Asset Management Plan

45.0°N 81.3°W
BRUCE
county

2022

This Asset Management Program was prepared by:

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

Key Statistics

Replacement cost of asset portfolio
$890.7 million

Replacement cost of infrastructure per household
$20,911

Percentage of assets in fair or better condition
78%

Percentage of assets with assessed condition data
77%

Annual capital infrastructure deficit
$18.3 million

Recommended timeframe for eliminating annual infrastructure deficit
15 Years

Target reinvestment rate
3.4%

Actual reinvestment rate
1.3%

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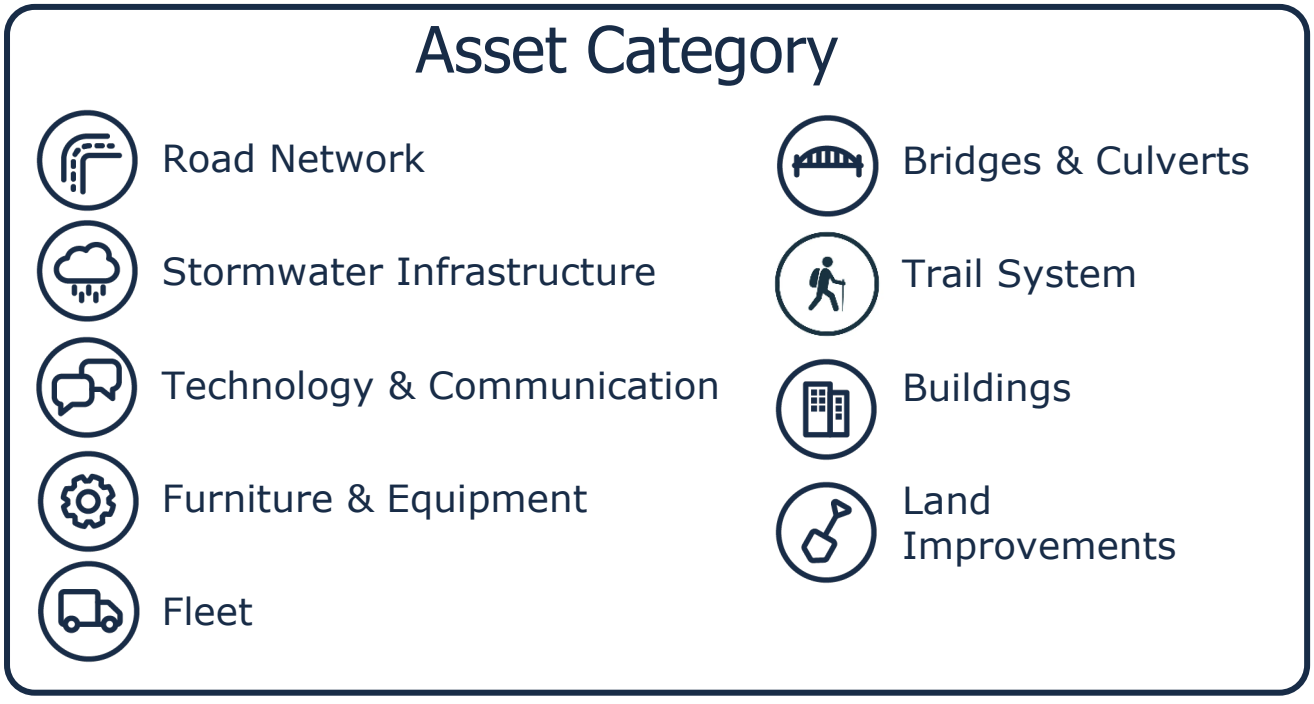
Executive Summary

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

All municipalities in Ontario are required to complete an asset management plan (AMP) in accordance with Ontario Regulation 588/17 (O. Reg. 588/17). This AMP outlines the current state of asset management planning at Bruce County. It identifies the current practices and strategies that are in place to manage public infrastructure and makes recommendations where they can be further refined. Through the implementation of sound asset management strategies, the County can ensure that public infrastructure is managed to support the sustainable delivery of infrastructure services.

This AMP includes the following asset categories:



The overall replacement cost of the asset categories included in this AMP totals $890.7 million. 78% of all assets analysed in this AMP are in fair or better condition and assessed condition data was available for 77% of assets. For the remaining assets, assessed condition data was unavailable, and asset age was used to approximate condition. This is a data gap that persists in most municipalities. Generally, age misstates the true condition of assets, making assessments essential to accurate asset management planning, and a recurring recommendation in this AMP.

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

To meet capital replacement and rehabilitation needs for existing infrastructure, prevent infrastructure backlogs, and achieve long-term sustainability, the County's average annual capital requirement totals $30.1 million. Based on a historical analysis of sustainable capital funding sources, the County is committing approximately $11.9 million towards capital projects or reserves per year. As a result, there is currently an annual funding gap of $18.2 million.

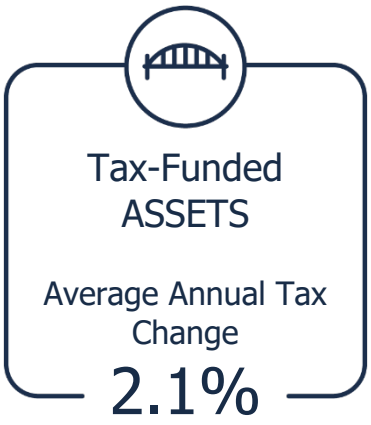
It is important to note that this AMP represents a snapshot in time and is based on the best available processes, data, and information at the County. Strategic asset management planning is an ongoing and dynamic process that requires continuous improvement and dedicated resources.

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

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

Recommendations

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



Recommendations to guide continuous refinement of the County's asset management program include:

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

1 Introduction & Context

Key Insights

- The goal of asset management is to minimize the lifecycle costs of delivering infrastructure services, and manage the associated risks, while maximizing the value rate payers receive from the asset portfolio

- The County's asset management policy provides clear direction to staff on their roles and responsibilities regarding asset management

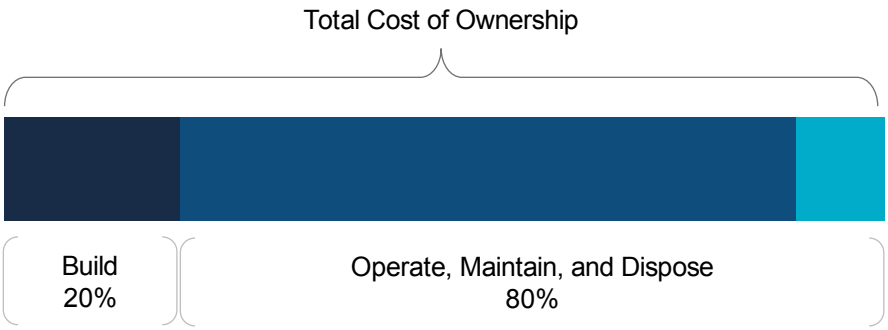
- An asset management plan is a living document that should be updated regularly to inform long-term planning

- Ontario Regulation 588/17 outlines several key milestones and requirements for asset management plans in Ontario between July 1, 2022 and 2025

1.1 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, and manage the associated risks, while maximizing the value ratepayers receive from the asset portfolio.

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



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

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

1.1.1 Asset Management Policy

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

The County adopted the "Strategic Asset Management Policy" on July 1st, 2019 in accordance with Ontario Regulation 588/17.

The objectives of the policy include:

- Provide leadership and commitment to asset management
- Guide the consistent use of asset management across the organization
- Facilitate logical and evidence-based decision-making
- Support the delivery of sustainable community services now and in the future

1.1.2 Asset Management Strategy

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

The County'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.

1.1.3 Asset Management Plan

The asset management plan (AMP) presents the outcomes of the County'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 County to re-evaluate the state of infrastructure and identify how the organization's asset management and financial strategies are progressing.

1.2 Key Concepts in Asset Management

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

1.2.1 Lifecycle Management Strategies

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

To ensure that 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 or replacement. The following table provides a description of each type of activity and the general difference in cost.

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

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

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

1.2.2 Risk Management Strategies

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

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

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

1.2.3 Levels of Service

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

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

Community Levels of Service

Community levels of service are a simple, plain language description or measure of the service that the community receives. For core asset categories (Roads, Bridges & Culverts, Stormwater) the Province, through O. Reg. 588/17, has provided qualitative descriptions that are required to be included in this AMP. For non-core asset categories, the County has determined the qualitative descriptions that will be used to determine the community level of service provided. These descriptions can be found in the Levels of Service subsection within each asset category.

Technical Levels of Service

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

For core asset categories (Roads, Bridges & Culverts, and Stormwater) the Province, through O. Reg. 588/17, has provided technical metrics that are required to be included in this AMP. For non-core asset categories, the County has determined the technical metrics that will be used to determine the technical level of service provided. These metrics can be found in the Levels of Service subsection within each asset category.

Current and Proposed Levels of Service

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

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

1.3 Ontario Regulation 588/17

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

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

2019

Strategic Asset Management Policy

2022

Asset Management Plan for Core Assets with the following components:

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

2024

Asset Management Plan for Core and Non-Core Assets

2025

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

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

1.3.1 O. Reg. 588/17 Compliance Review

The following table identifies the requirements outlined in Ontario Regulation 588/17 for municipalities to meet by July 1, 2022. Next to each requirement a page or section reference is included in addition to any necessary commentary. For this AMP the County has met all requirements for July 1, 2022 for core assets and has also partially met requirements for July 1, 2024 for non-core assets.

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

2 Scope and Methodology

Key Insights

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

2.1 Asset categories included in this AMP

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

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

Asset Category	Source of Funding
Bridges & Culverts	Tax Levy & Sustainable Funding Sources From Other Levels of Government
Buildings	
Fleet	
Furniture & Equipment	
Land Improvements	
Road Network	
Stormwater Infrastructure	
Technology & Communication	
Trail System	

2.2 Deriving Replacement Costs

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

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

User-defined costs based on reliable sources are a reasonably accurate and reliable way to determine asset replacement costs. Cost inflation is typically used in the absence of reliable replacement cost data. It is a reliable method for recently purchased and/or constructed assets where the total cost is reflective of the actual

costs that the County incurred. As assets age, and new products and technologies become available, cost inflation becomes a less reliable method.

2.3 Estimated Useful Life

The estimated useful life (EUL) of an asset is the period over which the County 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 County staff and supplemented by existing industry standards when necessary.

2.4 Reinvestment Rate

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

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

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

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

2.5 Deriving Asset Condition

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

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

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

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

3 Portfolio Overview

Key Insights

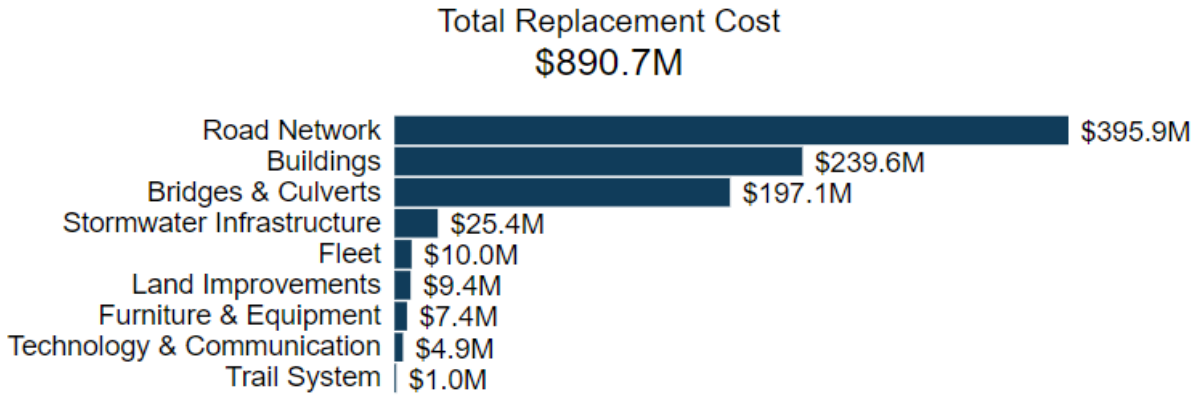
- The total replacement cost of the County's asset portfolio is $890.7 million
- The County's target re-investment rate is 3.4%, and the actual re-investment rate is 1.3%, contributing to an expanding infrastructure deficit
- 78% of all assets are in fair or better condition
- Average annual capital requirements total $30.1 million per year across all assets

3.1 State of the Infrastructure Summary

Asset Category	Replacement Cost	Average Condition	Financial Capacity	
Road Network	$396M	Fair	Annual Requirement:	$13,830,000
			Funding Available:	$3,769,000
			Annual Deficit:	**$10,061,000**
Buildings	$240M	Good	Annual Requirement:	$7,206,000
			Funding Available:	$2,964,000
			Annual Deficit:	**$4,242,000**
Bridges & Culverts	$197M	Good	Annual Requirement:	$4,588,000
			Funding Available:	$2,908,000
			Annual Deficit:	**$1,680,000**
Stormwater Infrastructure	$25M	Very Good	Annual Requirement:	$339,000
			Funding Available:	$0
			Annual Deficit:	**$339,000**
Fleet	$10M	Fair	Annual Requirement:	$1,724,000
			Funding Available:	$959,000
			Annual Deficit:	**$765,000**
Land Improvements	$9M	Fair	Annual Requirement:	$365,000
			Funding Available:	$85,000
			Annual Deficit:	**$280,000**
Furniture & Equipment	$7M	Poor	Annual Requirement:	$1,011,000
			Funding Available:	$730,000
			Annual Deficit:	**$281,000**
Technology & Communication	$5M	Poor	Annual Requirement:	$1,041,000
			Funding Available:	$376,000
			Annual Deficit:	**$665,000**
Trail System	$1M	Good	Annual Requirement:	$44,000
			Funding Available:	$95,000
			Annual Deficit:	**$(51,000)**
Overall	$891M	**Good**	Annual Requirement:	$30,148,000
			Funding Available:	$11,886,000
			Annual Deficit:	**$18,262,000**

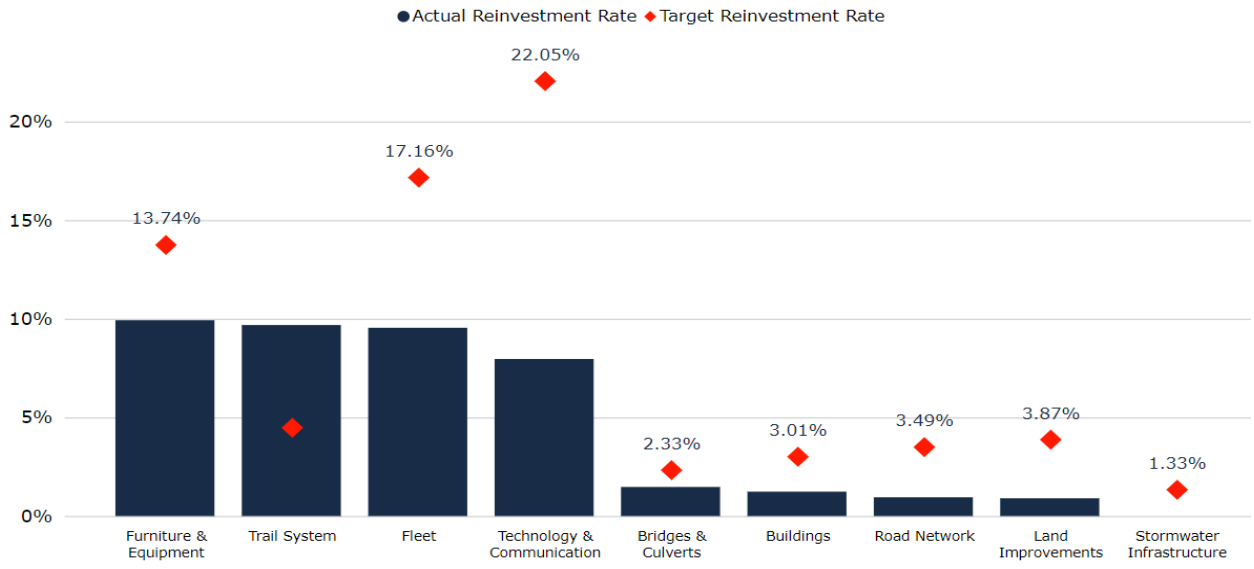
3.2 Total Replacement Cost of Asset Portfolio

The asset categories analyzed in this AMP have a total replacement cost of $891 million based on inventory data from 2020. This total was determined based on a combination of user-defined costs and historical cost inflation. This estimate reflects replacement of historical assets with similar, not necessarily identical, assets available for procurement today.



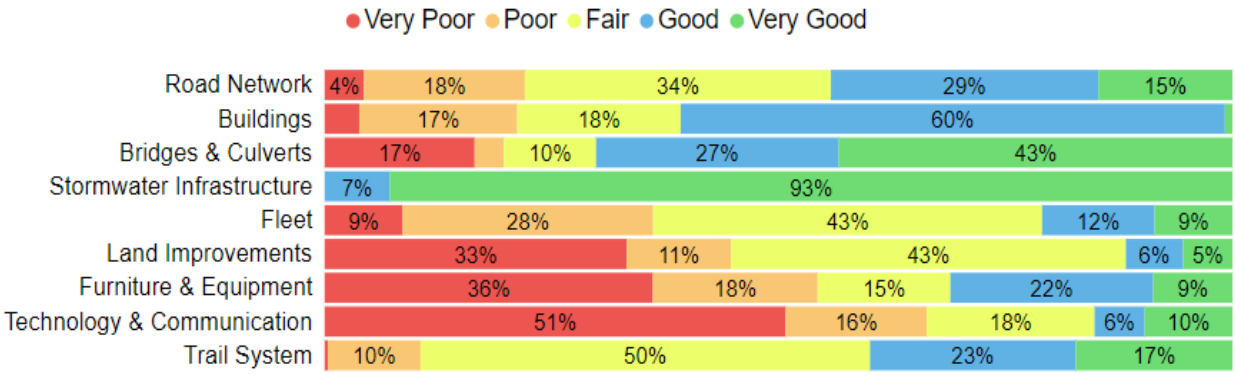
3.3 Target vs. Actual Reinvestment Rate

The graph below depicts funding gaps or surpluses by comparing target vs actual reinvestment rate. To meet the long-term replacement needs, the County should be allocating approximately $30.1 million annually, for a target reinvestment rate of 3.4%. Actual annual spending on infrastructure totals approximately $11.9 million, for an actual reinvestment rate of 1.30%.



3.4 Condition of Asset Portfolio

The current condition of the assets is central to all asset management planning. Collectively, 78% of assets in Bruce County are in fair or better condition. This estimate relies on both age-based and field condition data.



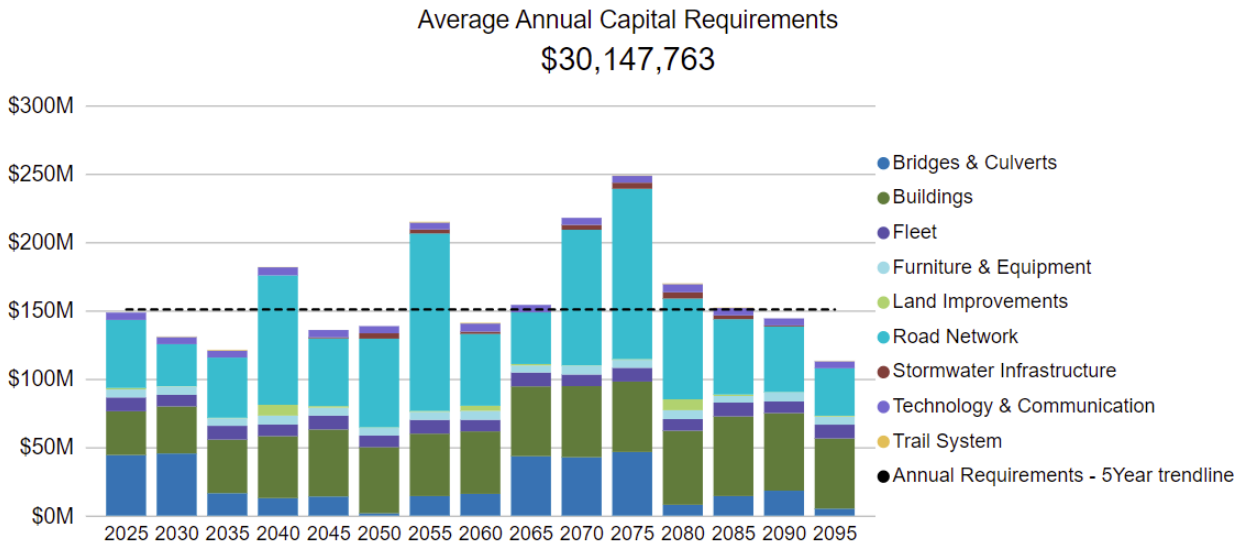
This AMP relies on assessed condition data for 77% of assets; for the remaining portfolio, age is used as an approximation of condition. Assessed condition data is invaluable in asset management planning as it reflects the true condition of the asset and its ability to perform its functions. The table below identifies the source of condition data used throughout this AMP.

Asset Category	Asset Segment	% of Assets with Assessed Condition	Source of Condition Data
Bridges & Culverts	All	100%	2020 Bridge Inspections
Buildings	All	95%	2019-2020 Building Condition Assessments
Fleet	All	92%	Staff Assessments
Furniture & Equipment	All	0%	Age-based
Land Improvements	All	0%	Age-based
Road Network	All	62%	2019 Road Assessment (Surface Only)
Stormwater Infastructure	All	0%	Age-based
Technology & Communication	All	0%	Age-based
Trail System	All	81%	2016 Inspections
		77%	

3.5 Forecasted Capital Requirements

The development of a long-term capital forecast should include both asset rehabilitation and replacement requirements. With the development of asset-specific lifecycle strategies that include the timing and cost of future capital events, the County can produce an accurate long-term capital forecast.

The annual capital requirement represents the average amount per year that the County should allocate towards funding rehabilitation and replacement needs to meet future capital needs. The following graph identifies capital requirements over the next 75 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year increments and the trend line represents the average 5-year capital requirements.



4 State of Local Infrastructure Core Assets

Key Insights

- Core infrastructure categories represented in this AMP include the road network, bridges and culverts, and stormwater infrastructure
- Core infrastructure assets are valued at $618 million
- 80% of core infrastructure assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for core infrastructure assets is approximately $18.8 million

Standard Tables and Graphs Defined

- The **Average Condition** (%) is a weighted value based on replacement cost. The Estimated Useful Life has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.
- The **annual capital requirement** represents the average amount per year that the County should allocate towards funding rehabilitation and replacement needs to meet future capital needs.
- **Risk matrices** provide a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within each asset category based on 2020 inventory data.

4.1 Road Network

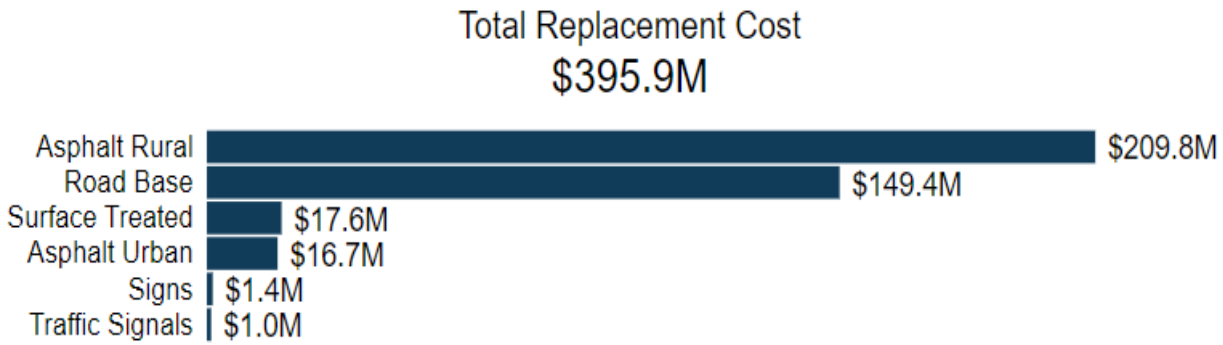
The Road Network is a critical component of the provision of safe and efficient transportation services and represents the highest value asset category in the County's asset portfolio. It includes all County owned and maintained roadways in addition to supporting roadside infrastructure including signs and traffic signals.

4.1.1 Asset Inventory & Replacement Cost

Table 1 below includes the quantity, replacement cost method and total replacement cost of each asset segment in the County's Road Network inventory.

Table 1: Road Network Replacement Cost Summary

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Asphalt Rural	569 kms	Cost/Unit	$209,761,213
Asphalt Urban	38 kms	Cost/Unit	$16,700,589
Road Base	677 kms	CPI Tables	$149,394,850
Signs	284	CPI Tables	$1,377,192
Surface Treated	70 kms	Cost/Unit	$17,631,836
Traffic Signals	20	CPI Tables	$1,007,835
			$395,873,515

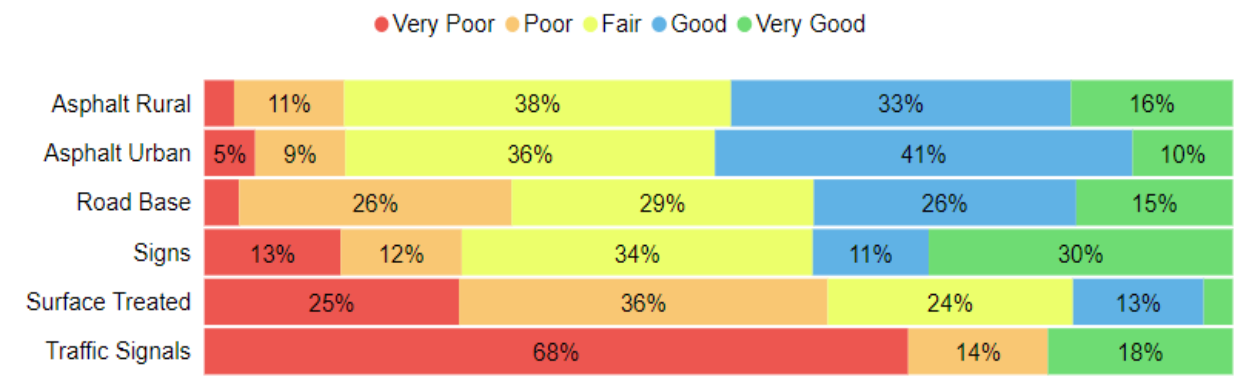


4.1.2 Asset Condition, Age & Useful Life

Table 2 below identifies the current average condition, average age, and estimated useful life for each asset segment.

Table 2: Road Network Asset Condition Summary

Asset Segment	Average Condition (%)	Estimated Useful Life (Years)	Average Age (Years)
Asphalt Rural	69% (Fair)	20	16.1
Asphalt Urban	67% (Fair)	20	15.5
Road Base	53% (Fair)	50-75	32.1
Signs	58% (Fair)	10-20	3.7
Surface Treated	44% (Poor)	8	17.1
Traffic Signals	20% (Poor)	10-25	13.8
	62% (Fair)		**23.5**



Current Approach to Condition Assessment

The following describes the County's current approach:

- A Road Assessment was completed in 2019 by StreetScan that included a detailed assessment of the condition of each road surface segment. This assessment did not include the road base.

In this AMP, the following rating criteria in **Table 3** is used to determine the current condition of road segments and forecast future capital requirements:

Table 3: Road Network Condition Assessment Criteria

Condition	Rating
Very Good	85 – 100
Good	70 – 85
Fair	50 – 70
Poor	30 – 50
Very Poor	0 – 30

For all other non-linear road assets, the following rating criteria in **Table 4** is used to determine the current condition of road segments and forecast future capital requirements:

Table 4: Road Network Appurtenances Condition Rating Criteria

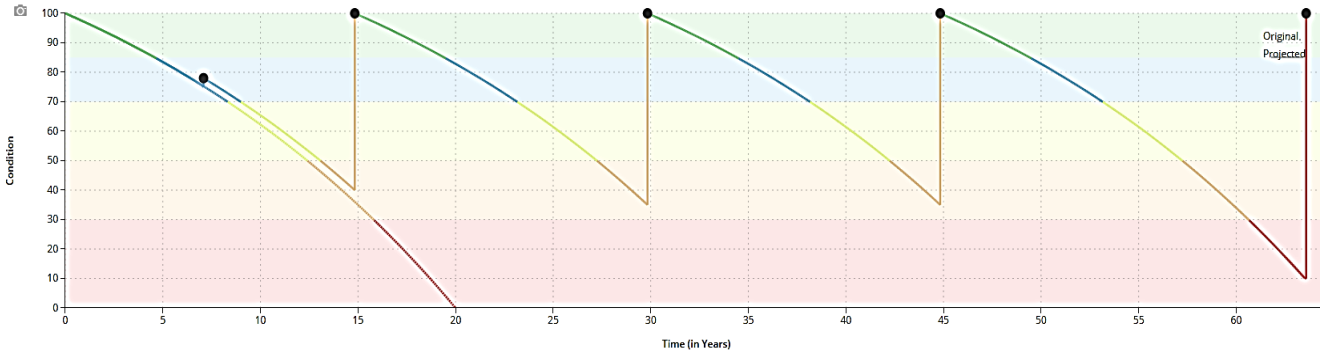
Condition	Rating
Very Good	80-100
Good	60-80
Fair	40-60
Poor	20-40
Very Poor	0-20

4.1.3 Lifecycle Management Strategy

The following lifecycle strategy in **Table 5** has been documented to illustrate the maintenance and rehabilitation required to keep paved roads in a good state of repair. Tar & chip surfaces undergo a similar maintenance strategy as listed below accompanied by perpetual maintenance activities such as periodic surface treatments that maintain these roads in a state of good repair.

Table 5: Road Network Lifecycle Strategy

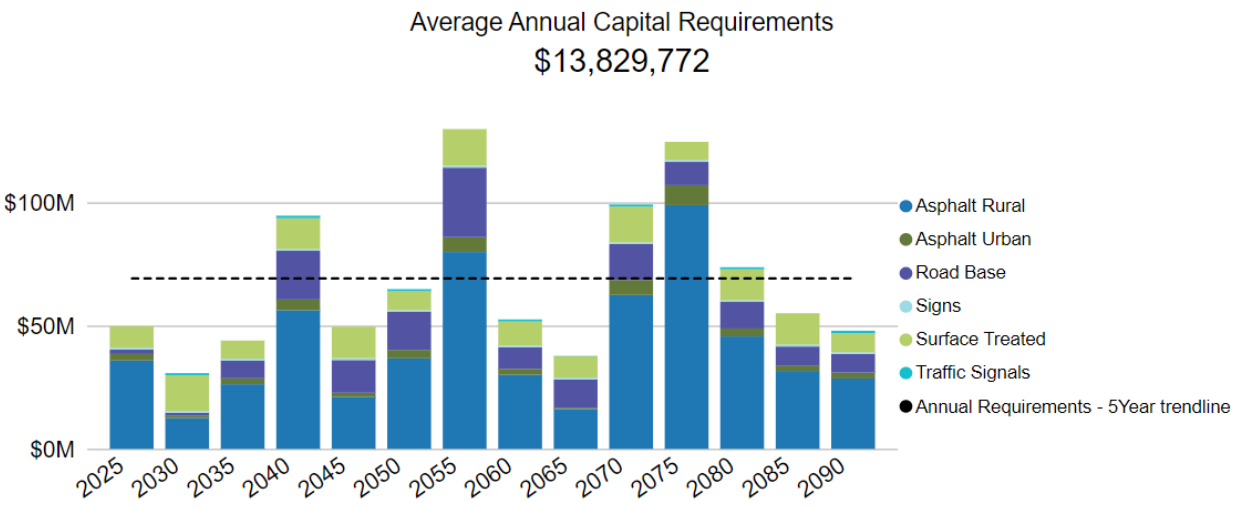
Paved Roads		
Event Name	**Event Class**	**Event Trigger**
Mowing	Maintenance	Semi-annually
Spray Application	Maintenance	Every 2 Years
Crack Sealing	Preventative Maintenance	Every 4 years as required
Ditching / Brushing	Preventative Maintenance	Every 13 Years
Microsurfacing	Preventative Maintenance	PCI 75%
Mill & Pave	Rehabilitation	PCI 40%
Hot In Place Recycling + 35mm UTO	Rehabilitation	PCI 35%
Cold In Place Recycling	Rehabilitation	PCI 35%
Full Reconstruction	Replacement	PCI 10% - 30%



4.1.4 Forecasted Capital Requirements

Based on the lifecycle strategies identified previously for the County's road network, **Figure 1** illustrates capital requirements over the next 75 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year increments and the trend line represents the average 5-year capital requirements.

Figure 1: Road Network Average Annual Capital Requirements



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

4.1.5 Risk Analysis

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in **Table 6** to determine the risk rating of each road segment and **Table 7** to determine the risk rating of all road network appurtenances.

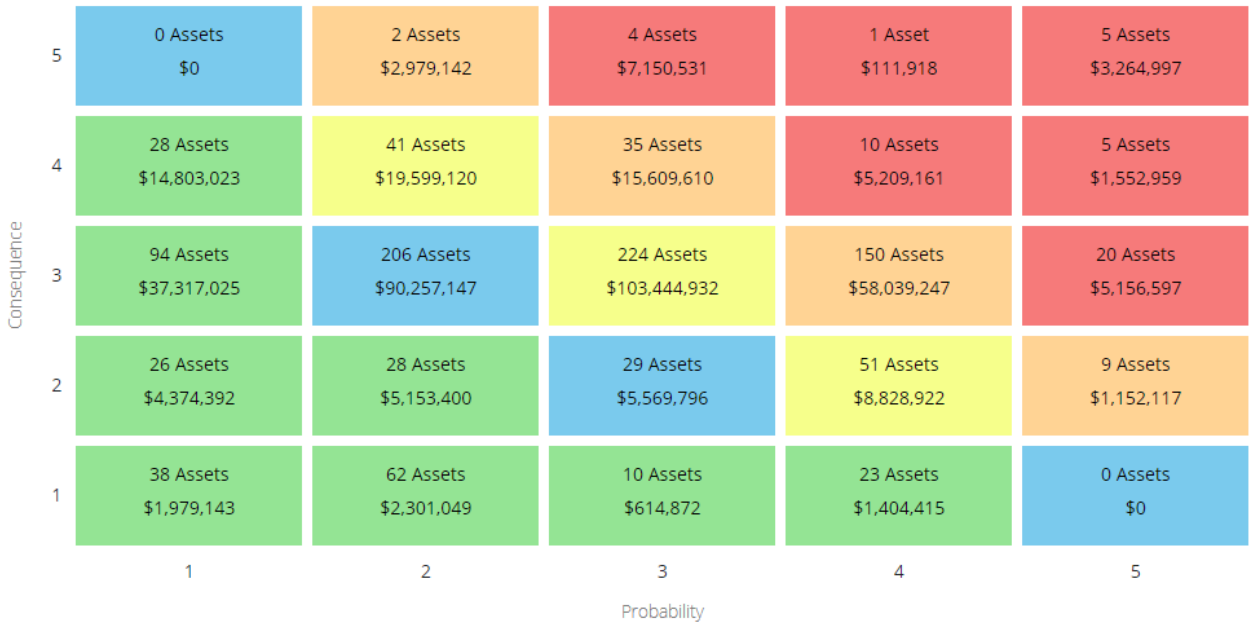


Table 6: Road Network Quantitative Risk Rating Criteria

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Economic)
	Number of Lanes (Economic)
	Roadside Environment (Economic)
	Maintenance Class (Operational)
Service Life Remaining (Years)	Design Class (Operational)
	Emergency Detour Route (Strategic)
	Preferred Super Load Route (Strategic)
	Load Posted Roads (Strategic)

Table 7: Road Network Appurtenances Quantitative Risk Rating Criteria

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Economic)

Risks to Current Asset Management Strategies

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

Financial Reinvestment
Maintaining County infrastructure and providing desired levels of service requires the allocation of adequate financial resources. Fiscal capacity and budget constraints are a constant concern for staff across all departments attempting to manage the maintenance and rehabilitation of County infrastructure. Capital funding is all too often negatively impacted by increasing operating costs.
Municipalities typically have few means at their disposal to raise adequate and sustainable funding to meet operational and capital requirements. As a result, they are heavily dependent on both provincial and federal grant programs to maintain and replace municipal infrastructure. Any fluctuations in annual grant funding secured can have a dramatic impact on provided services.

4.1.6 Levels of Service

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

Community Levels of Service

Table 8 outlines the qualitative descriptions that determine the community levels of service provided by the Road Network.

Table 8: Road Network Qualitative Levels of Service

Service Attribute	Qualitative Description	Current LOS (2020)
Availability	Description, which may include maps, of the road network in the County and its level of connectivity	The County's road network is critical infrastructure that supports multi-model transporation including commercial and personal transportation, emergency vehicles, agricultural machinery, and cyclists. See **Figure 2**
Performance	Description, images, or map that illustrate the different levels of road class pavement condition	A Road Assessment was completed in 2019 by StreetScan and provided surface condition data for the Bruce County road network.

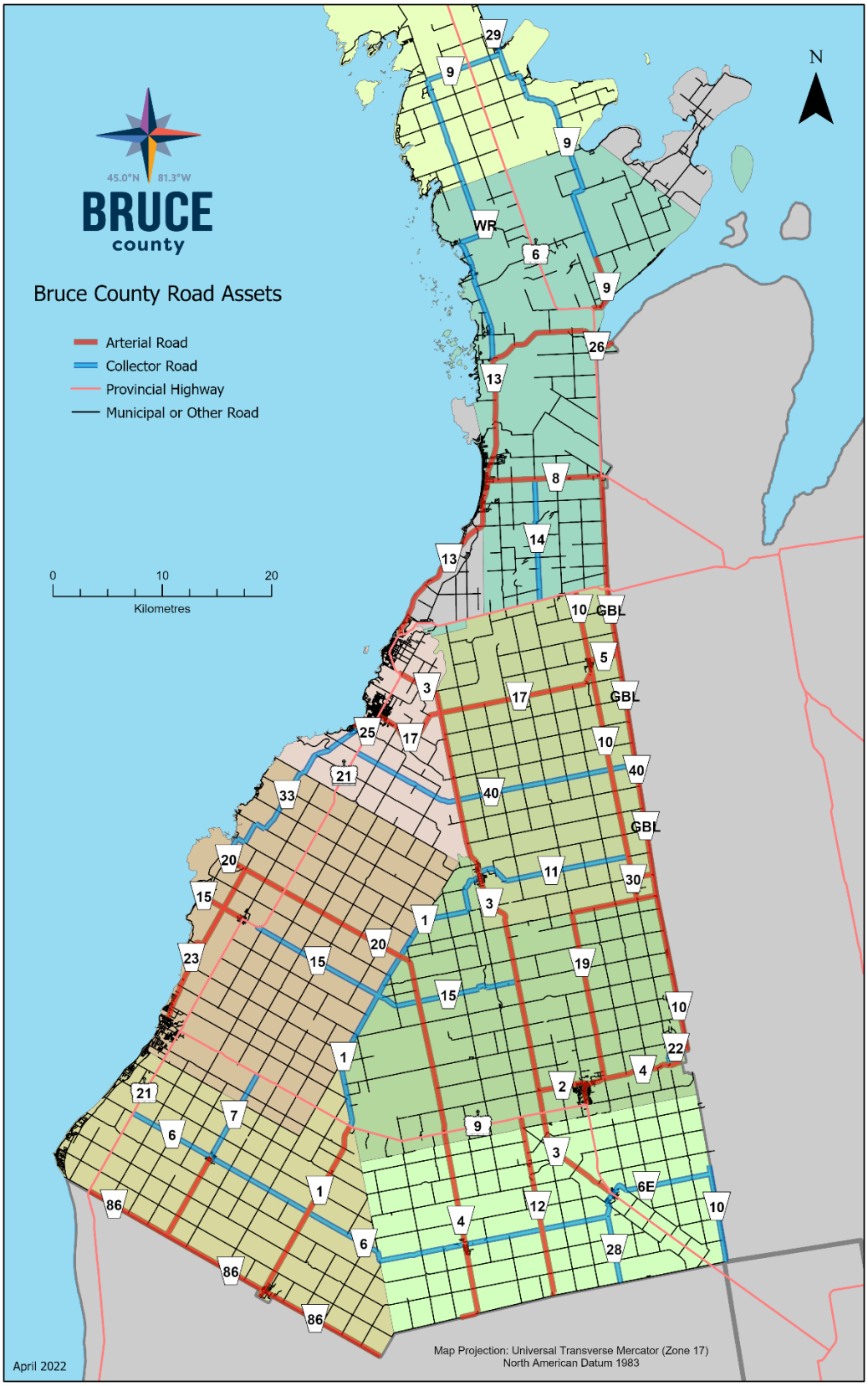
Technical Levels of Service

Table 9 outlines the quantitative metrics that determine the technical level of service provided by the Road Network.

Table 9: Road Network Quantitative Levels of Service

Service Attribute	Technical Metric	Current LOS (2020)
Availability	Lane-km of MMS classes 1 and 2 per land area (km/km^2)	0.002 km
	Lane-km of MMS classes 3 and 4 per land area (km/km^2)	0.17 km
Reliability	Average pavement condition index for paved roads in the County	Fair
	Average surface condition for unpaved roads in the County (e.g. excellent, good, fair, poor)	Very Poor
Sustainability	Capital reinvestment rate	0.95%

Figure 2: Road Network Connectivity



4.2 Bridges & Culverts

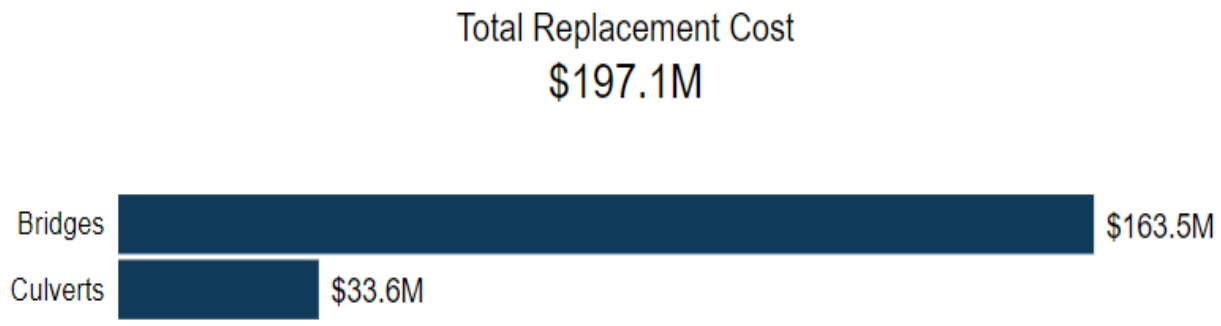
Bridges & Culverts (over 3m) represent a critical portion of the transportation services provided to the community. The Transportation and Environmental Services Department is responsible for the maintenance of all bridges and culverts located across County roads, with the goal of keeping structures in an adequate state of repair and minimizing service disruptions. Bruce County also is responsible for bridge and large diameter culvert assets within some lower tier municipal right of ways that connect municipal roads.

4.2.1 Asset Inventory & Replacement Cost

Table 10 below includes the quantity, replacement cost method and total replacement cost of each asset segment in the County's Bridges & Culverts inventory.

Table 10: Bridges & Culverts Replacement Cost Summary

Asset Segment	Quantity	Total Replacement Cost
Bridges	85	$163,474,777
Culverts	76	$33,599,764
		$197,074,541

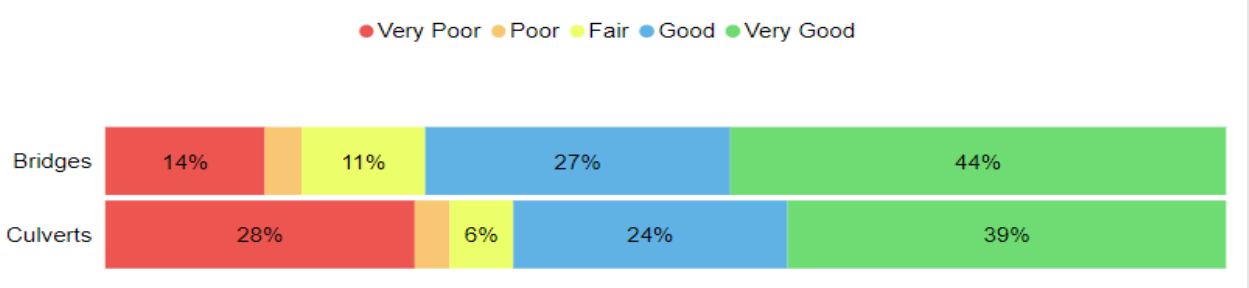


4.2.2 Asset Condition, Age & Useful Life

Table 11 below identifies the current average condition, average age, and estimated useful life for each asset segment.

Table 11: Bridges & Culverts Asset Condition Summary

Asset Segment	Average Condition (%)	Estimated Useful Life (Years)	Average Age (Years)
Bridges	69% (Good)	25-75	46.9
Culverts	59% (Fair)	25-45	41.3
	67% (Good)		**45.7**



Current Approach to Condition Assessment

The following describes the County's current approach:

- Condition assessments of all bridges and culverts with a span greater than or equal to 3 meters are completed every 2 years in accordance with the Ontario Structure Inspection Manual (OSIM)

In this AMP, the following rating criteria in **Table 12** is used to determine the current condition of bridges & culverts and forecast future capital requirements:

Table 12: Bridges & Culverts Condition Assessment Criteria

Condition	Rating
Very Good	70 – 100
Good	60 – 70
Fair	50 – 60
Poor	40 – 50
Very Poor	0 – 40

4.2.3 Lifecycle Management Strategy

Table 13 outlines the County's current lifecycle management strategy for bridges and culverts.

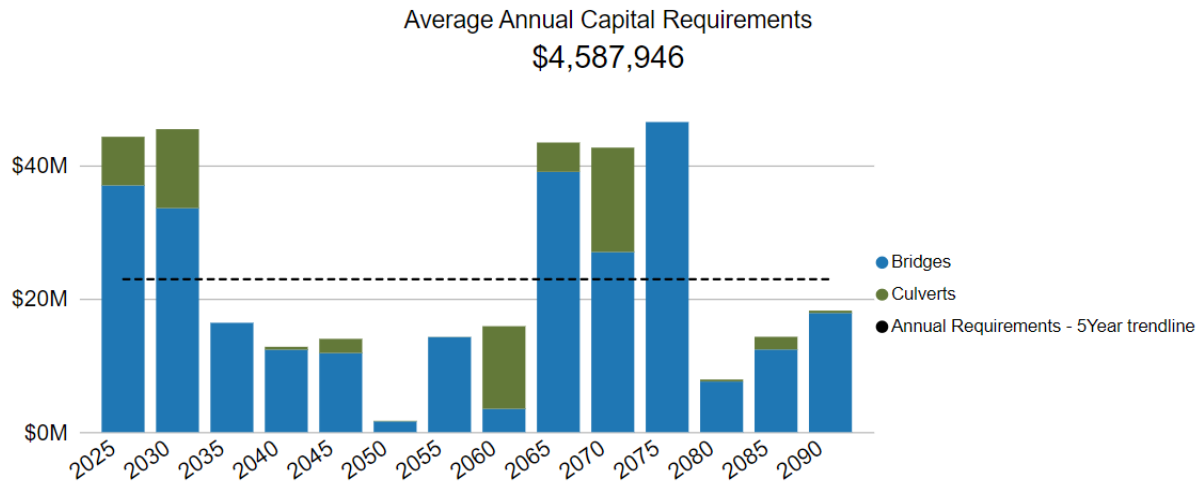
Table 13: Bridges & Culverts Lifecycle Strategy

Activity Type	Description of Current Strategy
Maintenance, Rehabilitation and Replacement	All lifecycle activities are driven by the results of mandated structural inspections competed according to the Ontario Structure Inspection Manual (OSIM)
Inspection	The most recent inspection report was completed in 2019 by B.M. Ross and Associates Limited

4.2.4 Forecasted Capital Requirements

Figure 3 illustrates capital requirements over the next 70 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year increments and the trend line represents the average 5-year capital requirements.

Figure 3: Bridges & Culverts Average Annual Capital Requirements



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

4.2.5 Risk Analysis

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in **Table 14** to determine the risk rating of each Bridge & Culvert.

Table 14: Bridges & Culverts Risk Rating Criteria

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
	Detour Length (Social)
Service Life Remaining (Years)	Forecast AADT (Social)

Risks to Current Asset Management Strategies

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

Aging Infrastructure

As County bridges continue to age, there are a handful of structures that are approaching their original useful life. There is currently no decision-making process in place to determine how to plan for structures that will require replacement or disposal.

Capital Funding Strategies

Major capital rehabilitation projects for bridges and culverts are somewhat dependant on the availability of grant funding opportunities. When grants are not available, bridge rehabilitation projects may be deferred. An annual capital funding strategy can reduce dependency on grant funding and help prevent deferral of capital works. In 2022 the County has taken first steps towards such a strategy by implementing a Capital Infrastructure Renewal Levy of 1.5% annually to be directed to major bridge projects over the next 5 years.

4.2.6 Levels of Service

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

Community Levels of Service

Table 15 outlines the qualitative descriptions that determine the community levels of service provided by Bridges & Culverts.

Table 15: Bridges & Culverts Qualitative Levels of Service

Service Attribute	Qualitative Description	Current LOS (2020)
Availability	Description of the traffic that is supported by County bridges (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	Bridges and structural culverts are a key component of the County's transportation network. 4% of the County's structures have loading or dimensional restrictions meaning that not all types of vehicles, including heavy transport, motor vehicles, emergency vehicles, agricultural machinery, and cyclists can cross them without restriction. See Error! Reference source not found.
Performance	Description or images of the condition of bridges & culverts and how this would affect use of the bridges & culverts	Good - **Figure 4** Fair - **Figure 5** Poor - **Figure 6**

Technical Levels of Service

Table 16 outlines the quantitative metrics that determine the technical level of service provided by Bridges & Culverts.

Table 16: Bridges & Culverts Quantitative Levels of Service

Service Attribute	Technical Metric	Current LOS (2020)
Availability	% of bridges in the County with loading or dimensional restrictions	4%
Reliability	Average bridge condition index value for bridges in the County	69
	Average bridge condition index value for structural culverts in the County	58
Sustainability	Capital re-investment rate	1.48%

Figure 4: Bridge in Good Condition (74 BCI)

GBL00200 – Scone Boundary bridge

Soffit	Bridge Deck Looking North	East Elevation
		

Figure 5: Bridge Culvert in Fair Condition (52 BCI)

1216000 – Greenock Creek Culvert

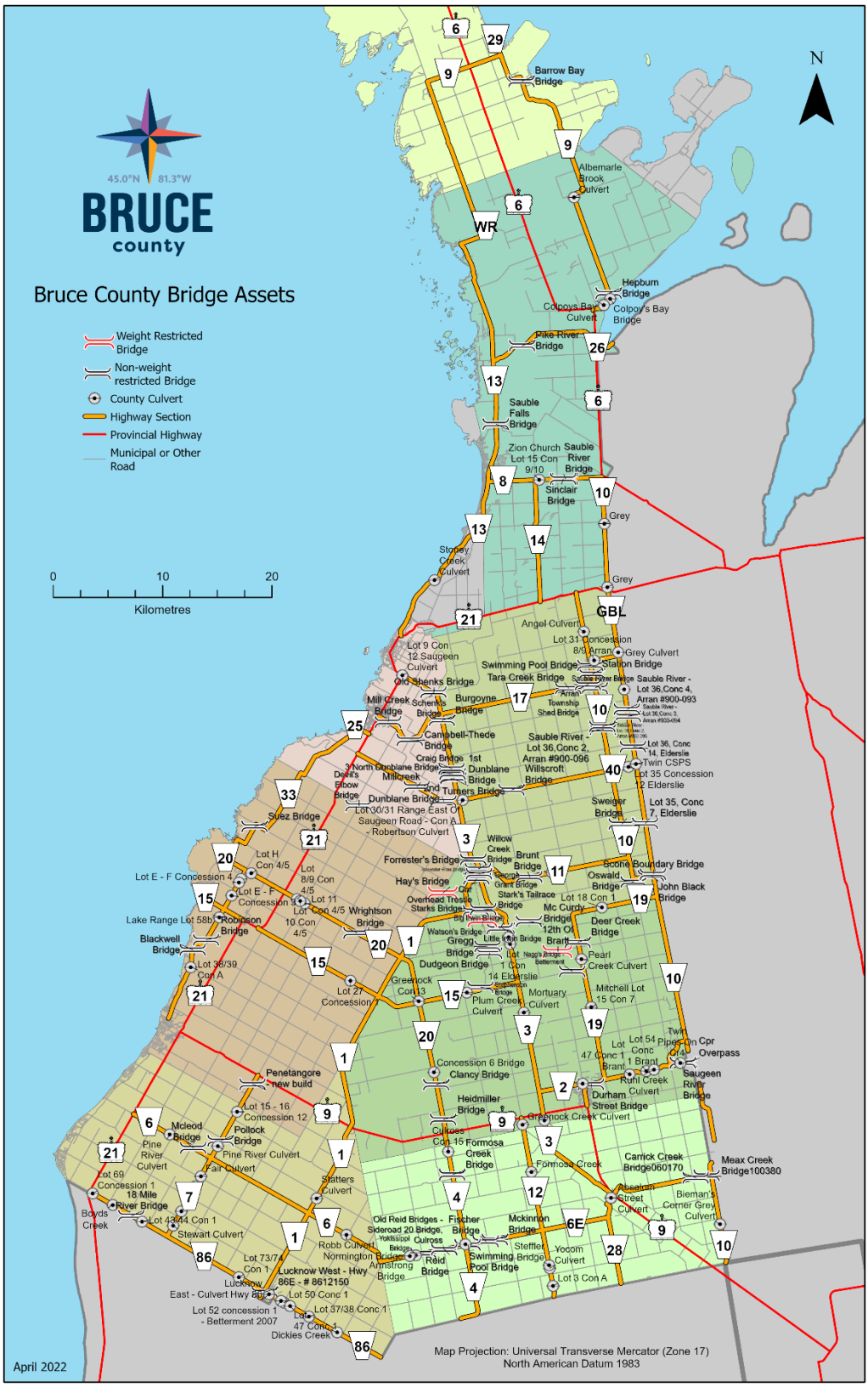
West Elevation	Interior	Culvert Deck Looking North
		

Figure 6: Bridge in Poor Condition (45 BCI)

8612150 – Lucknow West

Soffit	North Elevation	Bridge Deck Looking West
		

Figure 7: Bridges & Culverts Connectivity



4.3 Stormwater Infrastructure

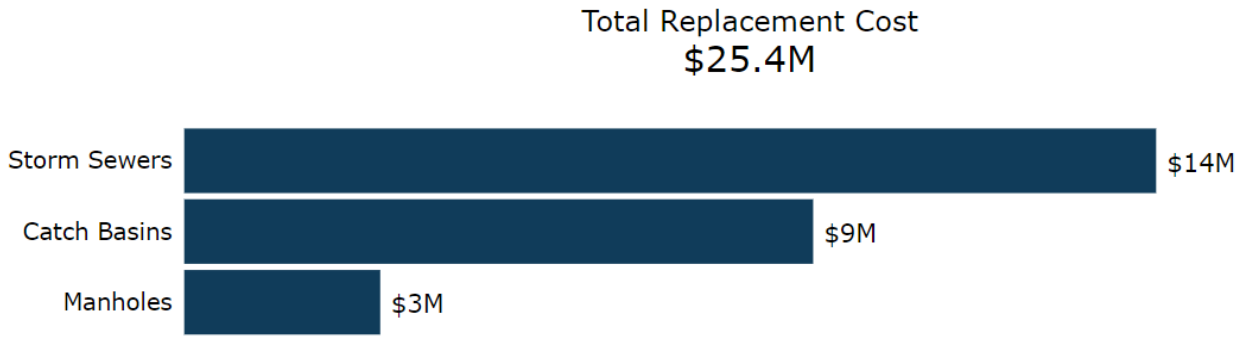
The County is responsible for owning and maintaining a stormwater network of 29 kms of storm mains, catch basins and manholes.

4.3.1 Asset Inventory & Replacement Cost

Table 17 includes the quantity, replacement cost method and total replacement cost of each asset segment in the County's Stormwater Infrastructure inventory.

Table 17: Stormwater Infrastructure Replacement Cost Summary

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Catch Basins	1,164	Cost/Unit	$8,904,600
Manholes	162	Cost/Unit	$2,775,330
Storm Sewers	29 kms	Cost/Unit	$13,760,424
			$25,440,354

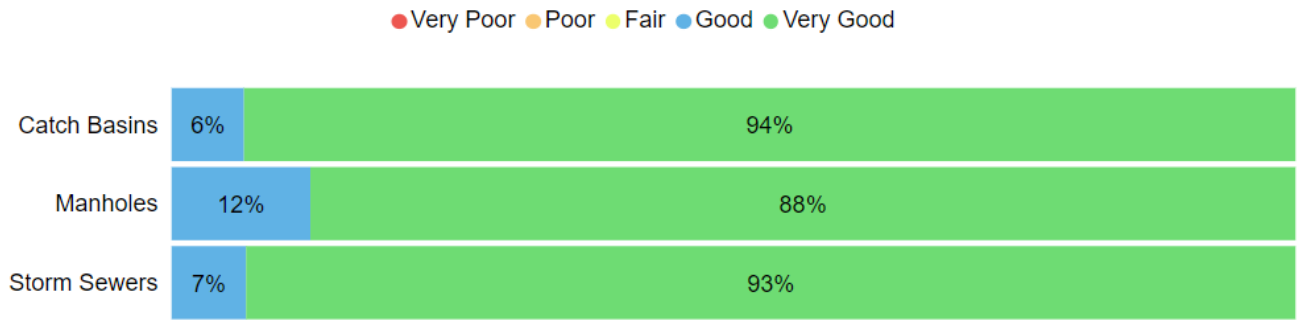


4.3.2 Asset Condition, Age & Useful Life

Table 18 identifies the current average condition, average age, and estimated useful life for each asset segment.

Table 18: Stormwater Infrastructure Asset Condition Summary

Asset Segment	Average Condition (%)	Estimated Useful Life (Years)	Average Age (Years)
Catch Basins	93% (Very Good)	75	24.9
Manholes	91% (Very Good)	75	26.0
Storm Sewers	92% (Very Good)	75	25.4
	92% (Very Good)		**25.3**



Current Approach to Condition Assessment

The following describes the County's current approach:

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

In this AMP, the following rating criteria illustrated in **Table 19** is used to determine the current condition of stormwater infrastructure and forecast future capital requirements:

Table 19: Stormwater Infrastructure Condition Rating Criteria

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

4.3.3 Lifecycle Management Strategy

Table 20 outlines the County's current lifecycle management strategy.

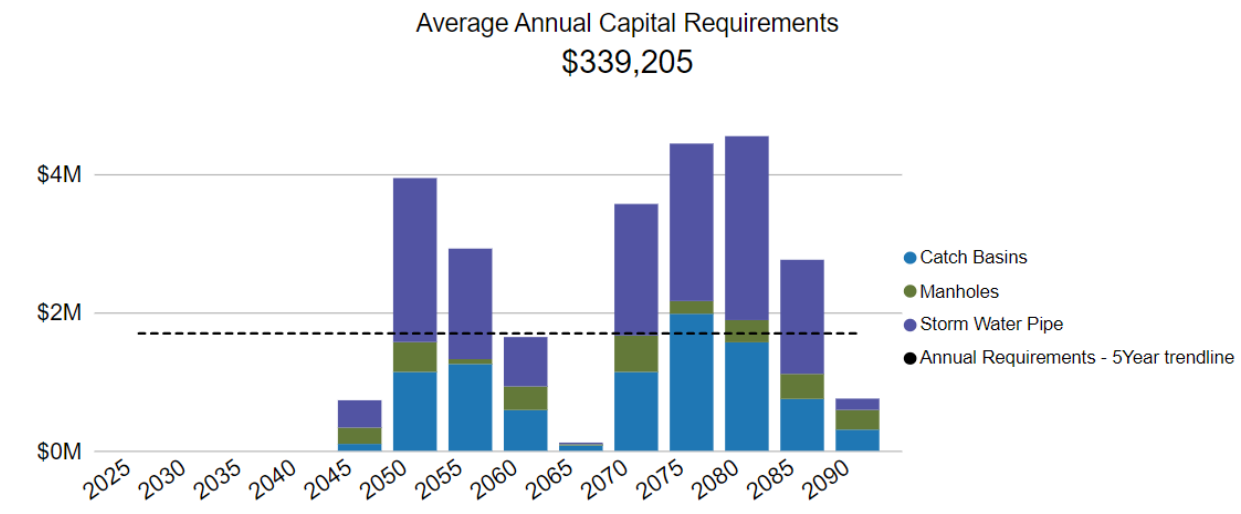
Table 20: Stormwater Infrastructure Lifecycle Strategy

Activity Type	Description of Current Strategy
Maintenance	Maintenance activities are informal and more reactive compared to other infrastructure and assets
	Primary activities include annual catch basin cleaning and storm main flushing when required

4.3.4 Forecasted Capital Requirements

Figure 8 illustrates capital requirements over the next 70 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year increments and the trend line represents the average 5-year capital requirements.

Figure 8: Stormwater Infrastructure Average Annual Capital Requirements



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

4.3.5 Risk Analysis

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in **Table 21** to determine the risk rating of each sewer pipe segment and **Table 22** to determine the risk rating of each point feature.

Table 21: Stormwater Linear Infrastructure Risk Rating Criteria

Probability of Failure (POF)	Consequence of Failure (COF)
Age-Based Condition	Replacement Cost (Financial)
	Pipe Size (Strategic)

Table 22: Stormwater Point Infrastructure Risk Rating Criteria

Probability of Failure (POF)	Consequence of Failure (COF)
Age-Based Condition	Replacement Cost (Financial)

Risks to Current Asset Management Strategies

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

Aging Infrastructure

As County stormwater infrastructure continues to age without current condition assessment data, some stormwater structures may be approaching the end of their original useful life. The County is developing a plan to assess stormwater structures to determine assets that will require future replacement, rehabilitation or disposal. The County incorporates replacements with road reconstruction projects where appropriate.

Capital Funding Strategies

Major capital reconstruction projects for stormwater infrastructure are typically included in road reconstruction projects. The County can access additional grant funding opportunities for stormwater infrastructure, especially regarding impacts of climate change and flooding. When grants are not available, stormwater infrastructure rehabilitation or reconstruction projects may be deferred.

Some of the asset-specific attributes that Staff utilize when prioritizing/defining the criticality of their stormwater infrastructure are documented below:

4.3.6 Levels of Service

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

Community Levels of Service

Table 23 outlines the qualitative descriptions that determine the community levels of service provided by Stormwater Infrastructure.

Table 23: Stormwater Infrastructure Qualitative Levels of Service

Service Attribute	Qualitative Description	Current LOS (2020)
Availability	Description, which may include map, of the user groups or areas of the County that are protected from flooding, including the extent of protection provided by the County stormwater infrastructure.	The County's stormwater collection network control minor or nuisance storms in urban areas. Their biggest benefit is protection of the road from minor flooding and prolongs the life of the road asset. See **Figure 9, Figure 10, Figure 11, Figure 12, Figure 13, Figure 14, Figure 15,** and **Figure 16**
Performance	Description or images of the condition of stormwater infrastructure and how this would affect the level of protection provided by the network.	The County's transportation connectivity is highly dependant on critical water crossings. Without the proper maintenance and repair of the County's bridge and culvert structures the levels of service provided by the transportation network would be severely affected.

Technical Levels of Service

Table 24 outlines the quantitative metrics that determine the technical level of service provided by the Stormwater Infrastructure.

Table 24: Stormwater Infrastructure Quantitative Levels of Service

Service Attribute	Technical Metric	Current LOS (2020)
Reliability	% of properties in County resilient to a 100-year storm	95%[1]
	% of the County's stormwater management system resilient to a 5-year storm	95%[2]
Sustainability	Capital reinvestment rate	0%

[1] The County does not currently have data available to determine this technical metric. The rate of properties that are not expected to be resilient to a 100-year storm is expected to be very low.
[2] This is based on the observations of County staff.

Figure 9: Saugeen Shores Stormwater Structures

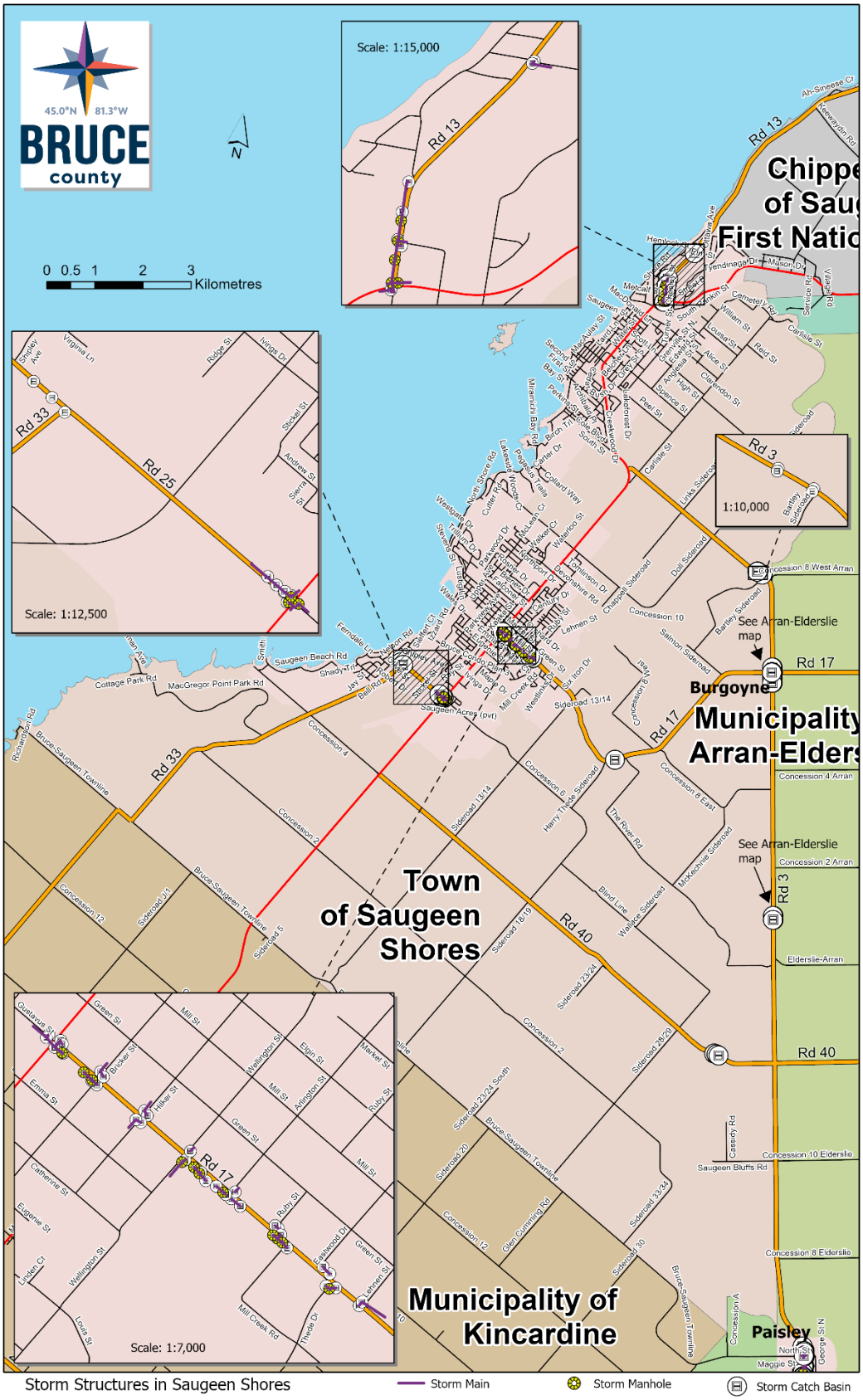


Figure 10: South Bruce Peninsula Stormwater Structures

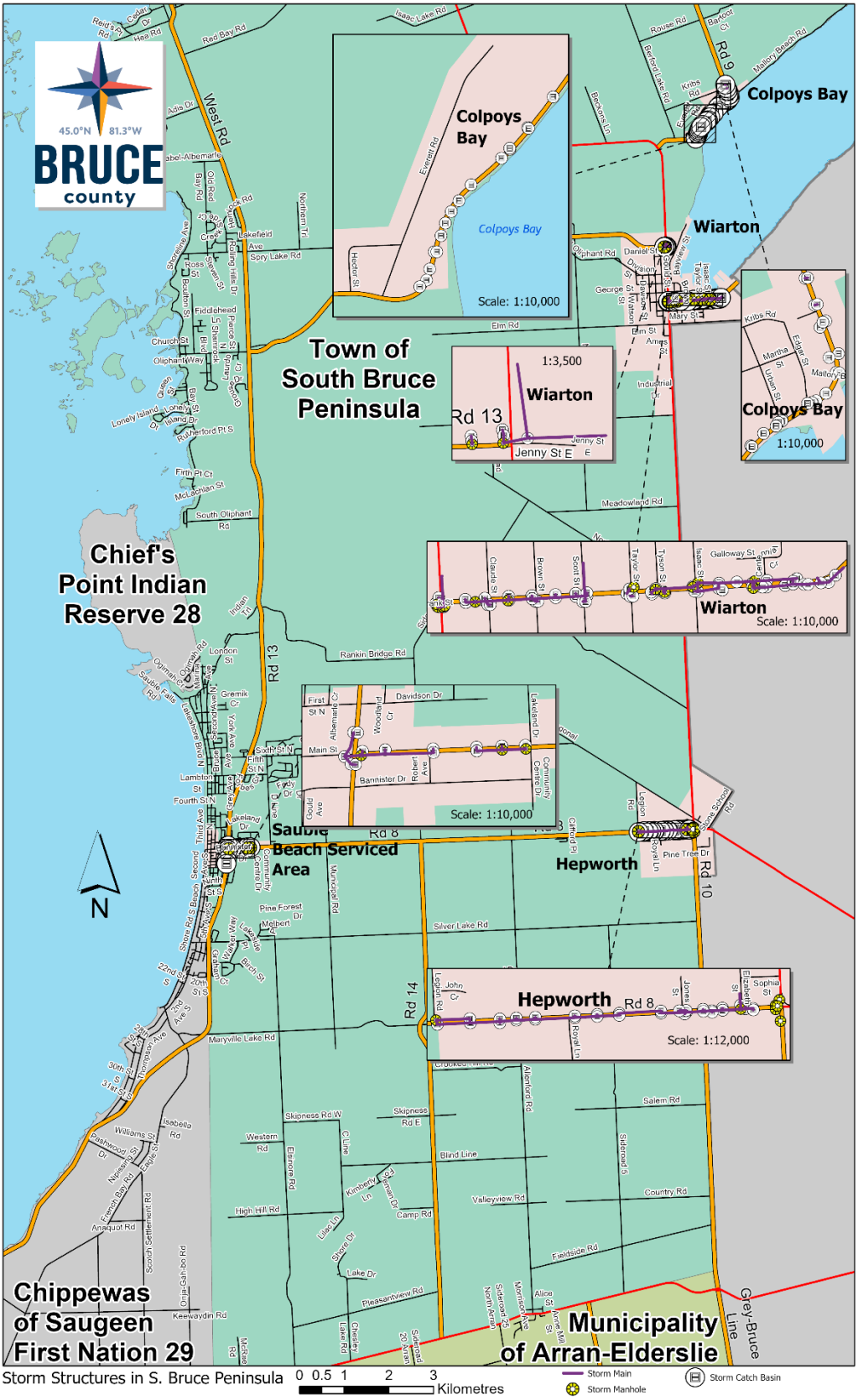


Figure 11: South Bruce Stormwater Structures

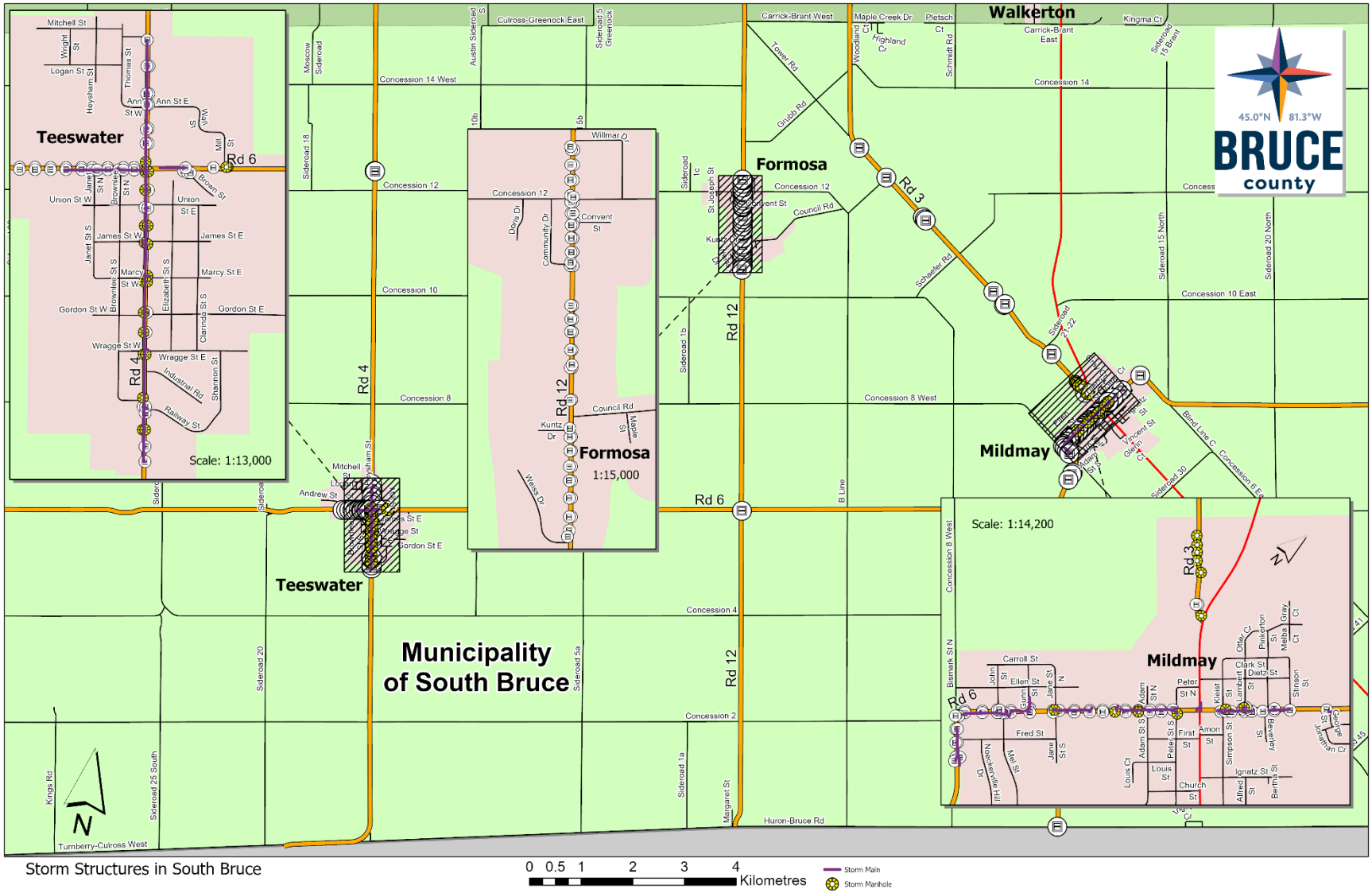


Figure 12: Northern Bruce Penninsula Stormwater Structures

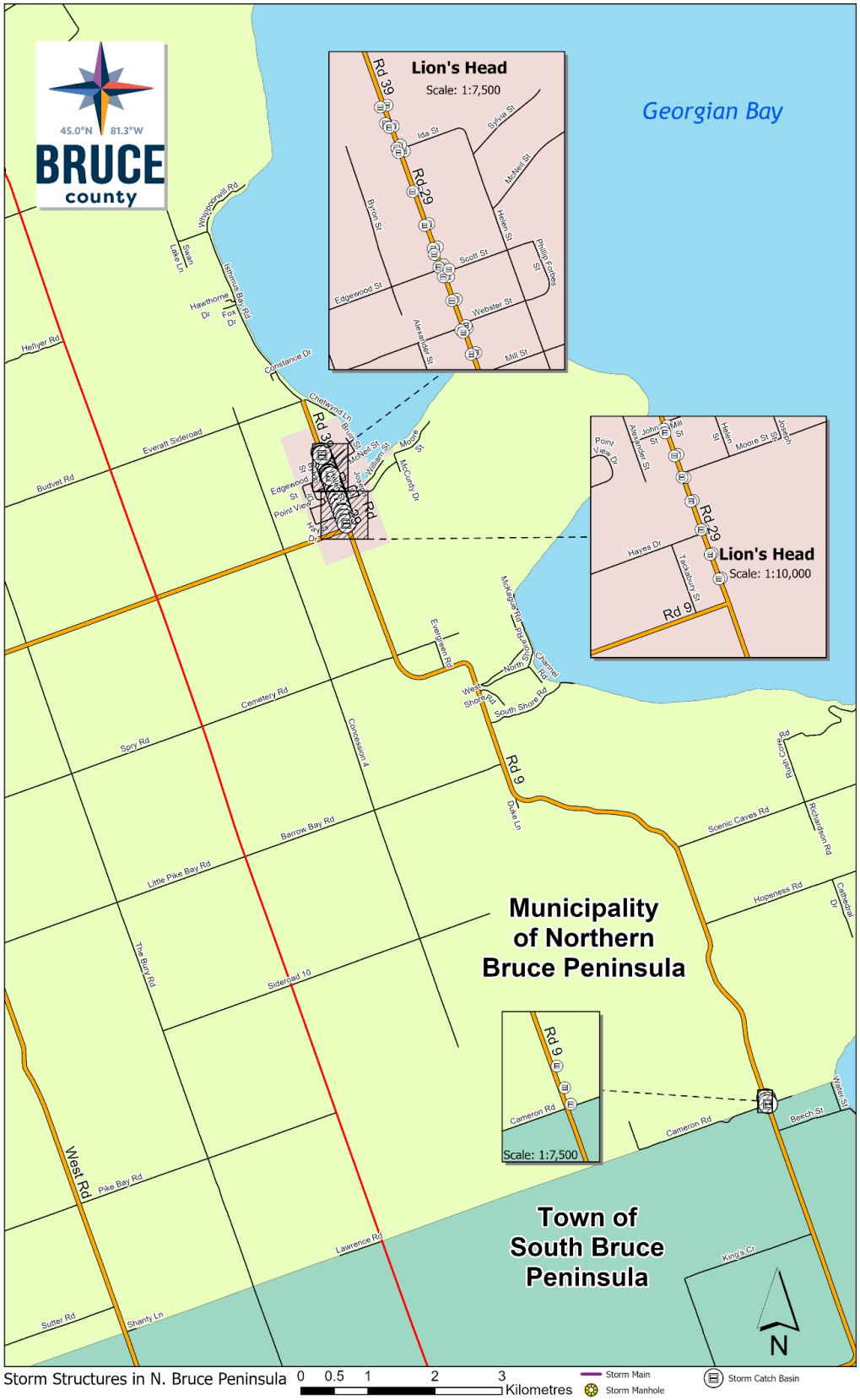


Figure 13: Huron-Kinloss Stormwater Structures

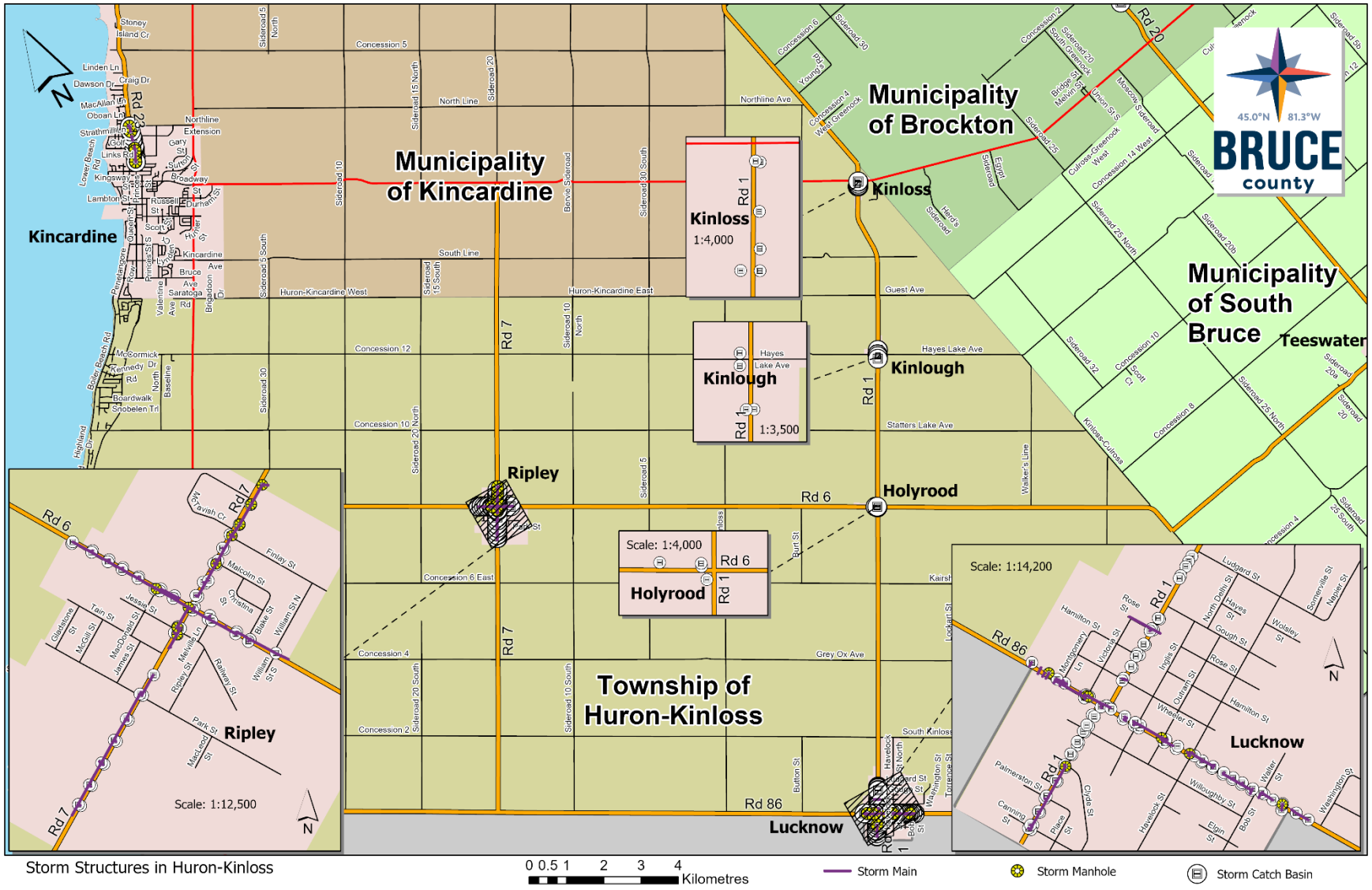


Figure 14: Brockton Stormwater Structures

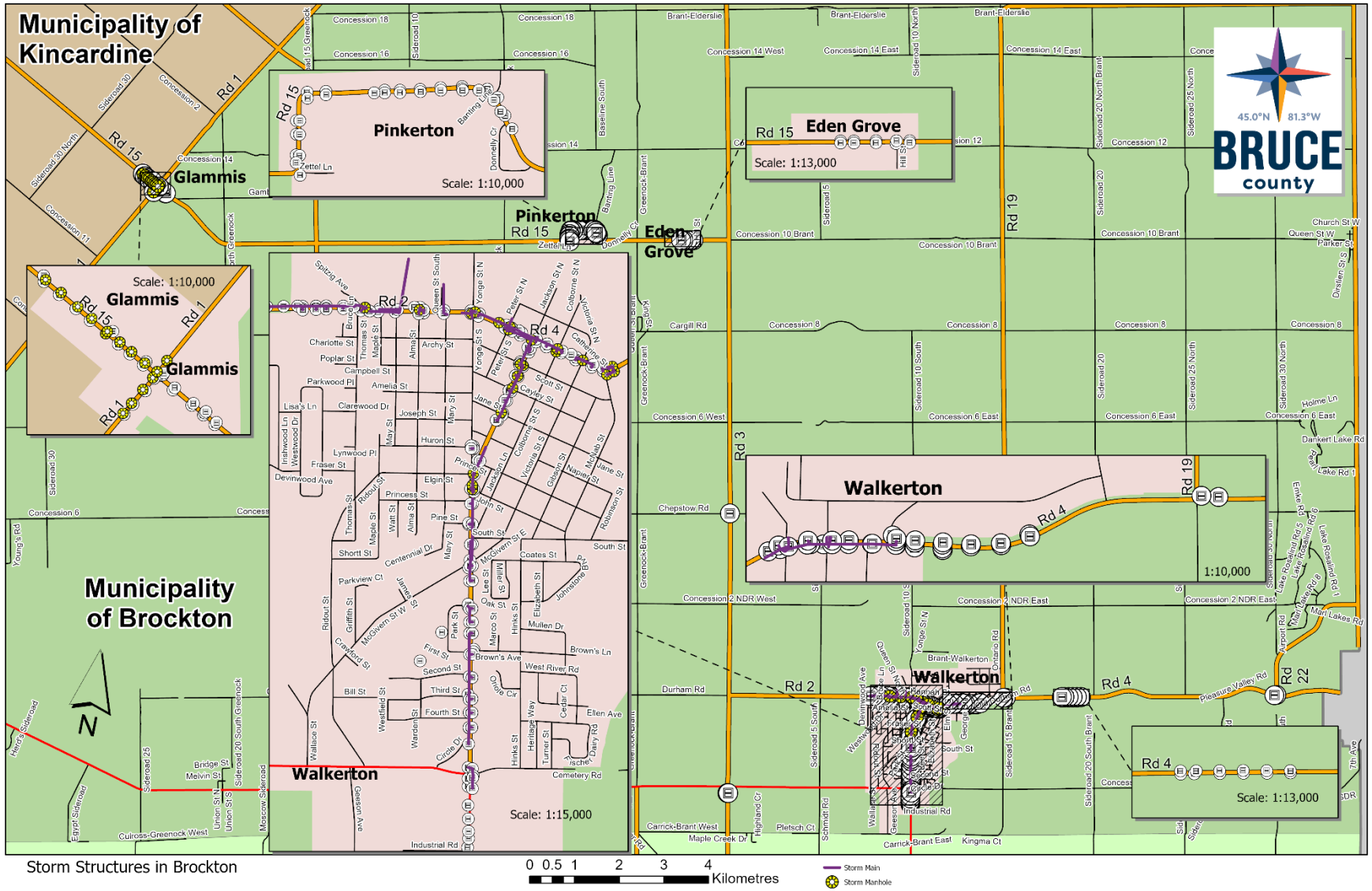


Figure 15: Kincardine Stormwater Structures

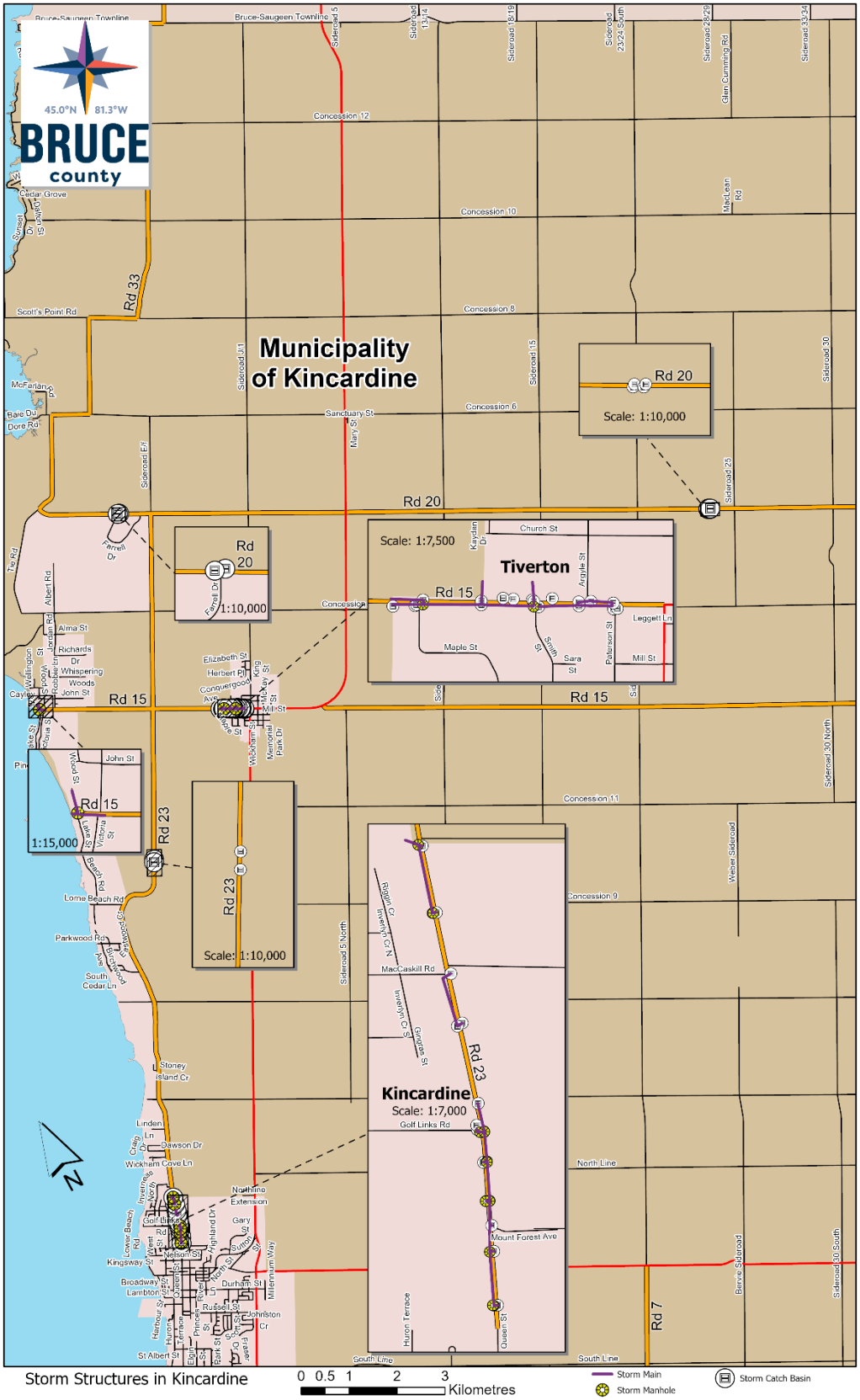
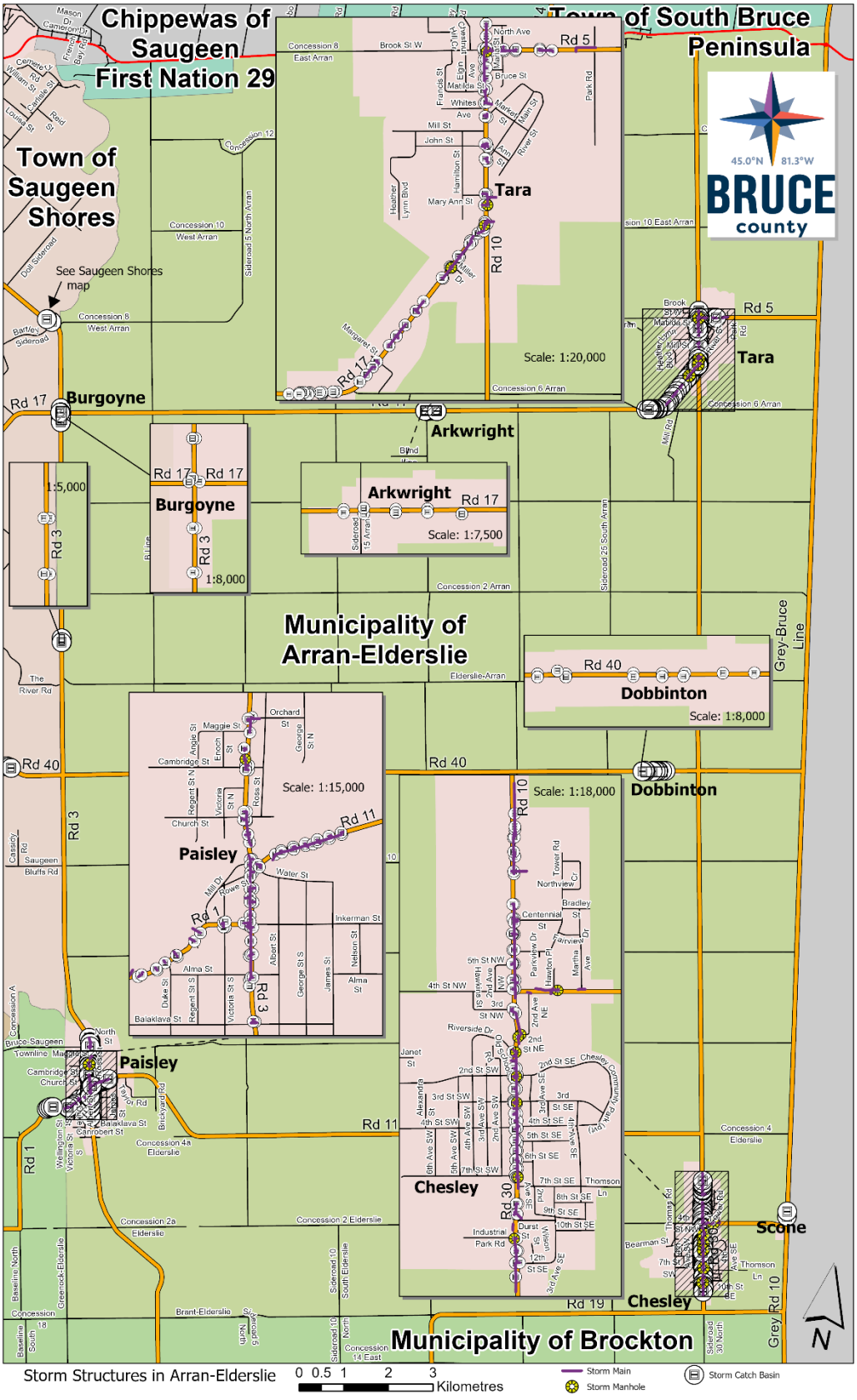


Figure 16: Arran Elderslie



4.4 Core Assets Recommendations

O.Reg 588/17 Proposed Levels of Service

- By July 1, 2025, Bruce County's asset management plan must include levels of service that the County's proposes to provide for each of the 10 years following the year in which all information is required.
- An explanation of why Bruce County's proposed levels of service are appropriate for the County.
- The proposed performance of each asset category for each year of the 10-year period, determined in accordance with the performance measures established by the County.
- A lifecycle management and financial strategy with respect to the assets in each asset category for the 10-year period

Data Review/Validation

Road Network

- Continue to review and refine the road network's asset inventory to ensure new assets and betterments are reflected and attributes are detailed.
- Review road culverts inventory to determine whether all County assets within this asset category have been accounted for.

Stormwater Infrastructure

- The County's stormwater infrastructure inventory is a newly developed inventory relying on a combination of historical construction drawings, lower-tier municipality data, internal professional knowledge, and filed data capture. It is highly recommended staff continue to review and validate stormwater infrastructure inventory data.
- The Ministry of Conservation, Energy and Parks has downloaded the approvals for stormwater infrastructure to municipalities with monitoring and maintenance requirements that will be adopted by the County of Bruce.

Bridges & Culverts

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

Condition Assessment Strategies

Road Network

- The last comprehensive assessment of the road network was completed in 2019. Consider completing an updated assessment of all roads within the next 2-3 years.

- Develop and conduct condition assessment programs for all other road network assets such traffic signals, signs, and non-structural culverts.

Stormwater Infrastructure

- The confirmation of a comprehensive asset inventory should be followed by a system-wide assessment of the condition of all stormwater infrastructure assets through CCTV or zoom camera inspections.

Lifecycle Management Strategies

Road Network

- Develop cursory life cycle management strategies for all other road network assets.

Bridges and Culverts

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

All Core Assets

- Document and review lifecycle management strategies for core infrastructure assets on a regular basis to achieve the lowest total cost of ownership while maintaining adequate service levels.

Risk Management Strategies

All Core Assets

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

Levels of Service

All Core Assets

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

5 State of Local Infrastructure Non-core Assets

Key Insights

- Non-core asset categories represented in this AMP include buildings, fleet, furniture and fixtures, land improvements, technology and communication, and trail system
- Non-core infrastructure assets are valued at $272.3 million
- 76% of non-core assets are in fair or better condition
- The average annual capital requirement to sustain the current level of service for non-core infrastructure assets is approximately $11.4 million

Standard Tables and Graphs Defined

- The **Average Condition** (%) is a weighted value based on replacement cost. The Estimated Useful Life has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.
- The **annual capital requirement** represents the average amount per year that the County should allocate towards funding rehabilitation and replacement needs to meet future capital needs.
- **Risk matrices** provide a visual representation of the relationship between the probability of failure and the consequence of failure for the assets within each asset category based on 2020 inventory data.

5.1 Buildings

Bruce County owns and maintains several buildings that provide key services to the community. These service area facilities include:

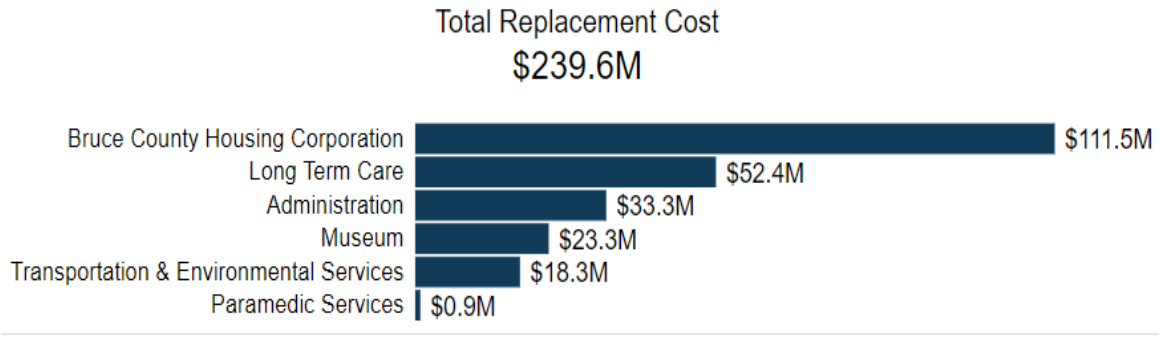
- administrative offices
- long term care facilities
- paramedic services
- housing corporation
- museum and cultural centre

5.1.1 Asset Inventory & Replacement Cost

Table 25 includes the quantity, replacement cost method and total replacement cost of each asset segment in the County's Buildings inventory.

Table 25: Building Inventory Replacement Cost Summary by Service Area

Asset Segment	Quantity (components)	Replacement Cost Method	Total Replacement Cost
Administration	7 (580)	Cost/Unit	$33,292,390
Bruce County Housing Corporation	28 (2,781)	Cost/Unit & CPI Tables	$111,455,825
Long Term Care	2 (273)	Cost/Unit	$52,421,055
Museum	4 (189)	Cost/Unit & CPI Tables	$23,273,562
Paramedic Services	1 (46)	Cost/Unit	$894,133
Transportation & Environmental Services	5 (327)	Cost/Unit	$18,262,122
			$239,599,087

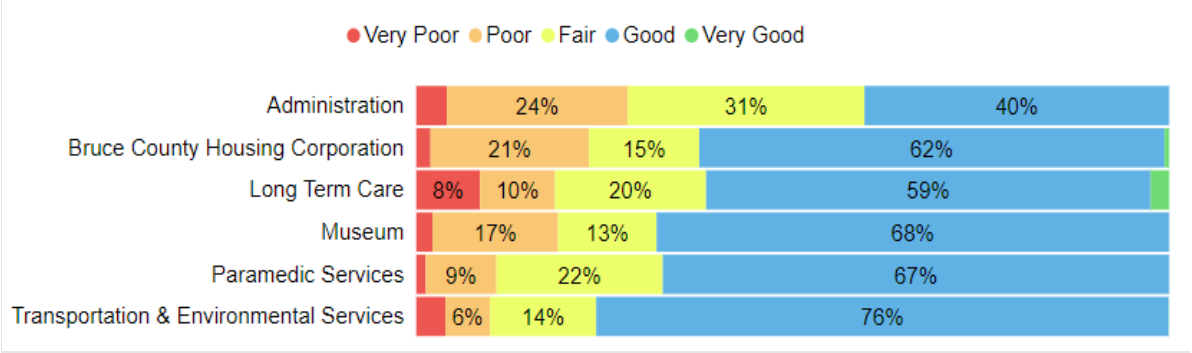


5.1.2 Asset Condition, Age & Useful Life

Table 26 identifies the current average condition, average age, and estimated useful life for each asset segment.

Table 26: Building Assets Condition Summary

Asset Segment	Average Condition (%)	Estimated Useful Life (Years)	Average Age (Years)
Administration	58% (Fair)	10-75	28.7
Bruce County Housing Corporation	65% (Good)	10-45	10.8
Long Term Care	63% (Good)	10-45	15.7
Museum	67% (Good)	10-75	45.9
Paramedic Services	68% (Good)	10-75	16.8
Transportation & Environmental Services	69% (Good)	10-75	13.2
	64% (Good)		**15.7**



Current Approach to Condition Assessment

The following describes the County's current approach:

- A comprehensive structural assessment for all County buildings was completed by FCAPX in 2019-2020

In this AMP, the following rating criteria in **Table 27** is used to determine the current condition of buildings and associated components, and forecast future capital requirements:

Table 27: Buildings Condition Rating Criteria

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

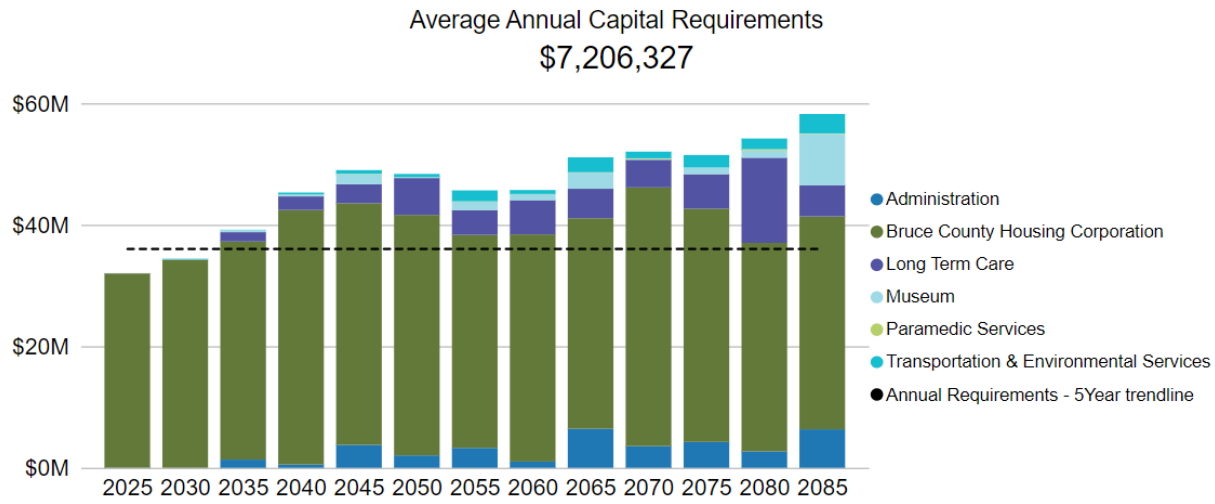
5.1.3 Lifecycle Management Strategy

The County's 2019-2020 comprehensive building assessments completed by FCAPX contain the short- and mid-term lifecycle requirements of buildings and associated components and serves as the proactive lifecycle management strategy for Bruce County's buildings.

5.1.4 Forecasted Capital Requirements

Figure 17 illustrates capital requirements over the next 65 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year increments and the trend line represents the average 5-year capital requirements.

Figure 17: Buildings Average Annual Capital Requirements



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

5.1.5 Risk Analysis

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in **Table** 28 to determine the risk rating of each building component.

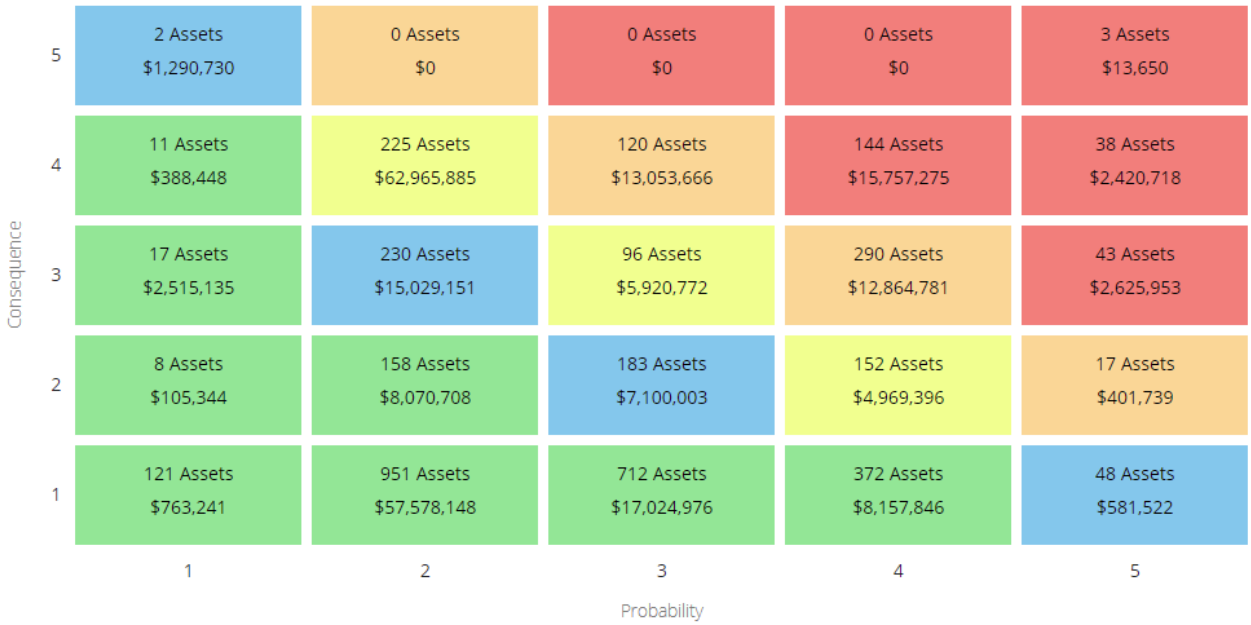


Table 28: Building Component Risk Rating Criteria

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
	Service Area (Strategic)

5.2 Land Improvements

The County of Bruce owns a small number of assets that are considered Land Improvements. This category includes:

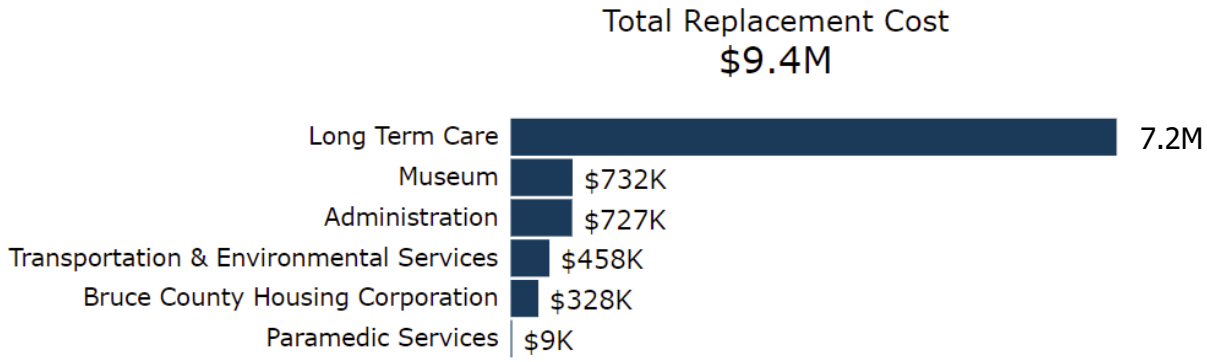
- Parking lots for County owned facilities
- Fencing and signage
- Miscellaneous landscaping, site drainage, and other assets

5.2.1 Asset Inventory & Replacement Cost

Table 29 includes the quantity, replacement cost method and total replacement cost of each asset segment in the County's Land Improvements inventory.

Table 29: Land Improvements Replaacement Cost Summary

Asset Segment	Count	Replacement Cost Method	Total Replacement Cost
Administrative	26	CPI Tables	$727,000
Bruce County Housing Corporation	64	CPI Tables	$327,541
Long Term Care	21	CPI Tables	$7,168,000
Museum	8	CPI Tables	$732,000
Paramedic Services	2	CPI Tables	$9,000
Transportation & Environmental Services	13	CPI Tables	$458,000
			$9,422,000

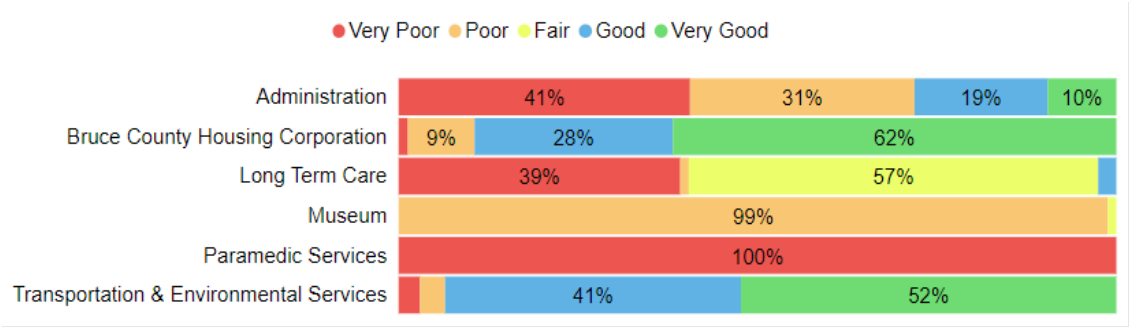


5.2.2 Asset Condition, Age & Useful Life

Table 30 identifies the current average condition, average age, and estimated useful life for each asset segment.

Table 30: Land Improvements Asset Condition Summary

Asset Segment	Average Condition (%)	Estimated Useful Life (Years)	Average Age (Years)
Administrative	31% (Poor)	20	12.8
Bruce County Housing Corporation	81% (Very Good)	15-40	7.8
Long Term Care	39% (Poor)	20-40	13.1
Museum	24% (Poor)	20	14.5
Paramedic Services	12% (Very Poor)	20	17.7
Transportation & Environmental Services	78% (Good)	30	8.0
	40% (Fair)		**11.8**



Current Approach to Condition Assessment

The following describes the County's current approach:

- Staff complete regular visual inspections of land improvements assets to ensure they are in state of adequate repair
- There are no formal condition assessment programs in place for land improvements

In this AMP, the following rating criteria in **Table 31** is used to determine the current condition of land improvement segments and forecast future capital requirements:

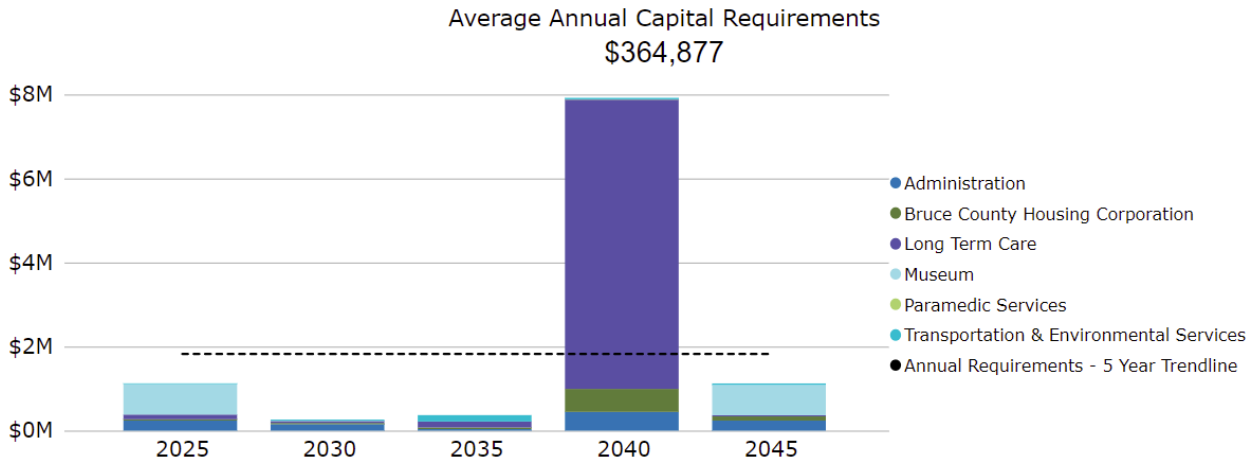
Table 31: Land Improvements Condition Rating Criteria

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

5.2.3 Forecasted Capital Requirements

Figure 18 illustrates capital requirements over the next 25 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year increments and the trend line represents the average 5-year capital requirements.

Figure 18: Land Improvements Average Annual Capital Requirements



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

5.2.4 Risk Analysis

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in **Table** 32 to determine the risk rating of each land improvement asset.

Table 32: Land Improvements Risk Rating Criteria

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
	Service Area (Strategic)

5.3 Furniture & Equipment

In order to maintain the high quality of public infrastructure and support the delivery of core services, County staff own and employ various types of furniture and equipment. This includes:

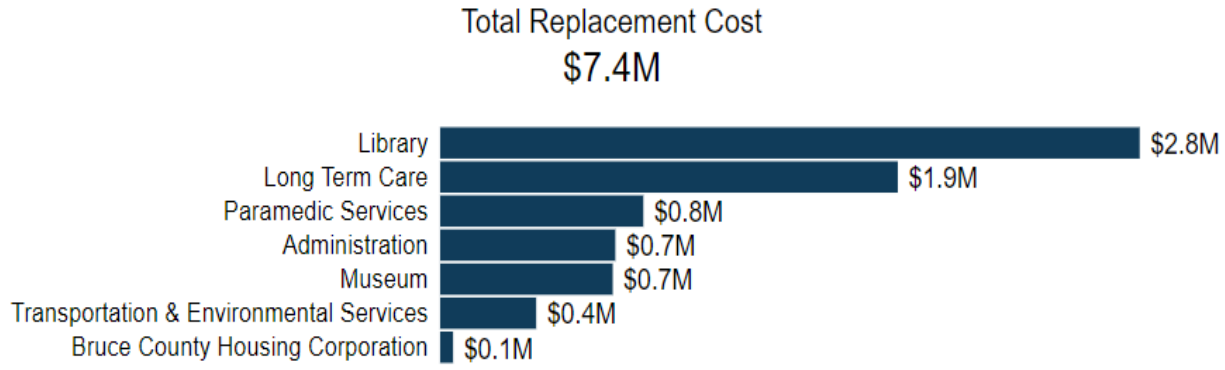
- Furniture in County owned buildings
- Long Term Care and Paramedic Services
- Library books

5.3.1 Asset Inventory & Replacement Cost

Table 33 includes the quantity, replacement cost method and total replacement cost of each asset segment by service area in the County's Furniture & Equipment inventory.

Table 33: Furniture & Equipment Replacement Cost Summary by Service Area

Asset Segment	Count	Replacement Cost Method	Total Replacement Cost
Administrative	296	CPI Tables	$709,055
Bruce County Housing Corporation	19	CPI Tables	$52,519
Library	132	CPI Tables	$2,830,416
Long Term Care	221	CPI Tables	$1,851,867
Museum	49	CPI Tables	$698,539
Paramedic Services	89	CPI Tables	$822,305
Transportation & Environmental Services	47	CPI Tables & User-Defined	$388,725
			$7,353,426

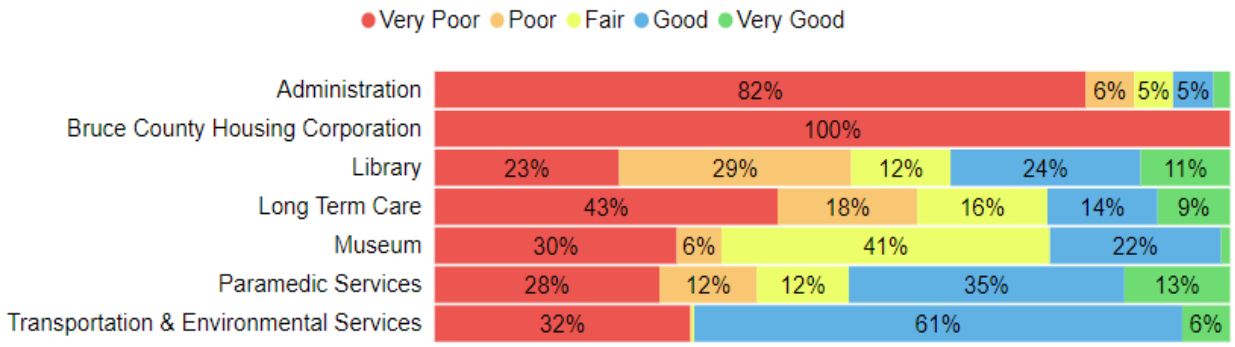


5.3.2 Asset Condition, Age & Useful Life

Table 34 identifies the current average condition, average age, and estimated useful life for each asset segment by service area.

Table 34: Furniture & Equipment Asset Condition Summary

Asset Segment	Average Condition (%)	Estimated Useful Life (Years)	Average Age (Years)
Administrative	10% (Very Poor)	5-10	7.3
Bruce County Housing Corporation	0% (Very Poor)	5-10	10.6
Library	43% (Fair)	5-10	6.4
Long Term Care	33% (Poor)	5-10	7.1
Museum	38% (Poor)	5-10	5.8
Paramedic Services	45% (Fair)	5-10	6.1
Transportation & Environmental Services	48% (Fair)	5-10	7.8
	37% (Poor)		**7.0**



Current Approach to Condition Assessment

The following describes the County's current approach:

- There are no formal condition assessment programs in place for the majority of furniture and equipment, although some furniture & equipment were assigned cursory condition ratings for this AMP

In this AMP, the following rating criteria in **Table 35** is used to determine the current condition of furniture & equipment and forecast future capital requirements:

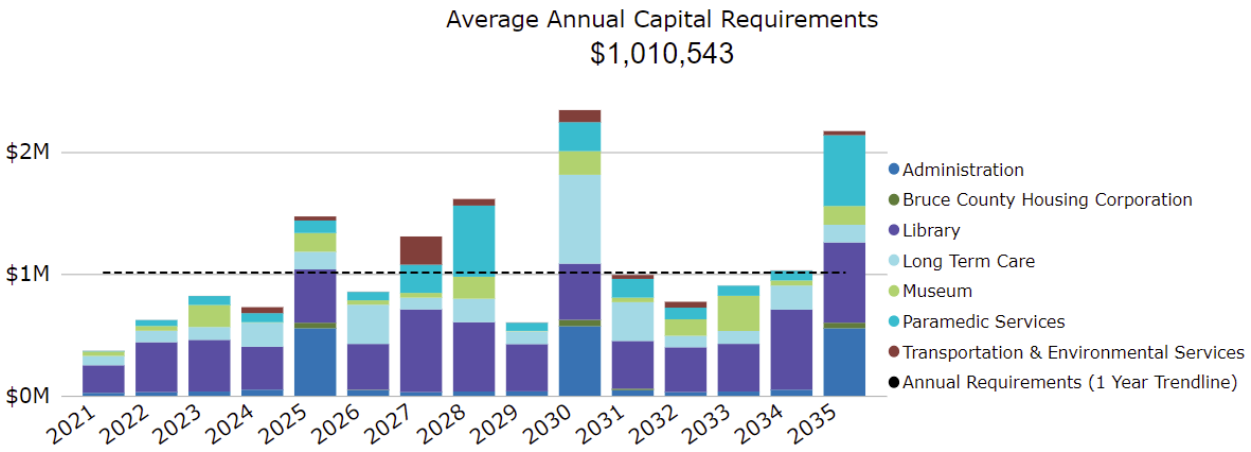
Table 35: Furniture & Equipment Condition Rating Criteria

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

5.3.3 Forecasted Capital Requirements

Figure 19 identifies capital requirements over the next 15 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 1-year increments and the trend line represents the average annual capital requirements.

Figure 19: Furniture & Equipment Average Annual Capital Requirements



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

5.3.4 Risk Analysis

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in **Table 36** to determine the risk rating of each building componenet.

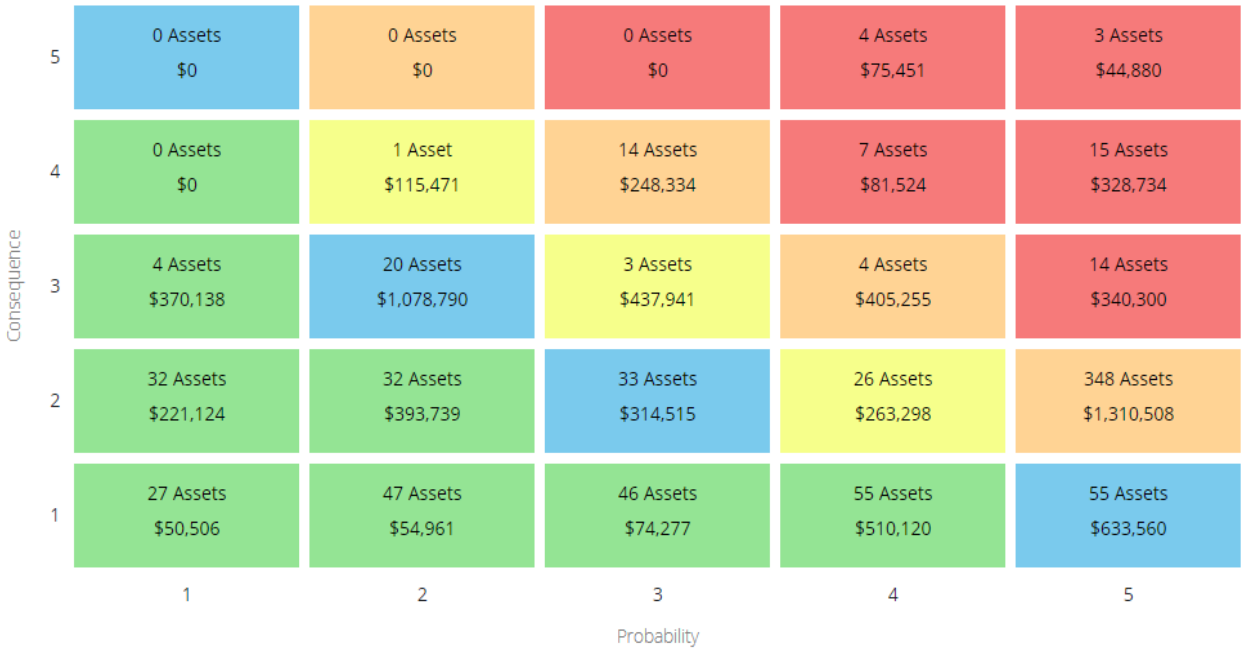


Table 36: Furniture & Equipment Risk Rating Criteria

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
	Service Area (Strategic)

5.4 Fleet

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

- ambulances to provide paramedic services
- light duty vehicles, heavy duty vehicles and machinery to support transportation services
- transit vans for library services

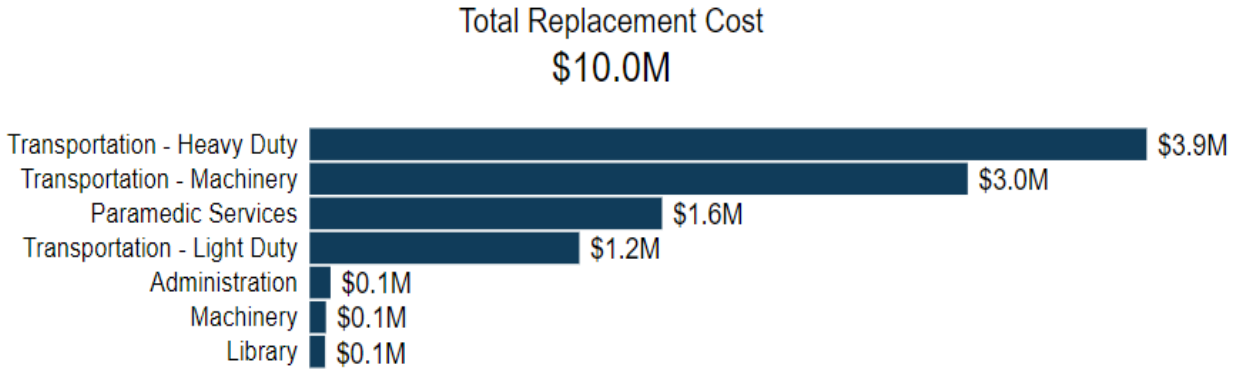
5.4.1 Asset Inventory & Replacement Cost

Table 37 includes the quantity, replacement cost method and total replacement cost of each asset segment in the County's Fleet.

Table 37: Fleet Assets Replacement Cost Summary

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Administration	4	CPI Tables	$96,697
Library	2	CPI Tables	$71,453
Machinery	5	User-Defined & CPI Tables	$75,181
Paramedic Services	16	User-Defined & CPI Tables	$1,631,639
Transportation – Heavy Duty	17	CPI Tables	$3,875,653
Transportation – Light Duty	32	CPI Tables	$1,248,845
Transportation - Machinery	56	CPI Tables	$3,047,014
			$10,046,482[3]

[3] *The outlined fleet replacement values are reported lower than current market prices in many cases as a result of major market pricing fluctuations in the last few years. A schedule for reviewing and updating fleet replacement values on a regular basis will be developed and the updated values reflected in the next asset management plan.*

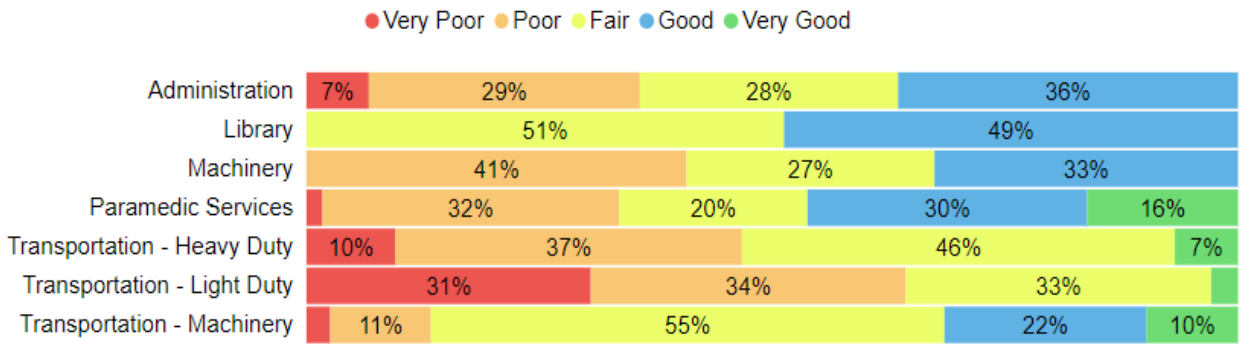

Total Replacement Cost
$10.0M
Transportation - Heavy Duty
$3.9M
Transportation - Machinery
$3.0M
Paramedic Services
$1.6M
Transportation - Light Duty
$1.2M
Administration
$0.1M
Machinery
$0.1M
Library
$0.1M

5.4.2 Asset Condition, Age & Useful Life

Table 38 identifies the current average condition, average age, and estimated useful life for each asset segment. The Average Condition (%) is a weighted value based on replacement cost. The Estimated Useful Life has been assigned according to a combination of established industry standards and staff knowledge. The Average Age of each asset is based on the number of years each asset has been in-service.

Table 38: Fleet Assets Condition Summary

Asset Segment	Average Condition (%)	Estimated Useful Life (Years)	Average Age (Years)
Administration	45% (Fair)	5-10	8.3
Library	51% (Fair)	5	3.3
Machinery	49% (Fair)	10	9.8
Paramedic Services	49% (Fair)	5-10	3.8
Transportation – Heavy Duty	45% (Fair)	5	7.9
Transportation – Light Duty	33% (Fair)	5	6.4
Transportation - Machinery	54% (Fair)	5-10	8.7
	47% (Fair)		**7.4**



Current Approach to Condition Assessment

The following describes the County's current approach:

- Staff complete regular visual inspections of vehicles and machinery to ensure they are in state of adequate repair prior to operation
- Heavy and medium duty vehicles undergo annual safety inspections to meet provincial regulations

- Routine maintenance schedules have been implemented by departments who manage fleet assets and are used as a proxy to determine remaining useful life and relative vehicle condition. In this AMP, the following rating criteria in **Table 39** is used to determine the current condition of the fleet and forecast future capital requirements:

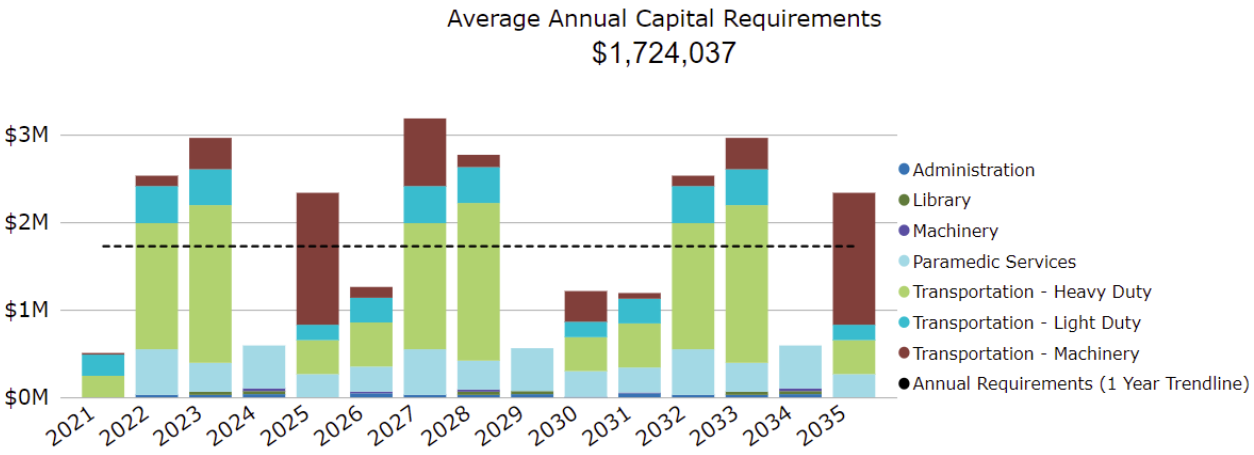
Table 39: Fleet Assets Condition Rating Criteria

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

5.4.3 Forecasted Capital Requirements

Figure 20 illustrates capital requirements over the next 15 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 1-year increments and the trend line represents the average annual capital requirements.

Figure 20: Fleet Average Annual Capital Requirements



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

5.4.4 Risk Analysis

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in **Table 40** to determine the risk rating of each fleet asset.

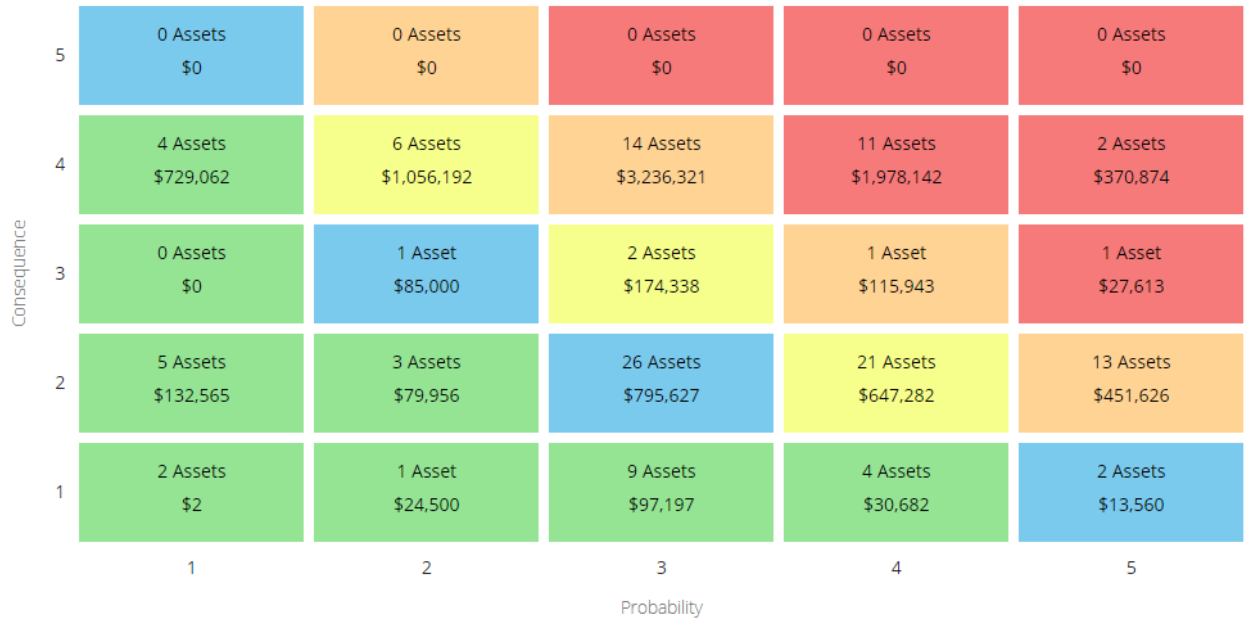


Table 40: Fleet Risk Rating Criteria

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
	Service Area (Strategic)

5.5 Technology & Communication

County staff own and employ several types of technology & communication assets to provide and support various County services. This includes:

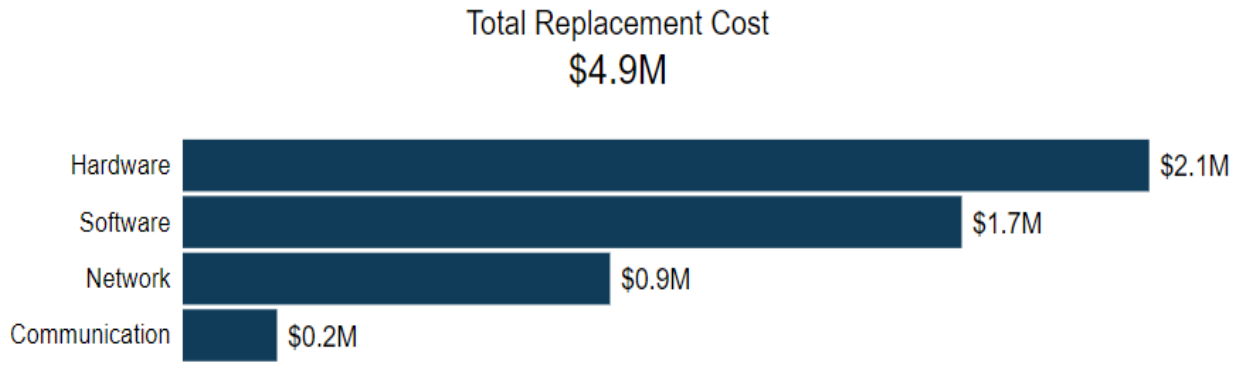
- Hardware, software, and networks to provide technological support for various County services
- Communication equipment for emergency services and long-term care facilities

5.5.1 Asset Inventory & Replacement Cost

Table 41 includes the quantity, replacement cost method and total replacement cost of each asset segment in the County's Technology & Communication assets.

Table 41: Technology & Communication Replacement Cost Summary

Asset Segment	Count	Replacement Cost Method	Total Replacement Cost
Communication	51	CPI Tables	$204,797
Hardware	1,922	CPI Tables	$2,100,018
Network	89	CPI Tables	$928,462
Software	130	CPI Tables	$1,692,610
			$4,925,887

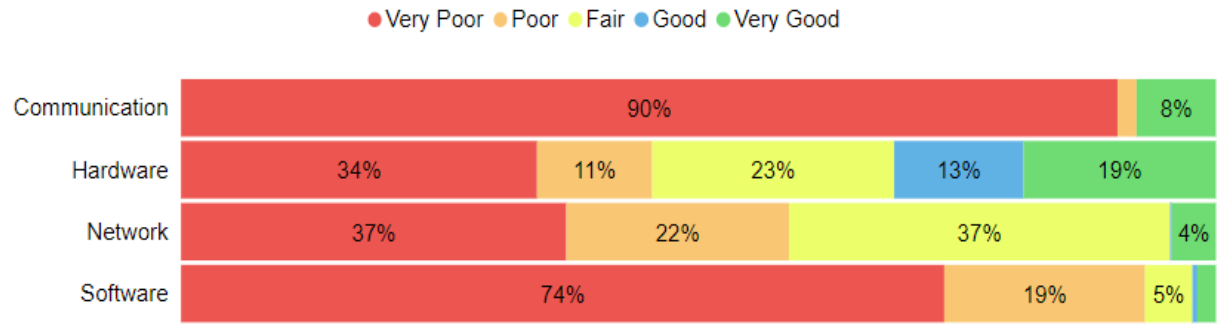


5.5.2 Asset Condition, Age & Useful Life

Table 42 identifies the current average condition, average age, and estimated useful life for each asset segment.

Table 42: Technology & Communication Asset Condition Summary

Asset Segment	Average Condition (%)	Estimated Useful Life (Years)	Average Age (Years)
Communication	10% (Very Poor)	5-10	10.4
Hardware	42% (Fair)	5-10	3.4
Network	29% (Poor)	5	5.8
Software	12% (very Poor)	4-5	6.1
	28% (Poor)		**3.8**



Current Approach to Condition Assessment

The following describes the County's current approach:

- There are no formal condition assessment programs in place for the majority of technology and communication assets although some were assigned cursory condition ratings for this AMP

In this AMP, the following rating criteria in **Table 43** is used to determine the current condition of technology & communication assets and forecast future capital requirements:

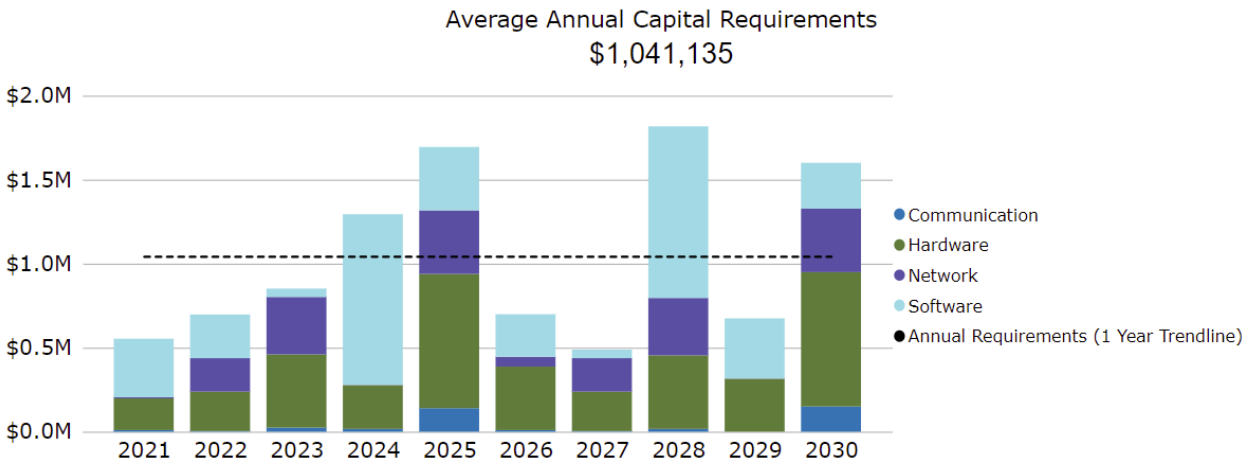
Table 43: Technology & Communication Condition Rating Criteria

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

5.5.3 Forecasted Capital Requirements

Figure 21 illustrates capital requirements over the next 10 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 1-year increments and the trend line represents the average annual capital requirements.

Figure 21:Technology & Communication Average Annual Captial Requirements



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

5.5.4 Risk Analysis

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in **Table 44** to determine the risk rating of each technology & communications asset..

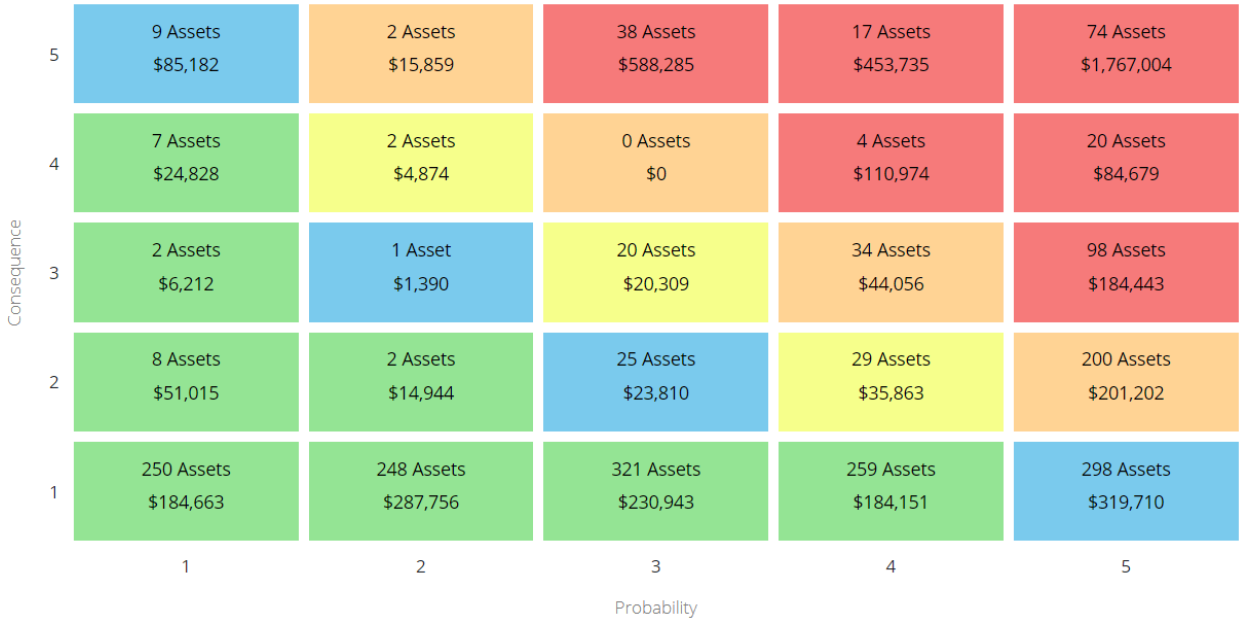


Table 44: Technology & Communication Risk Rating Criteria

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
	Asset Type (Strategic)

5.6 Trail System

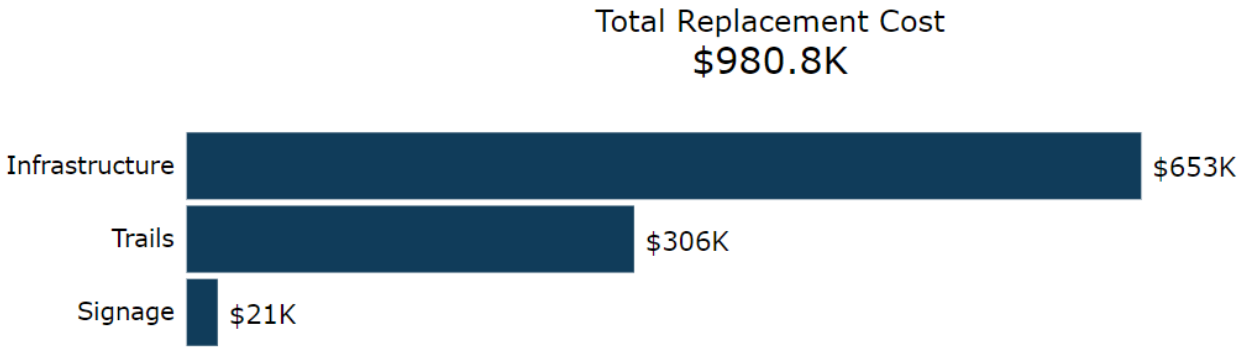
Bruce County owns and maintains a trail system compromised of 106 kms of trails, and all supporting infrastructure and signage.

5.6.1 Asset Inventory & Replacement Cost

Table 45 includes the quantity, replacement cost method and total replacement cost of each asset segment in the County's Trail System.

Table 45: Trail System Replacement Cost Summary

Asset Segment	Quantity	Replacement Cost Method	Total Replacement Cost
Infrastructure	30	CPI Tables	$653,354
Signage	15	CPI Tables	$21,249
Trails	106 kms	CPI Tables	$306,241
			$980,844

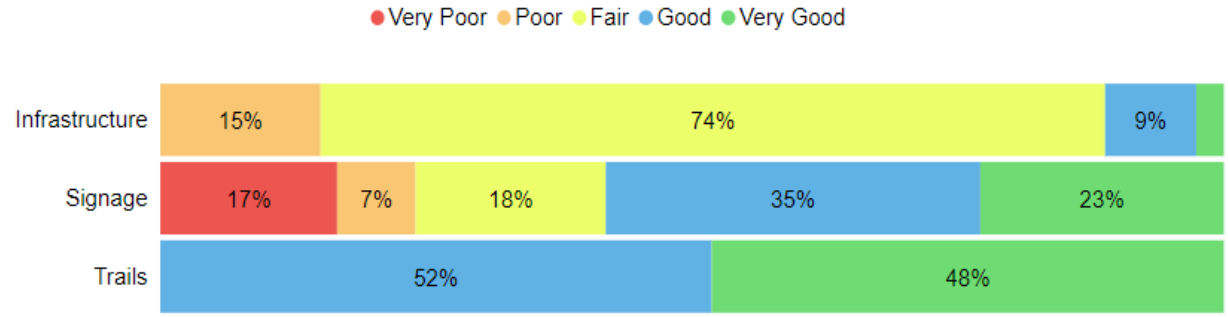


5.6.2 Asset Condition, Age & Useful Life

Error! Reference source not found. identifies the current average condition, average age, and estimated useful life for each asset segment.

Table 46: Trail System Asset Condition Summary

Asset Segment	Average Condition (%)	Estimated Useful Life (Years)	Average Age (Years)
Infastructure	53% (Fair)	20-50	17.7
Signage	57% (Fair)	10-20	4.9
Trails	84% (Very Good)	20	6.5
	63% (Good)		**12.8**



Current Approach to Condition Assessment

The following describes the County's current approach:

- Staff complete regular visual inspections of trail systems to ensure they are safe and accessible to the public

In this AMP, the following rating criteria in **Table 47** is used to determine the current condition of the trail system and forecast future capital requirements:

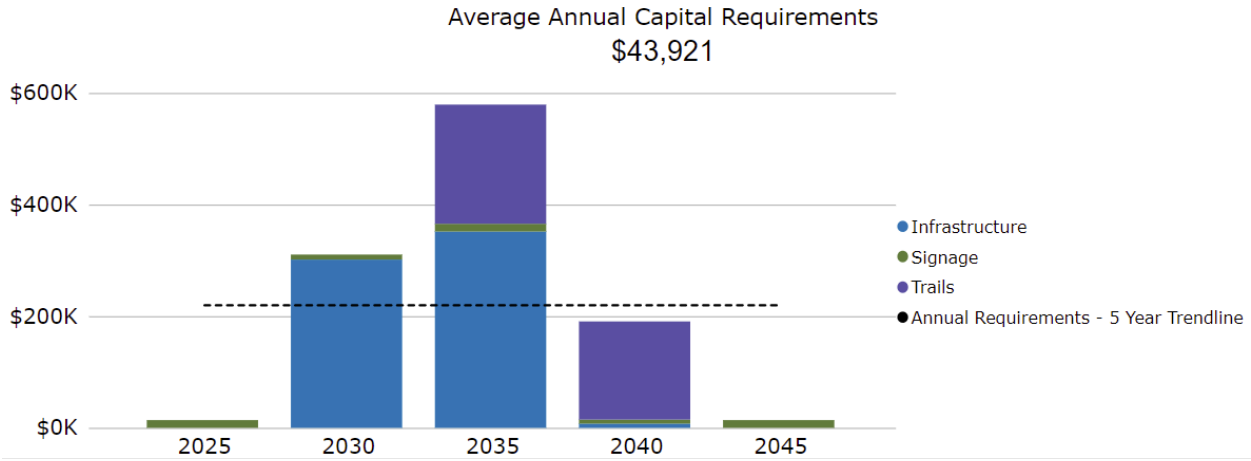
Table 47: Trail System Condition Rating Criteria

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

5.6.3 Forecasted Capital Requirements

The following graph in **Figure 22** identifies capital requirements over the next 25 years. This projection is used as it ensures that every asset has gone through one full iteration of replacement. The forecasted requirements are aggregated into 5-year increments and the trend line represents the average 5-year capital requirements.

Figure 22: Trail System Average Annual Capital Requirements



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

5.6.4 Risk Analysis

Risk Matrix

The following risk matrix provides a visual representation of the criteria used in **Table 48** to determine the risk rating of each trails asset.

Table 48: Trail System Risk Rating Criteria

Probability of Failure (POF)	Consequence of Failure (COF)
Condition	Replacement Cost (Financial)
	Service Area (Strategic)

5.7 Non-core Assets Recommendations

O.Reg 588/17 Current / Proposed Levels of Service

- Although the County has already met some of the requirements for non-core assets in accordance with O. Reg. 588/17 for Asset Management Plans, the County will continue to gather data and information in order to detail and review the lifecycle management strategies, levels of service, and risk of all non-core asset categories by July 1, 2024.
- By July 1, 2025, Bruce County's asset management plan must include levels of service that the County proposes to provide for each of the following 10 years.
- An explanation of why Bruce County's proposed levels of service are appropriate for the County.
- The proposed performance of each asset category for each year of the 10-year period, determined in accordance with the performance measures established by the County.
- A lifecycle management and financial strategy with respect to the assets in each asset category for the 10-year period.

Asset Inventories and Data

Buildings

- Through the 2019-2020 comprehensive facility assessments completed by FCAPX, the County has achieved a componentized centralized asset inventory for all County buildings. Facilities consist of several separate capital components that have unique estimated useful lives and require asset-specific lifecycle strategies. Staff should review and update the building inventory annually to maintain data accuracy and integrity.

Equipment

- The County assesses critical equipment where regulated or required, however the data is not necessarily captured within the County's centralized asset registry. Alignment of equipment assessment data to the County's centralized asset management system is critical to gain maximum system functionality and value from data.

All Other Non-core Assets

- All non-core asset inventory data should be analyzed regularly to ensure end users have confidence in the accuracy, consistency, integrity, and outputs of data.

Replacement Costs

All Non-core Assets

- Where asset replacement costs were not available, historical costs have been inflated using Provincial CPI tables. These costs should be evaluated to determine their accuracy and reliability.
- Replacement costs should be updated every 3–5 years according to the best available information on the cost to replace the asset in today's value.

Condition Assessment Strategies

Buildings

- The County should implement regular internal condition assessments for all buildings and associated components to better inform short- and mid-term capital requirements.
- The County should consider comprehensive building assessments for all buildings on a 5-10 year cycle to better inform and update the short- and long-term capital requirements.

Fleet

- Fleet assets are inspected regularly and the associated data should be appended to fleet assets within the County's centralized asset management system.

All Other Non-core Assets

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

Life Cycle Management Strategies

The documentation of lifecycle management strategies, current levels of service, and risk are critical to the development of a comprehensive asset management program. These components of the Asset Management Plan support effective short-term and long-term capital planning and contribute to more proactive asset management practices, thus extending the estimated useful life of many assets and providing a higher level of service.

Risk Management Strategies

All Non-core Assets

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

Levels of Service

All Non-core Assets

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

6 Impacts of Growth

Key Insights

- Understanding the key drivers of growth and demand will allow the County to more effectively plan for new infrastructure, and the upgrade or disposal of existing infrastructure
- Moderate population and employment growth is expected
- The costs of growth should be considered in long-term funding strategies that are designed to maintain the current level of service

6.1 Description of Growth Assumptions

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

6.1.1 County of Bruce Official Plan (Sept. 2017)

The County of Bruce adopted an Official Plan to guide physical, social, and economic development within the County to the year 2021. The policies included in the Official Plan are intended to encourage economic development and prosperity in the County and necessary social, cultural, and educational facilities and services, while maintaining the quality of the natural environment.

The Official Plan was approved by the Ontario Municipal Board on November 16th, 1999, and the Five-Year Review was approved by the Minister of Municipal Housing Affairs on June 21st, 2010. The most recent consolidation was published in September 2017.

The County of Bruce consists of eight lower tier municipalities, each providing a variety of economic, social, and physical attributes which give Bruce County a unique appeal. The Official Plan takes into account the desire to preserve the diversity and uniqueness of the County by balancing the demands for new development with the need to preserve existing attributes. A moderate population growth is expected in the County due to the expected expansion of Bruce Power, and the continued growth in tourism and retirement population.

Much of the anticipated growth in the County will occur in Primary Communities, Secondary Communities and Hamlet Communities, to ensure the impacts on heritage and agricultural features in the County are minimized. The policies in the Official Plan also consider the need to balance population growth with employment opportunities by ensuring County Council encourages economic development and promotes the County as a desirable location for new business development.

Population projections supplied in the Bruce County Housing Study anticipated a population of 63,130 permanent residents by 2021, representing a growth of 5,238 people (8.2%) from 2001 to 2021. Employment projections provided in the Official Plan anticipated a total of 36,335 jobs in the county by 2021, a growth of 940 jobs from 2001.

Table 49 outlines the population and employment forecasts allocated to the County of Bruce in the Official Plan.

Table 49: Population & Employment Forecasts

	2011	2016	2021
Historical & Forecasted Population	66,101	67,818	67,866
Historical & Forecasted Employment	35,390	36,309	36,335

The above projections are based on the County of Bruce Census Update (Housing Study) from 2009, and 2006 Census data. More recent population statistics from the 2016 and 2021 Census exceed the suggested projections. The recorded population in the County was 68,147 in 2016 and 73,396 in 2021.

6.2 Impact of Growth on Lifecycle Activities

By July 1, 2025, Bruce County's asset management plan must include levels of service that the County's proposes to provide for each of the 10 years following the year in which all information required.

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

7 Financial Strategy

7.1 Financial Strategy Overview

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

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

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

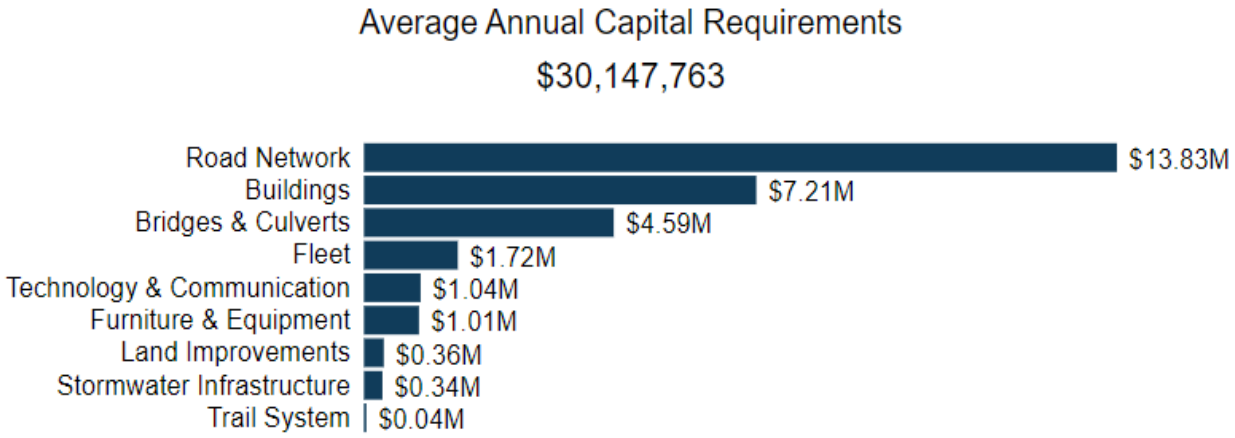
If the financial plan component results in a funding shortfall, the Province requires the inclusion of a specific plan as to how the impact of the shortfall will be managed. In determining the legitimacy of a funding shortfall, the Province may evaluate a County's approach to the following:

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

7.1.1 Annual Requirements & Capital Funding

Annual Requirements

The annual requirements represent the amount the County should allocate annually to each asset category to meet replacement needs as they arise, prevent infrastructure backlogs and achieve long-term sustainability. In total, the County must allocate approximately $30.1 million annually to address capital requirements for the assets included in this AMP.



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

However, for the Road Network, lifecycle management strategies have been developed and applied to the County's Asset Management System to identify capital costs that are realized through strategic rehabilitation and renewal of the County's roads. The development of these strategies allows for a cost comparison that identify potential cost avoidance if the strategies were to be implemented. The following table compares two scenarios for the road network:

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

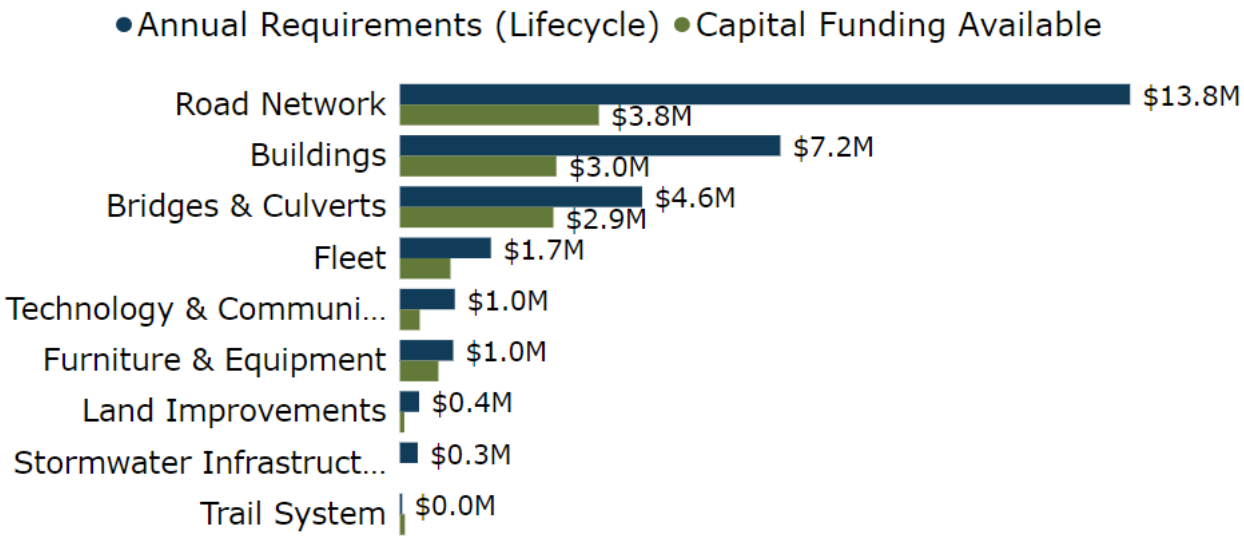
Asset Category	Annual Requirements (Replacement Only)	Annual Requirements (Lifecycle Strategy)	Difference
Road Network	$15,917,000	$13,830,000	$2,087,000

The implementation of a proactive lifecycle strategy for roads leads to a potential annual cost avoidance of $2,087,000 for the Road Network. This represents an overall reduction of the annual requirements for each category by 25%. As the lifecycle strategy scenario represents the lowest cost option available to the County, we have used these annual requirements in the development of the financial strategy.

Annual Funding Available

Based on a historical analysis of sustainable capital funding sources, the County is committing approximately $11,886,000 towards capital projects per year. Given the annual capital requirement of $30,148,000, there is currently a funding gap of $18,262,000 annually.

Figure 23: Annual Requirements vs Capital Funding Available



7.2 Funding Objective

We have developed a scenario that would enable Bruce County to achieve full funding within 1 to 20 years for the following assets:

Tax Funded Assets: Road Network, Stormwater Infrastructure, Bridges & Culverts, Buildings, Furniture & Equipment, Technology & Communication, Land Improvements, Trail System and Fleet
Note: For the purposes of this AMP, we have excluded gravel roads since they are a perpetual maintenance asset and end of life replacement calculations do not normally apply. If gravel roads are maintained properly, they can theoretically have a limitless service life.

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

7.3 Financial Profile

7.3.1 Current Funding Position

Table 50 itemizes by asset category, Bruce County's average annual asset capital expenditure (CapEx) requirements, current funding positions, and funding increases required to achieve full funding on assets funded by taxes.

Table 50: Current Funding Position

Asset Category	Avg. Annual Requirement	Annual Funding Available					Annual Deficit
		Taxes	Gas Tax	OCIF	Taxes to Reserves	Total Available	
Bridges & Culverts	$4,588,000	$2,383,000	$525,000			$2,908,000	$1,680,000
Buildings	$7,206,000	$148,000			$2,816,000	$2,964,000	$4,242,000
Land Improvements	$365,000	$85,000				$85,000	$280,000
Trail System	$44,000	$95,000				$95,000	$(51,000)
Road Network	$13,830,000	$1,195,000	$1,583,000	$661,000	$330,000	$3,769,000	$10,061,000
Stormwater Infrastructure	$339,000					$0	$339,000
Technology & Communication	$1,041,000	$64,000			$312,000	$376,000	$665,000
Furniture & Equipment	$1,011,000	$567,000			$163,000	$730,000	$281,000
Fleet	$1,724,000	$642,000			$317,000	$959,000	$765,000
	$**30,148,000**	$**5,179,000**	$**2,108,000**	$**661,000**	$**3,938,000**	$**11,886,000**	$**18,262,000**

The average annual CapEx requirement for the above categories is $30.1 million. Annual revenue currently allocated to these assets for capital purposes is $11.9 million leaving an annual deficit of $18.3 million. Put differently, these infrastructure categories are currently funded at 39% of their long-term requirements.

7.3.2 Full Funding Requirements

In 2021, the County of Bruce has annual budgeted tax revenues of $52.24 million. As illustrated in **Table 51**, without consideration of any other sources of revenue or cost containment strategies, full funding would require the following tax change over time:

Table 51: Full Funding Requirements

Asset Category	Tax Change Required for Full Funding
Bridges & Culverts	3.2%
Buildings	8.1%
Land Improvements	0.5%
Trail System	-0.1%
Road Network	19.3%
Signs/traffic signals	0.0%
Stormwater Infrastructure	0.6%
Technology & Communication	1.3%
Furniture & Equipment	0.5%
Fleet	1.5%
	34.9%

The following changes in costs and/or revenues over the next number of years are not being considered in the financial strategy as they are already committed in the County's long-term financial plans, but are worth highlighting:

a) Bruce County's formula based OCIF grant is scheduled to grow from $661K in 2021 to $1.3 million in 2022.
b) Bruce County's debt payments for these asset categories will be decreasing by $2.3 million over the next 5 years and by $3.3 million over the next 10 years. Although not shown in the table, debt payment decreases will be $4 million and $4.1 million over the next 15 and 20 years respectively.

As mentioned above, scenarios for full funding do not include capturing OCIF & debt payment. **Table 52** presents four different phase-in period lengths for full funding scenarios:

Table 52: Full Funding Scenarios

	Phase-In Period Length			
	5 Years	10 Years	15 Years	20 Years
Infrastructure Deficit	$18,262,000	$18,262,000	$18,262,000	18,262,000
Tax Increase Required	34.9%	34.9%	34.9%	34.9%
Annually:	**6.2%**	**3.1%**	**2.1%**	**1.6%**

7.3.3 Financial Strategy Recommendations

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

a) increasing tax revenues by 2.1% each year for the next 15 years solely for the purpose of phasing in full funding to the asset categories covered in this section of the AMP.
b) allocating the current gas tax and OCIF revenue as outlined previously.
c) allocating the scheduled OCIF grant increases to the infrastructure deficit as they occur.
d) reallocating appropriate revenue from categories in a surplus position to those in a deficit position.
e) increasing existing and future infrastructure budgets by the applicable inflation index on an annual basis in addition to the deficit phase-in.

Notes:

1. As in the past, periodic senior government infrastructure funding will most likely be available during the phase-in period. By Provincial AMP rules, this periodic funding cannot be incorporated into an AMP unless there are firm commitments in place. We have included OCIF formula-based funding, if applicable, since this funding is a multi-year commitment[4].
2. We realize that raising tax revenues by the amounts recommended above for infrastructure purposes will be very difficult to do. However, considering a longer phase-in window may have even greater consequences in terms of infrastructure failure.
3. Due to existing financial commitments, reallocations of debt payments to CapEx funding are not included in this strategy. It is recommended that the County consider this in the future when planning reallocations of debt payments.

Although this option achieves full CapEx funding on an annual basis in 15 years and provides financial sustainability over the period modeled, the recommendations do require prioritizing capital projects to fit the resulting annual funding available. Current data shows a pent-up investment demand of $2.5 million for the Road Network, $2.1 million for Furniture & Equipment, $1.7 million for Technology & Communication, $299K for Bridges & Culverts, $263K for Land Improvements and $245K for Fleet. Prioritizing future projects will require the current data to be replaced by condition-based data. Although our recommendations include no further use of debt, the results of the condition-based analysis may require otherwise.

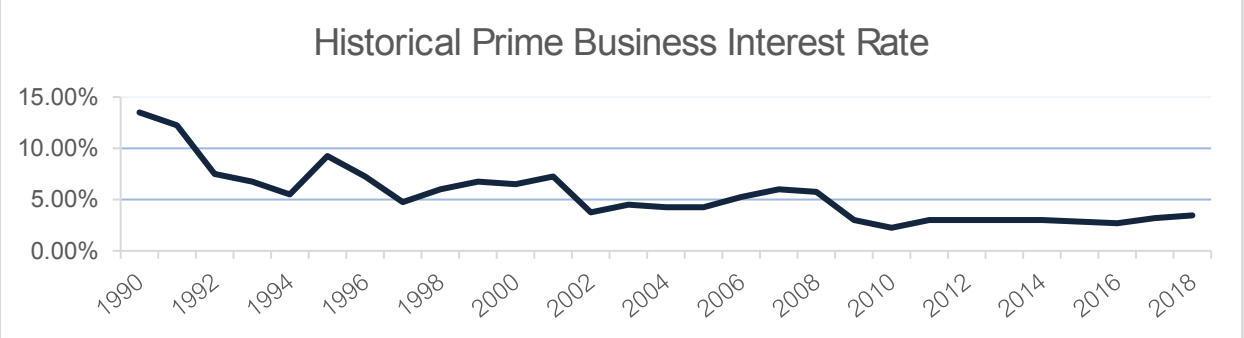
[4] The County should take advantage of all available grant funding programs and transfers from other levels of government. While OCIF has historically been considered a sustainable source of funding, the program is currently undergoing review by the provincial government. The outcome of the review may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

7.4 Use of Debt

For reference purposes, the following table outlines the premium paid on a project if financed by debt. For example, a $1M project financed at 3.0%[5] over 15 years would result in a 26% premium or $260,000 of increased costs due to interest payments. For simplicity, the table does not consider the time value of money or the effect of inflation on delayed projects.

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

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



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

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

Table 53 outlines how Bruce County has historically used debt for investing in the asset categories as listed. There is currently $19.8 million of debt outstanding for the assets covered by this AMP with corresponding principal and interest payments of $4.2 million, well within its provincially prescribed maximum of $11.3 million.

Table 53: Historical Use of Debt

Asset Category	Current Debt Outstanding	Use of Debt in the Last Five Years				
		2016	2017	2018	2019	2020
Bridges & Culverts	$3,006,000					$3,006,000
Buildings	$16,802,000	$1,636,000			$3,921,000	$561,000
Land Improvements						
Trail System						
Road Network						
Signs/traffic signals						
Stormwater Infrastructure						
Technology & Communication						
Furniture & Equipment						
Fleet						
Total Tax Funded:	$**19,808,000**	$**1,636,000**			$**3,921,000**	$**3,567,000**

Table 54: Principle & Interest Payments

Asset Category	Principal & Interest Payments in the Next Ten Years						
	2020	2021	2022	2023	2024	2025	2030
Bridges & Culverts	$97,000	$195,000	$195,000	$195,000	$195,000	$195,000	$195,000
Buildings	$4,051,000	$4,080,000	$3,478,000	$1,650,000	$1,615,000	$1,610,000	$704,000
Land Improvements							
Trail System							
Road Network							
Signs/traffic signals							
Stormwater Infrastructure							
Technology & Communication							
Furniture & Equipment							
Fleet							
Total Rate Funded:	**$4,148,000**	**$4,275,000**	**$3,673,000**	**$1,845,000**	**$1,810,000**	**$1,805,000**	**$899,000**

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

7.5 Use of Reserves

7.5.1 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 capital reserves currently available to Bruce County.

Asset Category	Balance at December 31, 2020
Bridges & Culverts	$2,668,000
Buildings	$8,681,000
Land Improvements	$7,000
Trail System	$215,000
Road Network	$6,578,000
Stormwater Infrastructure	$6,000
Technology & Communication	$1,474,000
Equipment	$1,188,000
Fleet	$246,000
Total Tax Funded:	$**21,063,000**

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

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

These reserves are available for use by applicable asset categories during the phase-in period to full funding. This coupled with Bruce County'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.

7.5.2 Recommendation

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

8 Appendices

Key Insights

- Appendix A identifies projected 10-year capital requirements for each asset category
- Appendix B provides additional guidance on the development of a condition assessment program

Appendix A: 10-Year Capital Requirements

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

Road Network

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Asphalt Rural	$0	$6,394,793	$6,331,363	$3,317,797	$9,101,998	$7,743,348	$9,668,449	$8,692,740	$2,285,404	$7,467,026	$3,577,562
Asphalt Urban	$0	$720,696	$259,926	$467,809	$1,057,320	$692,531	$338,939	$1,104,496	$55,228	$444,337	$449,684
Road Base	$1,953,505	$1,282,067	$0	$0	$0	$326,069	$0	$0	$1,314,575	$178,539	$0
Signs	$0	$0	$182,589	$111,918	$50,297	$422,761	$44,687	$98,573	$47,538	$187,925	$219,329
Surface Treated	$0	$778,978	$2,000,502	$2,272,142	$4,744,940	$2,919,700	$2,615,533	$2,300,043	$0	$778,978	$2,000,502
Traffic Signals	$689,754	$0	$0	$104,237	$32,552	$0	$0	$0	$0	$0	$0
Total	$2,643,259	$9,176,534	$8,774,380	$6,273,903	$14,987,108	$12,104,408	$12,667,607	$12,195,852	$3,702,746	$9,056,805	$6,247,077

Bridges & Culverts

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Bridges	$455,475	$24,005,935	$3,366,475	$1,427,647	$3,941,768	$6,653,958	$5,891,051	$5,536,014	$3,790,081	$15,140,963	$15,334,164
Culverts	$341,446	$8,937,776	$1,043,800	$24,032	$767,346	$1,369,676	$78,248	$1,696,728	$1,064,200	$3,087,200	$5,603,200
Total	$796,921	$32,943,711	$4,410,275	$1,451,679	$4,709,114	$8,023,634	$5,969,299	$7,232,742	$4,854,281	$18,228,163	$20,937,364

Stormwater Infastructure											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Catch Basins	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Manholes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Stormwater Sewers	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0

Buildings											
Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Administration	$0	$22,000	$0	$21,000	$0	$19,500	$0	$0	$0	$780	$0
Bruce County Housing Corporation	$154,915	$1,708,323	$3,325,010	$3,357,339	$4,365,845	$2,059,281	$7,395,888	$4,910,545	$11,928,480	$5,713,286	$5,696,344
Long Term Care	$0	$0	$180,000	$13,001	$0	$7,529	$0	$13,000	$0	$0	$0
Museum	$0	$20,500	$0	$0	$7,376	$5,850	$0	$1,305	$0	$0	$0
Paramedic Services	$0	$26,000	$5,000	$0	$0	$0	$0	$0	$0	$0	$0
Transportation & Environmental Services	$154,915	$1,776,823	$3,510,010	$3,391,340	$4,373,221	$2,092,160	$7,395,888	$4,924,850	$11,928,480	$5,714,066	$5,696,344
Total	$0	$22,000	$0	$21,000	$0	$19,500	$0	$0	$0	$780	$0

Furniture & Equipment

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Administration	$556,675	$23,636	$29,848	$34,629	$49,514	$15,101	$585,366	$29,848	$34,629	$36,400	$14,753
Bruce County Housing Corporation	$52,098	$421	$0	$0	$0	$0	$48,673	$0	$0	$0	$0
Library	$430,321	$226,088	$409,510	$424,238	$352,642	$343,816	$469,633	$342,079	$905,307	$387,982	$367,433
Long Term Care	$659,957	$76,778	$94,251	$105,489	$197,524	$22,501	$443,837	$96,353	$192,623	$104,592	$69,101
Museum	$176,688	$36,014	$39,173	$180,911	$3,891	$0	$190,818	$39,173	$180,911	$3,891	$17,948
Paramedic Services	$192,039	$4,197	$48,153	$72,812	$73,779	$50,254	$120,205	$231,458	$583,414	$66,224	$45,132
Transportation & Environmental Services	$123,155	$1,632	$1,100	$1,002	$2,077	$47,553	$34,503	$231,477	$7,012	$49,233	$23,372
Total	$2,190,933	$368,766	$622,035	$819,081	$679,427	$479,225	$1,893,035	$970,388	$1,903,896	$648,322	$537,739

Fleet

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Administration	$6,475	$0	$28,143	$26,795	$35,284	$0	$44,582	$28,143	$26,795	$35,284	$0
Library	$0	$0	$0	$36,631	$34,822	$0	$0	$0	$36,631	$34,822	$0
Machinery	$0	$0	$0	$0	$30,681	$0	$20,000	$0	$24,500	$0	$0
Paramedic Services	$27,613	$0	$520,000	$330,000	$490,000	$264,026	$285,664	$520,000	$330,000	$490,000	$264,026
Transportation - Heavy Duty	$126,183	$244,691	$1,441,185	$1,801,131	$0	$262,463	$630,114	$1,441,185	$1,801,131	$0	$262,463
Transportation – Light Duty	$139,118	$242,048	$422,311	$409,394	$0	$35,974	$421,041	$422,311	$409,394	$0	$35,974
Transportation - Machinery	$51,817	$18,643	$118,864	$358,218	$1	$1,507,302	$123,604	$772,821	$140,269	$0	$299,166
Total	$351,206	$505,382	$2,530,503	$2,962,169	$590,788	$2,069,765	$1,525,005	$3,184,460	$2,768,720	$560,106	$861,629

Land Improvements

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Administration	$270,233	$0	$0	$0	$36,673	$0	$211,998	$6,295	$20,903	$0	$85,537
Bruce County Housing Corporation	$4,254	$0	$0	$0	$0	$0	$0	$30,408	$0	$0	$0
Long Term Care	$6,554	$10,038	$0	$2,796,215	$0	$0	$5,710	$0	$94,941	$12,189	$0
Museum	$0	$0	$0	$0	$0	$703,810	$19,737	$0	$0	$0	$0
Paramedic Services	$0	$0	$0	$8,912	$0	$0	$0	$0	$0	$0	$0
Transportation & Environmental Services	$0	$0	$0	$0	$13,660	$0	$0	$0	$16,050	$0	$0
Total	$281,041	$10,038	$0	$2,805,127	$50,333	$703,810	$237,445	$36,703	$131,894	$12,189	$85,537

Technology & Communication

Asset Segment	Backlog	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Communication	$151,112	$9,657	$3,770	$24,548	$0	$32,369	$133,668	$3,770	$0	$16,659	$15,710
Hardware	$533,178	$188,746	$234,276	$435,629	$260,582	$266,254	$910,923	$234,276	$437,567	$315,091	$266,254
Network	$338,798	$6,891	$199,726	$341,884	$1,621	$39,542	$397,343	$199,726	$341,884	$1,621	$39,542
Software	$1,004,672	$348,099	$259,907	$49,538	$30,394	$1,342,617	$272,858	$50,735	$36,411	$1,342,617	$252,693
Total	$2,027,760	$553,393	$697,679	$851,599	$292,597	$1,680,782	$1,714,792	$488,507	$815,862	$1,675,988	$574,199

Trail System

Asset Segment	Backlog	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Infastructure	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Signage	$0	$3,534	$0	$0	$1,568	$0	$2,443	$1,356	$4,190	$1,601	$4,305
Trails	$0	$0	$0	$1	$0	$0	$0	$0	$0	$0	$0
Total	$0	$3,534	$0	$1	$1,568	$0	$2,443	$1,356	$4,190	$1,601	$4,305

Appendix B: Condition Assessment Guidelines

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

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

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

Role of Asset Condition Data

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

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

Guidelines for Condition Assessment

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

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

Developing a Condition Assessment Schedule

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

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