sump pumps and pits directing stormwater to the storm drain system can help to reduce the chance of this occurring.
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to stormwater infiltration	The municipality follows a series of design standards that integrate servicing requirements and land use considerations when constructing or replacing sanitary sewers. These standards have been determined with consideration of the minimization of sewage overflows and backups. Inflow and infiltration issues are more common in areas with older infrastructure and rarely an issue in areas with more recently constructed infrastructure.
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.	
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches.	N/A: The Town of Niagara-on-the-Lake does not own or operate water treatment facilities.

Service Attribute	Qualitative Description	Current LOS (2024)
Stormwater Network		
Scope	Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.	The Town's stormwater management system protects key user groups and areas within the municipality from flooding by effectively capturing, conveying, and controlling stormwater runoff. This system includes a network of storm mains, catch basins, manholes, and stormwater management ponds.
Facilities		
Quality	Description of the types of facilities that the municipality operates and maintains	The Town owns and operates several facilities that support daily municipal operations and provide a variety of services to the community which include the following: Administration is supported through the main administration facility. Fire services are provided via multiple fire stations throughout the Town. Operations are centered around the operations center and the operations yard. Recreation services are offered through numerous facilities including washrooms, arenas, the community center, courthouse, information center, library, cemetery, pool, art center, gazebo, pavilion, and splashpad.
Sustainability	Summary of key considerations for capital investment decisions.	The Town completed comprehensive facility Condition Assessments in 2017, and this information is an important consideration to capital investment decisions. Other notable considerations include stakeholder feedback, major unexpected events (e.g. weather events), criticality of need considering asset conditions, cost comparisons of approaches (i.e. replacement vs. rehabilitation), and revenue impacts as applicable.

Service Attribute	Qualitative Description	Current LOS (2024)
Machinery & Equipment		
Quality	Description of the types of equipment that the municipality operates and the services that they help to provide to the community	Administration is supported by equipment such as mail folder/ inserter machine. Cemetery is supported by a loader with a bucket, shoring equipment and a mower lift. Fire is supported by equipment such as generators, thermal imaging cameras, and bunker gear. IT supports multiple departments and functions across the Town. Common assets are personal computers and peripherals, security cameras, microphones, routers and iPads. Parks and recreation services are supported by mowers, trailers, a lift, snowblowers, a pump and storage tanks. Public Works is supported by equipment such as pumps, generators, saws and wing plows. Roads include air compressor system, fuel dispensers, fuel tanks, and traffic data collectors
Sustainability	Summary of key considerations for capital investment decisions.	Replacement is considered when maintenance is no longer effective or when equipment reaches the end of its useful life. Age, technology, and cost of ongoing repairs are key considerations.
Vehicles		
Quality	Description of the types of vehicles that the municipality operates and the services that they help to provide for the community.	Facility vehicles include pick-up trucks to ensure efficient transportation for staff. By-Law Enforcement vehicles include pick-up trucks, SUVs, and passenger vans. Fire vehicles include ladder trucks, pumpers, rescue squads, SUVs and tankers, ensuring readiness for emergency response.

Service Attribute	Qualitative Description	Current LOS (2024)
		Parks and Recreation vehicles include cargo vans, ice resurfacers, pick-up trucks, tractors and a utility truck for services such as park maintenance and arena servicing. Public Works vehicles, such as backhoes, cargo vans, plow trucks, pick-up trucks, are vital for ensuring safe road conditions and managing infrastructure during inclement weather and construction projects.
Sustainability	Summary of key considerations for capital investment decisions.	The most common considerations applied to investment decisions for fleet assets are the assets age and performance (condition), if repair costs and frequency are increasing, and insurance considerations.
Land Improvements		
Quality	Description of the outdoor recreational facilities that the municipality operates and maintains.	The Town offers a wide range of outdoor amenities that provide and support recreational activities. These include lighting, outdoor structures, parking lots, paved paths, play structures, sport fields, courts support, and sprinkler systems. These elements collectively enhance the quality of life and encourage outdoor activity throughout the Town. A map of parks is provided in Appendix E.
Sustainability	Summary of key considerations for capital investment decisions.	Staff work to maintain land improvements in safe operable condition. Regular inspection of assets is completed, in many cases, on a weekly basis. Considerations for asset replacement are primary condition, and the cost to maintain compared to replace. Where safety risks are present, replacement is prioritized.

5.4.5 Technical Levels of Service

The following table outlines the quantitative metrics that estimate the technical level of service provided by the Town's assets. Proposed LOS are reported based on Scenario 3 (70% Optimal) phased in over 20 years for tax funded assets and scenario 2 (100% optimal) phased in over 5 years (water and wastewater networks) and 20 years (stormwater network) for rate-funded assets.

Please Note: Some level of variation is expected between actual and below noted projected values due to potential differences in projected deterioration rates compared to actuals, unexpected natural events, and/or other factors (e.g. updated condition assessments). Further, the projections assume that the funding increases are successfully implemented throughout the period of analysis. If this does not occur, projected values are not expected to be realized.

Table 17 Technical Levels of Service

Service Attribute	Technical Metric	Current LOS (2024)	Projected LOS (2026-2035)
Road Network			
Scope	Lane-km of arterial roads (MMS classes 1 and 2) per land area in the municipality (km/km ²)	0 km/km ²	
	Lane-km of collector roads (MMS classes 3 and 4) per land area in the municipality (km/km ²)	1.95 km/km ²	Current +/- 5%
	Lane-km of local roads (MMS classes 5 and 6) per land area in the municipality (km/km ²)	2.04 km/km ²	
Quality	For paved roads in the municipality, the average pavement condition index value.	Asphalt roads: 79% Surface Treated Roads: 62%	~68% (year 1) to ~66% (year 10)
	For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor).	Poor	Poor
Performance	Current Capital Reinvestment Rate 100% AAR Capital Reinvestment Rate: 1.85%	0.87%	0.91% (year 1) to 1.24% (year 10)
	Average Risk of road network (reported out of 25)	6.76	~6 (year 1) to ~6.6 (year 10)
Bridges & Culverts			
Scope	% of bridges in the municipality with loading or dimensional restrictions.	5% ¹¹	Current +/- 5%
Quality	For bridges in the municipality, the average bridge condition index value.	66%	~ 65% (year 1) to ~45% (year 10)

¹¹ The 2023 OSIM report indicated a total of two bridges (Soth Shore Lane and Queenston Street) with loading or dimensional restrictions.

Service Attribute	Technical Metric	Current LOS (2024)	Projected LOS (2026-2035)
Performance	For structural culverts in the municipality, the average bridge condition index value.	67%	~ 65% (year 1) to ~45% (year 10)
	Average bridge condition index value for pedestrian bridges in the Town	70%	~ 65% (year 1) to ~45% (year 10)
	Current Capital Reinvestment Rate 100% AAR Capital Investment Rate: 1.93%	0.39%	0.42% (year 1) to 0.62% (year 10)
	Average Risk of Bridges and Culverts (reported out of 25)	10.39	~12.8 (year 1) to ~15.2 (year 10)
Water Network			
Scope	Percentage of properties connected to the municipal water system	78%	Current up to + 5%
	Percentage of properties where fire flow is available	77% ¹²	Current up to + 5%
Reliability	Number of connection-days ¹³ per year due to water main breaks compared to the total number of properties connected to the municipal water system	3 vs. 9678	Current +/- 5% ¹⁴
	Number 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 (No boil water advisories in 2024)	Current +/- 5%
Performance	Current Capital Reinvestment Rate 100% AAR Capital Reinvestment Rate: 1.66%	1.25%	1.33% (year 1) to 1.66% (year 10)
	Average Risk (reported out of 25)	4.51	~4 (year 1) to ~8 (year 10)
Wastewater Network			
Scope	% of properties connected to the municipal wastewater system	65.7%	Current up to + 5%
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	The Town does not own combined sewers.	N/A

¹² This is an estimated figure based on a Water Needs Study in draft at the time this AMP was completed.

¹³ "Connection-days" means the number of properties connected to a municipal system that are affected by a service issue, multiplied by the number of days on which those properties are affected by the service issue.

¹⁴ The Town does not intend to have any adverse water or wastewater events, but it can be anticipated that some may occur. Future projections consider this possibility.

Service Attribute	Technical Metric	Current LOS (2024)	Projected LOS (2026-2035)
	# of connection-days per year having wastewater backups compared to the total number of properties connected to the municipal wastewater system	12 vs. 6364	Current +/- 5% ¹⁵
	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	N/A: Niagara Region ¹⁶	
Performance	Current Capital Reinvestment Rate 100% AAR Capital Reinvestment Rate: 1.41%	1.19%	1.24% (year 1) to 1.41% (year 10)
	Average Risk (reported out of 25)	8.16	~8 (year 1) to ~10 (year 10)
Stormwater Network			
Scope	% of properties in municipality resilient to a 100-year storm	~90% ¹⁷	Current up to + 5%
	% of the municipal stormwater management system resilient to a 5-year storm	~90%	Current up to + 5%
Performance	Current Capital Reinvestment Rate 100% AAR Capital Reinvestment Rate: 1.42%	0.26%	0.29% (year 1) to 0.72% (year 10)
	Average Risk (reported out of 25)	6.88	~7 (year 1) to ~8 (year 10)
Facilities			
Quality	Average facility condition	37%	~31% (year 1) to ~20% (year 10)
Safe & Regulatory	Average Risk (reported out of 25)	11.98	~12 (year 1) to ~13 (year 10)
Sustainability	Current Capital Reinvestment Rate 100% AAR Capital Reinvestment Rate: 3.28%	0.66%	0.71% (year 1) to 1.16% (year 10)
Machinery & Equipment			

¹⁵ The Town does not intend to have any adverse water or wastewater events, but it can be anticipated that some may occur. Future projections consider this possibility.

¹⁶ Wastewater treatment assets are owned and managed by the Region of Niagara. The 2024 Annual Wastewater Annual report can be found [here](#).

¹⁷ As per the [Town's Municipal Engineering Standards report](#), all storm systems must be designed to a 5-year storm system and all major systems to a 100-year storm system. Based on this standard, the Town estimates that most of its network is resilient to a 5-year storm and most of its major systems are resilient to a 100-year storm. Considering this, most properties are inferred to be resilient. There may be, however, legacy assets constructed before the standard was developed that do not meet the updated standard. It is anticipated that the proportion of the network not meeting the standards will diminish over time as non-conforming assets age and are replaced.

Service Attribute	Technical Metric	Current LOS (2024)	Projected LOS (2026-2035)
Quality	Average condition of machinery and equipment	Fair (40-60%)	~39% (year 1) to ~20% (year 10)
Sustainability	Average Risk (reported out of 25)	9.91	~12 (year 1) to ~16 (year 10)
	Current Capital Reinvestment Rate 100% AAR Capital Reinvestment Rate: 8.75%	1.77%	1.85% (year 1) to 2.70% (year 10)
Vehicles			
Quality	Average condition of vehicles	Fair	~34% (year 1) to ~17% (year 10)
Sustainability	Average Risk (reported out of 25)	15.10	~16 (year 1) to ~20 (year 10)
	Current Capital Reinvestment Rate 100% AAR Capital Reinvestment Rate: 6.19%	1.25%	1.31 % (year 1) to 1.91% (year 10)
Land Improvements			
Quality	Average condition of land improvements	Fair	~46% (year 1) to ~28% (year 10)
Sustainability	Average Risk (reported out of 25)	10.71	~12 (year 1) to ~16 (year 10)
	Current Capital Reinvestment Rate 100% AAR Capital Reinvestment Rate: 4.13%	0.83%	0.87% (year 1) to 1.28% (year 10)

6. 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 Town of Niagara-on-the-Lake to identify the financial resources required for sustainable asset management based on existing asset inventories and the proposed LOS.

This plan (2025 AMP) identifies the financial requirements to meet the identified proposed LOS. Like the 2024 AMP it is based on the financial requirements for existing assets, however the required funding is based on meeting the proposed LOS (as summarized in Section 5.0). The financial plan considers and accounts for traditional and non-traditional sources of municipal funding, which are:

1. Use of traditional sources of municipal funds:
 - a. Tax levies
 - b. User fees
 - c. Debt
 - d. Development charges
2. Use of non-traditional sources of municipal funds:
 - a. Reallocated budgets
 - b. Partnerships
 - c. Procurement methods
3. Use of Senior Government Funds:
 - a. CCBF (Formerly 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 Municipality's approach to the following:

1. 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.

6.1 Proposed LOS: Annual Requirements & Capital Funding

The annual requirements represent the amount the Town should allocate annually to each asset category to meet the proposed LOS. For the Town of Niagara-on-the-Lake, the proposed LOS provides for an annual capital investment of \$11,835,000 for tax funded assets and \$5,364,000 for rate funded assets. For tax funded assets, the proposed LOS will result in funding 70% of the average annual requirement (AAR) by year 20. Generally, this means that under this proposed LOS tax funded assets are being replaced later than recommended. However, it should be noted that this level of investment is an increase from the current level of investment (35% AAR funded) and therefore the proposed LOS is still higher than it would be if existing levels of capital funding continued. In contrast, for rate funded assets, this funding increase will result in funding 100% of the AAR by year 5 for the water and wastewater network and year 20 for the stormwater network.

For most asset categories the annual requirement has been calculated based on a replacement only scenario, in which capital costs are only incurred at the construction and replacement of each asset. However, for the Road Network and bridges and culverts, lifecycle management strategies have been developed to identify capital costs that are realized through strategic rehabilitation and renewal.

6.1.1 Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the Town is currently committing approximately \$9,194,000 towards capital projects per year. Given the annual capital requirement of \$17,200,000 under the selected proposed LOS scenario, there is currently a funding gap of \$8,006,000 annually.

6.1.2 Funding Objective

We have developed a scenario that would enable the Town to achieve full funding required to meet the proposed LOS within 1 to 20 years for the following assets:

1. **Tax Funded Assets:** Road Network, Bridges & Culverts, Facilities, Vehicles, Machinery & Equipment, Land Improvements
2. **Rate Funded Assets:** Water Network, Wastewater Network, Stormwater 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.

6.2 Financial Profile: Tax Funded Assets

6.2.1 Current Funding Position

The following tables show, by asset category, the Town's average annual capital investment requirements to meet the proposed LOS by year 20, their current funding positions, and funding increases required to achieve funding levels required for the selected proposed LOS. Please note: CCBF, OCIF, and MAT amounts may vary year by year, reported values reflect estimates.

Table 18: Proposed LOS Current Funding Position

Asset Category	AAR (Proposed LOS)	Annual Funding Available (\$)					Annual Deficit (Proposed LOS)
		Taxes	CCBF	OCIF	MAT ¹⁸	Total	
Road Network	6,576,865	1,757,566	625,134	1,900,000	138,925	4,421,625	2,155,240
Bridges & Culverts	789,150	210,888			16,669	227,558	561,592
Facilities	2,565,675	685,637			54,196	739,833	1,825,842
Machinery & Equipment	809,569	216,345			17,101	233,446	576,124
Land Improvements	278,151	74,332			5,875	80,207	197,944
Vehicles	815,864	218,027			17,234	235,261	580,603
Total	11,835,273	3,162,795	625,134	1,900,000	250,000	5,937,929	5,897,344

¹⁸ Municipal Accommodation Tax came into effect July 1, 2022. It is a tax revenue provided to Tourism Niagara-on-the-Lake for purposes of promoting and growing the tourism industry in Niagara-on-the-Lake. A portion of these revenues are reallocated to several municipalities within the Niagara Region. Of the revenues available to the Town of Niagara-on-the-Lake, approximately \$250,000 annually is allocated to capital projects.

To meet the proposed LOS, the average annual investment requirement for the above categories is \$11,835,000 (rounded). Annual revenue currently allocated to these assets for capital purposes is \$5,938,000 (rounded) leaving an annual deficit of \$5,897,000. Put differently, the current level of investment is 50% of the investment needed to achieve the proposed LOS.

6.2.2 Full Funding Requirements

For 2026, the budgeted annual tax revenues for the Town of Niagara-on-the-Lake are approximately \$18,163,077. As illustrated in the following table, without consideration of any other sources of revenue or cost containment strategies, fully funding the proposed LOS would require the following tax change over time.

Table 19: Tax Changes Required

Asset Category	Tax Change Required for Full Funding of Proposed LOS (%)
Road Network	11.9
Bridges & Culverts	3.1
Facilities	10.1
Machinery & Equipment	3.2
Land Improvements	1.1
Vehicles	3.2
Total	32.5

The following changes in costs over the next number of years should also be considered in the financial strategy:

- a) Niagara-on-the-Lake's debt payments for these asset categories will be increasing by \$308,219 by 2030.
- b) By 2035 debt payments will increase by \$13,856 from 2025 levels
- c) By 2040 debt payments will increase \$10,460 from 2025 levels
- d) By 2045 debt payments will reduce by \$257,724 from 2025 levels

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

Table 20: Recommended Reallocations

	Without Capturing Debt Changes (\$)				With Capturing Debt Changes (\$)			
	5 Years	10 Years	15 Years	20 Years	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit (Proposed LOS) (\$)	5,897,344	5,897,344	5,897,344	5,897,344	5,897,344	5,897,344	5,897,344	5,897,344
Change in Debt Costs (\$)	N/A	N/A	N/A	N/A	308,219	13,856	10,460	(257,724)
Resulting Infrastructure Deficit (\$):	5,897,344	5,897,344	5,897,344	5,897,344	6,205,564	5,911,200	5,907,804	5,639,620
Total Tax Increase Required (%):	32.50	32.50	32.50	32.50	34.20	32.50	32.50	31.00
Annual Tax Increase Required (%):	5.8	2.9	1.9	1.5	6.1	2.9	1.9	1.4

6.2.3 Financial Strategy Recommendations

With all things considered, we recommend the 20-year option for tax funded assets. This involves proposed LOS being achieved over 20 year or less by:

- a) Increasing tax revenues by 1.4% (assuming debt increases reallocated) or 1.5% (assuming *no* debt increase reallocation) each year for the next 20 years solely for the purpose of phasing in the proposed levels of service for asset categories covered in this section of the AMP.
- b) Allocating the current CCBF, OCIF, and MAT revenue as outlined previously.
- c) Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
- d) Incorporating Benefit to Existing (BTE) costs once identified in the Development Charges Study into the annual increase amounts noted above.

Notes:

- 1. We realize that raising revenues for infrastructure purposes may be challenging. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
- 2. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment¹⁹.
- 3. Any increase in taxes required for operations would be in addition to the above recommendations.

¹⁹ The Town should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. Depending on the outcome of this review, there may be changes that impact its availability.

6.3 Financial Profile: Rate Funded Assets

6.3.1 Current Funding Position

The following tables show, by asset category, the Town of Niagara-on-the-Lake's average annual asset capital investment requirements needed to meet the proposed LOS, their current funding positions, and funding increases required.

Asset Category	Annual Funding Available					Annual Deficit
	AAR (Proposed LOS)	Rates	CCBF	OCIF	Total Available	AAR (Proposed LOS)
Water Network	2,705,695	2,025,757	0	0	2,025,757	679,939
Wastewater Network	1,126,677	954,878	0	0	954,878	171,799
Stormwater Network	1,532,091	275,000	0	0	275,000	1,257,091
Total	5,364,464	3,255,634	0	0	3,255,634	2,108,829

Table 21 Annual Available Funding for Rate Funded Assets

The average annual investment requirement to meet the proposed LOS for the above categories is \$5,364,000 (rounded). Annual revenue currently allocated to these assets for capital purposes is \$3,256,000 (rounded). Based on the annual funding required to meet the proposed LOS, there is an annual deficit of \$2,109,000 (rounded).

6.3.2 Full Funding Requirements

Using the 2025 budgeted revenues, Niagara-on-the-Lake has annual budgeted water revenues of \$7,036,000, annual budgeted wastewater revenues of \$6,137,000 and annual budgeted stormwater revenues of \$961,600. As illustrated in the table below, without consideration of any other sources of revenue, full funding of the proposed LOS would require the following changes over time:

Asset Category	Rate Change Required for Full Funding of Proposed LOS
Water Network	9.7%
Wastewater Network	2.8%
Stormwater Network	130.7%

Table 22 Rate Increase Requirements for Full Funding of Proposed LOS

In the following tables, we have expanded the above scenario to present multiple time periods options for closing the identified gap. For the purposes of analysis, we have provided phase-in options for up to 20 years. Please note there are currently no debts associated with rate funded assets.

Table 23 Water Rate Increase Options 5-20 Years

Water Network				
	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	679,939	679,939	679,939	679,939
Rate Increase Required	9.7%	9.7%	9.7%	9.7%
Annually:	1.9%	1.0%	0.7%	0.5%

Table 24 Wastewater Rate Increase Options 5-20 Years

Wastewater Network				
	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	171,799	171,799	171,799	171,799
Rate Increase Required	2.8%	2.8%	2.8%	2.8%
Annually:	0.6%	0.3%	0.2%	0.2%

Table 25: Stormwater Network Increase Options

Stormwater Network				
	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	1,257,091	1,257,091	1,257,091	1,257,091
Rate Increase Required	130.7%	130.7%	130.7%	130.7%
Annually:	18.3%	8.8%	5.8%	4.3%

6.3.3 Financial Strategy Recommendations

Considering all the above information, we recommend the 5-year options for the water network and the wastewater network. We recommend the 20-year option for the stormwater network. This involves full funding being achieved over 5 and 20 years by:

- Increasing water rate revenues by 1.9% each year for the next 5 years solely for the purpose of phasing in the proposed LOS funding requirements.
- Increase wastewater rate revenues by 0.6% each year for the next 5 years solely for purpose of phasing in the proposed LOS funding requirements.
- Increasing stormwater rate revenues by 4.3% each year for the next 20 years solely for the purposes of phasing in the proposed LOS funding requirements.
- Allocating the current CCBF, OCIF, and MAT revenue as outlined previously.
- Increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.
- Incorporating Benefit to Existing (BTE) costs associated with rate funded assets once identified in the Development Charges Study into the annual increase amounts noted above.

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 revenues for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
3. Any increase in rates required for operations would be in addition to the above recommendations.

Although this option achieves full 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. The capital projections reported in Appendix B reflect a prioritization model of investment.

6.4 Use of Debt

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

- a) the ability to stabilize tax & user rates when dealing with variable and sometimes uncontrollable factors
- b) equitable distribution of the cost/benefits of infrastructure over its useful life
- c) a secure source of funding
- d) flexibility in cash flow management

The following tables outline how Niagara-on-the-Lake has historically used debt for investing in the asset categories as listed. As of year-end 2024, there is currently \$2,777,000 (rounded) of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of \$561,000 (rounded) as of 2026 well within its provincially prescribed maximum of \$10.2 million.

Table 26: Use of Debt in the Last 5 Years

Asset Category	Current Debt Outstanding	Total Debt Outstanding in the Last Five Years				
		2020	2021	2022	2023	2024
Road Network	25,780	162,513	135,155	103,586	67,311	25,780
Bridges & Culverts	0	0	0	0	0	0
Facilities	563,000	891,000	812,000	731,000	648,000	563,000
Machinery & Equipment	394,785	0	0	496,037	446,012	394,785
Land Improvements	0	0	0	0	0	0
Vehicles	1,793,205	0	1,056,116	1,284,994	962,713	1,793,205
Total Tax Funded	<u>2,776,770</u>	<u>1,053,513</u>	<u>2,003,271</u>	<u>2,615,616</u>	<u>2,124,036</u>	<u>2,776,770</u>
Water Network	0	0	0	0	0	0
Wastewater Network	0	0	0	0	0	0
Stormwater Network	0	0	0	0	0	0
Total Rate Funded	0	0	0	0	0	0

Table 27: Future Debt Payments

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2025	2026	2027	2028	2029	2030	2035
Road Network	226,004	403,859	404,765	407,244	408,947	410,530	286,472
Bridges & Culverts	0	29,087	29,087	29,087	29,087	29,087	29,087
Facilities	134,750	134,577	134,186	132,673	131,914	130,992	22,253
Machinery & Equipment	61,583	61,583	61,583	61,583	61,583	61,583	0
Land Improvements	0	0	0	0	0	0	0
Vehicles	138,954	237,318	237,313	237,343	237,332	237,319	237,334
Total Tax Funded	<u>561,291</u>	<u>866,424</u>	<u>866,932</u>	<u>867,930</u>	<u>868,862</u>	<u>869,510</u>	<u>575,146</u>
Water Network	0	0	0	0	0	0	0
Wastewater Network	0	0	0	0	0	0	0
Stormwater Network	0	0	0	0	0	0	0
Total Rate Funded	0	0	0	0	0	0	0

The revenue options outlined in this plan allow the Town of Niagara-on-the-Lake to fully fund its long-term infrastructure requirements without further use of debt.

6.5 Use of Reserves

6.5.1 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 Niagara-on-the-Lake.

Table 28: Reserve Balances

Asset Category	Balance at December 31, 2024
Road Network	2,943,988
Bridges & Culverts	372,221
Facilities	2,792,079
Machinery & Equipment	881,009
Land Improvements	2,468,316
Vehicles	1,722,851
Total Tax Funded:	<u>11,180,464</u>
Water Network	6,518,648
Wastewater Network	5,398,665
Stormwater Network	1,767,616
Total Rate Funded:	<u>13,684,929</u>

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

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

These reserves are available for use in applicable asset categories during the phase-in period to full funding. This coupled with Niagara-on-the-Lake'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. Recommendations & Key Considerations

7.1 Financial Strategies

1. Work towards meeting the target funding levels for the proposed LOS. To support this, adjust taxes and rates as follows:
 - a. Increasing tax revenues by 1.4% (assuming debt increases reallocated) or 1.5% (assuming *no* debt increase reallocation) each year for the next 20 years solely for the purpose of phasing in the proposed levels of service for asset categories covered in this section of the AMP.
 - b. Increasing water rate revenues by 1.9% each year for the next 5 years solely for the purpose of phasing in the proposed LOS funding requirements.
 - c. Increase wastewater rate revenues by 0.6% each year for the next 5 years solely for purpose of phasing in the proposed LOS funding requirements.
 - d. Increasing stormwater rate revenues by 4.3% each year for the next 20 years solely for the purposes of phasing in the proposed LOS funding requirements.
 - e. Allocating the current CCBF, OCIF, and MAT revenue as outlined previously.
 - f. Incorporating Benefit to Existing (BTE) costs associated with rate funded assets once identified in the Development Charges Study into the annual increase amounts noted above.
2. Continue to apply for project specific grant funding to supplement sustainable funding sources.
3. Upon completion of the Development Charge Study determine the total cost of Benefit to Existing (BTE) capital projects, their projected timing, and based on this their average annual tax and rate impacts. Incorporate this information into capital budget requests.

7.2 Asset Data

1. Continuously review, refine, and calibrate asset data, especially assessed condition information. Identified opportunities include:
 - a. Water Condition: Current condition information is based on a review of key attribute data such as break history and pipe material. Based on this methodology, almost all water mains are reflected as in very good condition. Further inspection may reveal more variability in condition within the network. It is recommended that this be considered for future inspection to further increase the accuracy of the assessment information and the resultant analysis (i.e. forecasted capital requirements).
 - b. Sanitary Need Study: As additional assets are assessed incorporate asset details, particularly asset condition information and rehabilitation needs. Where additional attribute information is available (e.g. Inflow and infiltration rates), update the asset registry to reflect. Currently some assets still rely on age-based estimates, however approximately one-fifth of the network is planned for inspection annually.
 - c. Storm CCTV Assessments: As additional assets are assessed update assessment details into the asset registry. Currently some assets still rely on age-based

estimates, however approximately one-fifth of the network is planned for inspection annually.

- d. Facility Condition Assessment Updates: The last assessment was completed in 2017; an assessment review and update tentatively planned for 2027 is expected to provide value. Whenever assessments are completed, update the asset inventory. Where possible and beneficial leverage the existing asset inventory to complete the assessment update.
 - e. OSIM Updates: Bridges and structural culverts are required to be inspected every two (2) years. As assessments are updated, reflect the revised assessed condition, replacement costs, and rehabilitation recommendations in the database.
 - f. Road Needs Study: Reflect any updates to the road needs study (i.e. new condition assessments and associated lifecycle strategy recommendations) in the inventory.
 - g. Water Network: Within the valve inventory, identify valve types (i.e. butterfly valves, ball valves)
 - h. Natural Assets: Upon completion of the State of the Infrastructure Report evaluate integration of natural assets into the Town's asset management program and associated database.
2. Work towards an assessment program for non-core assets. Ensure that the program identifies and documents a standard condition scale, associated definitions and reference examples, frequency of assessments and persons responsible for assessment completion, review, and update to the asset inventory. Review capital forecasts, risks, and priorities for replacement based on any updates to asset condition.
 3. Asset management planning is highly sensitive to replacement costs. Periodically update replacement costs based on recent projects, invoices, or estimates, as well as condition assessments, or any other technical reports and studies. Material and labor costs can fluctuate due to local, regional, and broader market trends, and substantially so during major world events. Accurately estimating the replacement cost of like-for-like assets can be challenging. Ideally, several recent projects over multiple years should be used.

7.3 Risk & Levels of Service

1. Risk models and matrices can play an important role in identifying critical assets. As a result, project selection and the development of multi-year capital plans can become more strategic and objective. This may be particularly impactful for the water, wastewater, and stormwater main assets which received condition assessments in 2024 and have standardized, reliable, and consistent data that can be a powerful aid in prioritizing capital projects. Initial models have been built into Citywide for all asset groups. These models reflect current data. As the data evolves and new attribute information is obtained, these models should also be refined and updated. There may be opportunities to use additional asset attributes and/or reasons to adjust the weighting or ranges of already incorporated attributes. Explore opportunities to leverage study or assessment projects as a means of gathering asset data that may not yet exist but is deemed valuable and cost-effective to collect and maintain.
2. Each year compare the current LOS to the projected proposed LOS. Where differences are significant work to understand the primary causes. Commonly, differences may be due to new condition assessments- especially where previous assessments were age-based- changes to risk models, and/or large capital project completion or deferment.

Appendices

Appendix A – Resident Survey

Resident Questionnaire

The Town of Niagara-On-The-Lake is committed to providing a high quality of life and exceptional services for our residents. As our community evolves, we must invest your tax dollars wisely to maintain and improve our infrastructure, including roads, bridges, water and wastewater systems, and other municipal services. Your input is crucial for strategic planning and asset management. This brief (10 min) Resident Questionnaire provides you with an opportunity to share your thoughts on our strengths and areas for improvement, as well as your feedback on our priorities for the coming years. The information gathered will be used to develop the forward-looking 2025 Asset Management Plan for the Town of Niagara-On-The-Lake. This Plan is developed in accordance with Ontario Regulation 588/17, which mandates municipalities to establish a strategic asset management policy and maintain an asset management plan for core and non-core municipal infrastructure assets.

We thank you in advance for completing this questionnaire. If you have questions, please contact us.

Questions:

1. What is your current residency status in the Town of Niagara-On-The-Lake?
 - Full-time resident – tenant
 - Full-time resident – property owner
 - Part-time resident – tenant
 - Part-time resident – property owner
 - Seasonal resident – property owner
 - I own property within the Town but do not reside here
2. Which planning area best describes where you live within the Town?
 - Urban (reside within a village, town, or city)
 - Semi-urban (reside within a hamlet or rural subdivision)
 - Rural (reside on a rural residential lot or farm)
3. Family Structure
 - Single
 - Married/common law partner
 - Married with children
 - Retired single/spouse
 - Other

4. Please select your age range:
- ☐ 15 - 29 years
 - ☐ 30 - 44 years
 - ☐ 45 - 64 years
 - ☐ 65 years plus
5. Have you read the Town's Asset Management Plan?
- ☐ Yes
 - ☐ No (You can view the AMP on the Town's website here: ([Town of Niagara-On-The-Lake Asset management plan](#)))
6. Please indicate how you would prefer to learn about municipal issues/events/initiatives such as the Asset Management Plan: (Select all that apply)
- ☐ In-person information sessions with council and staff
 - ☐ Municipal website
 - ☐ Municipal social media
 - ☐ Newspaper (print)
 - ☐ Radio
 - ☐ Email
 - ☐ Mail

7. Please indicate how important the following features are in making the Town of Niagara-On-The-Lake a great place to live:

Service	Low Importance (i.e. I use it monthly or rarely)	Mid Importance (i.e. I use weekly)	High Importance (i.e. I use it daily)	N/A (i.e. I don't use it)
Recreation or sports facilities				
Heritage or Historical Sites				
Arts, Culture, and Heritage Opportunities				
Affordable living				
Building Services and Bylaw Enforcement				
Programs and support for seniors				
Maintenance of Public Property				
Safe and Well-Maintained Roads and Bridges				
Economic Investment and Local Jobs				
Communication From the Town				
Emergency Services				
Public safety and community spirit				

8. How important are the following municipal services to your household?

Service	Low Importance (i.e. I use it monthly or rarely)	Mid Importance (i.e. I use weekly)	High Importance (i.e. I use it daily)	N/A (i.e. I don't use it)
Roads				
Bridges				
Waste Management Services				
Emergency Services				
Land Use and Development Planning				
Recreation and Community Programs				
Economic Development Initiatives				
Historical Sites and Services				
Stormwater Management				
Outdoor open space, parks, and trails				
Arts, culture, and heritage opportunities				
Building services and bylaw enforcement				
Maintenance of public property				
Safe and Reliable Utilities				

9. How would you describe your experience with the *availability* of different infrastructure?

Dissatisfied: Insufficient availability, unacceptable quality of performance/condition

Somewhat Satisfied: somewhat meets user needs, minimum quality requirements for performance and/or condition usually met

Satisfied: meets user needs majority of the time, functional requirements consistently met

Unsure: do not use the asset grouping enough to have meaningful understanding of functionality and/or reliability of performance

Not Applicable: I do not use this asset grouping (i.e. I have well water)

Infrastructure	Dissatisfied	Somewhat Satisfied	Satisfied	Unsure	Not Applicable
Roads					
Sidewalks					
Bridges					
Outdoor Open Spaces, Parks, and Trails					
Community Centers, Libraries, and Recreation Facilities					
Emergency Services Vehicles and Equipment					
Stormwater Management					
Water systems					
Wastewater systems					

Reliability and Condition:

Dissatisfied: Unacceptable reliability, unacceptable quality of performance/condition (e.g. the asset is frequently not in service, and when it is it performs poorly)

Somewhat Satisfied: minimum quality requirements for performance and/or condition are *usually* met (e.g. most of the time the asset is in service, and the condition is okay for my needs)

Satisfied: meets user needs *majority* of the time, functional requirements consistently met, and condition is satisfactory (e.g. I'm confident the asset will be able to service my needs)

Unsure: do not use the asset grouping enough to have meaningful understanding of functionality and/or reliability of performance

Not Applicable: I do not use this asset grouping (i.e. I have well water)

Infrastructure	Dissatisfied	Somewhat Satisfied	Satisfied	Unsure	Not Applicable
Roads					
Sidewalks					
Bridges					
Outdoor Open Spaces, Parks, and Trails					
Community Centers, Libraries, and Recreation Facilities					
Emergency Services Vehicles and Equipment					
Stormwater Management					
Water systems					
Wastewater systems					

Safety:

Dissatisfied: There are consistent issues with assets being safe to use.

Somewhat Satisfied: The asset is safe for use most of the time, but not always.

Satisfied: I am not concerned about the safety of the asset whenever I use it.

Unsure: do not use the asset grouping enough to have meaningful understanding of its safety (e.g. I do not use Parks and Trails)

Not Applicable: I do not use this asset grouping (i.e. I have well water)

Infrastructure	Dissatisfied	Somewhat Satisfied	Satisfied	Unsure	Not Applicable
Roads					
Sidewalks					
Bridges					
Outdoor Open Spaces, Parks, and Trails					
Community Centers, Libraries, and Recreation Facilities					
Emergency Services Vehicles and Equipment					
Stormwater Management					
Water systems					
Wastewater systems					

10. In your experience with the municipal services offered, would you decrease, maintain, or increase service levels for each of the services provided?

Decrease Service Levels: Reduced availability of assets, reduced condition of asset (i.e., lower ride comfort for roads)

Maintain Service Levels: Existing availability and condition of assets

Increase Service Levels: Increased availability of assets, improved condition of assets (i.e. higher ride comfort for roads)

Not Applicable: I do not interact with this asset grouping (i.e. I use well water, not municipal water)

Service	Decrease Service Levels	Maintain Service Levels	Increase Service Levels	Not Applicable
Roads				
Bridges				
Waste Management Services				
Emergency Services				
Land Use and Development Planning				
Recreation and Community Programs				
Economic Development Initiatives				
Historical Sites and Services				
Stormwater Management				
Outdoor open space, parks, and trails				
Arts, culture, and heritage opportunities				
Building services and bylaw enforcement				

Service	Decrease Service Levels	Maintain Service Levels	Increase Service Levels	Not Applicable
Maintenance of public property				
Safe and Reliable Utilities				

11. For each of the following services, indicate your preference for spending and willingness to pay for improvements:

Not Willing: Not willing to pay any more for this service than current. This may result in reduced condition and lower reliability of the asset, and I can accept that.

Somewhat Willing: I would be *hesitant but ultimately willing* to pay slightly more (i.e. 5-10%) than I am currently paying if the quality is the current state is maintained.

Willing: I would *happily pay* slightly more (i.e. 5-10%) than I am currently paying if the quality is improved slightly.

Not Applicable: I do not pay for these services currently (i.e., I have well water and do not pay for municipal water)

Service	Not Willing	Somewhat Willing	Willing	Not Applicable
Roads				
Bridges				
Waste Management Services				
Emergency Services				
Land Use and Development Planning				
Recreation and Community Programs				
Economic Development Initiatives				
Historical Sites and Services				
Stormwater Management				
Outdoor open space, parks, and trails				
Arts, culture, and heritage opportunities				

Service	Not Willing	Somewhat Willing	Willing	Not Applicable
Building services and bylaw enforcement				
Maintenance of public property				
Safe and Reliable Utilities				

12. The Town is evolving. This means spending on infrastructure services may need to change over time to meet the evolving needs of the community. How important are the following factors in deciding if the Municipality's spending on infrastructure is best for the community?

Less Important: These have the least weight on decisions, but they still may be relevant to note

Somewhat Important: These factors are helpful considerations, but not primary considerations

Highly Important: These factors should be the primary drivers for consideration

Factor	Less Important	Somewhat Important	Highly Important	Not Applicable
Preserve the Current Character and Charm				
Attract New Residents				
Attract New Businesses				
Limit Cost Increase to Residents				
Support the Local Economy				
Protect the Environment				
Enrich Community Assets, Environment & Infrastructure				

13. In your opinion: the Town is making the right investments in infrastructure for its current residents:

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Unsure

14. In your opinion: the Town is making the right investments in infrastructure for its future:

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Unsure

15. In your opinion: the Town is overspending on any service areas:

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree
- Unsure

If so, in which areas: _____.

Any other thoughts/comments?

Appendix B – 10-Year Capital Investment and Allocations to Assets

The table below summarizes the forecasted capital investments to assets based on the selected proposed LOS. Please note all values have been rounded to the nearest thousand.

Table 29: System Generated Proposed LOS Investments in Assets

Capital Investment in Assets (\$,'000)										
Asset Category	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Road Network	4,598	4,779	4,961	5,145	5,334	5,524	5,720	5,915	6,108	3,681
Bridges & Culverts	219	276	252	161	426	-	487	497	-	864
Facilities	791	844	900	950	1,010	1,063	1,122	1,179	1,239	1,296
Machinery & Equipment	243	257	269	280	294	306	319	330	345	358
Land Improvements	84	88	92	97	100	105	109	114	118	123
Vehicles	246	236	290	252	316	298	332	337	338	366
Water Network	1,388	410	36	285	101	157	195	187	173	207
Wastewater Network	500	-	-	57	-	9	185	76	-	126
Stormwater Network	316	359	405	451	500	552	603	658	718	778
TOTAL²⁰	8,385	7,249	7,205	7,678	8,081	8,015	9,072	9,294	9,040	7,797

²⁰ Total values are the rounded sum of unrounded values.

Table 30 below details the total funds to be allocated (i.e. via direct investments and savings for future projects) over the next ten years. In some years, actual capital investments (as noted in the table above) may be greater than or less than the capital funds allocated. Unused funds are to be carried forward in future years to allow for larger expenditures where needed.

Table 30: Capital Allocation Requirements

Capital Allocation Requirements (\$,'000)										
Asset Category	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Road Network	4,599	4,778	4,961	5,146	5,334	5,525	5,718	5,915	6,114	6,317
Bridges & Culverts	244	260	276	293	310	327	345	363	381	399
Facilities	792	845	898	953	1,008	1,064	1,121	1,179	1,238	1,297
Machinery & Equipment	245	257	269	281	293	306	318	331	344	357
Land Improvements	84	88	92	96	101	105	109	114	118	123
Vehicles	247	259	271	283	295	308	321	334	347	360
Water Network	2,159	2,296	2,434	2,576	2,706	2,706	2,706	2,706	2,706	2,706
Wastewater Network	992	1,029	1,066	1,103	1,127	1,127	1,127	1,127	1,127	1,127
Stormwater Network	316	359	404	451	500	551	605	660	718	778
TOTAL²¹	9,362	9,811	10,268	10,732	11,174	11,468	11,765	12,068	12,375	12,686

²¹ Total values are the rounded sum of unrounded values.

Appendix C – Proposed LOS Models: Results

The following graphs illustrate how the average condition scores and average risks ratings are forecasted to change over time by scenario for each asset category.

Stormwater Network

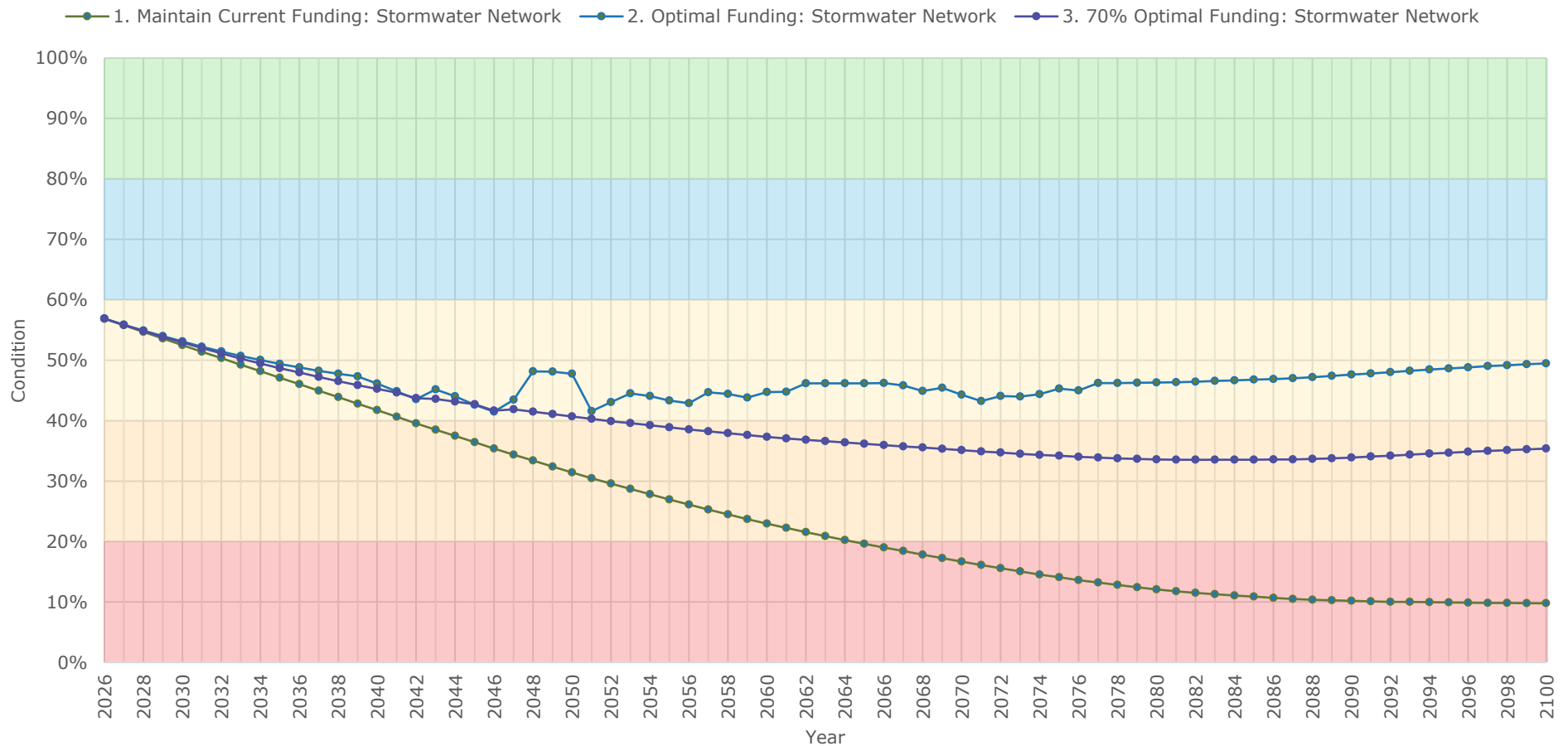


Figure 34: Stormwater Network Projected Condition by Scenario

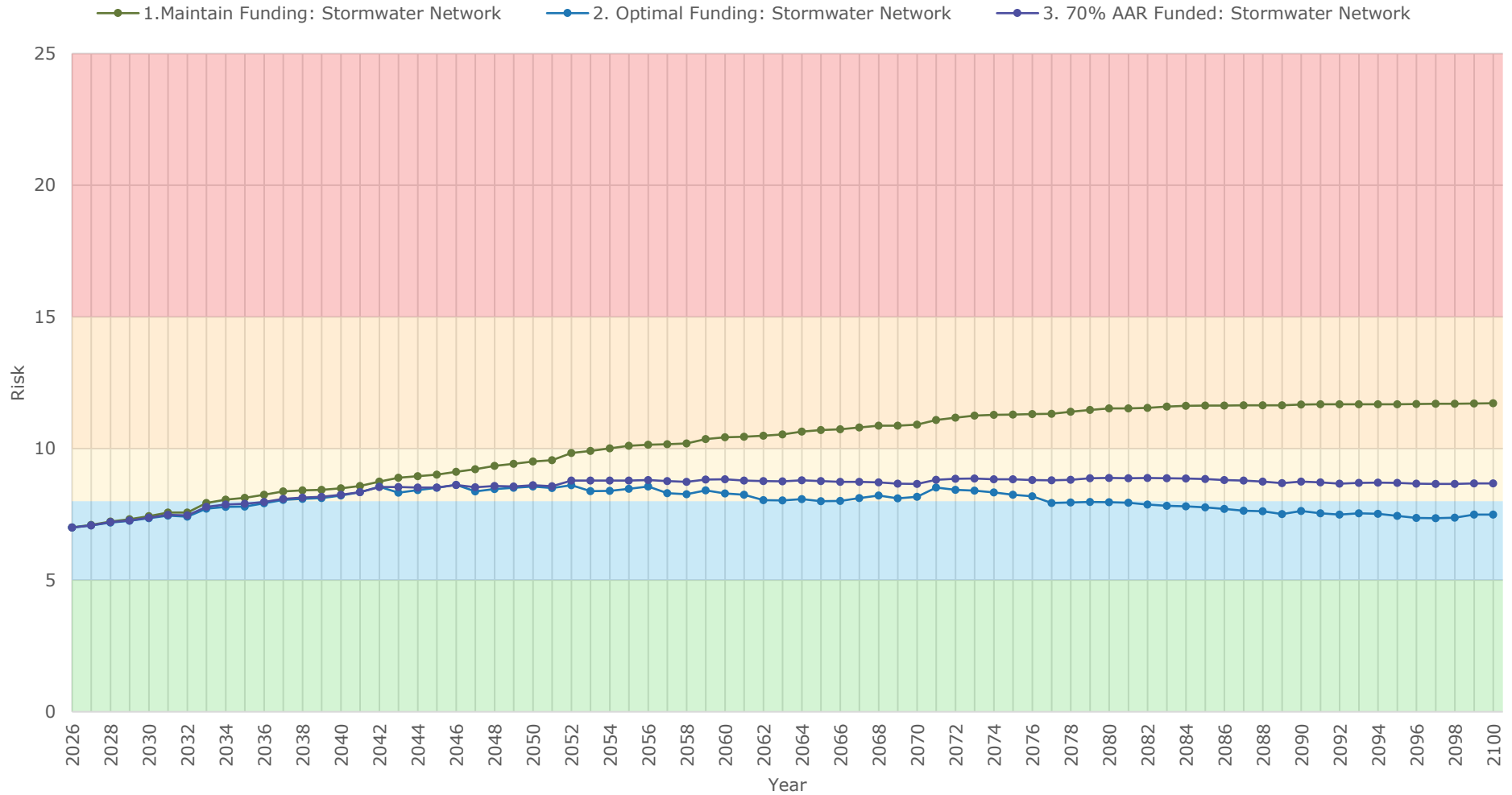


Figure 35: Stormwater Network Projected Risk by Scenario

Facilities

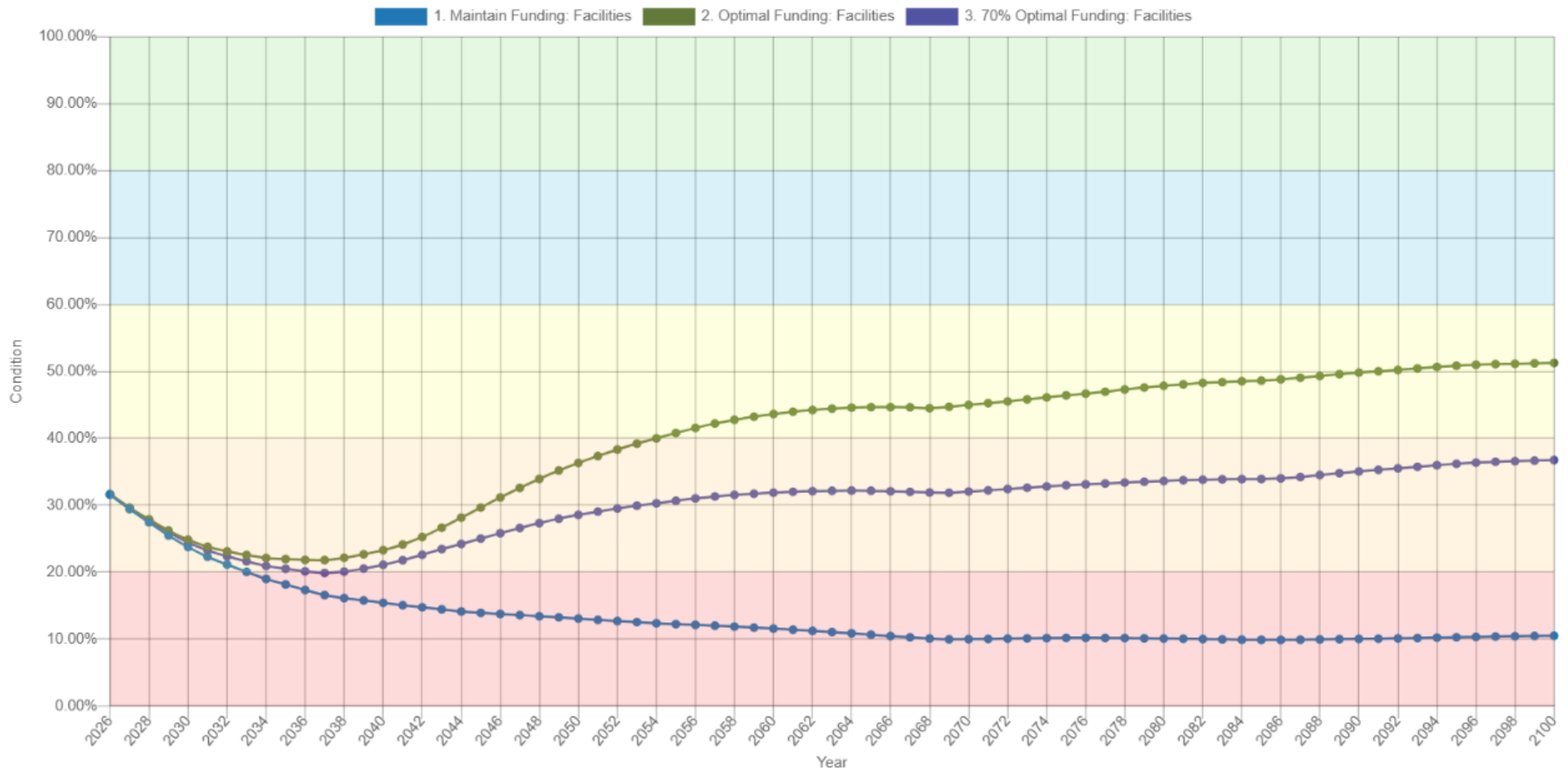


Figure 36: Facilities Projected Condition by Scenario

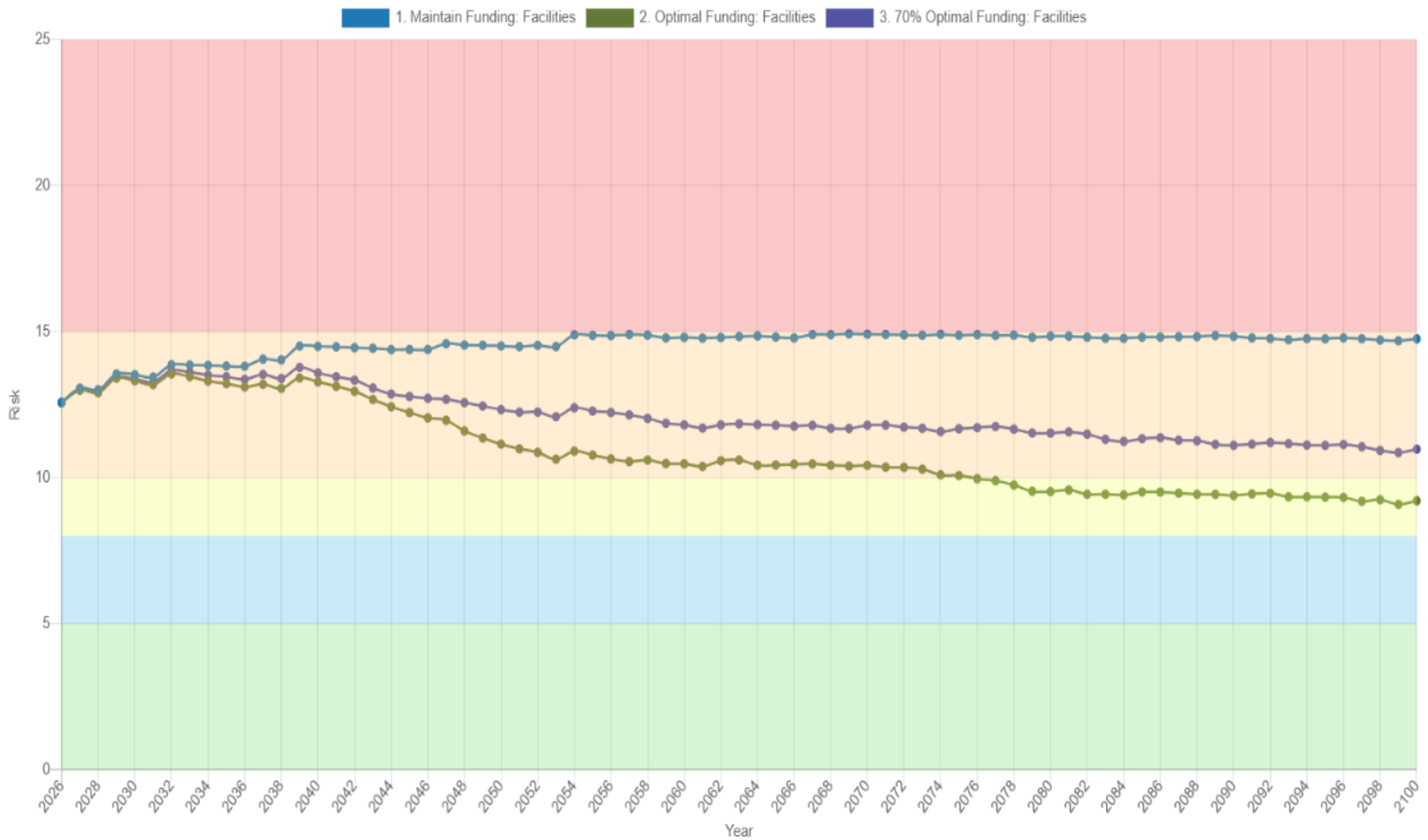


Figure 37: Facilities Projected Risk by Scenario

Land Improvements

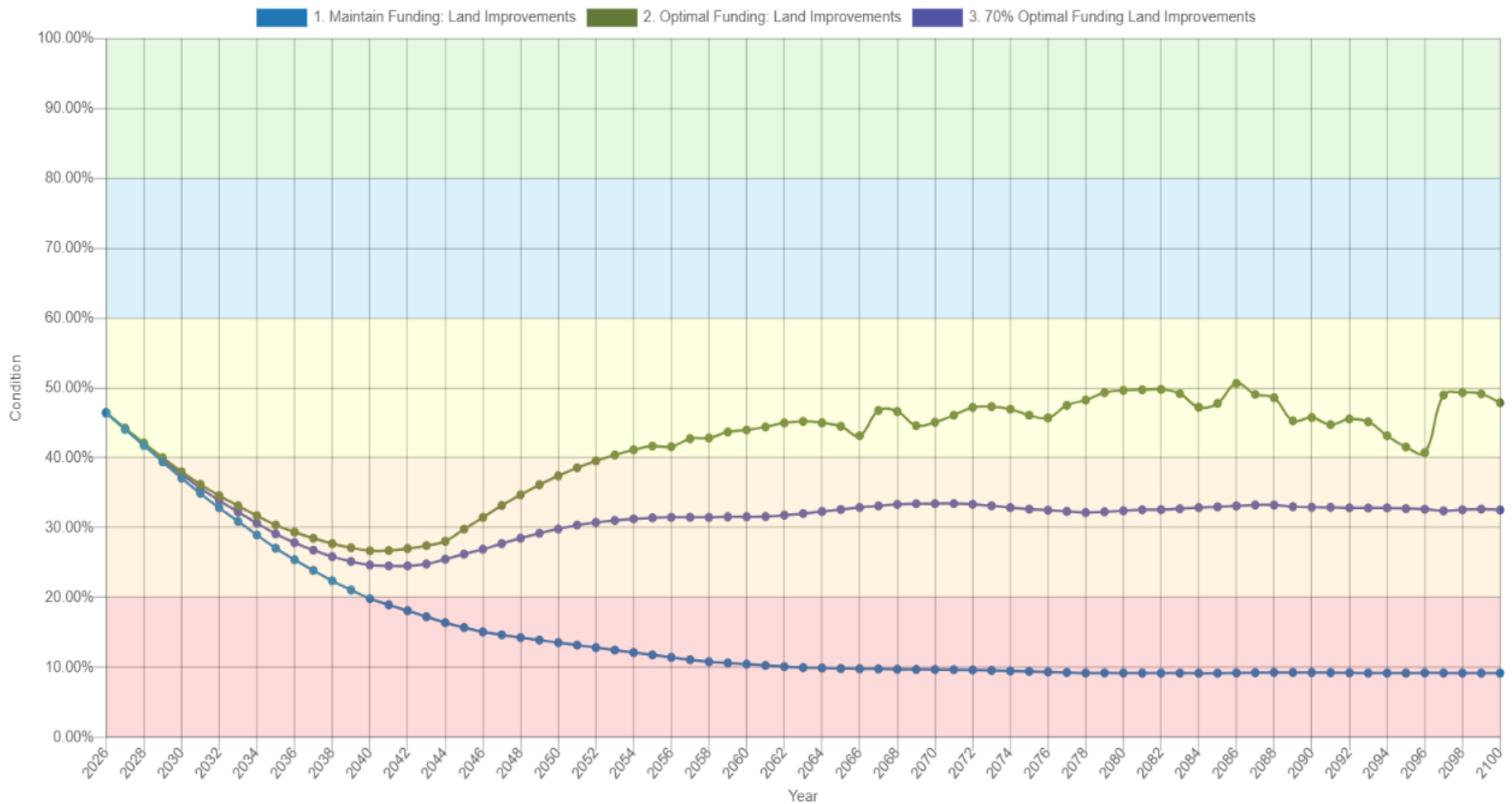


Figure 38: Land Improvements Projected Condition by Scenario

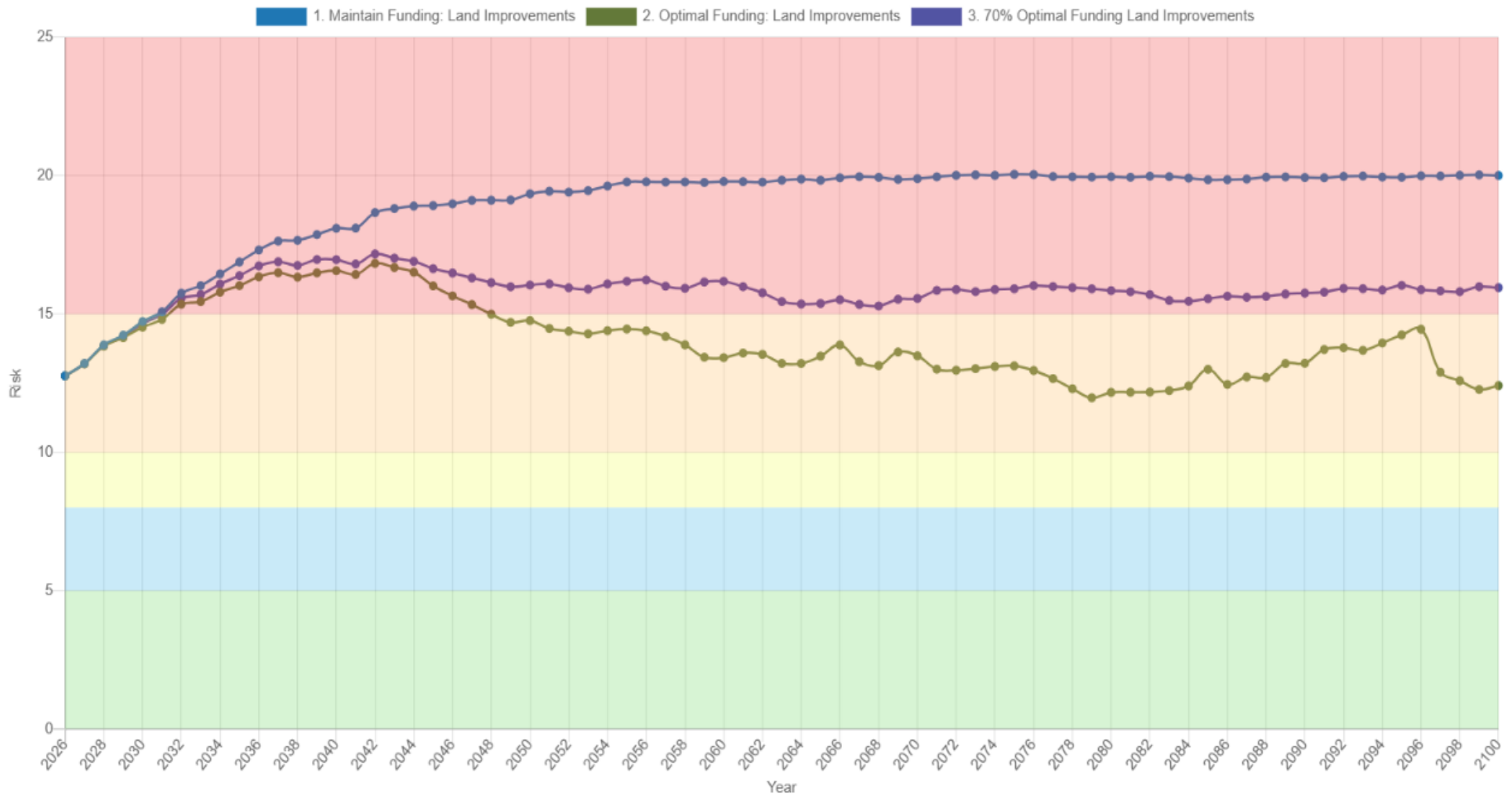


Figure 39: Land Improvements Projected Risk by Scenario

Vehicles

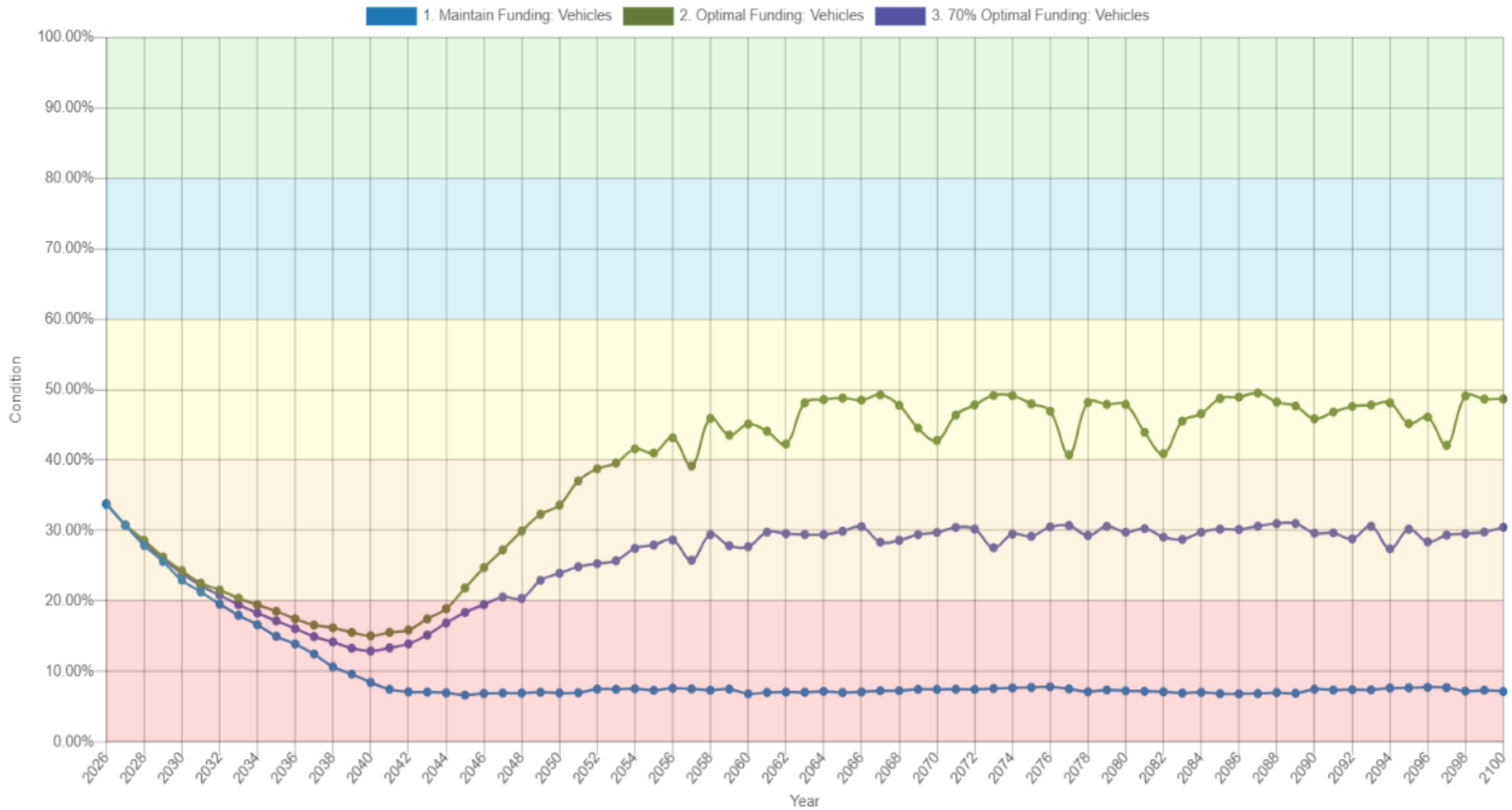


Figure 40: Vehicles Projected Condition by Scenario

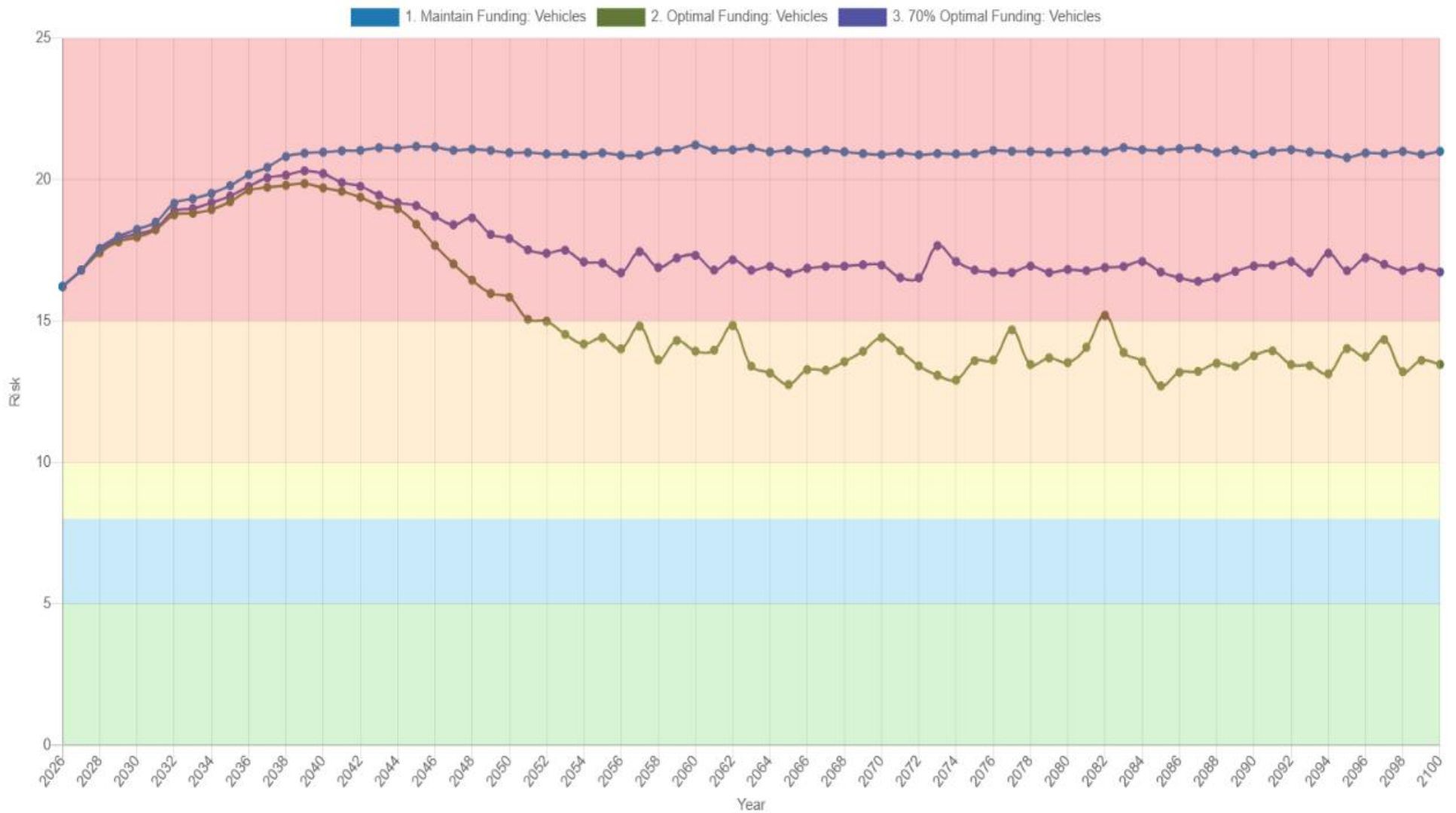


Figure 41: Vehicles Projected Risk by Scenario

Machinery & Equipment

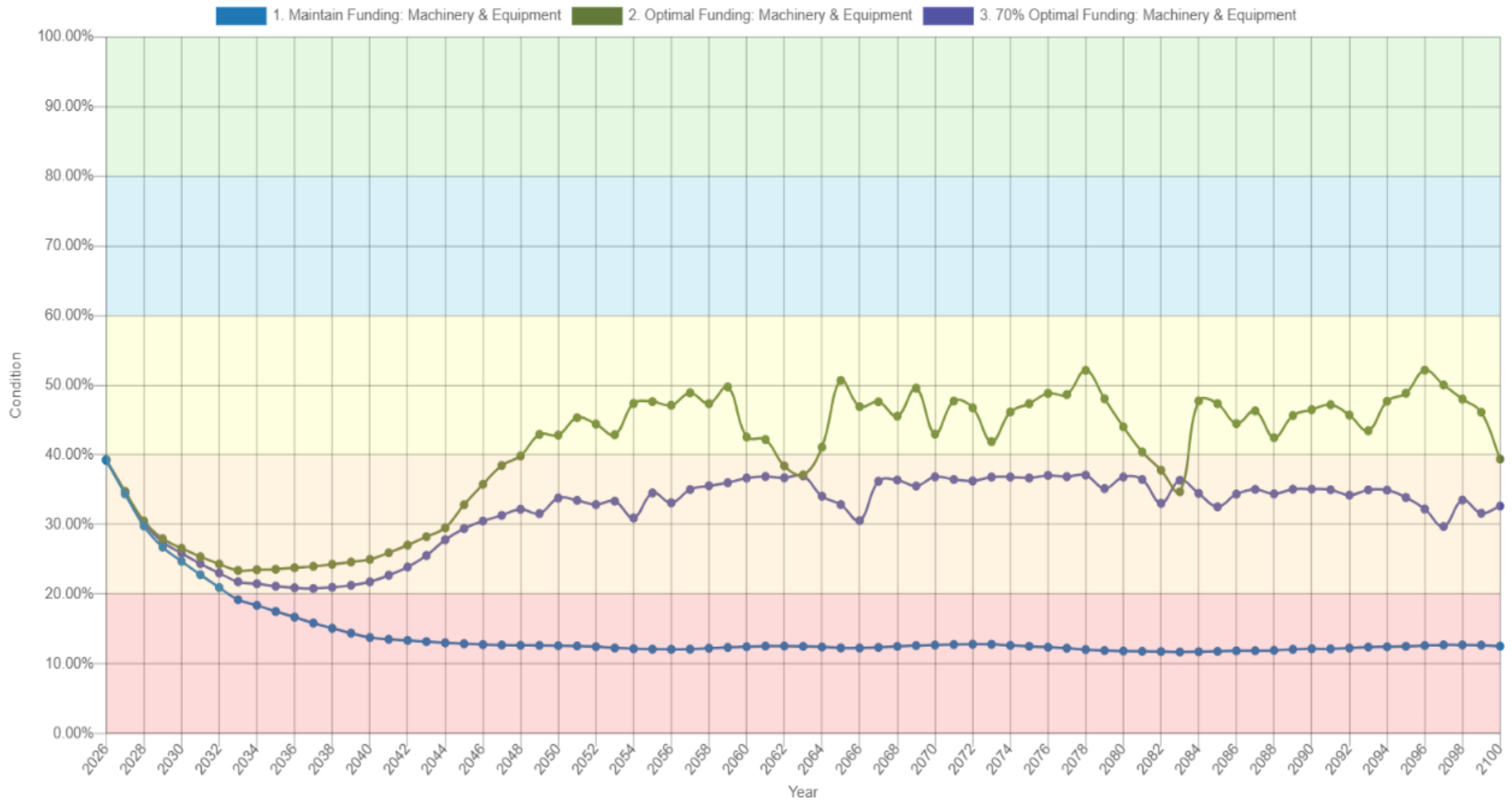


Figure 42: Machinery and Equipment Projected Condition by Scenario

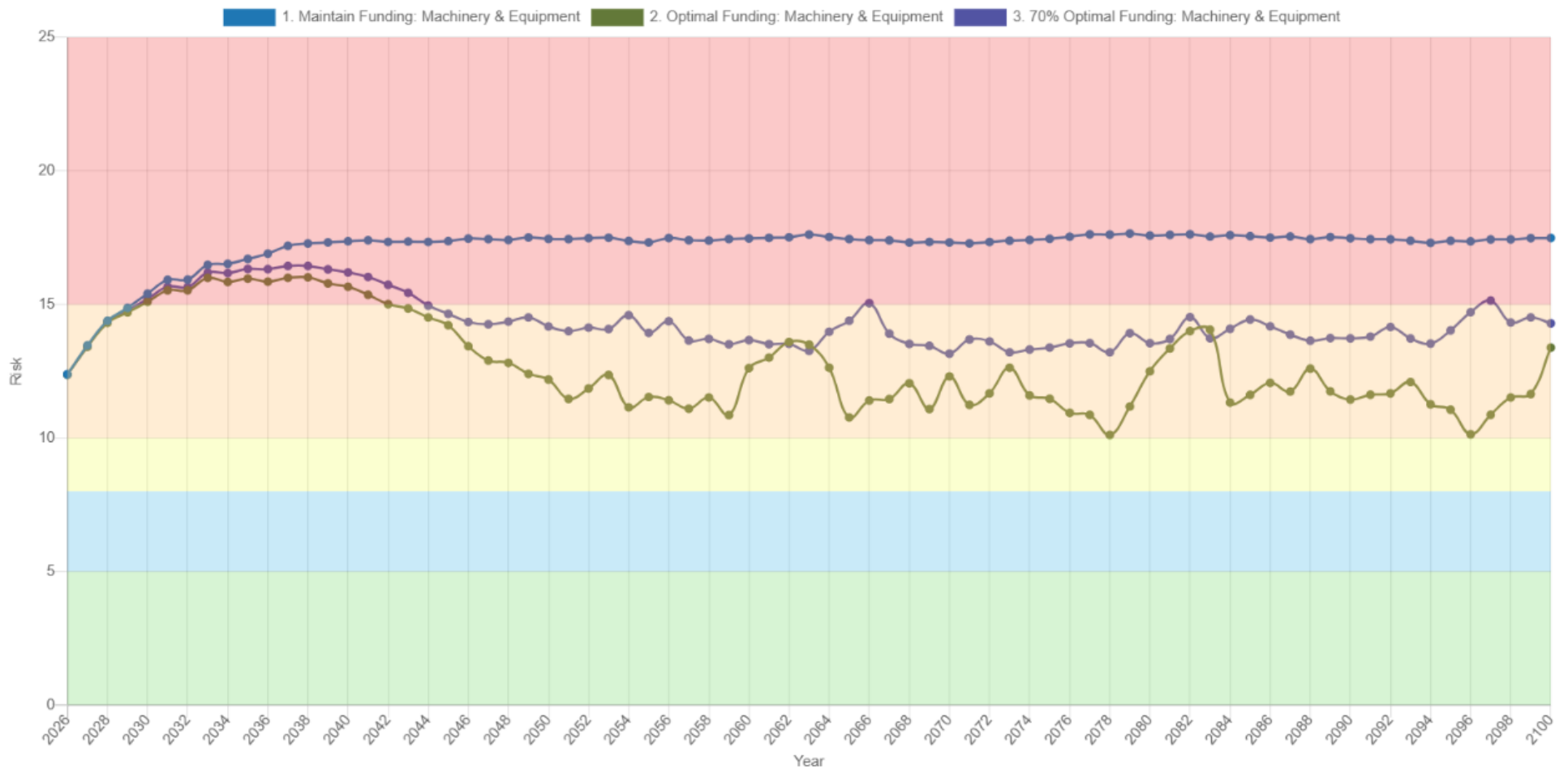
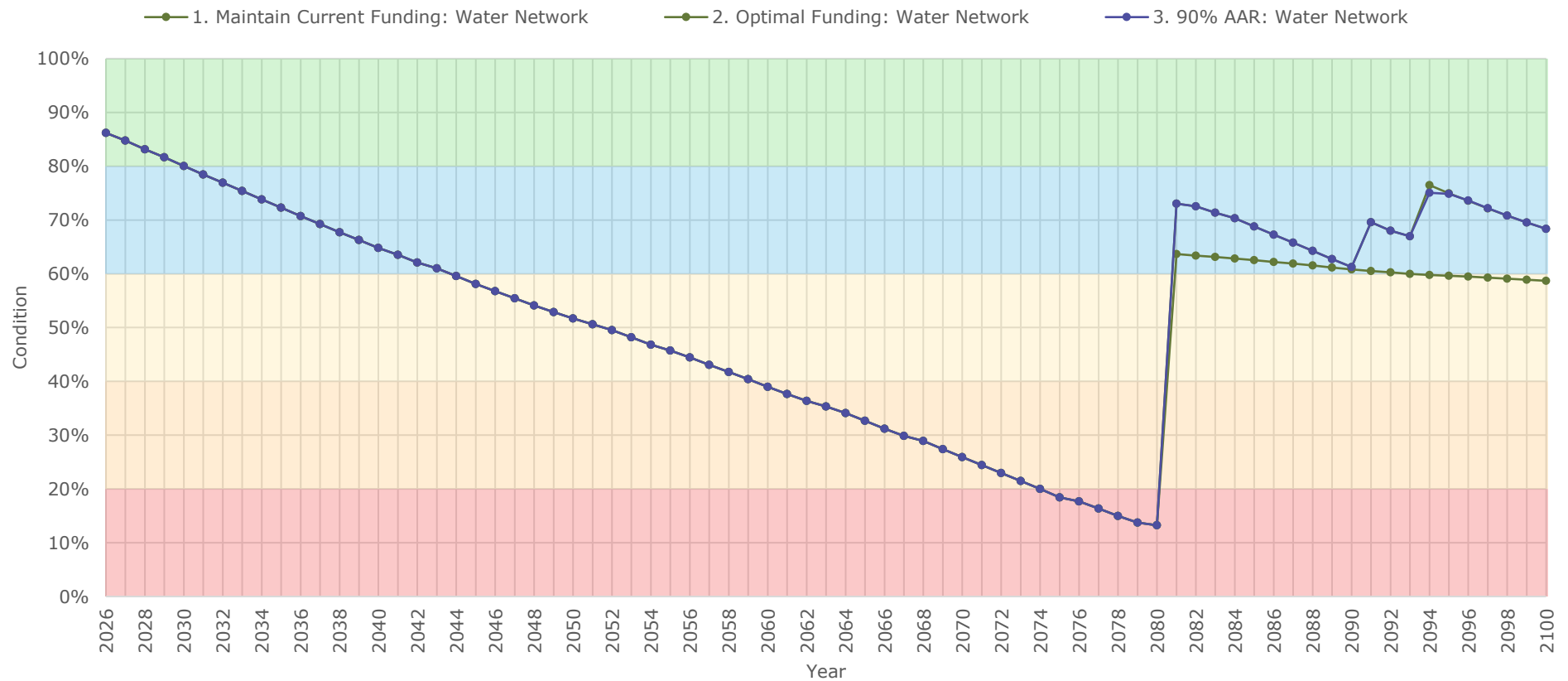


Figure 43: Machinery and Equipment Projected Risk by Scenario

Water Network



22

Figure 44: Water Network Projected Condition by Scenario

²² Differences in condition projections are modest because the proportion of the optimal funding invested between scenarios are similar. Condition declines and then increases sharply due to most water mains being in very good condition as of 2024 and therefore most replacements occurring around the same time. As noted in the 2024 AMP, it is recommended that the Town implement a CCTV method of inspection for their water main assets to obtain more reflective condition information. If this completed, data changes and resultant projections, are anticipated to change.

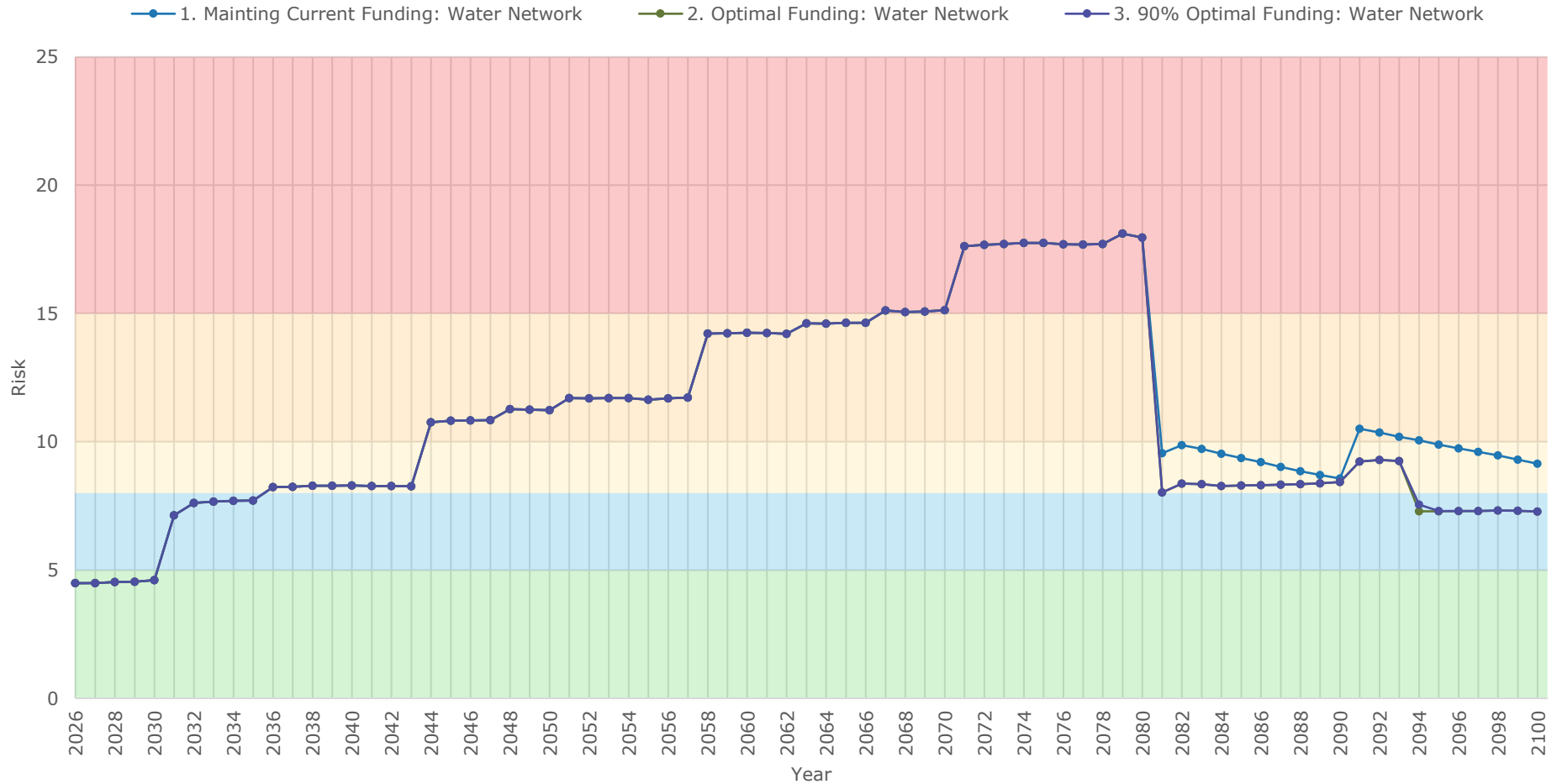


Figure 45: Water Network Risk Projections

Wastewater Network

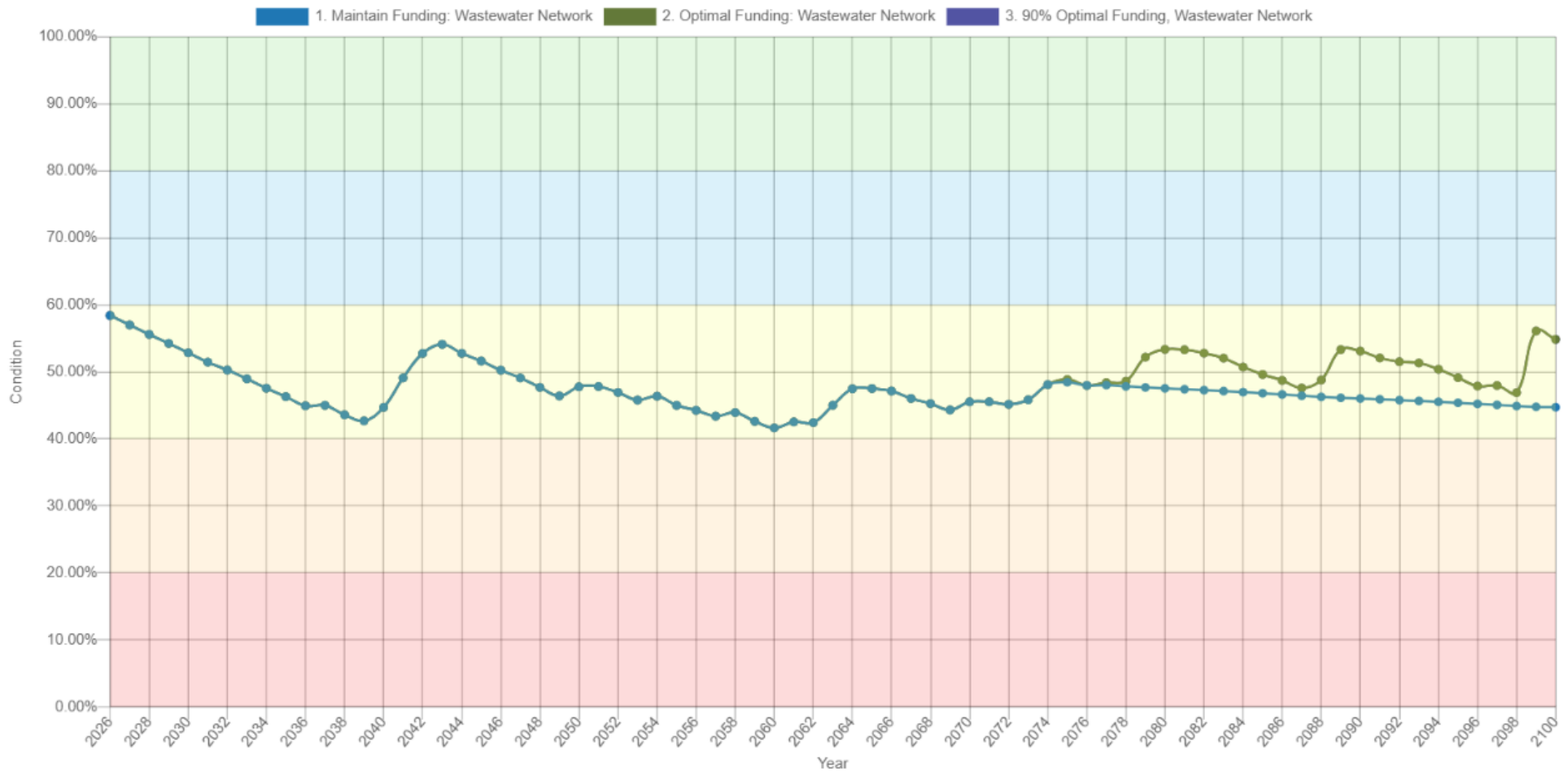


Figure 46: Wastewater Network Projected Condition by Scenario

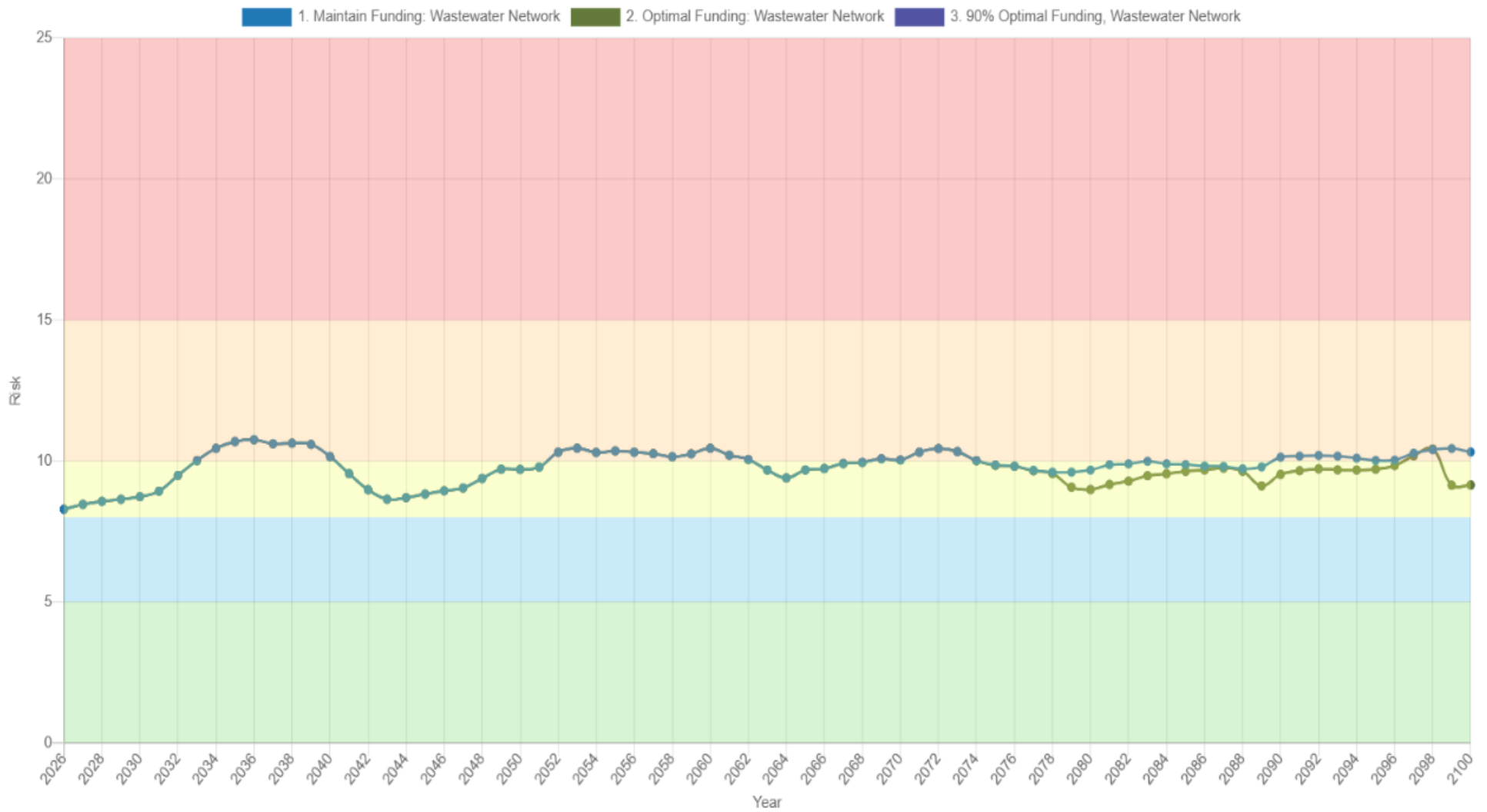


Figure 47: Wastewater Network Projected Risk by Scenario

Bridges & Structural Culverts

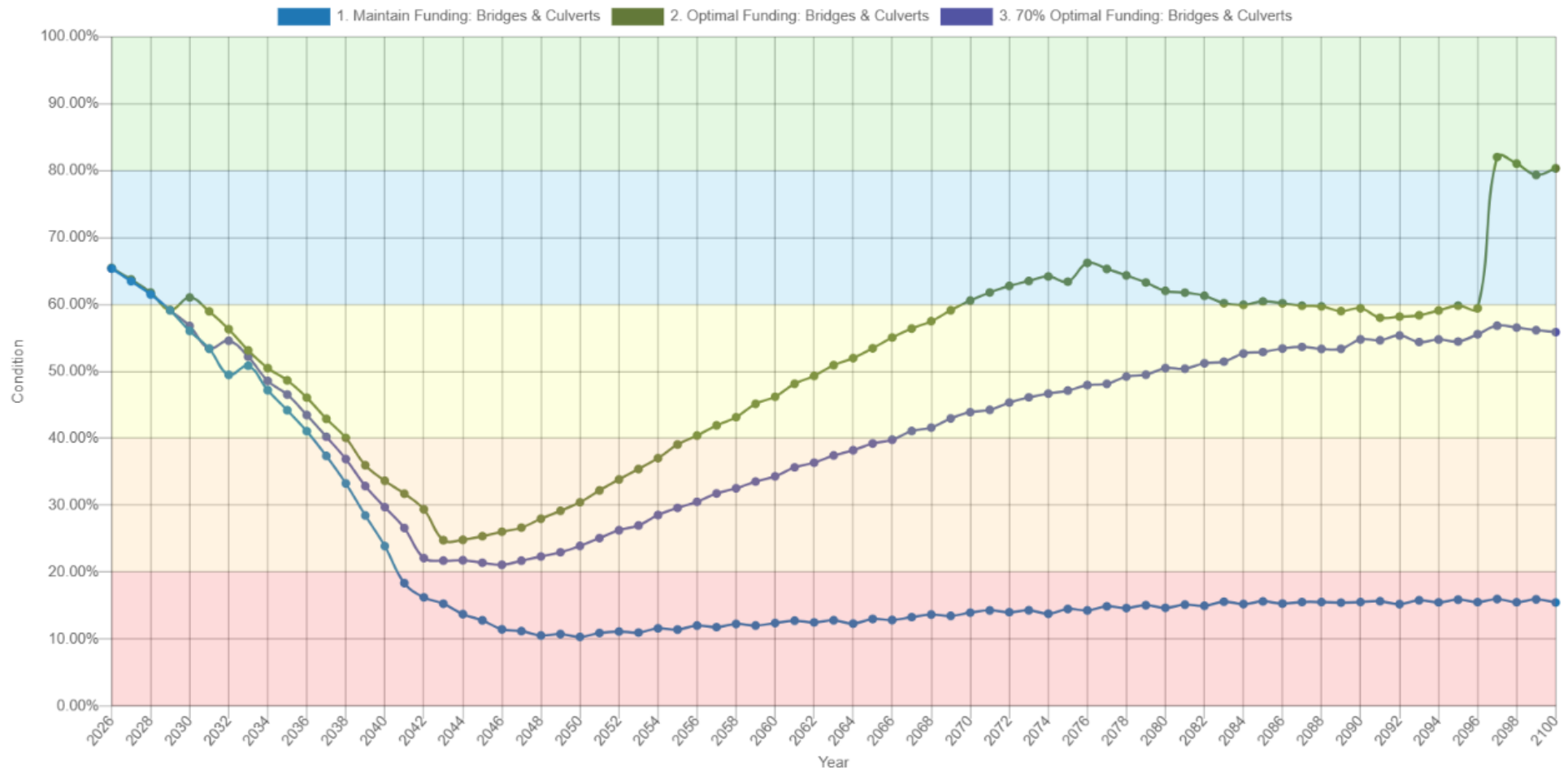


Figure 48: Bridge and Structural Culverts Projected Condition by Scenario

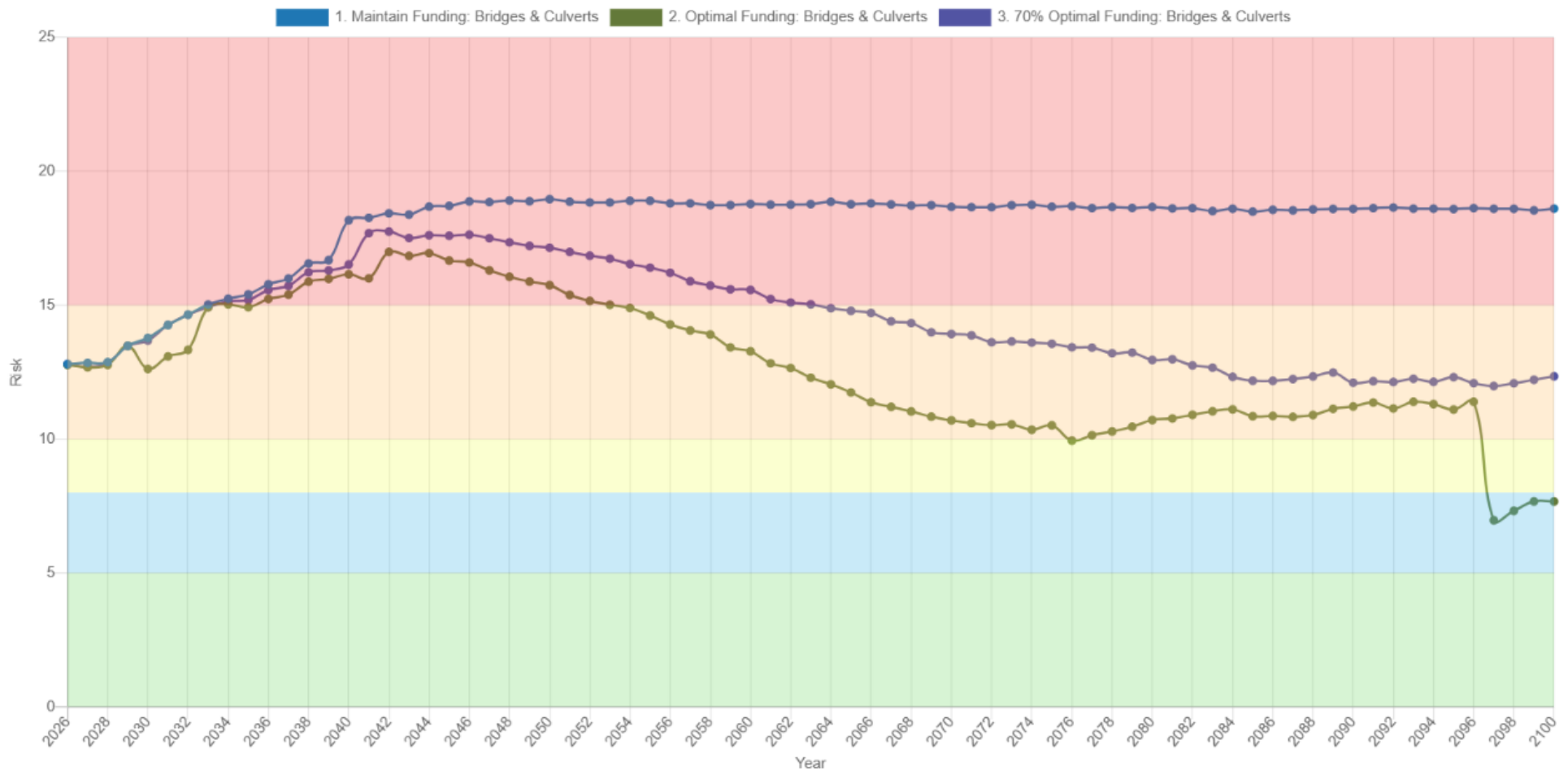


Figure 49: Bridge & Structural Culverts: Projected Risk by Scenario

Road Network

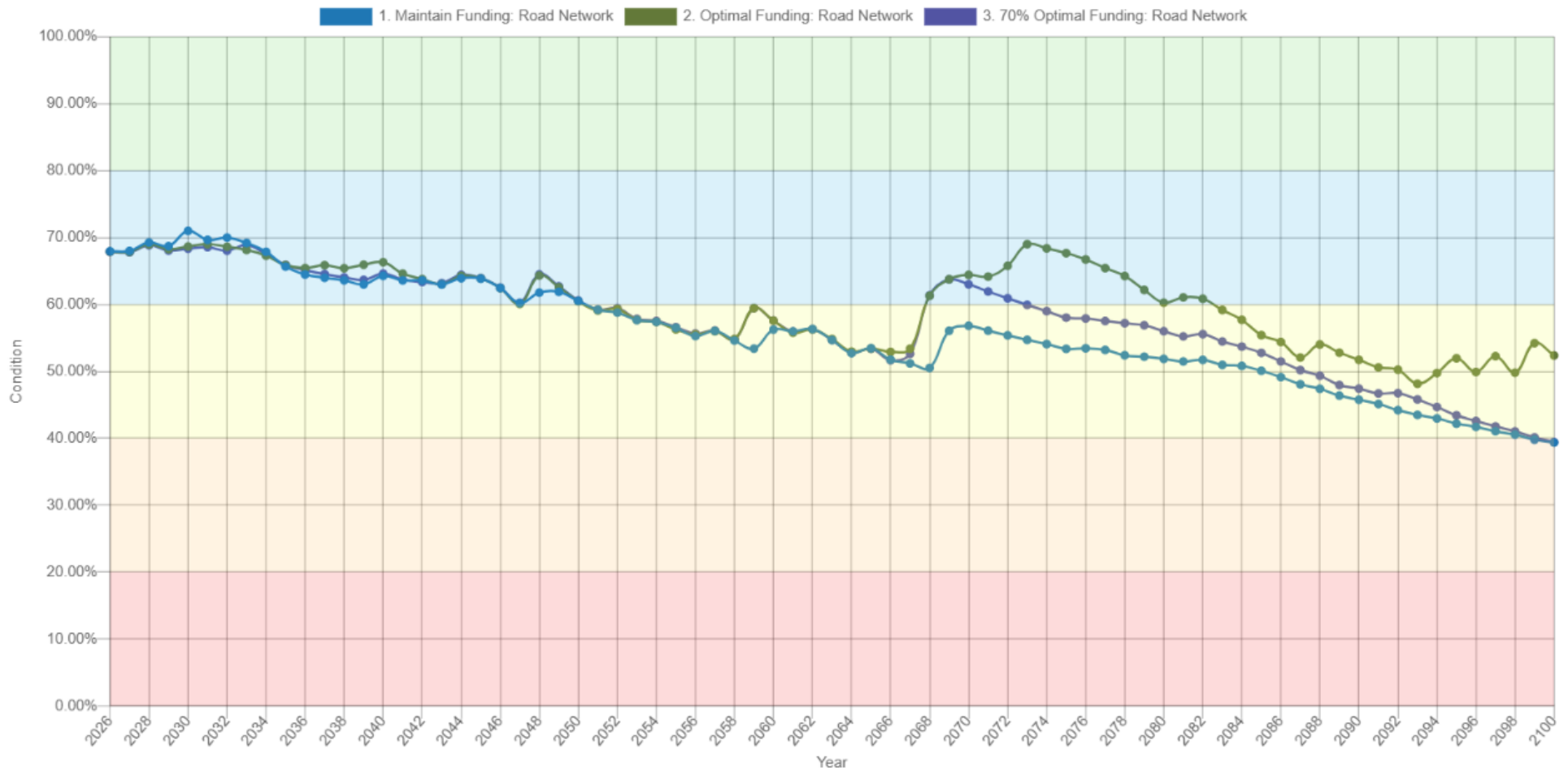


Figure 50: Road Network: Projected Condition by Scenario

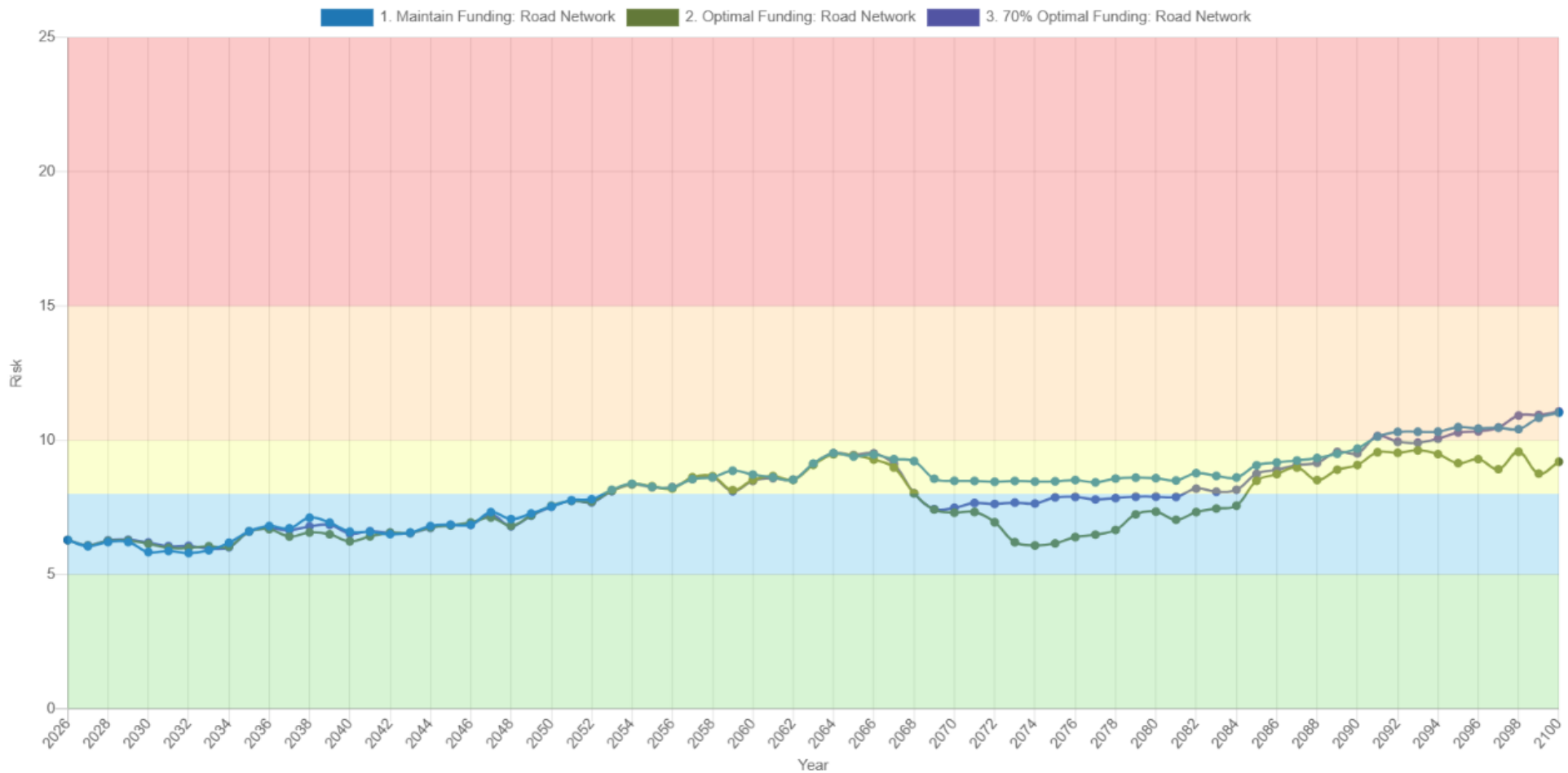


Figure 51: Road Network: Projected Risk by Scenario

Appendix D – Risk Rating Criteria

Probability of Failure:

Asset Category	Risk Criteria	Criteria Weighting	Value/Range	Probability of Failure Score
Road Network (Asphalt / Gravel Roads/ Surface Treated)	Condition	100%	70-100	1-Rare
			55-69	2- Unlikely
			35-54	3- Possible
			20-34	4- Likely
			0-19	5- Almost Certain
Bridges & Culverts	Condition	100%	80-100	1-Rare
			70-79	2- Unlikely
			60-69	3- Possible
			20-59	4- Likely
			0-19	5- Almost Certain
All Others	Condition	100%	80-100	1-Rare
			60-79	2- Unlikely
			40-59	3- Possible
			20-39	4- Likely
			0-19	5- Almost Certain

Consequence of Failure:

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network (Asphalt)	Economic (60%)	Replacement Cost (100%)	<\$100,000	1-Insignificant
			\$100,000 - \$400,000	2- Minor
			\$400,000 - \$650,000	3- Moderate
			\$650,000 - \$1,500,000	4- Major
			\$1,500,000-\$4,000,000	5- Severe
	Operational (40%)	AADT (70%)	0-200	1-Insignificant
			201-500	2- Minor
			501-1000	3- Moderate
			1001-3000	4- Major
			3001-6500	5- Severe
		Roadside Environment (30%)	Rural -> 2 - Minor	1-Insignificant
			Suburban -> 3 - Moderate	2- Minor
			Urban -> 4 - Major	3- Moderate
Road Network (Surface Treated)	Economic (60%)	Replacement Cost (100%)	\$0-\$100,000	1-Insignificant
			\$100,000-\$350,000	2- Minor
			\$350,000-\$500,000	3- Moderate
			\$500,000-\$1,000,000	4- Major
			\$1,000,000-\$4,000,000	5- Severe
	Operational (40%)	AADT (80%)	0-100	1-Insignificant
			101-300	2- Minor
			301-700	3- Moderate

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Road Network (Gravel)		Roadside Environment (20%)	701-1000	4- Major
			1001-2500	5- Severe
			Rural -> 2 - Minor	1-Insignificant
			Suburban -> 3 - Moderate	2- Minor
			Urban -> 4 - Major	3- Moderate
	Economic (60%)	Replacement Cost (100%)	0-\$75,000	1-Insignificant
			\$75,000-\$250,000	2- Minor
			\$250,000-\$400,000	3- Moderate
			\$400,000-\$600,000	4- Major
			\$600,000-\$800,000	5- Severe
	Operational (40%)	AADT (80%)	0-100	1-Insignificant
			101-300	2- Minor
			301-700	3- Moderate
			701-1000	4- Major
			1001-2500	5- Severe
		Roadside Environment (20%)	Rural -> 2 - Minor	1-Insignificant
			Suburban -> 3 - Moderate	2- Minor
			Urban -> 4 - Major	3- Moderate
Bridges & Culverts	Economic (100%)	Replacement Cost (100%)	<\$100,000	1-Insignificant
			\$100,000 - \$400,000	2- Minor
			\$400,000 - \$650,000	3- Moderate
			\$650,000 - \$850,000	4- Major
			\$850,000-\$1,000,000	5- Severe
Facilities	Economic	Replacement Cost	<\$50,000	1-Insignificant

Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
	(65%)	(100%)	\$50,000 - \$100,000	2- Minor
			\$100,000 - \$250,000	3- Moderate
			\$250,000 - \$350,000	4- Major
			\$350,000-\$500,000	5- Severe
			C30 - Interior Finishes -> 1 - Insignificant , E10 - Equipment -> 1 - Insignificant , E20 - Furnishings -> 1 - Insignificant , G20 - Site Improvements -> 1 - Insignificant	1-Insignificant
			C10 - Interior Construction - > 2 - Minor , F10 - Special Construction -> 2 - Minor	2- Minor
	Operational (35%)	Uniformat Level 2 (100%)	A10 - Foundations -> 3 - Moderate , A20 - Basement Construction -> 3 - Moderate , B10 - Superstructure -> 3 - Moderate , B20 - Exterior Enclosures -> 3 - Moderate , G40 - Site Electrical Utilities -> 3 - Moderate	3- Moderate
			B30 - Roofing -> 4 - Major , C20 - Stairs -> 4 - Major , D20 - Plumbing -> 4 - Major , D30 - HVAC -> 4 - Major , D50 - Electrical -> 4 - Major	4- Major

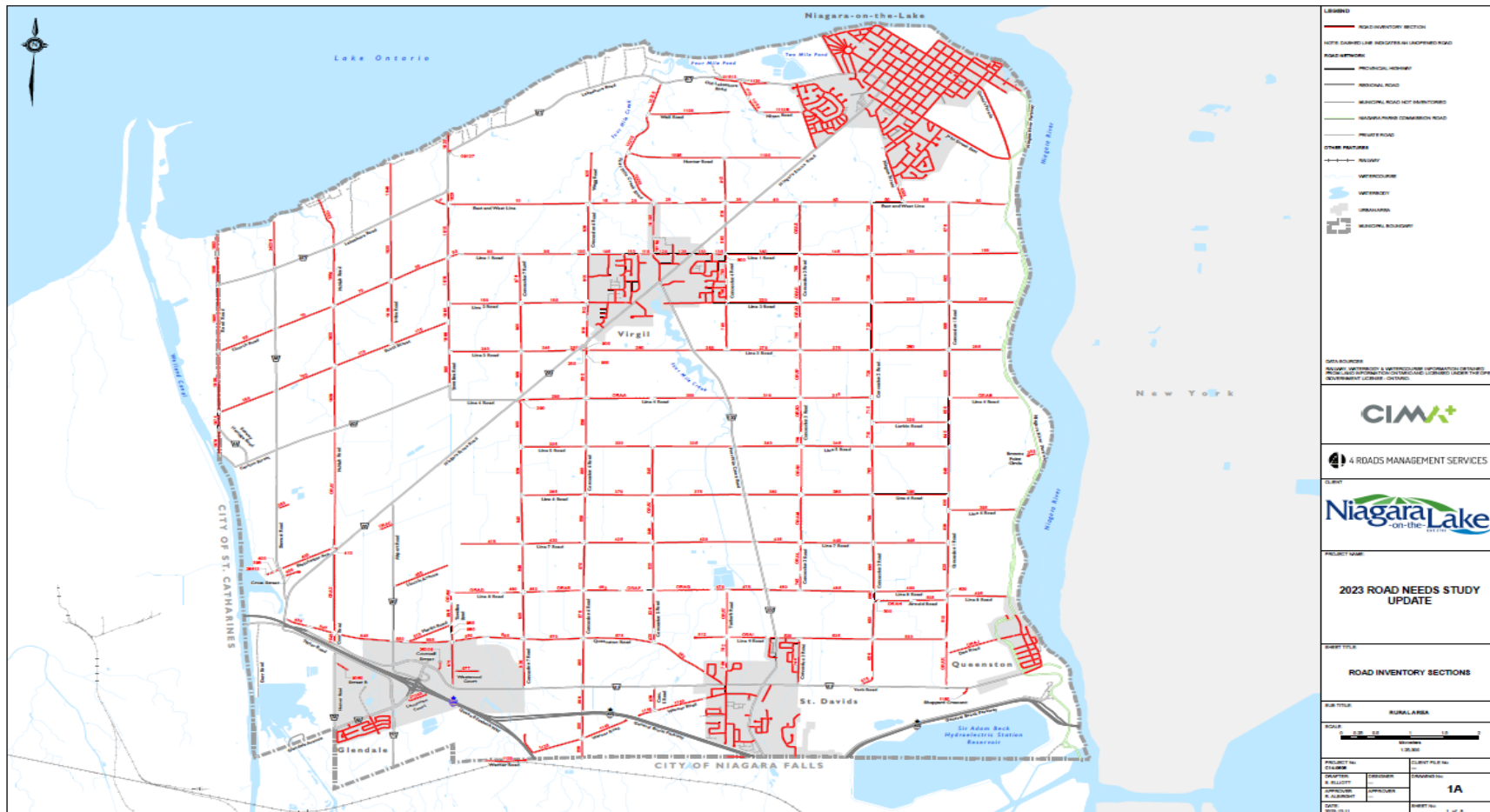
Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
Mains	Economic (60%)	Replacement Cost (100%)	D10 - Conveying -> 5 - Severe , D40 - Fire Protection -> 5 - Severe	5- Severe
			<\$20,000	1-Insignificant
			\$20,000 - \$40,000	2- Minor
			\$40,000 - \$60,000	3- Moderate
			\$60,000 - \$80,000	4- Major
			\$80,000-\$100,000	5- Severe
	Operational (10%)	Diameter (mm) (100%)	<150	1-Insignificant
			150-400	2- Minor
			400-700	3- Moderate
			700-1200	4- Major
			1200-1800	5- Severe
	Social (30%)	Category (100%)	Stormwater Network -> 3 - Moderate	1-Insignificant
			Wastewater Network -> 4 - Major	2- Minor
			Water Network -> 5 - Severe	3- Moderate
All Others	Economic (60%)	Replacement Cost	<\$10,000	1-Insignificant
			\$10,001-\$20,000	2- Minor
			\$20,000-\$30,000	3- Moderate
			\$30,001-\$60,000	4- Major
			>\$60,000	5- Severe
	Social (40%)	Segment	Administration, By-Law Enforcement, Cemetery,	2- Minor

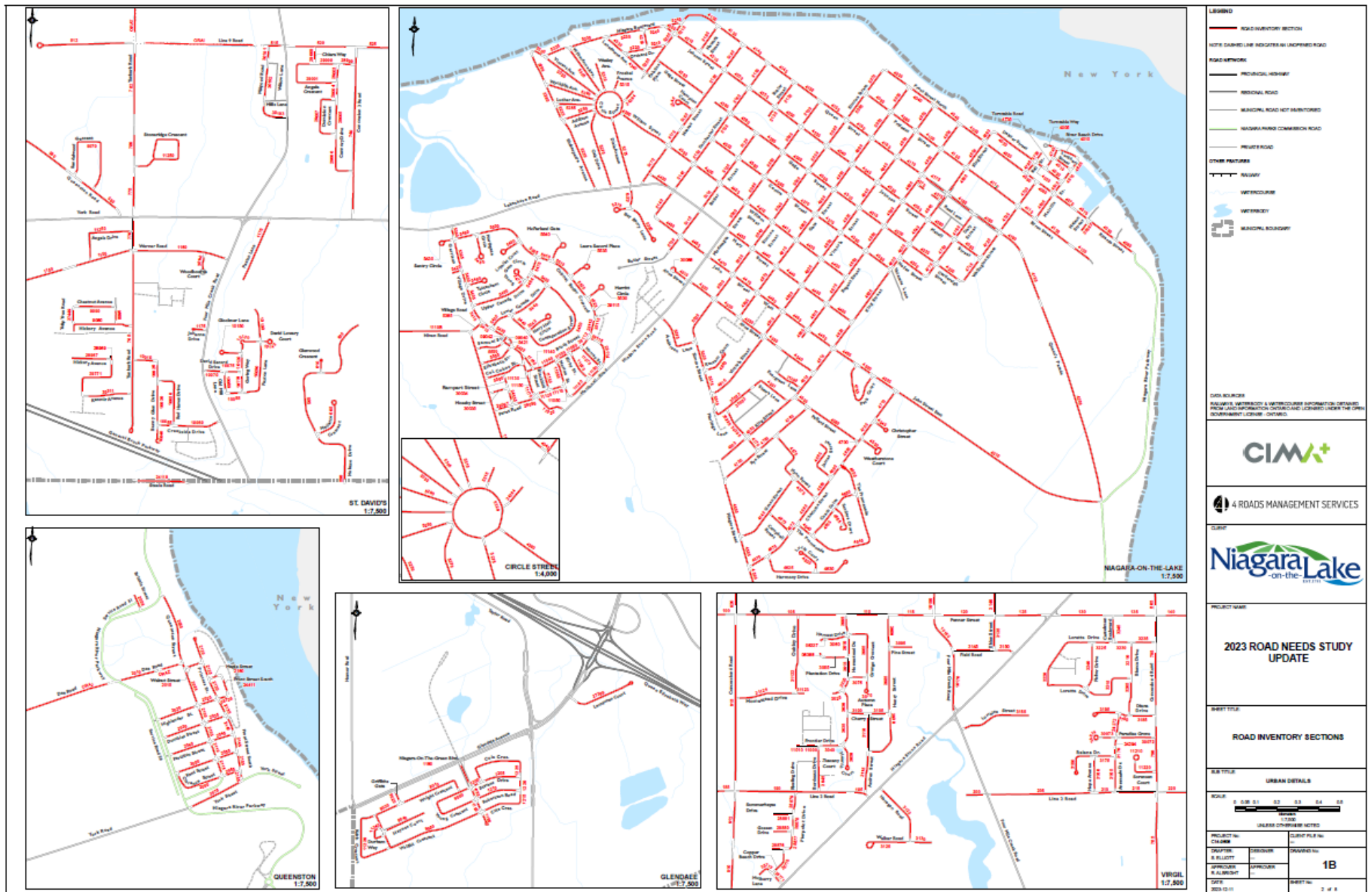
Asset Category	Risk Classification	Risk Criteria	Value/Range	Consequence of Failure Score
			Gravel & Other Roads, Parks & Recreation	
			Facility, Machinery & Equipment, Public Works, Valves	3- Moderate
			Fire, Fire, Hydrants	4- Major

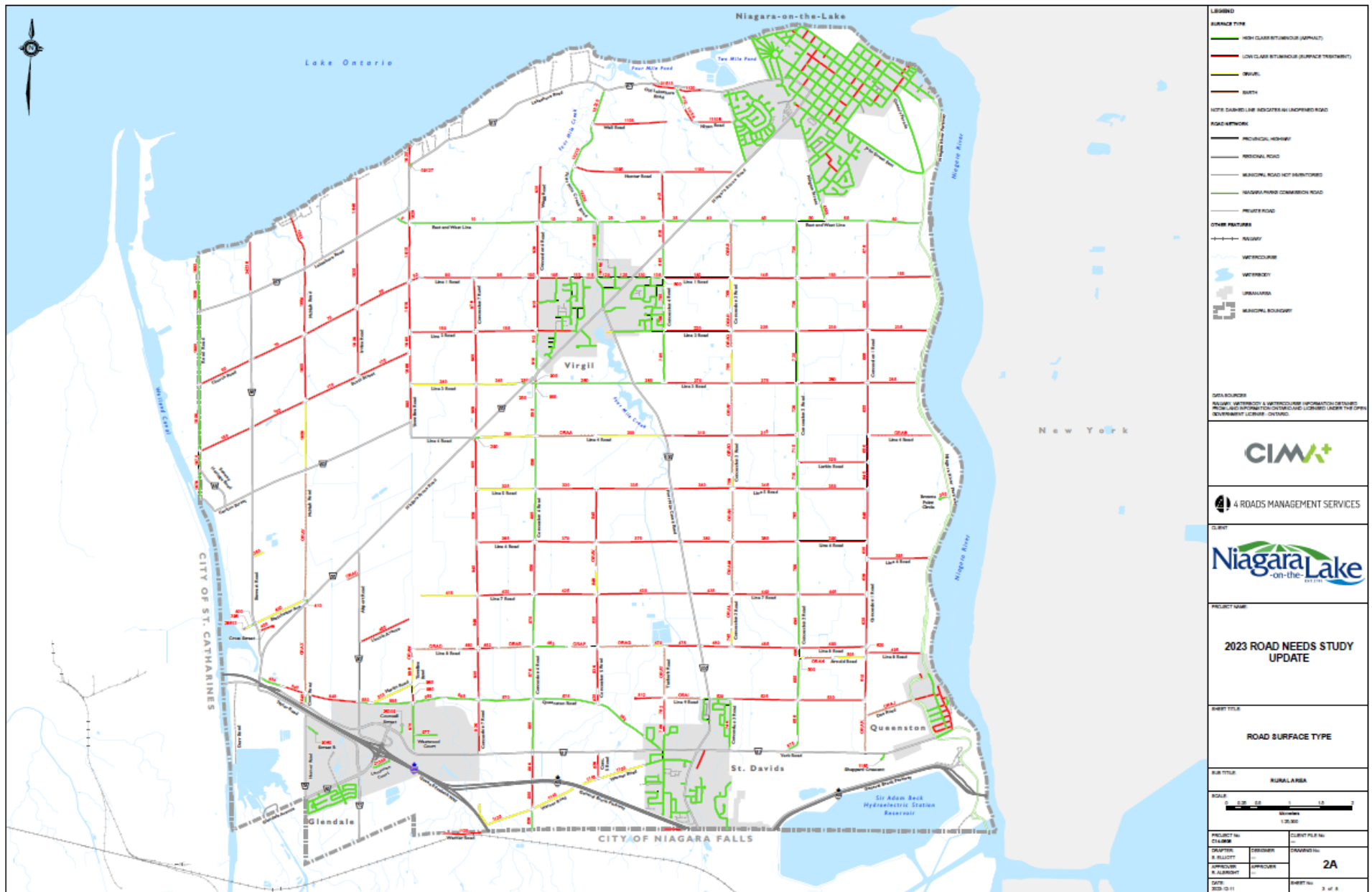
Appendix E — Maps

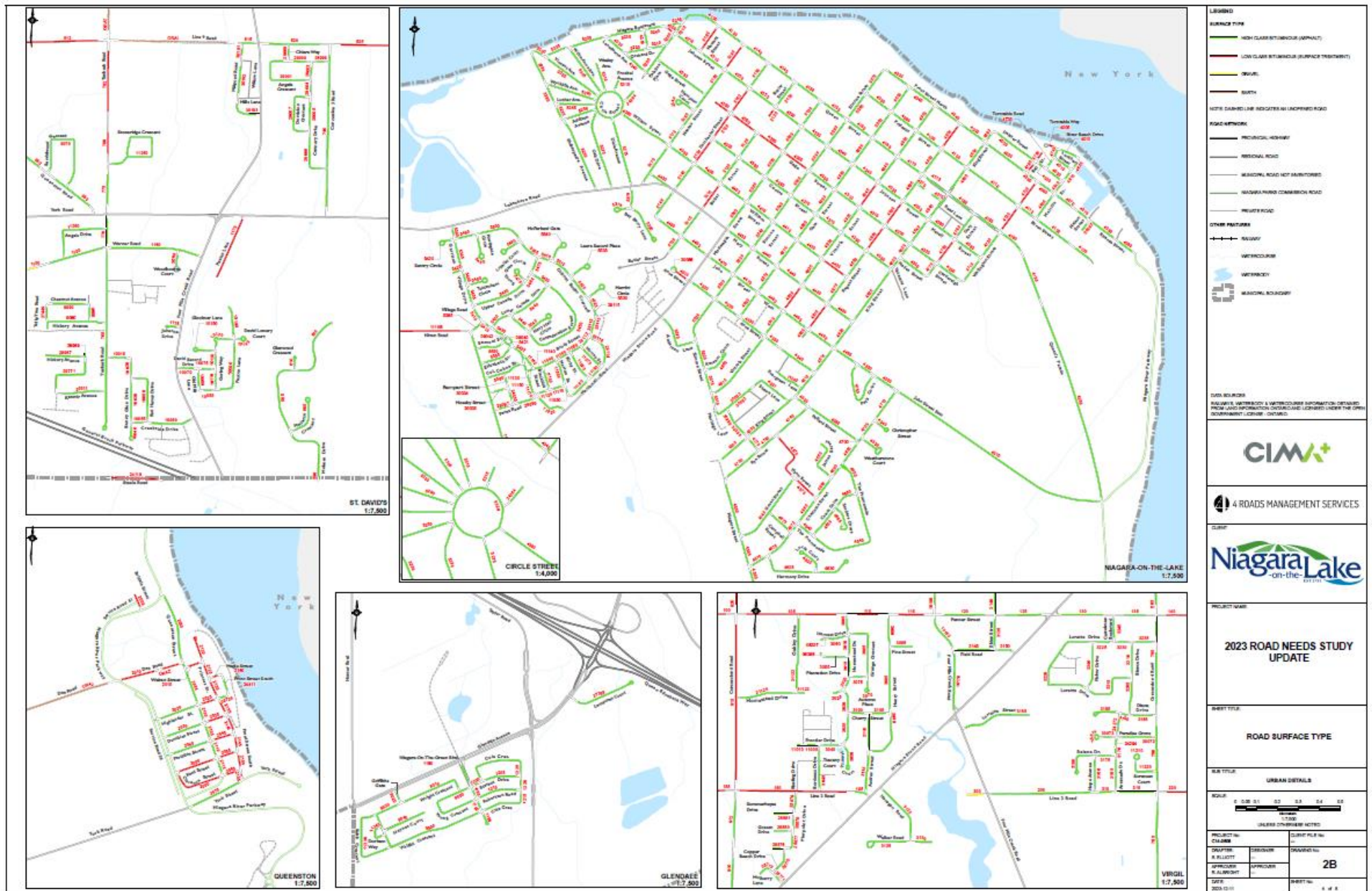
Road Network

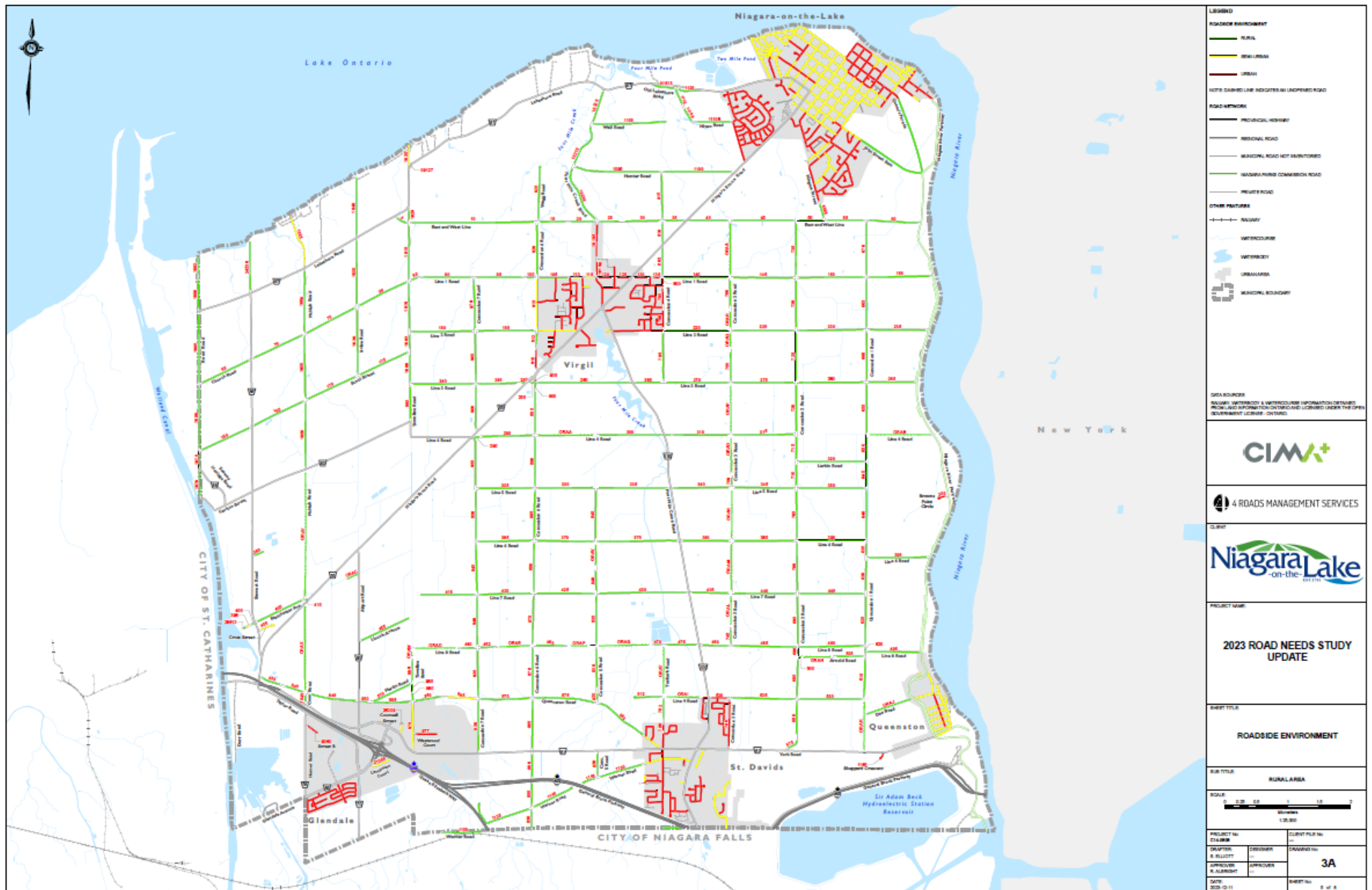
Maps of Roads

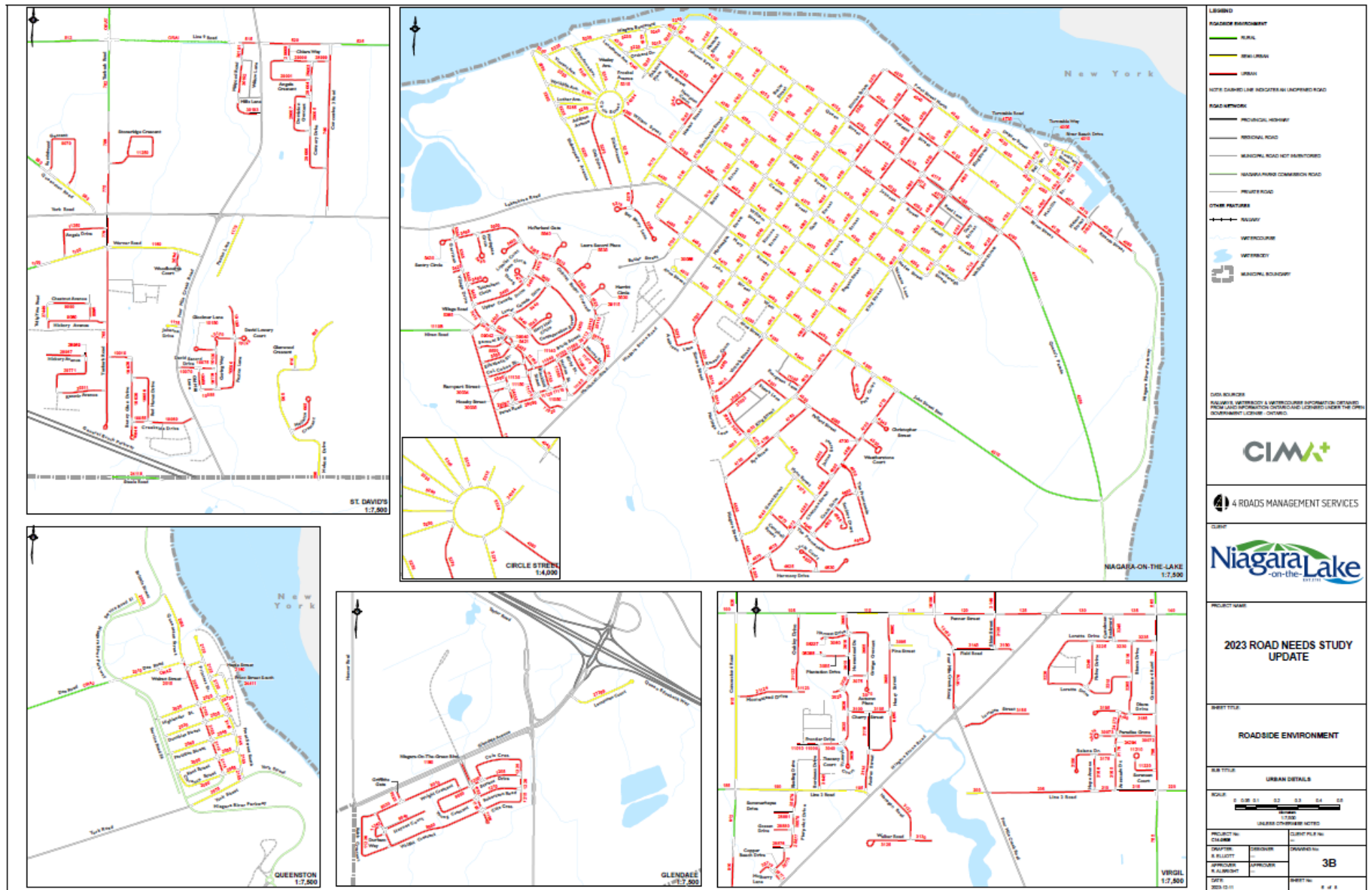






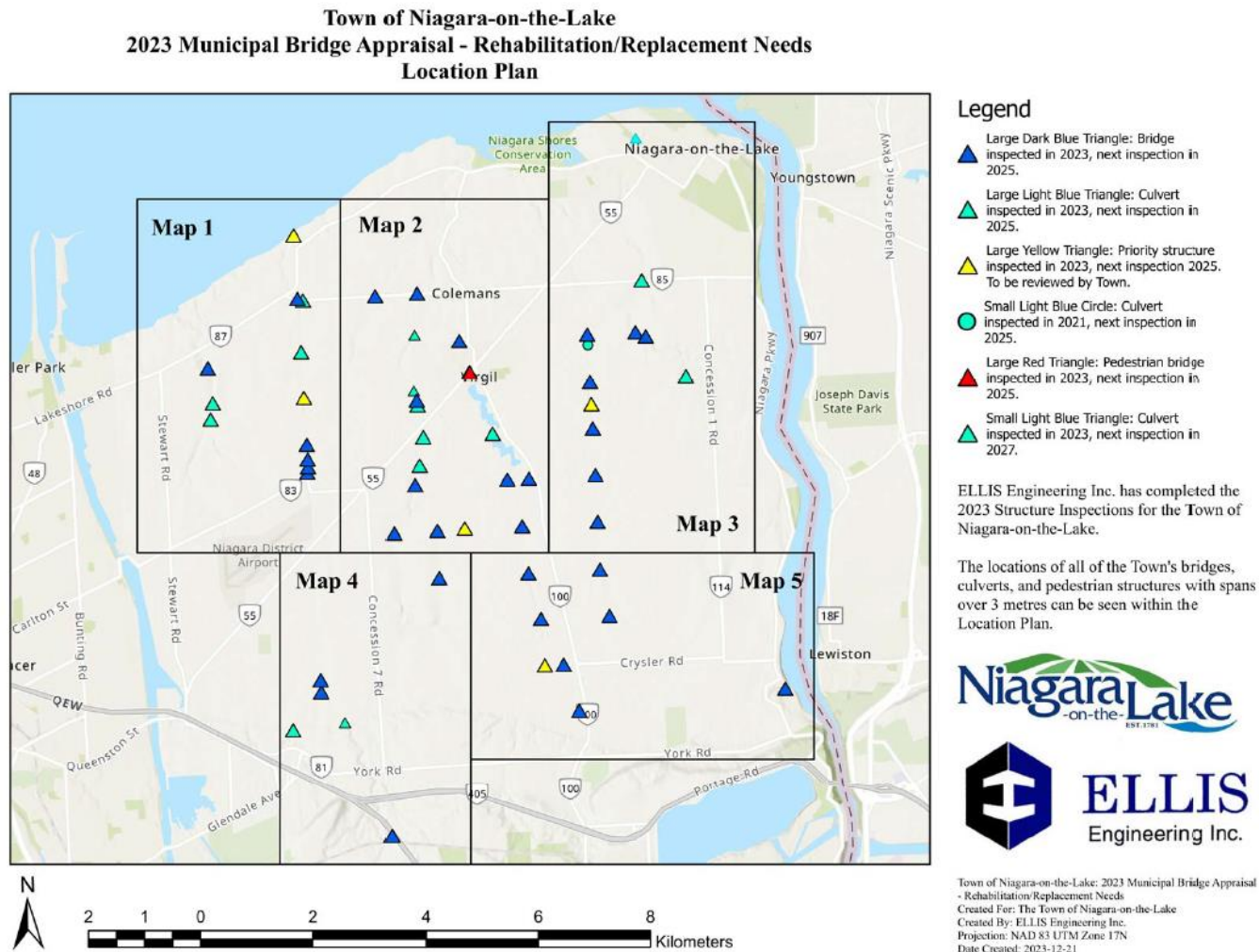




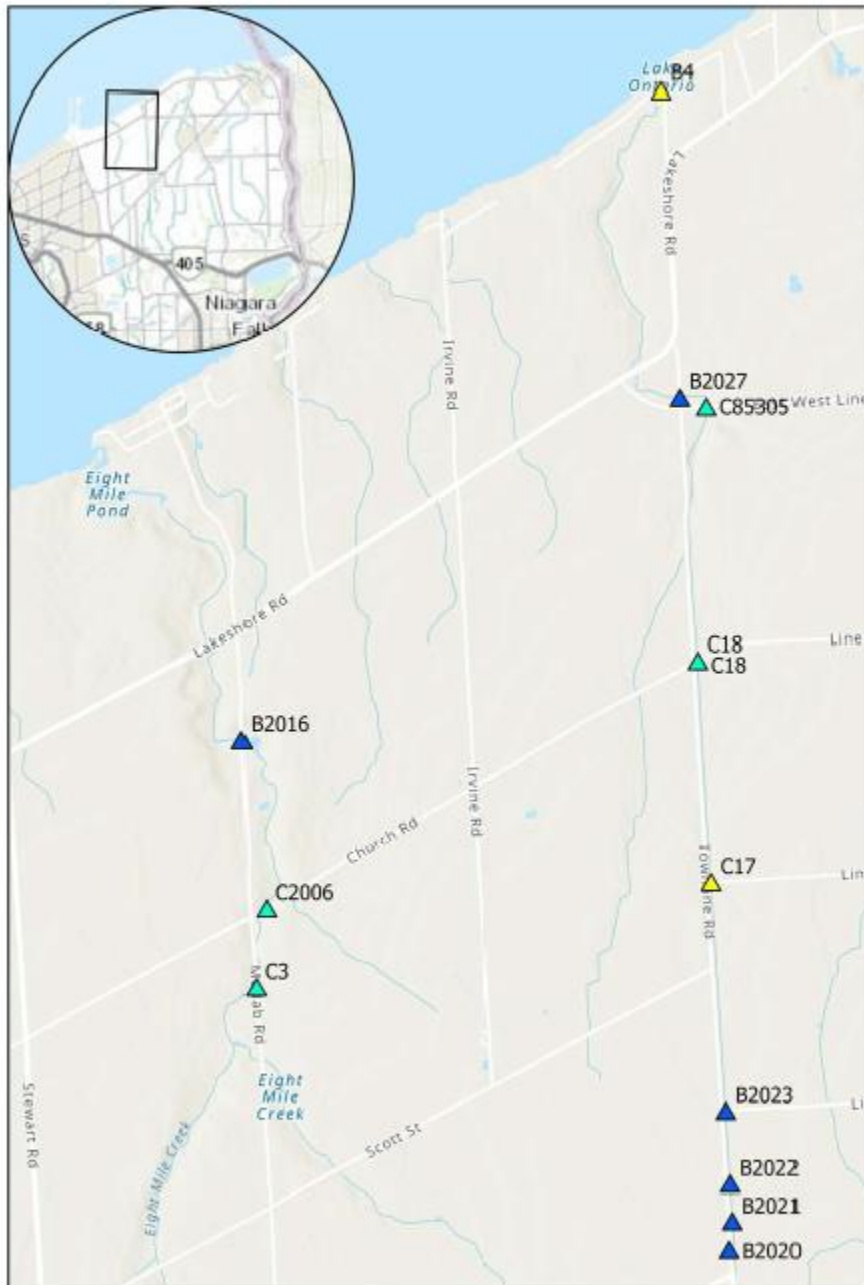


Bridges and Culverts

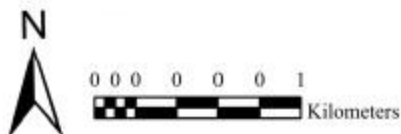
Map of Bridges and Culverts



Town of Niagara-on-the-Lake: 2023 Municipal Bridge Appraisal - Rehabilitation/Replacement Needs Location Plan - Map 1

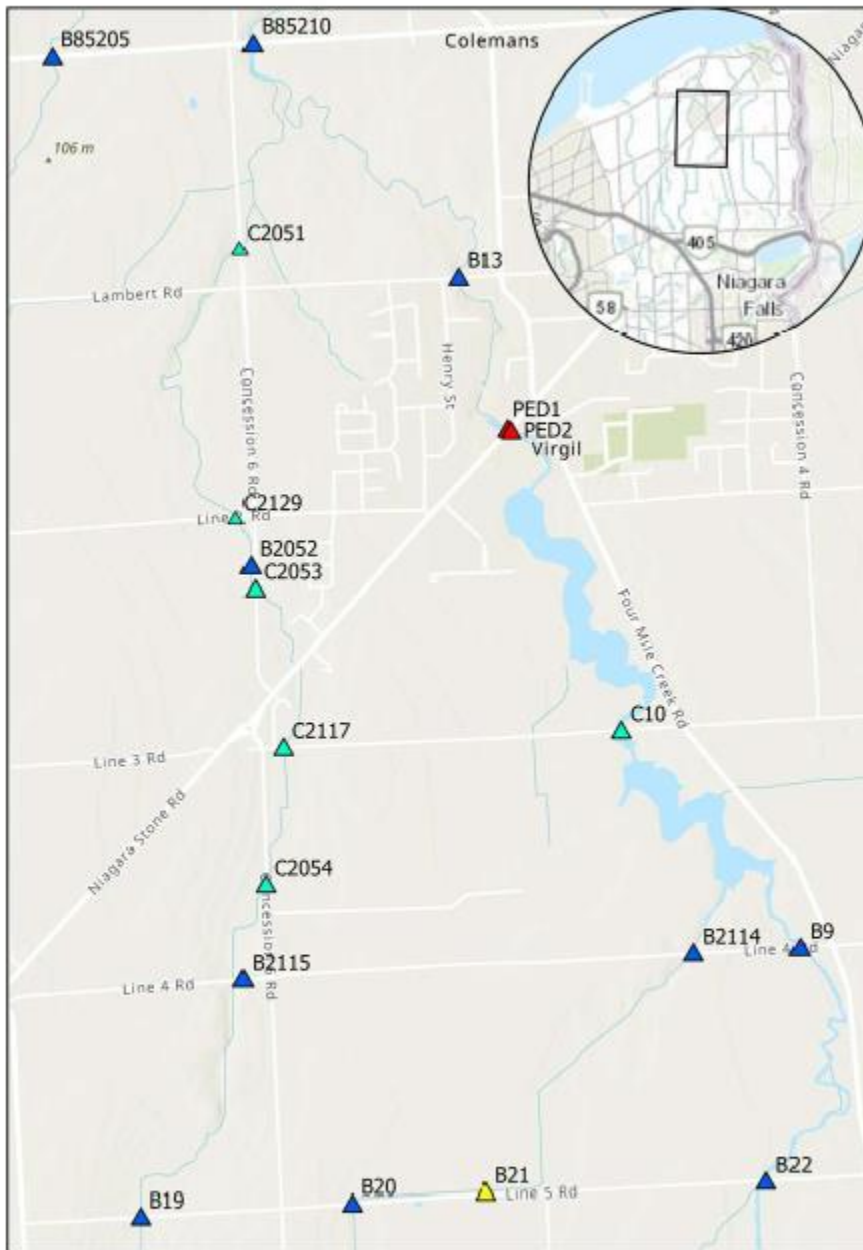


- Legend**
- Large Dark Blue Triangle: Bridge inspected in 2023, next inspection in 2025.
 - Large Light Blue Triangle: Culvert inspected in 2023, next inspection in 2025.
 - Large Yellow Triangle: Priority structure inspected in 2023, next inspection 2025. To be reviewed by Town.
 - Small Light Blue Circle: Culvert inspected in 2021, next inspection in 2025.
 - Large Red Triangle: Pedestrian bridge inspected in 2023, next inspection in 2025.
 - Small Light Blue Triangle: Culvert inspected in 2023, next inspection in 2027.



Town of Niagara-on-the-Lake: 2023 Municipal Bridge Appraisal Rehabilitation/Replacement Needs - Location Plan - Map 1
Created For: The Town of Niagara-on-the-Lake
Created By: ELLIS engineering inc.
Projection: NAD 83 UTM Zone 17N
Date Created: 2023-12-21

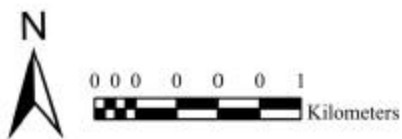
Town of Niagara-on-the-Lake: 2023 Municipal Bridge Appraisal - Rehabilitation/Replacement Needs Location Plan - Map 2



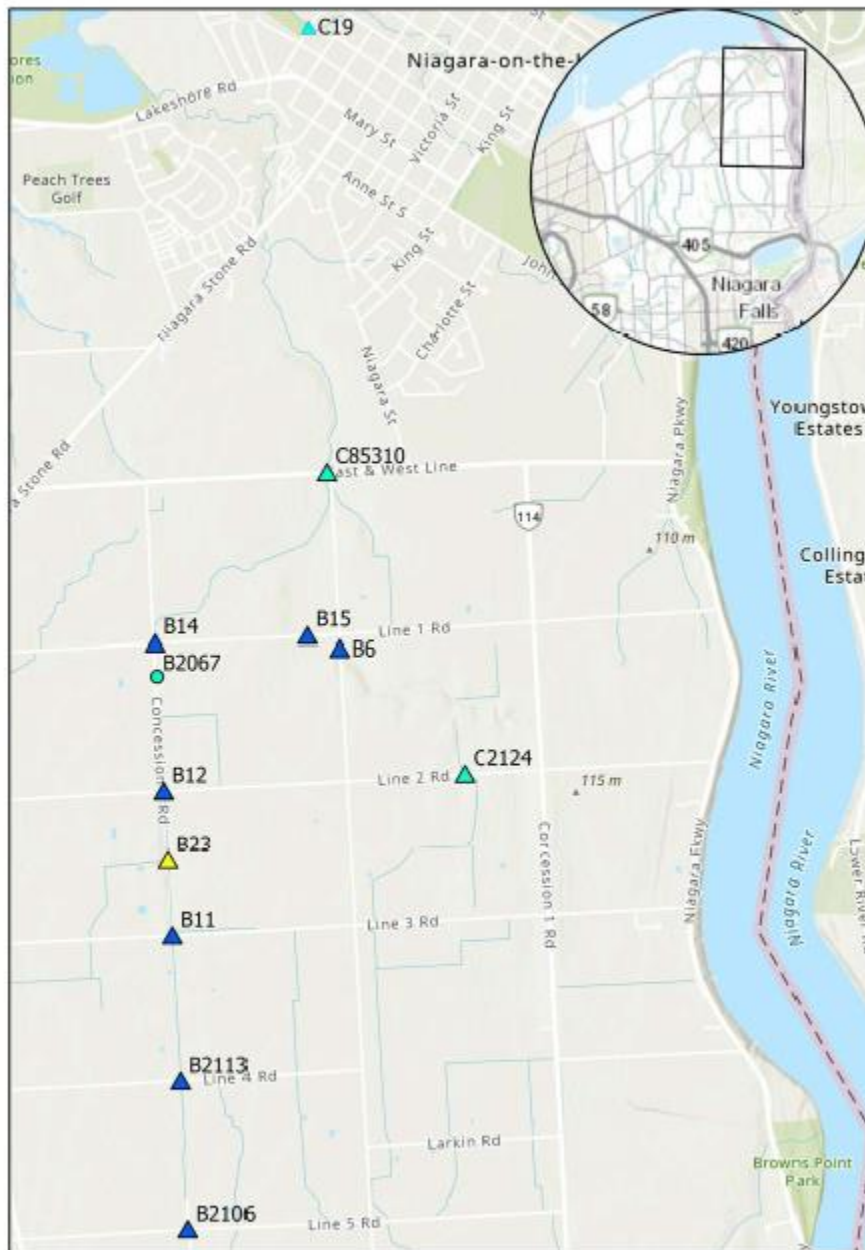
- Legend**
- Large Dark Blue Triangle: Bridge inspected in 2023, next inspection in 2025.
 - Large Light Blue Triangle: Culvert inspected in 2023, next inspection in 2025.
 - Large Yellow Triangle: Priority structure inspected in 2023, next inspection 2025. To be reviewed by Town.
 - Small Light Blue Circle: Culvert inspected in 2021, next inspection in 2025.
 - Large Red Triangle: Pedestrian bridge inspected in 2023, next inspection in 2025.
 - Small Light Blue Triangle: Culvert inspected in 2023, next inspection in 2027.



Town of Niagara-on-the-Lake: 2023 Municipal Bridge Appraisal Rehabilitation/Replacement Needs - Location Plan - Map 2
Created For: The Town of Niagara-on-the-Lake
Created By: ELLIS engineering inc.
Projection: NAD 83 UTM Zone 17N
Date Created: 2023-12-21



Town of Niagara-on-the-Lake: 2023 Municipal Bridge Appraisal - Rehabilitation/Replacement Needs Location Plan - Map 3



Legend

- Large Dark Blue Triangle: Bridge inspected in 2023, next inspection in 2025.
- Large Light Blue Triangle: Culvert inspected in 2023, next inspection in 2025.
- Large Yellow Triangle: Priority structure inspected in 2023, next inspection 2025. To be reviewed by Town.
- Small Light Blue Circle: Culvert inspected in 2021, next inspection in 2025.
- Large Red Triangle: Pedestrian bridge inspected in 2023, next inspection in 2025.
- Small Light Blue Triangle: Culvert inspected in 2023, next inspection in 2027.

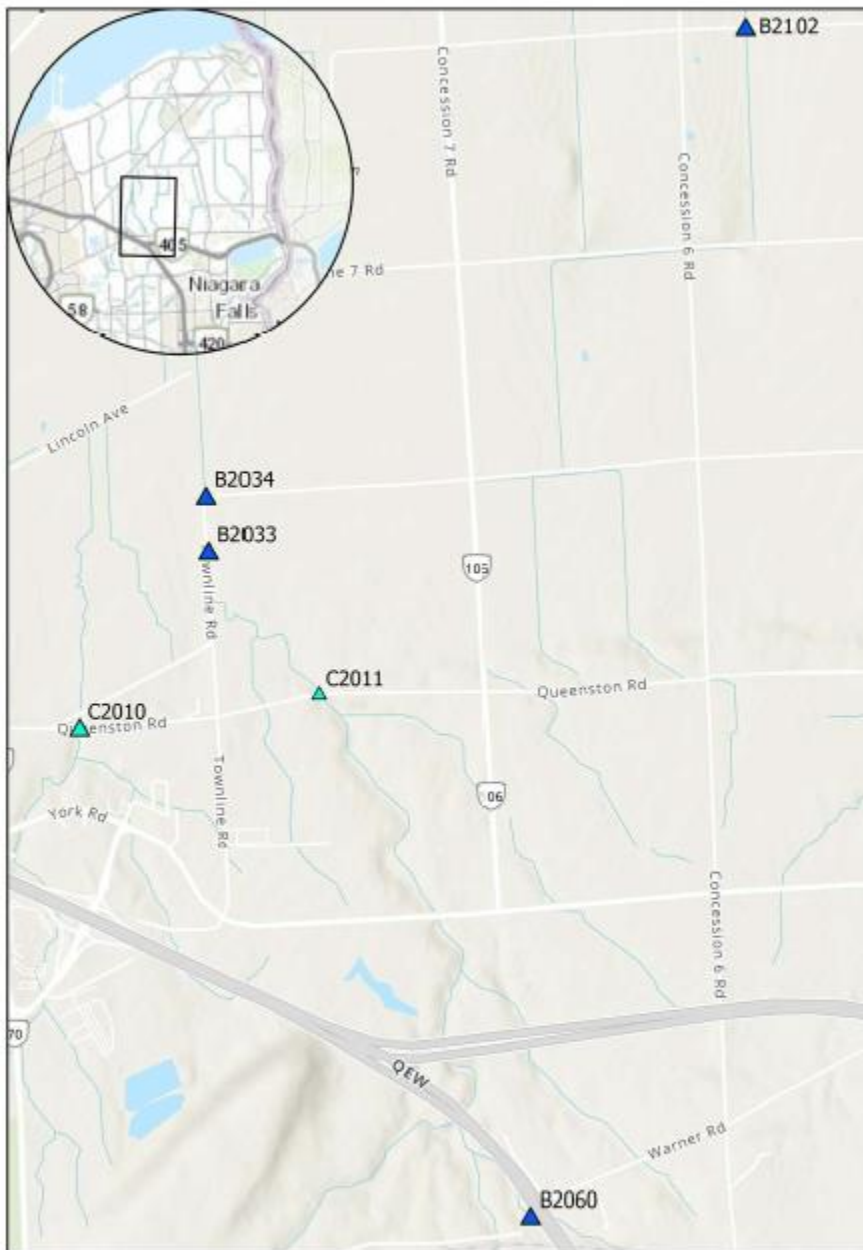


0 0 0 0 1 1 1 Kilometers



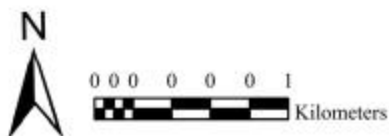
Town of Niagara-on-the-Lake: 2021 Municipal
Bridge Appraisal Rehabilitation/Replacement
Needs - Location Plan - Map 3
Created For: The Town of Niagara-on-the-Lake
Created By: ELLIS Engineering Inc.
Projection: NAD 83 UTM Zone 17N
Date Created: 2021-11-11

Town of Niagara-on-the-Lake: 2023 Municipal Bridge Appraisal - Rehabilitation/Replacement Needs Location Plan - Map 4



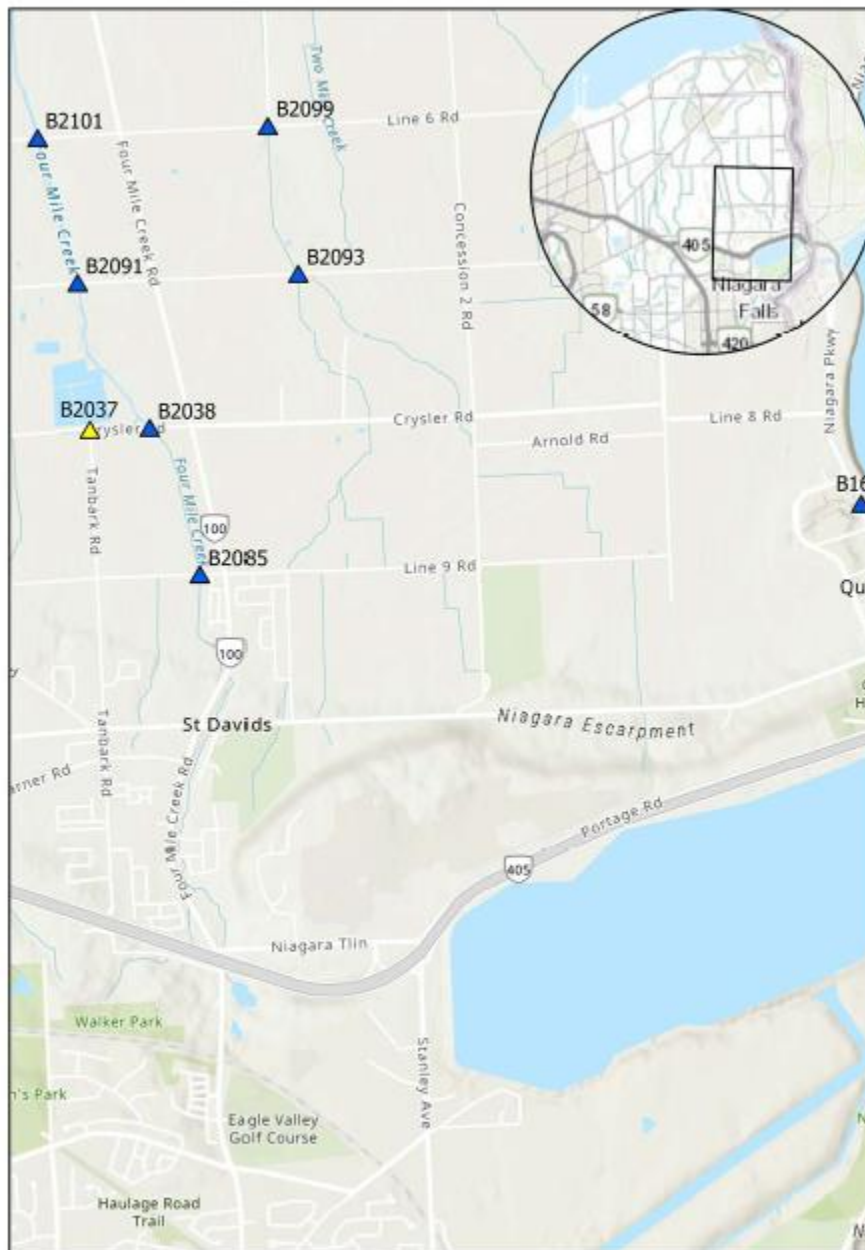
Legend

- Large Dark Blue Triangle: Bridge inspected in 2023, next inspection in 2025.
- Large Light Blue Triangle: Culvert inspected in 2023, next inspection in 2025.
- Large Yellow Triangle: Priority structure inspected in 2023, next inspection 2025. To be reviewed by Town.
- Small Light Blue Circle: Culvert inspected in 2021, next inspection in 2025.
- Large Red Triangle: Pedestrian bridge inspected in 2023, next inspection in 2025.
- Small Light Blue Triangle: Culvert inspected in 2023, next inspection in 2027.



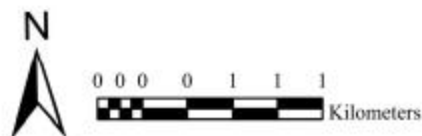
Town of Niagara-on-the-Lake: 2023 Municipal
Bridge Appraisal Rehabilitation/Replacement
Needs - Location Plan - Map 4
Created For: The Town of Niagara-on-the-Lake
Created By: ELLIS engineering inc.
Projection: NAD 83 UTM Zone 17N
Date Created: 2023-12-21

Town of Niagara-on-the-Lake: 2023 Municipal Bridge Appraisal - Rehabilitation/Replacement Needs Location Plan - Map 5



Legend

- Large Dark Blue Triangle: Bridge inspected in 2023, next inspection in 2025.
- Large Light Blue Triangle: Culvert inspected in 2023, next inspection in 2025.
- Large Yellow Triangle: Priority structure inspected in 2023, next inspection 2025. To be reviewed by Town.
- Small Light Blue Circle: Culvert inspected in 2021, next inspection in 2025
- Large Red Triangle: Pedestrian bridge inspected in 2023, next inspection in 2025.
- Small Light Blue Triangle: Culvert inspected in 2023, next inspection in 2027.



Town of Niagara-on-the-Lake: 2023 Municipal
Bridge Appraisal Rehabilitation/Replacement
Needs - Location Plan - Map 5
Created For: The Town of Niagara-on-the-Lake
Created By: ELLIS engineering inc.
Projection: NAD 83 UTM Zone 17N
Date Created: 2021-12-21

TOWN OF NIAGARA-ON-THE-LAKE
2024 ONE MILE CREEK STRUCTURE INSPECTIONS
REHABILITATION/REPLACEMENT NEEDS

LOCATION PLAN



TOWN OF NIAGARA-ON-THE-LAKE

2024 ONE MILE CREEK STRUCTURE INSPECTIONS REHABILITATION/REPLACEMENT NEEDS

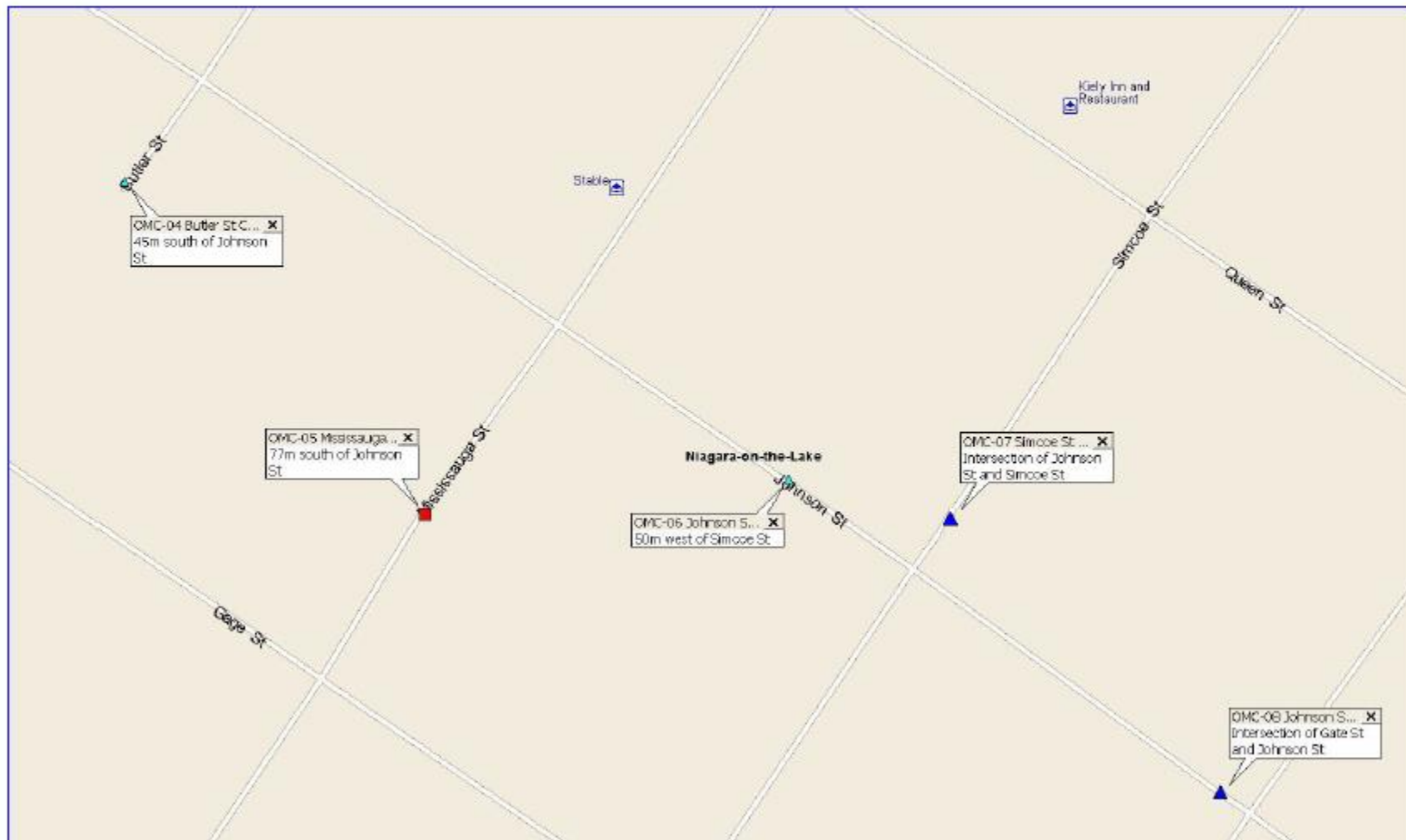
LOCATION PLAN – MAP 1



TOWN OF NIAGARA-ON-THE-LAKE

2024 ONE MILE CREEK STRUCTURE INSPECTIONS REHABILITATION/REPLACEMENT NEEDS

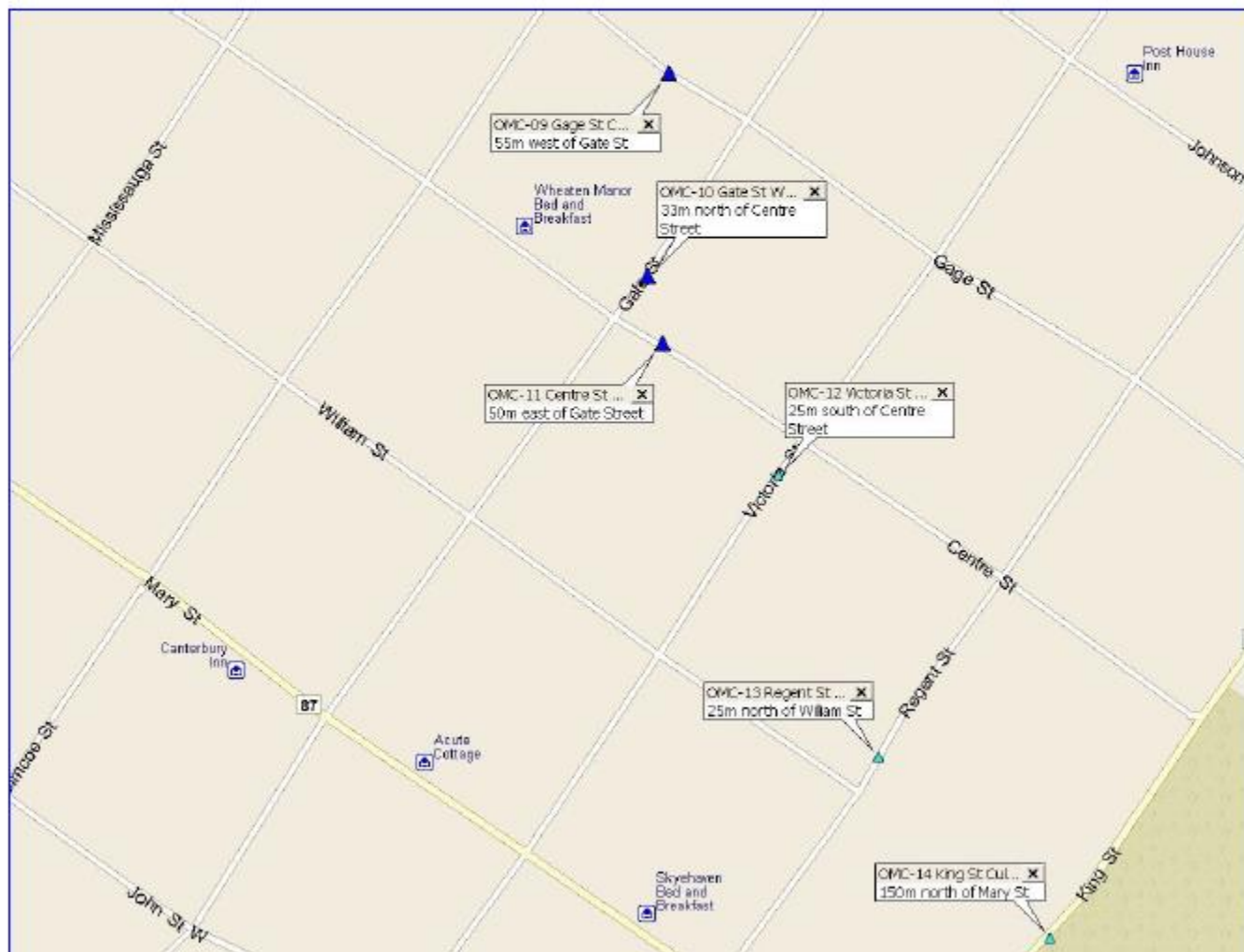
LOCATION PLAN – MAP 2



TOWN OF NIAGARA-ON-THE-LAKE

2024 ONE MILE CREEK STRUCTURE INSPECTIONS REHABILITATION/REPLACEMENT NEEDS

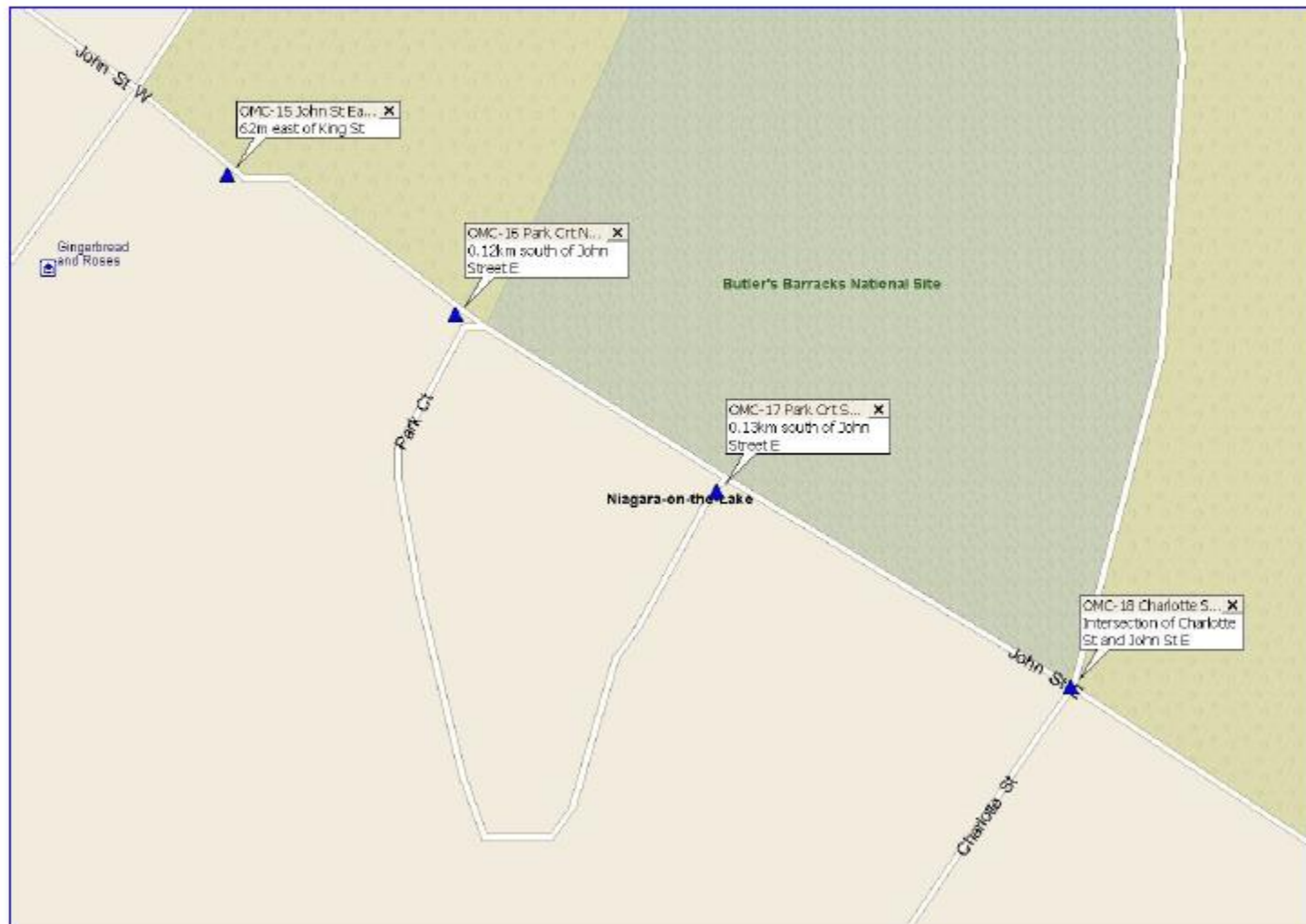
LOCATION PLAN – MAP 3



TOWN OF NIAGARA-ON-THE-LAKE

2024 ONE MILE CREEK STRUCTURE INSPECTIONS REHABILITATION/REPLACEMENT NEEDS

LOCATION PLAN – MAP 4



Photos of Bridges and Culverts

Bridge Name: Concession 2 Road (B6), Captured 11th July 2023, Condition: 88/100 (Very Good)



Photograph No. 1: 0227: Roadway over the structure looking north.



Photograph No. 2: 0248: East elevation.



Photograph No. 3: 0285: West elevation.



Photograph No. 4: 0258: Underside of the structure looking west.

Bridge Name: Shore Lane (B4), Captured 20th June 2023, Condition: 63/100 (Fair)



Photograph No. 1: 0766: Roadway over the structure looking east.



Photograph No. 2: 0771: South elevation.



Photograph No. 3: 0788: Underside of the structure and east abutment looking east.



Photograph No. 4: 0778: Area of severe corrosion on west exterior girder.

Bridge Name: Concession 3 Road (B23), Captured July 2023, Condition: 10/100 (Very Poor)



Photograph No. 1: 0718: Driveway over the structure looking east.



Photograph No. 2: 0724: North elevation.



Photograph No. 3: 0725: South elevation.

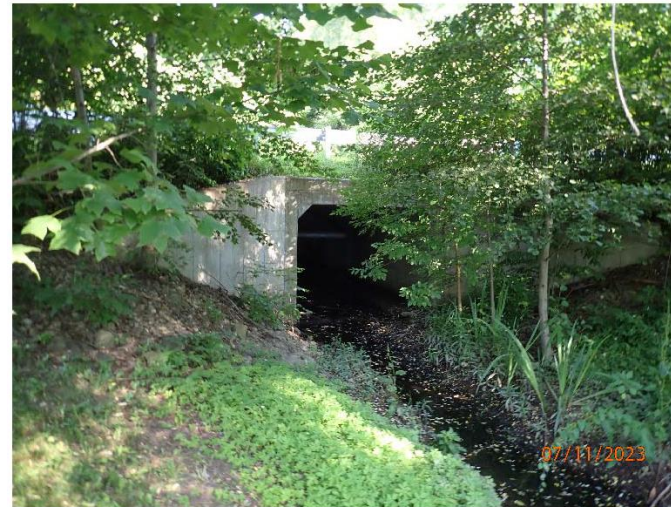


Photograph No. 4: 0722: Concrete barrier at west end.

Culvert Name: Nassau Street Culvert (C19), Captured July 2023, Condition: 85/100 (Very Good)



Photograph No. 1: 0012: Roadway over the structure looking south.



Photograph No. 2: 0039: East elevation.



Photograph No. 3: 0050: Underside of the structure looking west.



Photograph No. 4: 0020: Detached post at southeast corner.

Culvert Name: Regent Street Culvert (OMC-13), Captured June 2024, Condition: 55/100 (Poor)



Photograph No. 1: 0419: Roadway over the structure looking south.



Photograph No. 2: 0437: West elevation.

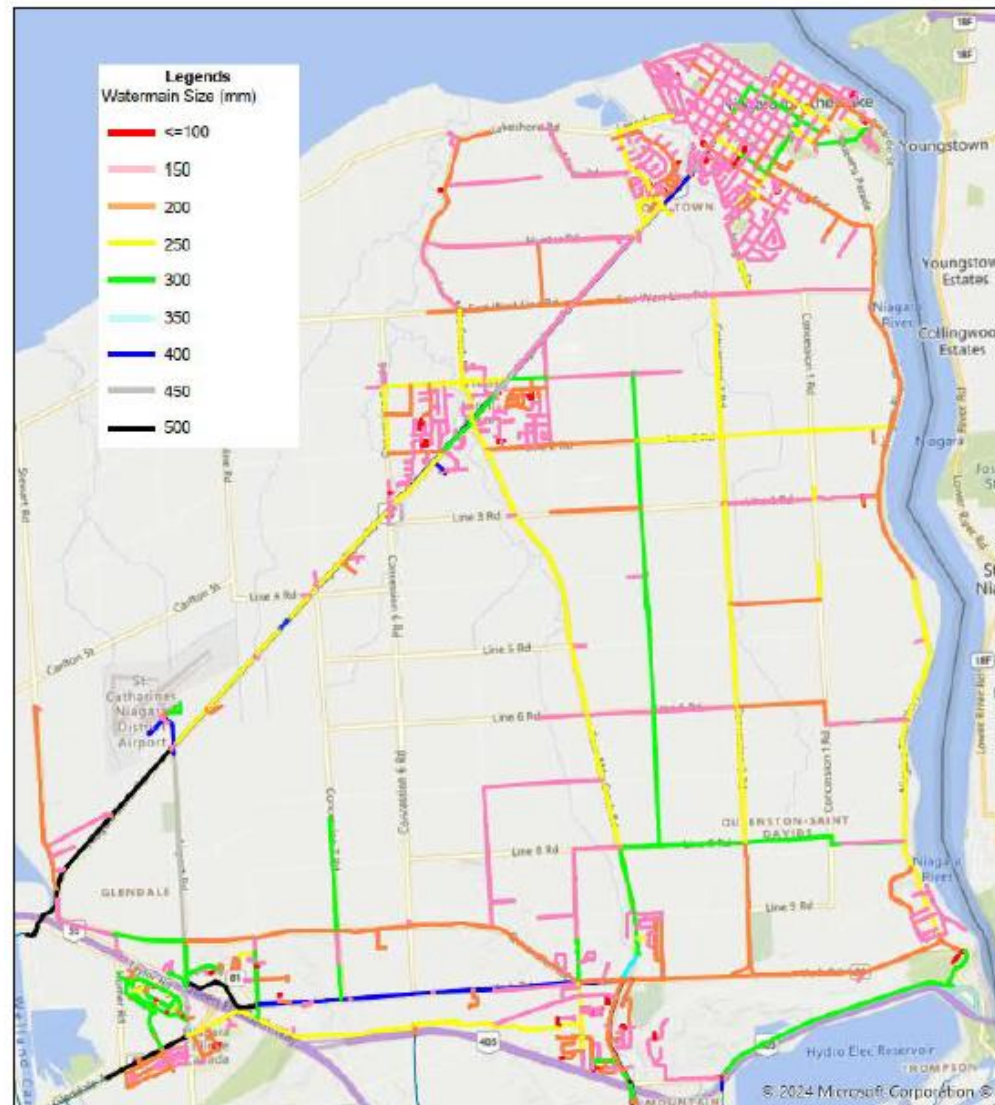


Photograph No. 3: 0442: Interior of west half of structure looking east.



Photograph No. 4: 0449: Area of failure in concrete arch at west end of structure.

7.3.1 Map of the Water Network



7.3.2 Map of Parks



Parks Location Map

- | | |
|--------------------------|--------------------------------|
| 1) Newark Park | 13) Dietsch Park |
| 2) Ryerson Park | 14) Centennial Sports Park (T) |
| 3) Chatauqua Park | 15) Homestead Park |
| 4) William Nassau Park | 16) St. Davids Lions Park (T) |
| 5) Queen's Royal Park | 17) Lowrey Park |
| 6) Simcoe Park | 18) 19) 20) |
| 7) Nelson Park | Niagara-on-the-Green |
| 8) Memorial Park (T) | Parkettes |
| 9) Rye Heritage Park (T) | 21) Sparky's Park |
| 10) Community Centre | 22) Queenston Village |
| 11) (T) + 12) | Common |

The Village's Parks

Recreation Trails & Paths 
Tennis Courts = (T)



2017 Prepared by the Town of Niagara-on-the-Lake GIS