

COUNTY OF SIMCOE 2022
CORE INFRASTRUCTURE
ASSET MANAGEMENT PLAN

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The County of Simcoe's Asset Management Plan illustrates the link between the strategic council and community objectives, and the daily decisions of infrastructure investments. The plan provides data driven guidance and sets a strategic framework that will guide future investment decisions, supporting growth and the changing needs within the County in a fiscally responsible manner.



1.0 Executive Summary

Introduction
Ontario Regulation 588/17
Current State of Infrastructure
Levels of Service
Risk Assessment
Asset Lifecycle Management Strategy
Financing Strategies
Discussion and Conclusion

1.1 Introduction

The County of Simcoe is located in the central portion of southern Ontario with an approximate area of 4,841 square kilometers. The County stretches from the shores of Lake Simcoe in the east to Georgian Bay in the west. The County provides an array of services to the community with its infrastructure being the foundation for economic development, competitiveness, prosperity, and overall quality of life for the residents of the County. The County of Simcoe is the second largest County based upon population and the third largest based on physical size in Ontario. The vast size of the County creates opportunities and challenges when it comes to strategically managing the diverse infrastructure portfolio.

This Asset Management Plan (AMP) includes County owned core infrastructure assets which include road segments, bridges, structural culverts, and the stormwater network. The plan provides data driven guidance and sets a strategic framework that will guide future investment decisions in a fiscally responsible manner. The draft strategic vision of the County's transportation network as taken from the draft 2021 Transportation Master Plan reads:

"To provide a safe, efficient and adaptable multi-modal transportation system that supports vibrant, healthy and prosperous communities, and responds to the County's vast geography, growing permanent and seasonal populations plus an expanding economy."



Intersection of County Road 21 & County Road 4 (Innisfil Beach Rd. & old Hwy. 11)

1.2 Ontario Regulation 588/17

In December 2017, the Ontario Government passed [Ontario Regulation 588/17 - Asset Management Planning for Municipal Infrastructure](#). The goal of Ontario Regulation 588/17 is to help improve the way municipalities plan for infrastructure. To be eligible for capital grants, municipalities must have an Asset Management Plan. As required by the O. Reg. 588/17, this plan details the current state of infrastructure and the life cycle activities required to provide an agreed upon level of service, in a cost-effective manner, while managing an acceptable level of risks.

O. Reg. 588/17 has a phased implementation approach with three deadlines left to meet:

- **July 1, 2022** – Asset Management Plan for Core Assets
- **July 1, 2024** – Asset Management Plan for all Assets
- **July 1, 2025** – Asset Management Plan documenting proposed levels of service
-

The County's Core Infrastructure Asset Management Plan is an update of the previous Asset Management Plan approved by Council May 19, 2016, and is compliant with the July 1, 2022 regulation requirements. The County will perform a full re-evaluation of its AMP and the Strategic Asset Management Policy at least every five years once all deadlines of the O. Reg. 588/17 have been met. However, the AMP is an evolving document and as such, the County may implement updates or changes required to the plan prior to the comprehensive 5-year review.

1.3 Current State of Infrastructure

The County of Simcoe's core infrastructure consists of the transportation network:

- Roads
- Bridges and Structural Culverts
- Stormwater

The core infrastructure assets have a total replacement value of \$2.6B as of December 31, 2020. The average age of the roads and stormwater network are 39 and 38 years respectively based on a lifecycle estimated useful life (lifecycle EUL) of 85 years. The average age of the structures is 19 years based on a lifecycle EUL of 50 years for corrugated steel culverts and a lifecycle EUL of 75 years for bridges and concrete culverts. The chart below summarize the replacement cost and average age by asset category.

Asset Category	Replacement Cost	Average Age
Roads	\$2,247,500,000	39
Structures	\$356,863,740	19
Stormwater	\$14,284,682	38
TOTAL	\$2,618,648,422	

*Note – the replacement value for the stormwater assets is a best estimate based on the current available data

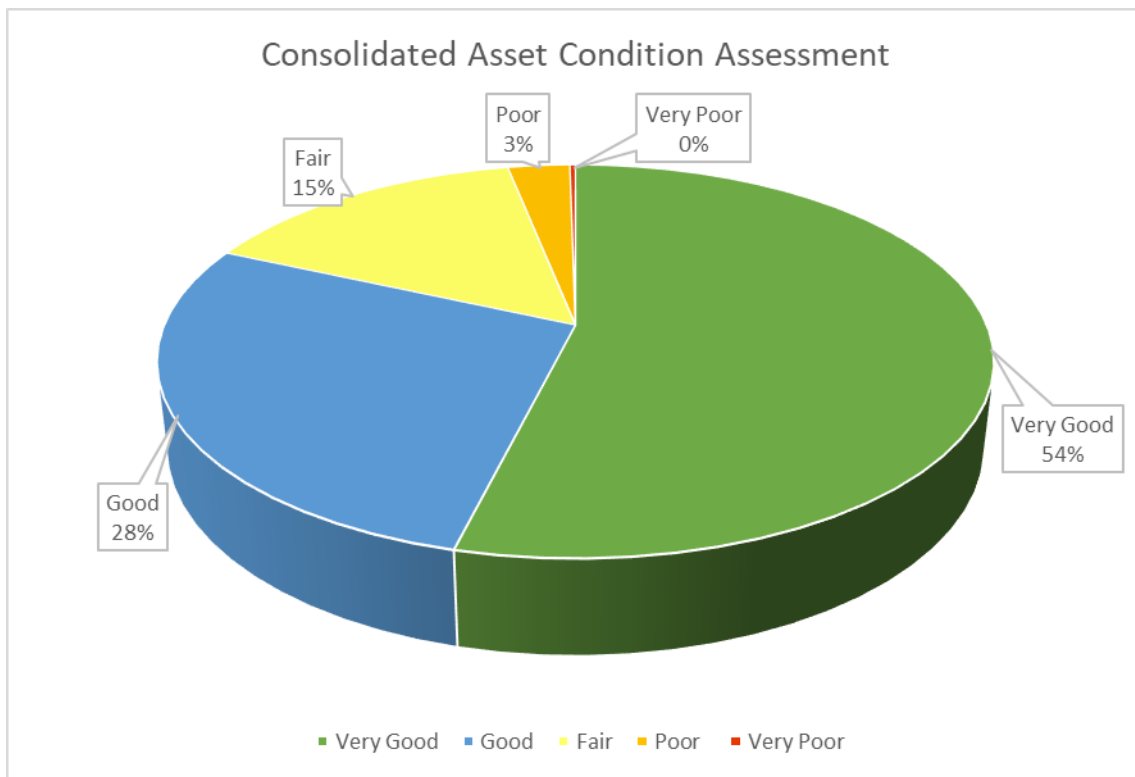
A summary of the core infrastructure inventory and unit of measure is shown below.

Asset Category	Inventory	Unit
Roads	1,798	Total Lane km
Structures	203	Each
Storm Sewers	37,345	Meters
Stormwater outlets	255	Each
Stormwater ponds	9	Each

1.3.1 Current Condition

Over 80% of the County’s core infrastructure has a condition rating of good to very good (based on number of assets), indicating the majority of core assets are fit for the future and well maintained. The average condition rating for all core infrastructure at December 31, 2020 is 80.25 (Very Good) with the roads average pavement condition index (PCI) being 82.91 (Very Good) and a bridge condition index (BCI) of 72.83 (Good) for the County bridges and structural culverts combined. The assets that are of greater concern to the County are the smaller fraction of assets listed in fair, poor or very poor condition. They may still be functioning but at a low level of service and the County needs to be prepared to respond to failures.

The illustration below includes the County’s roads, bridges, and structural culverts and excludes data for the stormwater system as it has not been implemented into the County’s asset management software and additional inventory break out would be required.



Very Good 415 Assets \$1,645,259,150	Good 214 Assets \$624,562,590	Fair 117 Assets \$286,508,520	Poor 22 Assets \$45,792,660	Very Poor 2 Assets \$2,240,820
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1.4 Level of Service

The service levels for the core infrastructure support the County's strategic goals and are based on legislative requirements, customer expectations, expected asset performance, strategic and corporate master plans and the financial capacity of the County to deliver those levels of service. The County has identified specific service levels along with performance metrics for each asset type quantifying the level of service delivered in the asset management plan. These service levels are developed and recommended by the departments and then approved by Council through the approval of the County's Asset Management Plan. This AMP includes the mandatory metrics prescribed by O. Reg. 588/17. The funding strategy is adequate to maintain the existing service levels for the 10-year planning period.

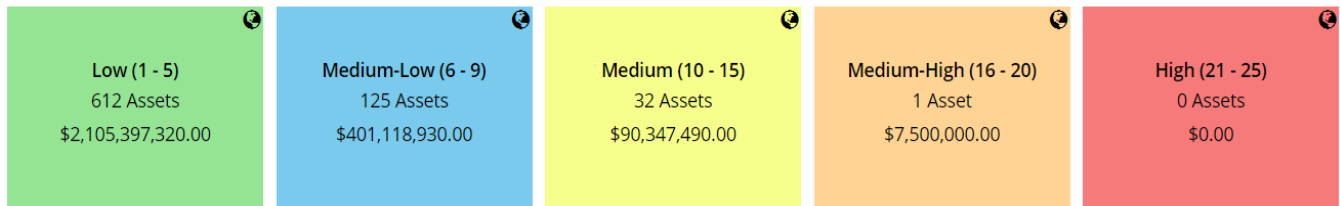


County Road 17

1.5 Risk Assessment

Risk is generally managed across all service areas through proactive maintenance programs and a combination of age-based prioritization methods and condition and service impact assessments for rehabilitation and replacement programs. Risk as it relates to prioritizing rehabilitation and replacement projects can be defined as the relationship between the probability of failure and the consequence of failure for any asset within an asset category. The probability of failure is linked to the condition and age of an asset and the consequence of failure is linked to the service impact as a result of an asset failing. This risk assessment allows the County to compare different asset types to determine the highest priority assets requiring rehabilitation or replacement. An asset with a lower condition rating and higher service impact will have a greater risk to the County. For example, a road segment with a pavement condition index rating of 55 (Fair) and a high average annual daily traffic would have a greater risk to the County than a road segment with a pavement condition index rating of 75 (Good) and a low average annual daily traffic. Currently, 79% of the County’s core infrastructure assets are considered low risk and 16% are medium-low based on the County’s current risk assessment calculation.

Core Infrastructure Risk Matrix



1.6 Lifecycle Management Strategy

Each County, Municipality, Region, Town or Township needs to balance the funds available to build new infrastructure against manage existing assets. To ensure resources are maximized the County relies on lifecycle management strategies. The lifecycle strategy details how the County plans to manage the assets at the desired levels of service, as approved by Council, at acceptable risk levels and at the lowest lifecycle costs over the service life of the asset. The activities are funded through capital and operating budgets and are generally grouped into the categories as shown below. Each service area section within this asset management plan documents the specific lifecycle management strategies currently in place and the associated costs.

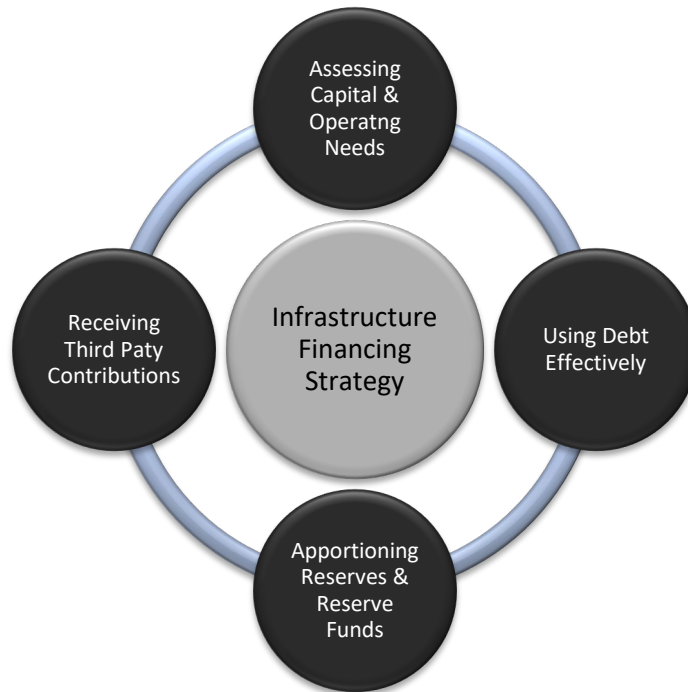
Lifecycle Activity	Description	Examples
Maintenance	Providing regular activities or routine inspections, maintenance, repairs, unexpected events and all other maintenance costs related to supporting the core infrastructure	Inspections, sweeping, brush cutting, cold mix patch fill, bridge repair, snow removal, insurance.
Rehabilitation	An event more substantial than standard maintenance which would extend the life of the asset or ensure its safety to the community.	Road or bridge deck resurfacing, bridge concrete patch repair, waterproofing, pulverising, micro-surfacing.
Replacement	When rehabilitation is not an option, the activities performed to replace when the asset is at the end of life.	Bridge or stormwater pipe/outlet replacement or road reconstruction.
Growth	Increase in inventory based on contributed assets or construction.	Increase in transportation system from 2 to 4 lanes. Upload or download of assets from lower tier Municipalities or the Province
Disposal	Could be the result of transferring a road to a lower-tier municipality or when replacement is not an option an asset may be disposed of.	Downloaded road or bridge to a lower tier municipality or in a situation such as McKinnon bridge where it is no longer being used by vehicular traffic and has deteriorated significantly; disposal may be considered.

1.7 Financing Strategies

For an asset management plan to be effective it must integrate financial planning and long-term budgeting. A comprehensive asset management financial plan will allow the County to identify the financial resources required to maintain the existing infrastructure at the desired levels of service and identify any potential infrastructure gaps that need to be addressed.

The financing strategy presented in this Core Infrastructure Asset Management Plan is summarized below and includes:

- Assessing capital and operating needs
- Apportioning reserves and reserve funds
- Receiving third party contributions.
- Using debt effectively



10-Year Core Infrastructure Asset Management Requirements

When analyzing the asset management financial strategy requirements there are two scenarios that could be used:

1. **Replacement Only Scenario** – assumes that assets are replaced at the end of their useful life without any maintenance or renewal/rehabilitation work completed. The asset effectively deteriorates to a PCI/BCI of zero.
2. **Lifecycle Strategy Scenario** – assumes that lifecycle activities are performed at strategic points to extend the service life of the asset or ensure community safety until full replacement is required.

For the roads and structures network the **Lifecycle Strategy Scenario** is used. By performing the lifecycle activities, the useful lives of the assets are extended and safety to the community is ensured.

The County has forecasted a 10-year average annual requirement, with a 2% yearly inflationary factor for existing core infrastructure, of \$40.4M over the 2022-2031 time period. These lifecycle event categories include maintenance (\$22.5M), rehabilitation (\$11.5M) and asset replacements (\$6.4M).

Overall, the County is in good financial standing to maintain and fund the lifecycle activities of its existing assets. Based on the financial strategy of the County's existing core infrastructure there will not be an infrastructure funding gap. In regard to the growth-related projects the County has not identified the source(s) of funding beyond the development charges (DC's) to support the benefit to existing for the growth projects.

1.8 Discussion and Conclusion

This AMP is a strategic document that describes the state of the County's core infrastructure and the approaches used to manage the assets over their lifecycle to achieve desired service levels at the lowest lifecycle cost. The County's Core Infrastructure Asset Management Plan is compliant with the July 1, 2022, regulation requirements. The total replacement value of the County's core infrastructure is \$2.6B as of December 31, 2020, and over 80% of core infrastructure has a condition rating of good to very good coinciding with a low-risk rating.

Several transportation related initiatives have been implemented since the last asset management plan improving the overall transportation experience in our County. However, new opportunities continue to evolve in the development of the County's transportation network. Multi-modal transportation has the potential to foster more connected and vibrant communities and support growing tourism and economic development. Green infrastructure stormwater systems are another way the County of Simcoe can enhance its core infrastructure by improving its environmental stewardship.

2.0 Introduction

Asset Management Program
[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]

2.1 Asset Management Program

The County of Simcoe owns a diverse portfolio of infrastructure assets that provide a number of services and enable residents, businesses, and other stakeholders to live, work, and play within the County. The asset management program is a coordinated effort of all relevant departments and stakeholders across the County to extract the highest value from capital assets at the lowest lifecycle cost.

Assets are defined as the physical infrastructure that is necessary to support the social, economic, and environmental services provided to residents. These assets only exist for the purpose of supporting the delivery of a service to the public. Asset management is the way the County manages and maintains these assets in the most cost-effective way to a standard the County feels is acceptable.

The following is a list of goals that this Core Infrastructure Asset Management Plan and linked processes aim to achieve:

- Communicate the requirements for sustainable delivery of services, through the management of the County’s assets.
- Minimize life cycle costs of an asset from acquisition through to disposal.
- Mitigate risk exposure to the County by ensuring assets are managed in a manner that considers both the condition of the asset with the service impact of the asset.
- Ensure required funding is available to provide the appropriate levels of service over the planning period.
- Compliance with regulatory requirements

Successful asset management results in:

Asset management includes setting levels of service in line with resident's expectations. The higher the level of service provided, the higher the cost associated with maintaining the asset; however, risk decreases with increased service levels. Levels of service drive how the County will manage its infrastructure. Determining a sustainable level of service is the key to successful asset management as it allows the County to meet the needs of users in a risk-averse and cost-efficient manner

2.1.1 Alignment to Strategic Plan and other County Plans and Policies

An asset management plan is an important piece of a municipalities' strategic plan. It helps to strengthen the development and operation of municipal infrastructure and the services they provide to the community. The County of Simcoe's Strategic Plan is intended to communicate, educate, and promote an understanding of the County Vision, Mission, Core Values and Strategic Direction. The Strategic Plan serves as a roadmap that will take us from where we are today to where we want to be in the coming years. This enables departments to align their goals and strategies, resulting in more consistent, sustainable, and transparent budgetary decisions. The Strategic Plan helps the County establish priorities and make informed decisions while:

- Improving performance
- Promoting forward looking focus
- Communicating "what is important"
- Providing directions
- Managing risk

County of Simcoe Vision, Mission & Core Values Statement



Under the direction of the County’s strategic vision, mission, values and objectives, the County’s AMP will provide guidance and enable effective management of infrastructure assets. The County of Simcoe’s Strategic Directions as outlined by the Strategic Plan, which will guide the asset management strategy include:



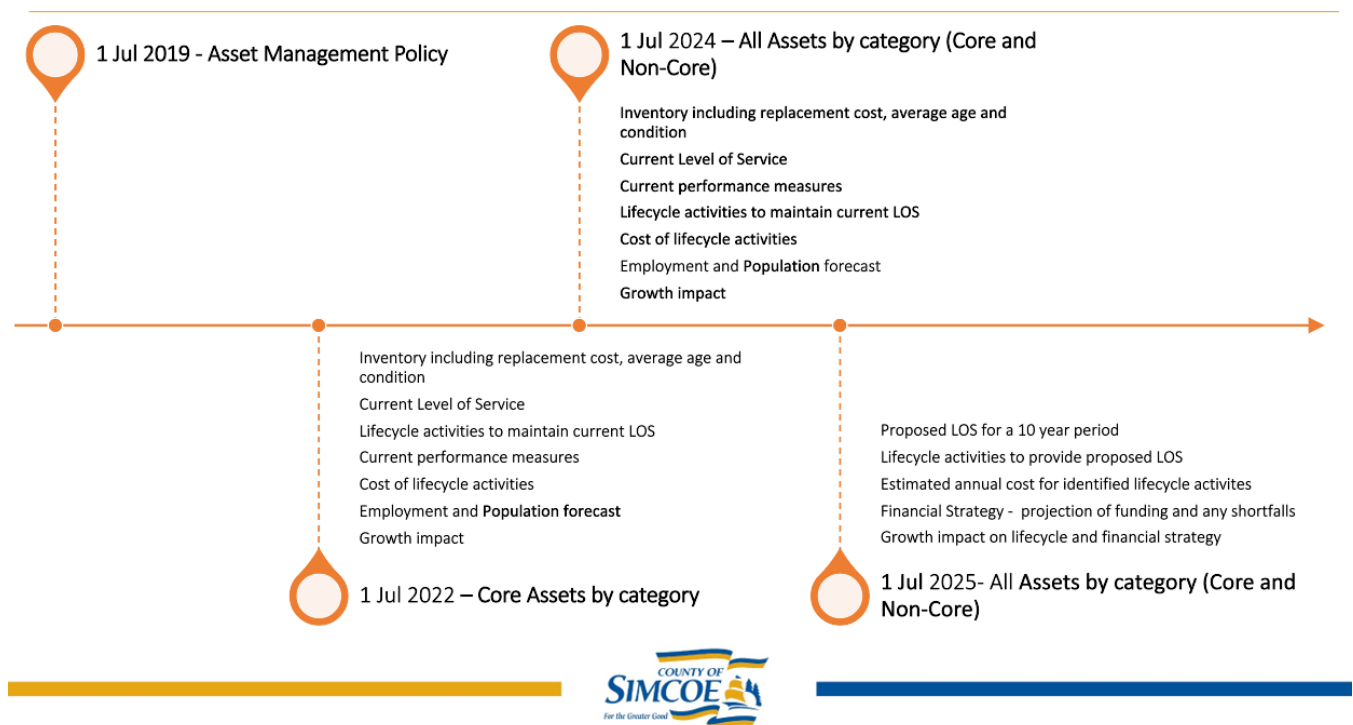
Along with the Strategic Plan, the guiding principles used in the development of this AMP incorporates direction from the following County documents with a reciprocal relationship:

County Plan and Policies	Description of Plan or Policy	Asset Management Plan Alignment
Long Term Financial Plan	Future horizon, incorporating the financial requirements of the budget, Transportation Master Plan and AMP. The LTF planning objective is to reflect the County's mission and strategic objectives in a financial plan that includes service levels, capital projects, debt levels and revenue sources.	The AMP will be a key component of the LTFFP; allowing the County to optimize the management of capital assets through the delivery of services in a cost-effective and efficient manner to maximize long-term community benefits.
Transportation Master Plan (TMP)	Future transportation recommendations	The TMP and AMP will support each other. The TMP will be a strategic tool used in finalizing the AMP by outlining priority projects over the 10-year planning period.
Official Plan	Land use policy directions for long-term growth and development.	Provides direction for growth and development surrounding asset decision making.
Departmental Budgets/Business Plans	Strategic planning documents whereby financial resources are allocated to various programs and services to achieve priorities and reflect the needs of residents.	The service levels and financial requirements set out in the AMP are incorporated into departmental plans as goals and budgets.
Capital Budget	The capital budget identifies replacement schedules, capital improvements or growth projects required to meet the desired service levels and program offerings.	The AMP will allow the County to strategically align service levels with risk to determine highest priority projects for the coming year.
By-Laws; Policies and Procedures	All County related by-laws, policies and procedures that have an impact on asset management (Tangible Capital Asset Policy; Asset Management Policy; Development Charges By-law).	The AMP will utilize various infrastructure related by-laws and County policies and procedures.
Regulations	All government regulations that have an impact on asset management (Ontario Regulation 588/17).	Abide by government regulations. (See Table below for a breakdown of other legislative requirements linked to asset management).

2.2 Regulation Requirements

To address the challenges of funding municipal infrastructure needs across the province the Ontario Government under the “Infrastructure for Jobs and Prosperity Act, 2015”, introduced the [Ontario Regulation 588/17 – Asset Management Planning for Municipal Infrastructure](#) (O. Reg. 588/17). The regulation mandates municipalities place emphasis on asset management planning and reporting, specifically by asset category, and requires a summary of the assets, replacement costs, average age, condition of the assets, current and proposed levels of service, the life cycle costs of providing these activities and the associated risk. The regulation is to be implemented in a staged approach.

As of March 15, 2021, the Ministry of Infrastructure has amended O. Reg. 588/17 to extend the timelines under the regulation by a year.



The County has addressed the July 1, 2022, requirement to produce a core infrastructure asset management plan based on the Ontario Regulation 588/17 guidelines mentioned above.

2.3 Developing the Asset Management Plan

The preparation of the core infrastructure AMP is a concerted and collaborative effort of employees across several departments within the County including: Transportation Construction, Transportation Maintenance, Finance, IT and Service Simcoe.



County Road 90/Mill Street - Elliot Bridge over Nottawasaga River

Asset Management Roles & Responsibility

Asset Management Role	Asset Management Responsibility
County Council <ul style="list-style-type: none"> ▪ Mayors of sixteen towns and townships within Simcoe County ▪ Deputy Mayors of sixteen towns and townships within Simcoe County 	<ul style="list-style-type: none"> ▪ Represent the needs of the community ▪ Allocate resources to meet planning objectives in providing services while managing risks ▪ Approve service levels and ensure sustainability ▪ Approve by resolution the asset management plan and its updates every five years ▪ Review of O. Reg. 588/17 implementation
Executive Management Committee <ul style="list-style-type: none"> ▪ CAO ▪ General Managers 	<ul style="list-style-type: none"> ▪ Authorize, commit to, and communicate the asset management policy, strategy, and governance structure ▪ Reinforce and communicate asset management culture ▪ Ensure the asset management plan depicts the corporate goals and objectives of the County ▪ Review and approve the asset management plan and related processes to proceed to Council for final approval ▪ Recommend project selection criteria to Council ▪ Ensure adequate resources are available for the development and implementation of asset management initiatives
Asset Management Steering Committee	<ul style="list-style-type: none"> ▪ Sponsors the overall corporate asset management program ▪ Develop the AM vision and ensures the program aligns with the corporate strategy, plans and benchmarks ▪ Monitors the current progress on asset management activities and provides status updates to the executive management committee ▪ Agree on project prioritization criteria and weighting for EMC ▪ Ensures that adequate resources are being made available for corporate asset management initiative implementation

Asset Management Role	Asset Management Responsibility
<p>Asset Management Network Team</p> <ul style="list-style-type: none"> ▪ Service Area Managers/Supervisors ▪ Managers/Supervisors of support departments (IT and Finance) ▪ Front-line employees 	<ul style="list-style-type: none"> ▪ Provide insight and knowledge to support the on-going asset management program including asset maintenance for the various service areas ▪ Provide current information regarding the state and needs of their respective assets (maintenance, repair, rehabilitation, or replacement requirements). ▪ Carry out the necessary capital projects as identified in the asset management plan ▪ Recommend an asset management strategy to meet defined levels of service while minimizing risk and life cycle cost of an asset ▪ Ensure data used in the preparation of the asset management plan is complete and reliable
<p>Corporate Performance Asset Management Team</p> <ul style="list-style-type: none"> ▪ Treasurer ▪ Controller ▪ Asset Supervisor(s) <ul style="list-style-type: none"> ○ Asset Accounting ○ Asset Management 	<ul style="list-style-type: none"> ▪ Responsible for developing and implementing Corporate Asset Management initiatives and embedding the corporate asset management culture, practices, and concepts in the County ▪ Ensure the asset management plan reflects accurately and consistently with goals of the organization, including financial information ▪ Coordinate, support, gather and analyze financial asset information ▪ Prepare the asset management plan in alignment with O. Reg. 588/17 ▪ Provide guidance in the implementation of asset management strategies ▪ Develop necessary AM policies, procedures, and processes.

2.4 Continuous Improvements of the Asset Management Plan

Continuous improvements to the County's asset management plan are vital to the long-term sustainability of infrastructure. In alignment with the province's phased implementation of the O. Reg. 588/17 the County's corporate asset management team and asset management network will continue working towards meeting the requirements of including all municipal infrastructure into its asset management plan in advance of the July 1, 2024, deadline. Various aspects of the asset management strategy will continue to be evaluated for areas of improvement and to further align all asset management processes. Some of the areas currently identified for improvement are highlighted below:

- Enhance asset management inventories and data quality within the new asset management software
- Improve Levels of Service targets including County specific technical and customer-oriented key performance indicators.
- The County has developed an initial risk framework by asset category; however, enhancements to the model will be reviewed over the coming updates to the AMP which may further support long-term budgeting, project prioritization, and minimize potential economic, financial, social, environmental, and political risks associated with the County's assets.
- Address risks and vulnerabilities to infrastructure assets as a result of climate change.
- Formalize asset management governance.
- Improve integration between systems to enable dynamic flow, data sharing and analytics to support planning and forecasting.
- Pursue community engagement to identify expectations and help set levels of service.

2.5 Asset Management Plan Scope

This version of the Asset Management Plan, in alignment with O. Reg. 588/17, includes the legislative requirements for the core infrastructure, which include the following assets:

- Roads Network
- Structures - Bridges and Structural Culverts
- Stormwater System

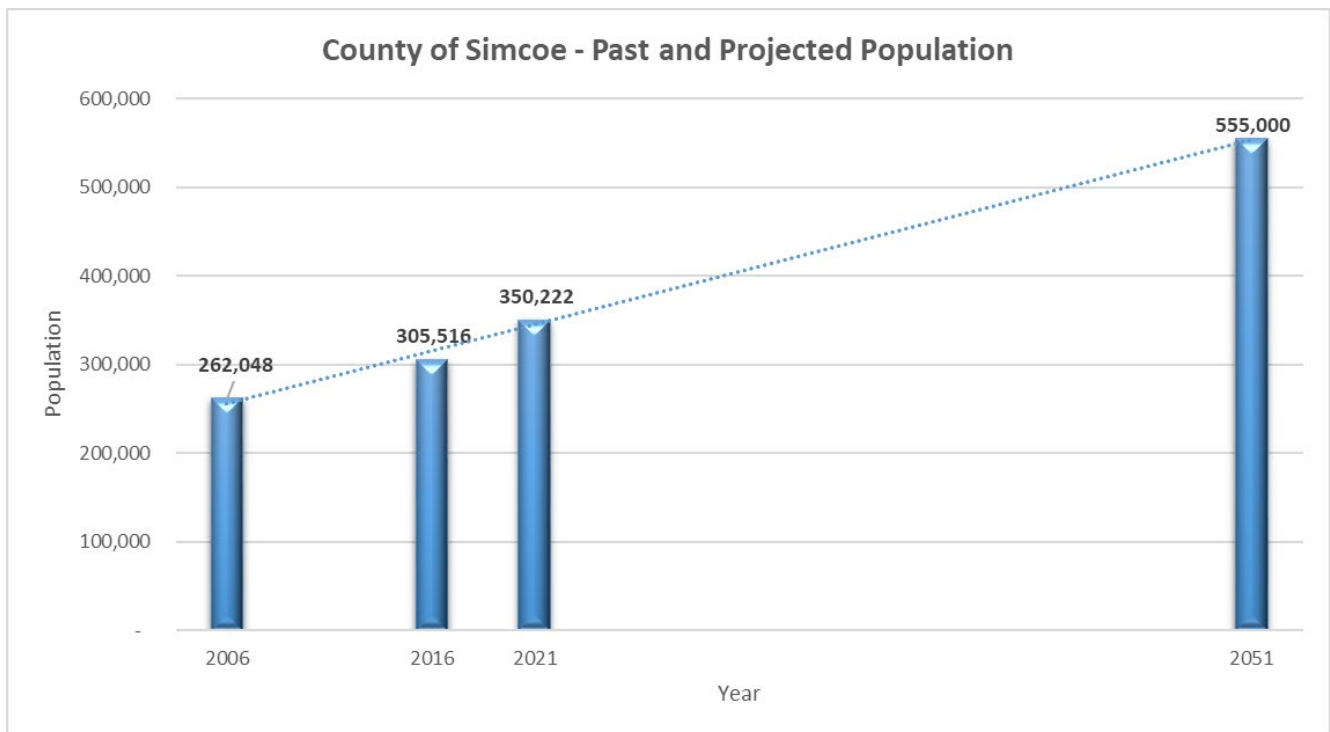
Service	Assets
Roads Network	Roads include primary arterial, secondary arterial, and primary controlled arterial roads with the inclusion of the road base, asphalt, curb, gutter, and traffic island.
Structures	Structures include bridges and culverts greater than or equal to 3 meters
Stormwater System	Stormwater ponds, storm sewers, outlets



County Road 90 – CPR Overhead Bridge - Slab on Concrete I Girders

2.6 Growth

The County of Simcoe delivers a wide variety of programs and services to meet the needs of local residents and businesses. The County is a well-situated and dynamic community that continues to experience sustained growth and development. It is one of the fastest growing counties in Ontario and is forecasted to continue to experience population growth from approximately 350K in 2021 to 555K in 2051, a 58% increase over the 30-year period. Recent and planned population growth is largely focused on the southern parts of the County and on the southern shore of Nottawasaga Bay. The population and employment forecasts are based on the growth allocated to Simcoe County in Schedule 3 of the Provincial Plan *A Place to Grow: Growth Plan for the Greater Golden Horseshoe (Growth Plan)*. Employment is expected to be 198,000 in 2051.



Sources: 2006-2021 – Statistics Canada, Census of Population; 2051 – *A Place to Grow: Growth Plan for the Greater Golden Horseshoe County of Simcoe only* – excludes the cities of Barrie and Orillia

Three primary events that influence growth in the County's core infrastructure include:

Growth Factor	Description
Service Improvements	To provide a higher level of service to the community there are times when new or larger assets are required (i.e.: improvements to stormwater system, intersection improvements which result in additional traffic assets)
Population Growth	The Transportation Master Plan and LTFP incorporate changes in demographics along with growth. These are then used to determine which roads in the County will need to be reconstructed, usually from two to four or five lanes.
Upload or Download of Assets	Another form of growth to the transportation network includes roads and/or structures that are uploaded from lower-tier Municipalities within the County of Simcoe or downloaded from the Province to the County. In this case, the assets are often reconstructed to County standards.

2.7 Communication and Community Engagement

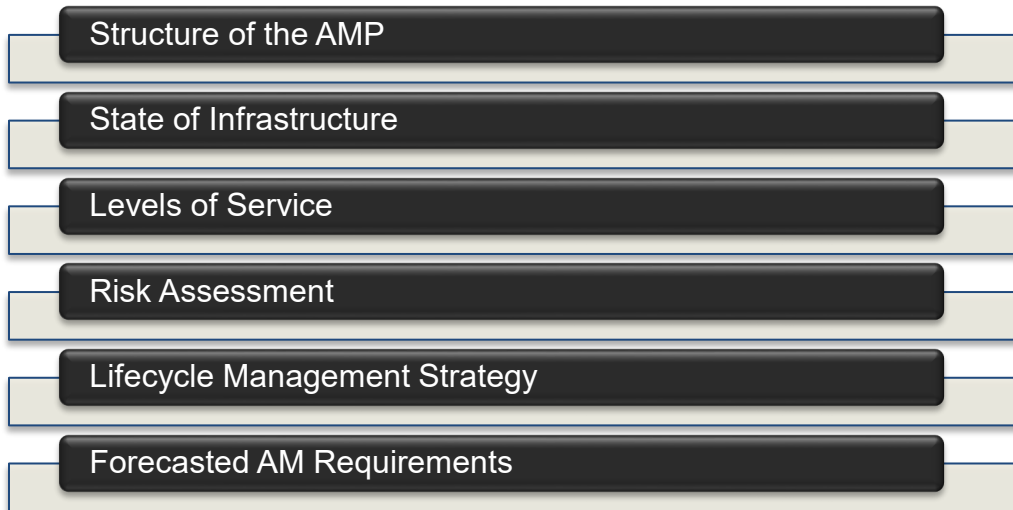
Municipalities across the province continue to engage their communities to ensure the recommendations provided to Council, for their approval, align with the strategic direction, priorities for resource allocation and the expectations of the community. The most common community engagement is where the citizens of the County provide their ideas, opinions, and views to Council in an effective manner. The County has not created a specific community engagement strategy as it relates to the resident expectations and service levels for the asset management program. The County's approach for this asset management plan will be limited to the Ontario regulation community levels of service requirements. The County will use the information obtained from community engagement public meetings and the virtual Public Information Centre developed for the Transportation Master Plan, as well as other County plans and processes, to identify strategic investment opportunities in transportation infrastructure and help derive potential community levels of service metrics. The Transportation Master Plan Virtual Public Information Centre was created as an interactive engagement space containing project display boards, a public opinion survey and an area to submit feedback and comments.

2.8 Asset Management Plan Assumptions and Limitations

The following summarizes the asset management plan assumptions and limitations:

- The AMP is compliant to the O. Reg. 588/17 July 2022 requirements. Continued efforts will be made by the County to produce an asset management plan compliant with the July 2024 and 2025 requirements as well as address the AMP improvements identified earlier in this document.
- Asset condition is based on Pavement Condition Index/Bridge Condition Index which is determined by staff and/or consultant opinions of the asset condition.
- Unexpected events (e.g., climate change, weather patterns) are not included in the values but should they occur the replacement and rehabilitation of projects will continue over this period of analysis.
- Community Level of Service are based on qualitative requirements from the regulation.
- Total lane kilometers include the bridge and intersection road surface. The total lane kilometers are calculated based on the number of lanes of a road multiplied by the length of the road. For example, a road segment that is 1.7km in length with two lanes would be 3.4 lane km's; however, if that road segment had a total of four lanes, then the lane km's would total 6.8 lane km's.
- Excluded from the plan are assets that do not require lifecycle strategies such as land.
- The asset age is based on the in-service date as the starting point.
- The asset management requirements include all events required to maintain an asset, which are both operating and capital related expenses.
- The core infrastructure asset management reserve contribution is based on the rolling 10-year average remaining funding requirement and inflated at year one by 3.3% and all consecutive years are inflated by 2%.

3.0 Overview of Service Area Sections



3.1 Structure of the Asset Management Plan

The Core Infrastructure Asset Management Plan was designed to provide consistency amongst each of the sections to the reader. The format of the remainder of the AMP is described in detail below:

1. Core Service Area Sections (Roads, Structures, Stormwater):

- State of Infrastructure
 - Refer to section 3.2 for additional information on the State of Infrastructure
 - This AMP relies on 2020 TCA, PCI/BCI and GIS information
- Levels of Service (LOS) framework including community and technical levels of service
 - Refer to sections 3.3 for additional information on the Levels of Service
- Risk Assessment
 - Refer to section 3.4 for additional information on the Risk Assessment
- Lifecycle Management Strategy, including maintenance, rehabilitation, replacement and/or growth, and any disposal activities.
 - Refer to section 3.5 for additional information on the Lifecycle Management Strategy
- Forecasted Requirements
 - Refer to section 3.6 for additional information on the Forecasted Asset

Management Requirements

- This AMP relies on 2017-2021 actuals & 2022-2031 forecasted requirements
 - Growth or replacement activities are analyzed and determined using the County's Transportation Master Plan, Long-Term Financial Plan, and Development Charges Background Study and pulled together based on the overall Strategic Plan.
- Discussion and Conclusions
 2. **Financial Strategy** - The County's financial strategy identifies the funding approaches for the Core service areas discussed in the plan.
 3. **Conclusion and Recommendations** - Includes a summary of the plan results and recommendations for the future.
 4. **Appendices** - All tables, charts, definitions, calculations etc. to support the body of the document.

3.2 State of Infrastructure

The County recognizes that data collection and data management is a critical aspect of the asset management planning process. Accuracy, completeness, reliability, and consistency of data is extremely important in developing a sound asset management plan. Understanding the replacement value, condition, useful life, and age of the County's assets is key to evaluating the effectiveness of infrastructure investments and provide County staff and Council with a basis to analyze and determine future requirements.

The State of Infrastructure included in each core service area sections includes the following information:

- A summary of the asset inventory for each service area.
- The asset category replacement value, which is determined by the estimated current actual cost of replacing the existing assets.
- The average age of the asset category.
- Asset condition of each service area:
 - The asset condition provides a numerical rating, where 0 is the worst possible condition and 100 is the best.
 - For consistency across all service areas, this 100-point rating system is then grouped into a five-point rating scale identified in the table below to be able to compare assets across all service areas.

Asset Condition Rating	Condition	Description
1	Very Good	Fit for the future. The infrastructure is well maintained, new or recently rehabilitated. Only a few elements have signs of deterioration that require attention.
2	Good	Adequate for now. The infrastructure is acceptable, generally approaching mid stage of expected useful life. Some elements have signs of deterioration that require attention with a few significant deficiencies.
3	Fair	Requires attention. The infrastructure shows signs of deterioration with some significant deficiencies.
4	Poor	At risk of affecting service. The infrastructure is approaching end of life with a large portion exhibiting significant deterioration.
5	Very Poor	Unacceptable for sustained service. The infrastructure is near or beyond expected useful life with widespread signs of advance deterioration and failure imminent. Some assets may be unusable.

3.3 Level of Service

The level of service is a methodology used to identify customer needs and expectations and allows the County to describe the kind of service that will be provided to its residents. The community and technical levels of service provided by core assets in comparison to the current performance will be detailed in each core asset section of this AMP.

For each service area, the community level of service in the asset management plan is based on qualitative descriptions\illustrations as legislated by the Ministry. The technical levels of service for each service area are calculated using performance measures legislated by the Ministry to quantify the quality of service each asset provides. The current performance will be noted in each service area section. In future releases, the County will investigate expanding both the community and technical levels of service by identifying additional performance metrics.

3.4 Risk Assessment

The level of service for the County is ensured by maintaining infrastructure at an acceptable level while minimizing the risk exposure to the County. For consistency across all service areas, the County has developed a risk matrix that allows a comparison of all asset types across service areas to determine the highest priority assets requiring rehabilitation or replacement. Risk can be defined as the relationship between the probability of failure and the consequence of failure. Where the probability of failure is linked to the asset condition index and the consequence of failure is linked to the service impact rating.

Asset Condition Index

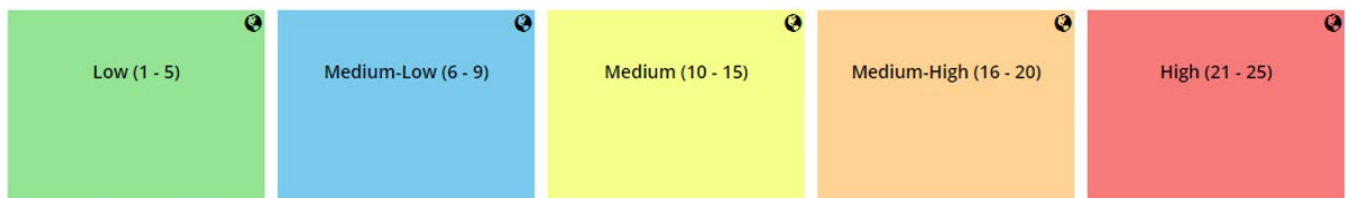
Refer to section 3.2 above for the asset condition ratings which are assigned to each asset based on a five-point rating scale

Service Impact

As with the Asset Condition Index, for consistency across all service areas, the service impact ratings are assigned to the asset based on a five-point rating scale identified below.

Service Impact Rating	Description
1	Very low measurable effect of any kind.
2	Low/marginal change in the function, serviceability, or capacity of the asset and/or effect on public safety and the environment.
3	Moderate/regular change in the function, serviceability, or capacity of the asset and/or effect on public safety and the environment.
4	Major/regular change in the function, serviceability, or capacity of the asset and/or effect on public safety and the environment.
5	Catastrophic loss of infrastructure affecting public safety or having severe environmental consequences.

To calculate the risk associated with each asset, the asset condition rating and the service impact ratings are multiplied together, allowing a total risk level to be compared across the County. This results in a risk rating for each asset between 1 and 25. These ratings are categorized into risk levels as seen below:



3.5 Lifecycle Management Strategy

The plan outlines the lifecycle activities required for each service area broken into distinct categories: maintenance, rehabilitation, replacement and growth. The results of understanding the full lifecycle activities of each asset allows the County to create an optimal budget and long-term financial plan to maintain the current level of service and fund the costs over the near, medium, and long-term

3.6 Forecasted Asset Management Requirements

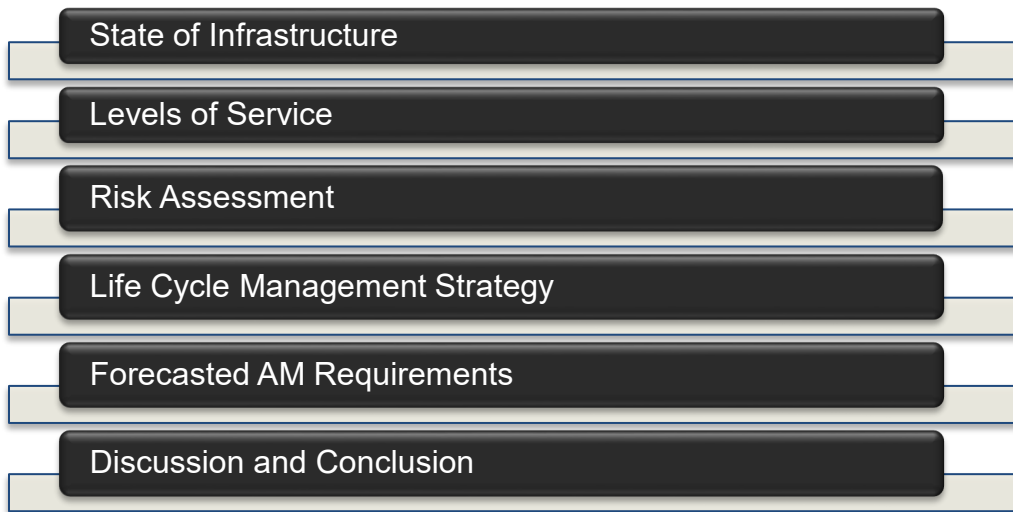
A financial strategy is a critical component of an asset management plan. Understanding the current state of infrastructure and utilizing levels of service and risk assessment with lifecycle management strategies allows the County to accurately forecast infrastructure-funding needs.

Each core service area section will detail the 5-year historical asset management expenditures by lifecycle activity as well as the 10-year forecasted asset management investment needs based on the lifecycle strategies to maintain an acceptable level of service.



County Road 56 – Concession 6/7 Lot 24 Culvert

4.0 Core Services – Transportation - Roads



4.1 State of Infrastructure

Quick Facts:

- 1,798 Lane kilometers
- 52 Paved Roads
- 567 Road Segments
- Replacement Value – \$2.2 billion
- Asset Condition – Very Good
- Average Age – 39 years



The County of Simcoe strives to provide an efficient and adaptable multi-modal transportation network that responds to the vast geography, growing permanent and seasonal populations and expanding economy. The assets in the County's roads network assist in the safe and efficient transportation of individuals and goods. A reliable roads network is essential in building a strong and vibrant economy and providing the quality of life our community desires. It also allows the County to promote and create business, employment, and social opportunities. A deteriorating roads infrastructure can have serious consequences including an increase in the frequency of accidents, a decrease in emergency response efficiency, increased wear and tear on vehicles and lost business and recruitment opportunities to name a few. The County identifies a road as two separate asset components: the land the road is constructed on within the right of way and the road infrastructure itself.

4.1.1 Asset Inventory and Valuation

The road network is a critical part of the County's infrastructure. To effectively manage these assets the road network is broken down into road segments, each with its own unique number issued by the County of Simcoe. The road segments have varied lengths and vary in composition. The details of each road segment including the segment width, length, depth of asphalt, number of lanes, pavement type, road class, date acquired or uploaded to the County and average daily traffic counts are all recorded in the County's asset management system. The County's road network is composed of paved roads in urban and rural areas. Rural roadways are those that do not have infrastructure associated with them such as catch basins, curbs, or storm sewers. Urban roadways are usually found in residential areas where they receive greater use. This is important, as there is a correlation between the annual average daily traffic of a roadway and its deterioration. As of December 31, 2020, the County's road network was composed of 95% rural roadways and 5% urban.

As of December 31, 2021, the base cost to build a two-lane road amounts to an average of \$1.25 million per lane km. This figure is calculated using the average current construction costs incurred by the County. This is an estimate used when forecasting the reconstruction of County roads. There are however many factors that may influence the cost of reconstruction such as land acquisition costs, design changes, requirements from the Ministry of Environment and Ministry of Natural Resources, utility relocations, construction delays and infrastructure installations.

A County road consists of several road segments combined; each being classified by the Ministry of Transportation as Arterial roads. There are 52 County Roads within the road network, broken into 567 road segments, equating to 1,798 total lane kilometers, with an estimated replacement value of \$2.25B.

Road Network Category	Road Segments	Replacement Cost	Lane Kilometers
Primary Arterial	398	\$1,583,875,000	1,267.10
Primary Arterial – Controlled Access	54	\$210,375,000	168.30
Secondary Arterial	115	\$453,250,000	362.60
Road Network Total	567	\$2,247,500,000	1,798.00

Land related to the roads has not been included as part of the County's asset management plan as there is no further maintenance strategy associated with land after its initial purchase. However, land acquisitions are performed during the widening process of existing County roads, which have been identified for growth reconstruction.



County Road 90

4.1.2 Average Age

The asset age is based on the in-service date of each road segment and is captured within the County’s asset management software. The financial estimated useful life is established based on industry standard and staff knowledge and is an accounting tool used for amortization; while the lifecycle estimated useful life (lifecycle EUL) is the life of the asset based on the lifecycle strategy in place. Significant investment into a road segment to improve condition will extend the life of the asset. The average age of the County’s roads is 39 years and is calculated based on the lifecycle EUL. The average age of the County’s road network indicates our road system is sustainable with more than 50% life span remaining.

Asset Type	Estimated Financial Useful Life (Years)	Deterioration Curve Useful Life (Years)	Lifecycle EUL Extended by Events (Years)	Average Age (Years)
Primary Arterial	40	25	85	39
Primary Arterial – Controlled Access	40	25	85	40
Secondary Arterial	40	25	85	39
Average:				39

4.1.3 Asset Condition

Pavement Condition Index

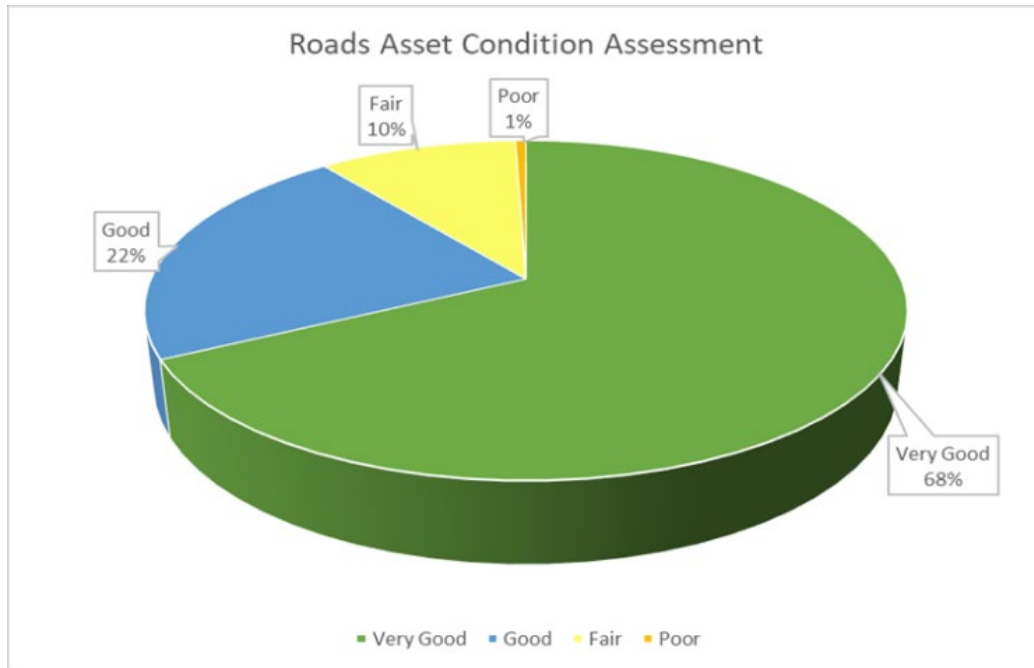
The state of the County's road network is determined based on the industry standard Pavement Condition Index (PCI). This method rates the condition of the surface of the road network by providing a numerical rating for the condition, where 0 is the worst possible condition and 100 is the best. This is based on the *Ontario Good Roads Association* recommended method of rating pavement condition. For the County to assess the road condition, an annual road inspection consisting of visual ratings and surface distress is completed for every road segment. PCI allows us to understand the current condition of the road segment and it can help staff in determining the rate of road deterioration over time to plan for immediate, short-term, and long-term needs more accurately. PCI is calculated from two factors:

- Distress Manifestation Index (DMI): the type, extent, and severity of pavement surface distresses
- Ride Comfort Rating (RCR): the smoothness and ride comfort of the road

The DMI is determined based on a systematic method for classifying and assessing the visible consequences of various distress mechanisms. DMI classifies distress manifestations into 14 categories, which are by severity and density. The RCR is determined by a qualitative visual inspection of the road segment at the posted speed limit and assigned a rating based on a predetermined scale.

The PCI is determined by the County's technical engineering staff and identifies what the current condition of the road segment is. The higher the PCI value, the greater condition the asset is in. The state of the County's road network is reviewed annually for all road segments. The condition of the road segments is divided into 5 categories based on the PCI of each segment as shown below:

PCI Level	Condition	Number of Segments	Lane Km's	% of Inventory
80 – 100	Very Good	383	1,244.70	68%
65 – 79.9	Good	124	369.40	22%
40 – 64.9	Fair	57	165.30	10%
1 – 39.9	Poor	3	18.60	1%
0 < 1	Very Poor	0	0	0%



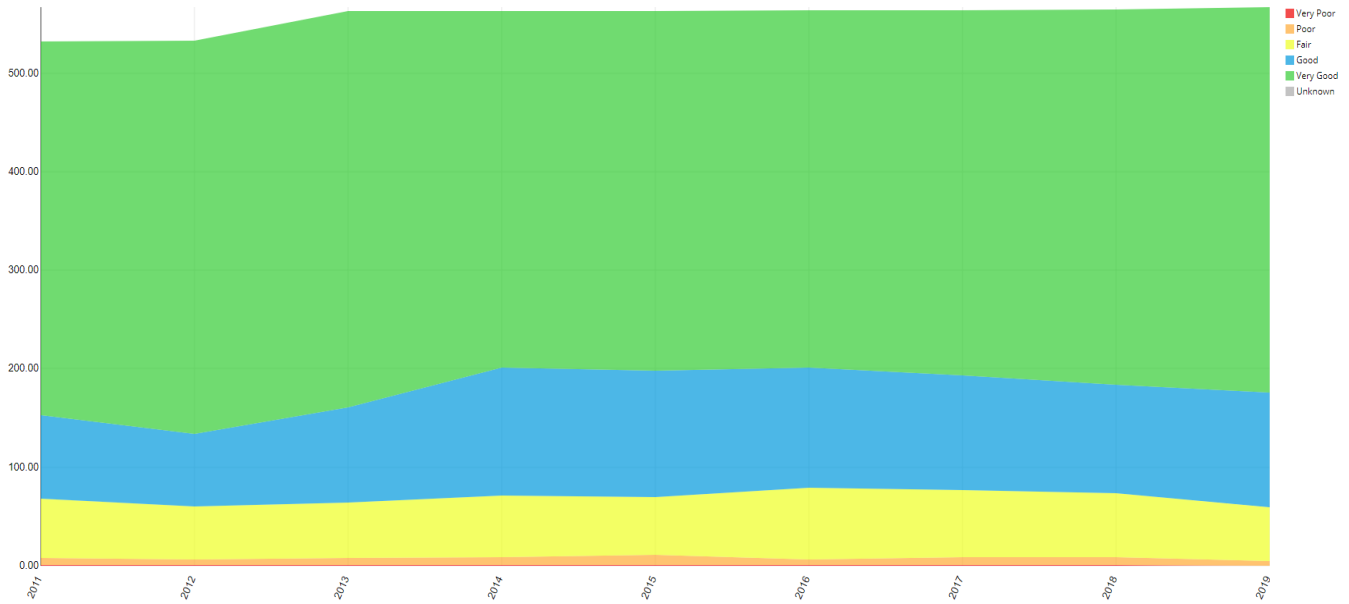
The average assessed condition by asset road type is shown below:

Asset Type	Average Assessed Condition	Condition Rating	Lane Km's
Primary Arterial	82.76%	Very Good	1,267.10
Primary Arterial – Controlled Access	80.29%	Very Good	168.30
Secondary Arterial	84.68%	Very Good	362.60
Total	82.91%	Very Good	1,798.00

The condition data shown in the graph below illustrates that historically the asset condition of the County’s road network has been in great condition. In 2020 almost 90% of road segments were in good to very good condition while only 1% of the roads network was deemed to be in poor condition. The County will continue to monitor the road conditions and alter the lifecycle management strategy should the condition of the roads not align with the current or proposed level of service.

Road segments that require rehabilitation treatment are reviewed and prioritized based on condition and risk and dependent on funding availability. Efforts are also made to coordinate projects with other infrastructure needs to achieve efficiencies and cost savings.

Number of Lane km's per Condition Index Level - 2011-2019



The County currently does not have any road segments considered to be in very poor condition. The road segments rated as poor are listed below along with the lifecycle renewal strategy for each.

County Road	Description	PCI	Lifecycle Renewal Strategy
County Road 52	McCarthy Sideroad to Severn River	31.50	Included in LTFP. To be reconstructed
County Road 46	Black River to Junction CR 45 Section	37.88	Boundary road with another municipality. Likely a rehabilitation to be completed.
County Road 21	CR 4 to CR 54	27.25	Scheduled to commence construction in 2022

4.2 Level of Service

The Ontario Regulation 588/17 requires the asset management plan include the current level of service determined with qualitative descriptions and technical metrics. Examples provided in the legislation for community levels of service include a map showing the road network in the County and its level of connectivity and images that illustrate the different levels of road class pavement conditions. Examples provided in the legislation for technical levels of service include the number of lane-kilometers of each arterial road as a proportion of square kilometers of land in the County and the average pavement condition index.

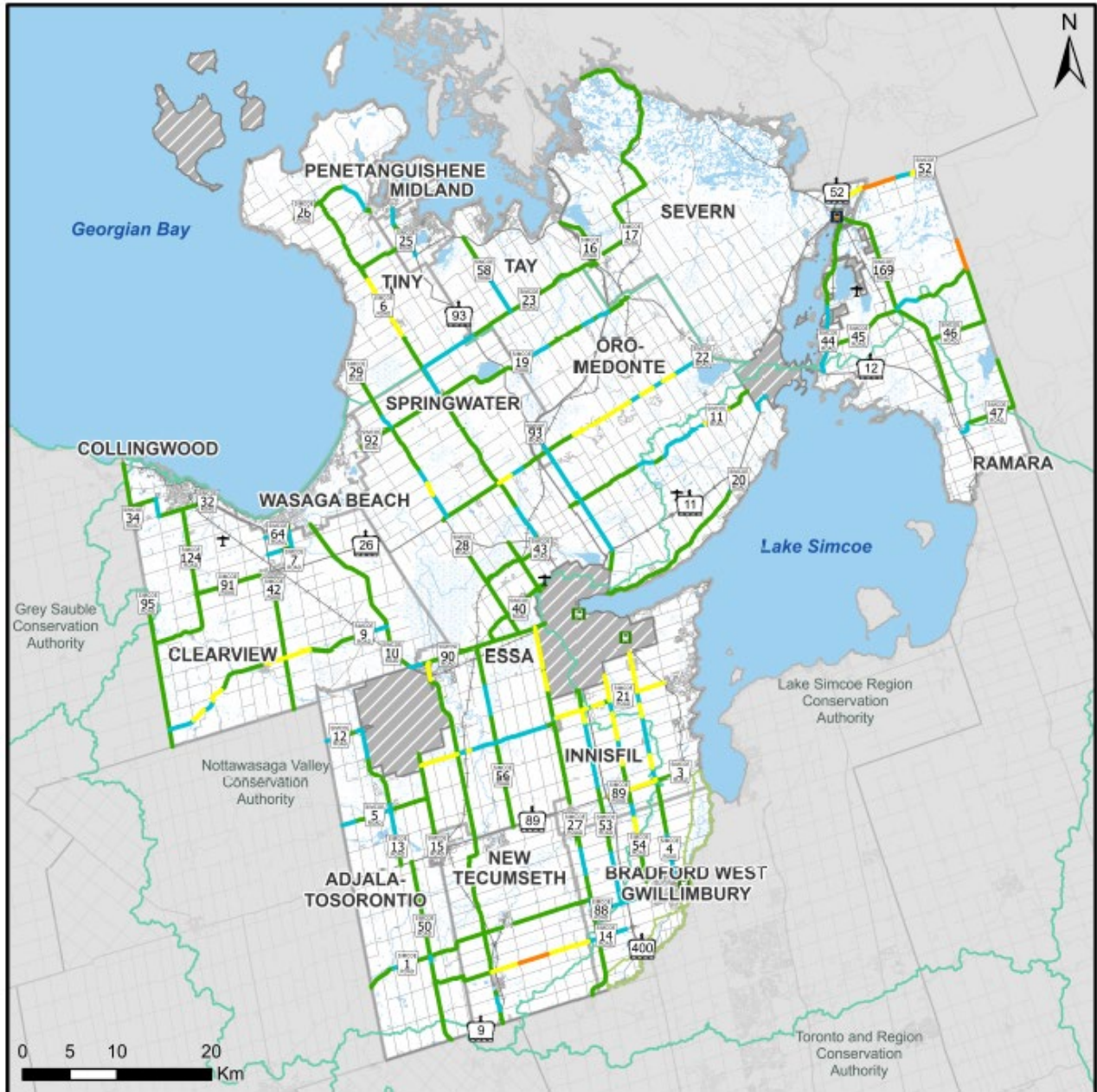
Community Levels of Service

Illustration of the Different Pavement Condition Index Levels

Average 2020 PCI = 82.91%



County of Simcoe Road Network Map



Simcoe County Pavement Condition Index

<p>Pavement Condition Index</p> <ul style="list-style-type: none"> — Very Good (80-100) — Good (65-79.9) — Fair (40-64.9) — Poor (1-39.9) — Very Poor (0<1) 	<ul style="list-style-type: none"> + Airport ■ Existing GO Station ■ Existing VIA Station □ Conservation Authority □ Administrative Area □ Greenbelt ■ Lands not subject to this plan
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Technical Levels of Service

The table below outlines the quantitative metrics that determine the technical levels of service as currently set out by O. Reg. 588/17.

Technical Metric	Current Level of Service
Lane km's of primary arterial roads	1,267.10
Lane km's of primary arterial – controlled access roads	168.30
Lane km's of secondary arterial roads	362.60
Total lane km's of County arterial roads	1,798.00
County of Simcoe land area square km's	4,841 km ²
Lane km's as a proportion of land area	0.37km/km ²
Average pavement condition index for paved roads	82.91
Average condition rating	Very Good

The County strives to maintain an average PCI of 75 (Good) or greater for its roadways. At December 31, 2020, the County's average PCI was 82.91 (Very Good).

4.3 Risk Assessment

The County uses a risk rating system to determine which assets are in the greatest need of repair or replacement. The risk rating evaluates each asset on both the physical condition as well as the service impact. This represents the relationship between the probability of failure and the consequence of failure of a road segment. These two factors are then multiplied together to give each asset an overall risk rating. The risk score is calculated for each asset based on:

Asset Condition Index

- A score based on the condition of the asset today and how well it performs its function.
- Represents the probability of failure.

Roads – Asset Condition Index

PCI Level	Condition	Asset Condition Index
80 – 100	Very Good	1
65 – 79.9	Good	2
40 – 64.9	Fair	3
1 – 39.9	Poor	4
0 < 1	Very Poor	5

Service Impact Rating

- A score based on the direct and indirect impact on the County if the asset were to not to perform as expected.
- Represents the consequence of failure.
- The service impact risk rating has been assigned to each road segment based on the average annual daily traffic (AADT) the segment receives. Each road segment is assessed for traffic count on a three-year cycle by the County.

Roads Service Impact Rating– Average Annual Daily Traffic

AADT	Number of Lane Km	Service Impact
15,000 or greater	133.60	5
12,000 – 14,999	45.80	4
5,000 – 11,999	708.90	3
1,000 – 4,999	827.50	2
0 – 999	82.20	1
Total Roads	1798.00	

Overall, the risk profile associated with the County’s road network is low with 79% of road segments having a low-risk rating and 17% having a medium-low risk rating based on the County’s current risk assessment calculation. As the County continues to move its asset management program forward it will review the current risk rating system and identify opportunities to enhance the outcome across the roads network.

Asset Risk Profile – Roads Network



4.4 Lifecycle Management Strategy

Council has approved the road network level of service of maintaining a pavement condition rating of 75 (Good) or greater. This is accomplished through regular maintenance activities, an aggressive program of rehabilitation of the road's infrastructure, and through the application of effective traffic operations and planning principles. The demand for growth is a challenge facing the County's transportation system. The County's road network lifecycle includes all activities required to maintain the condition of the asset from maintenance, rehabilitation, replacement and growth through to disposal.

The asset management lifecycle strategies for the road network are determined and segregated by road classification as defined below:

Road Classification	Definition
Non-Standard Cross Section	A road section that contains a right of way less than 30m.
Standard Cross Section	Conforms to all County and Provincial Standards and Specification (i.e., 30m right of way or greater). This would include all the MTO roads that were transferred to the County and existing County roads that have been fully reconstructed. The placement of asphalt will be 100 mm or greater.
Standard Cross Section < 100mm	Road sections, where the right of way is greater than 30m, but the rehabilitation treatment is less than 100 mm of asphalt.

The County has 305 standard cross section road segments, 120 standard cross section <100mm road segments and 143 non-standard cross section road segments with a total lifecycle event cost of \$665M as shown below.

Road Classification	Number of Road Segments	Replacement Cost (\$ 000)	Total Lifecycle Events Cost (\$ 000)
Non-Standard Cross Section	143	\$567,000	\$167,832
Standard Cross Section	305	\$1,224,500	\$362,542
Standard Cross Section < 100mm	120	\$456,000	\$134,976
Total	567	\$2,247,500	\$665,260

There are three main lifecycle strategy categories that the County uses in the overall sustainable management of its existing roads network that ensures the levels of service outlined for these assets are continually met. The final lifecycle event an asset would go through would be a disposal; however, this is infrequent. These lifecycle strategies and activities are detailed below (It is to be noted that there could be some exceptions to the strategies mentioned below).

Strategy	Lifecycle Activity	Trigger
Maintenance	Scheduled maintenance and inspections such as cold mix patching, brush cutting, catch basin cleaning, pavement marking, snow removal, traffic studies and road inspections. These events do not extend the useful life of the asset.	Ongoing
Rehabilitation	Includes restoring or rehabilitating the existing road back to the original or near original service potential. Activities such as micro surfacing, cold in place asphalt recycling, pulverizing, or expanded asphalt recycling are used which thereby increase the condition of the road and extend its useful life.	Renewal PCI = 65 – 75 Rehab PCI = 40-64
Replacement	Replacement occurs when the segment has reached the end of its lifecycle useful life.	PCI < 40
Growth	Growth strategies occurs when roads are uploaded from Municipalities to the County, or a road is downloaded from the province or if existing county roads require expansion (e.g., roads increasing from 2 to 4 lanes).	Growth (TMP/DC Study)
Disposal	Road or road segment disposals are infrequent and generally related to downloading to lower tier municipalities.	

Road segments are inspected annually and the results of these inspections are evaluated based on priority levels, funding, risk, County growth and the alignment with other County plans including the Transportation Master Plan and Development Charges study to determine what projects will be completed in the coming years. The financial impact of a project must also be considered. The effects of “smoothing” costs over multiple years allows the County to manage the costs more effectively.

4.4.1 Maintenance Activities

2020 Maintenance Statistics		
<u>Maintenance Activity</u>	<u>Metric Statistics</u>	<u>Expenses</u>
Snow Plowing	610,432 Lane kms	\$2.765M
Cold Mix Patching	65,713 Kilograms placed	\$133.6K
Brush Cutting	12,658 Meters	\$79.8K
Pavement Marking	5,556 Lane kms	\$702.6K

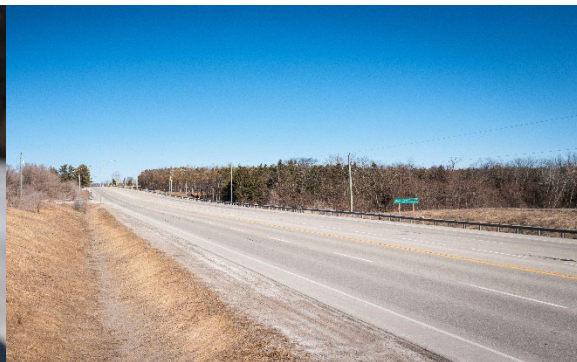
To adequately maintain a road network at the desired levels of service the appropriate maintenance strategies need to be implemented throughout the asset’s lifecycle. Effective maintenance practices include routine, preventative, and corrective activities. The Province provides minimum maintenance standards that the County meets. Maintenance costs are reflected in the operating budget. Road’s maintenance is performed annually in the spring through fall months. Currently the maintenance budget is sufficient for the road system.

The road network requires various maintenance activities. Some examples of each have been detailed below.

Summer Activities	Cold Mix Patching, Brush cutting, catch basin cleaning, ditching, traffic studies, road patrol, road brushing, pavement marking, road inspections, crack sealing
Winter Activities	Snow removal, drainage, road patrol, sand salt stockpiling,



County Road 56 Guide Rail



County Road 50

4.4.2 Rehabilitation Activities

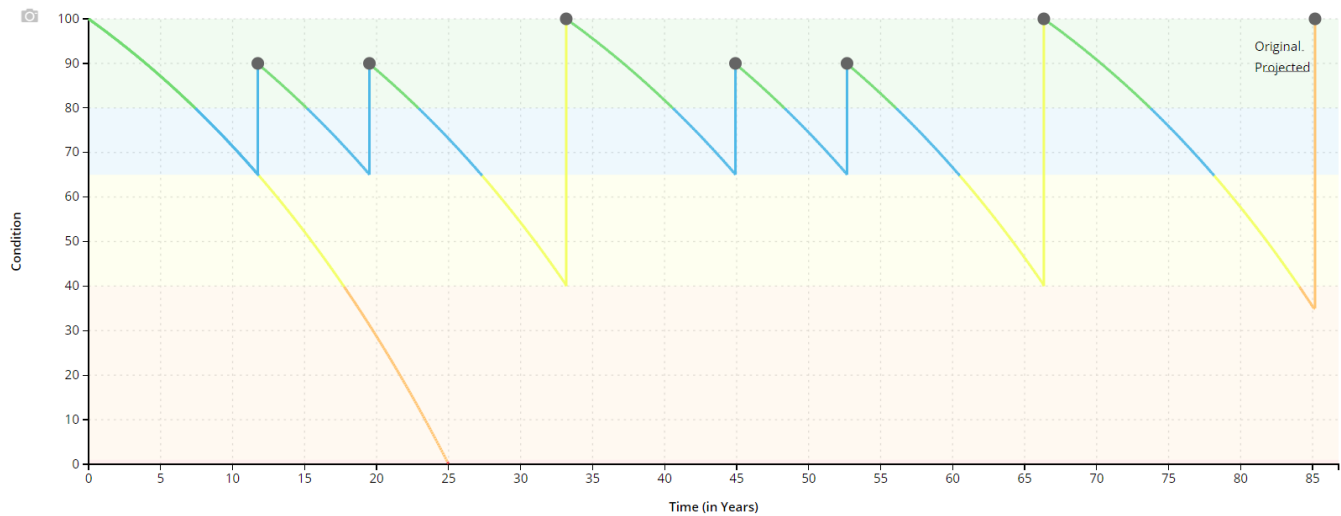
The County has determined, for each road segment, the structure of the road through drilling boreholes. Based on the quality of the County road construction standards, the majority of roads do not need to be replaced or reconstructed, the segments merely need to have rehabilitation work performed.

All pavement deteriorates over time. Typically, pavement deteriorates at an ever-increasing rate. Road renewal or rehabilitation work includes restoring the existing road back to the original or near original service potential by immediately improving the pavement condition. The improvement to the condition then reduces the future rate of deterioration, therefore extending the life of the road. Road rehabilitation activities include micro surfacing, cold in place asphalt recycling, pulverizing, or expanded asphalt recycling, which vary depending on the type of road classification. Micro surfacing is a principal preventative maintenance treatments used to extend pavement life. In general, micro surfacing can slow the rate of deterioration by correcting small pavement defects before they can worsen and contribute to further defects. Beyond a certain point, however, defects become too large for correction by mere micro surfacing. At this point, rehabilitation treatments can be used to make a correction to a large number of relatively severe defects, which will provide a significant increase in pavement condition. The timing of these preventative maintenance actions can greatly influence their effectiveness and cost. Generally, the closer to a required preventative maintenance event that the actual activity is performed, the more cost-effective it will be.

The road strategies use the PCI to identify when a road segment requires an event. Based on historic road inspections the PCI trend will project deterioration thereby identifying the optimal time for rehabilitation of a road segment. There may be situations when the PCI is not used to determine which road segments require rehabilitation. These situations occur when several road segments in proximity on a County road require work. Cost efficiencies occur when consecutive road segments have work performed at the same time. Therefore, at times, road segments that have reasonable PCIs are subject to rehabilitation as adjacent road segments are in poor condition.

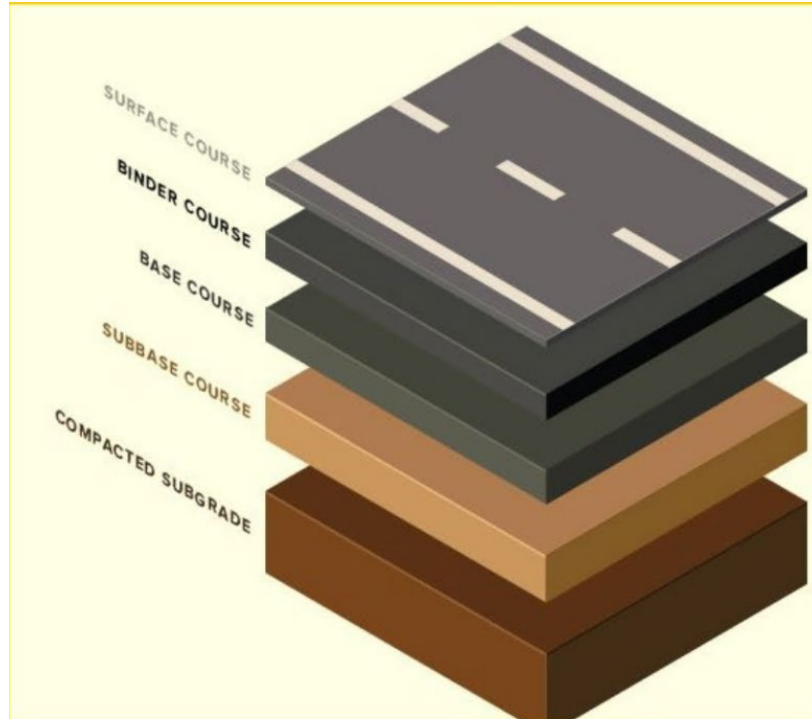
The current generic rehabilitation strategy is identified below:

Simplified Roads Rehabilitation Lifecycle Strategy		
Event Name	Event Trigger	2021 Event Cost
Renewal Event (First Treatment)	PCI = 65 – 75	\$30,000/Lane km
Renewal Event (Second Treatment)	PCI = 65 – 75	\$30,000/Lane km
Rehabilitation Event	PCI = 40 – 64	\$125,000/Lane km
Events Repeat		



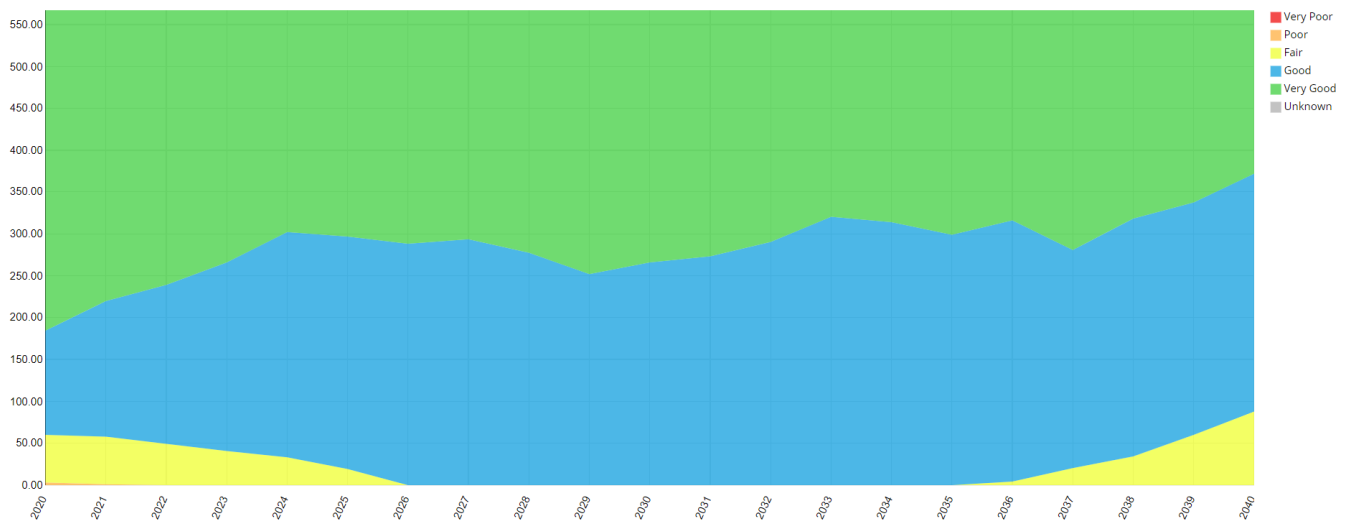
4.4.3 Replacement Activities

The replacement of a road or road segment is required once a road has reached the end of its useful life and rehabilitation is no longer an option. When the County reconstructs a road for growth related purposes it creates a new base course, subbase course and compacted subgrade that will not deteriorate. Therefore, it is assumed that when a road rehabilitation occurs the base is left as is and only the surface course and binder course are replaced. The total approximate replacement cost of County owned roads is \$2.2B. Below is an illustration of the various layers of a road when initially being constructed.



Based on the current lifecycle strategies and current assessed conditions for the County’s road network the illustration below shows the projected road network conditions over the twenty-year planning period. The current strategy maintains the current level of service over the future planning years and will continue to be reviewed to ensure effective asset management planning and resource allocation.

Roads Network Projected Condition Index Level - 2020-2040



4.4.4 Growth Activities

The growth strategy includes any roads that are uploaded from lower-tier municipalities, downloaded roads from the Province, existing county roads that have planned service improvements or which require expansion, for example from 2 to 4 lanes based on the Transportation Master Plan. The road standards for provincial roads and lower-tier municipalities can differ from the county roads and therefore those segments uploaded or downloaded usually require reconstruction to bring to County standards. They would be classified either as standard cross section or non-standard cross section upon completion of construction and road would then follow the appropriate lifecycle strategy assigned.

[Appendix C](#) includes a full listing of anticipated local municipal road uploads, which are expected to have road improvements performed. As the County does not currently own these roads, they are not included in the current roads infrastructure inventory but are analyzed through the Transportation Master Plan and Long-Term Financial Plan as a potential growth activity. The approximate costs of these projects are \$222M.

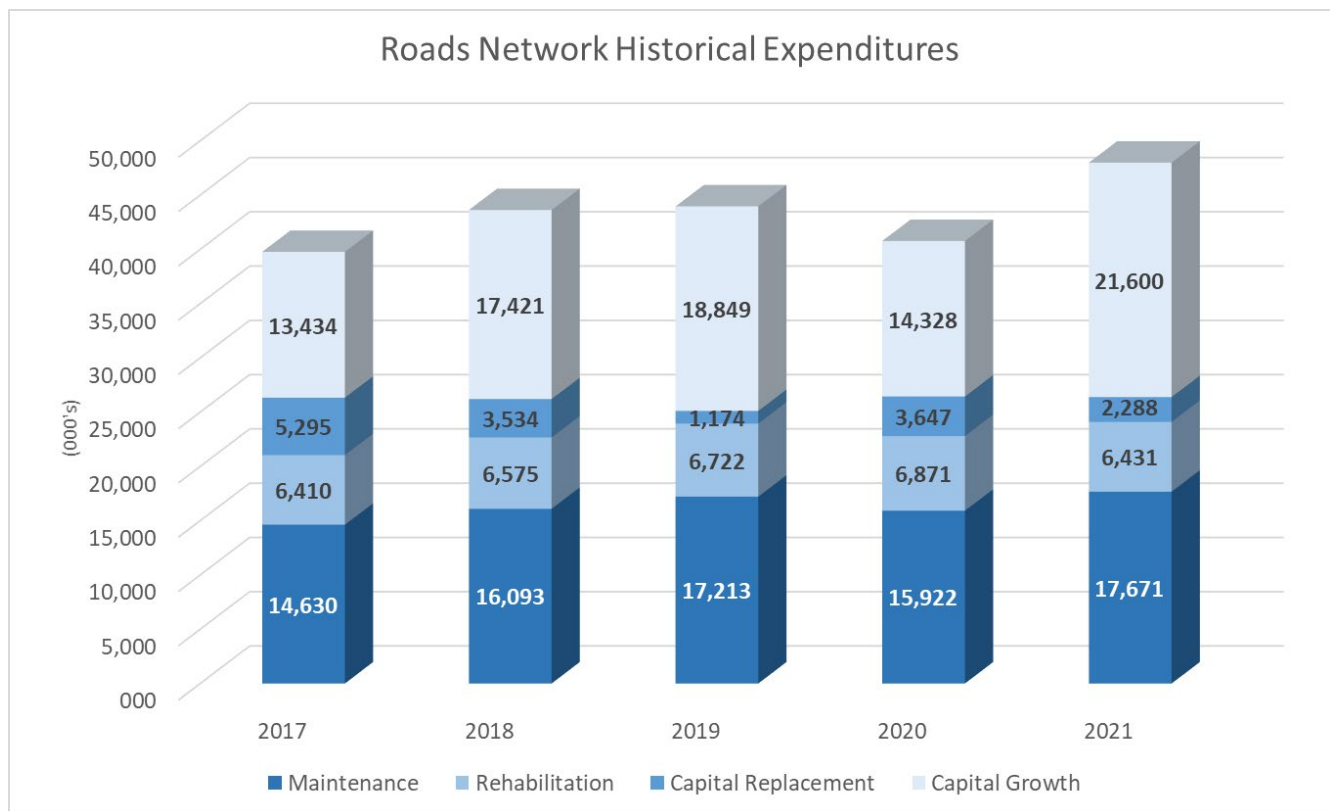
4.5 Forecasted Asset Management Requirements

Historical Expenditures

The maintenance work as well as roads renewal and rehabilitation are currently all part of the County's operating budget, while road replacements and growth-related projects are considered capital.

The total asset management spend on the County's road network between 2017 and 2021 was \$216M. The total maintenance and rehabilitation expenditures for the roads network were \$81.5M and \$33M respectively from 2017 to 2021. A total of \$85.6M was spent on roads construction projects, which were mainly growth related. The chart and graph below illustrate the historical asset management expenditures (\$ Million).

	2017	2018	2019	2020	2021	Total 5-Year
Maintenance	14,630	16,093	17,213	15,922	17,671	81,529
Rehabilitation	6,410	6,575	6,722	6,871	6,431	33,009
Capital Replacement	5,295	3,534	1,174	3,647	2,288	15,939
Capital Growth	13,434	17,421	18,849	14,328	21,600	85,632
Total Expenditures	39,769	43,624	43,958	40,768	47,990	216,109
County Levy - Maintenance	14,630	16,093	17,213	15,922	17,671	81,529
County Levy - Capital	2,297	2,834	3,967	3,516	1,817	14,431
CCBF	8,121	6,481	3,995	4,441	7,152	30,190
Development Charges	12,058	15,761	16,384	11,098	20,154	75,456
Other Grants/Subsidies	1,029	1,463	2,398	2,417	1,196	8,503
Debt	1,633	992		3,375		6,000
Total Revenue	39,769	43,624	43,958	40,768	47,990	216,109

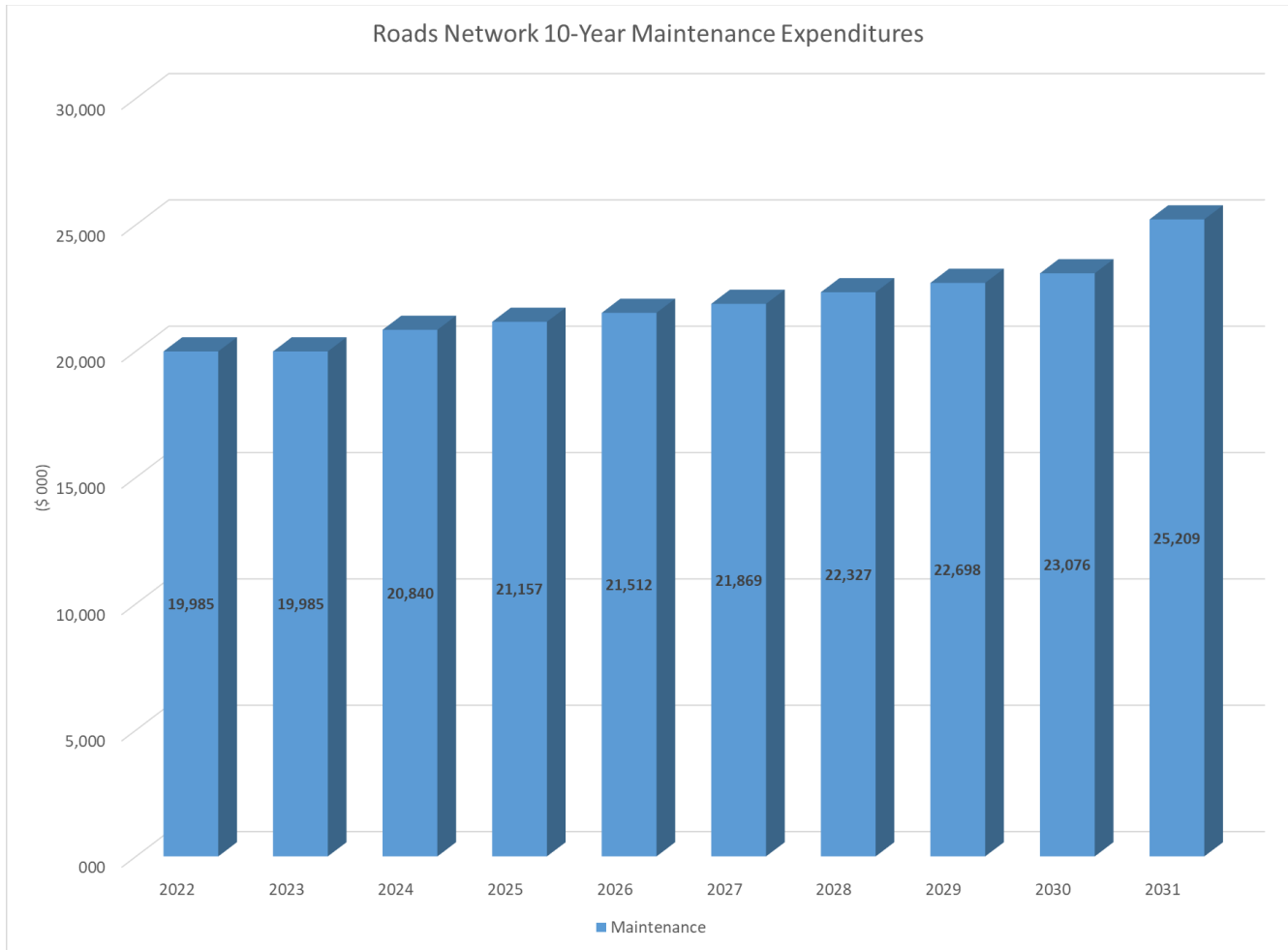


10-Year Existing Core Infrastructure Asset Management Requirements

Using the core infrastructure lifecycle strategies for existing assets, detailed in section **4.4 Lifecycle Management Strategy** above, the 10-year financial requirements are determined and illustrated below. The financial requirements are inflated based on a yearly 2% inflation factor.

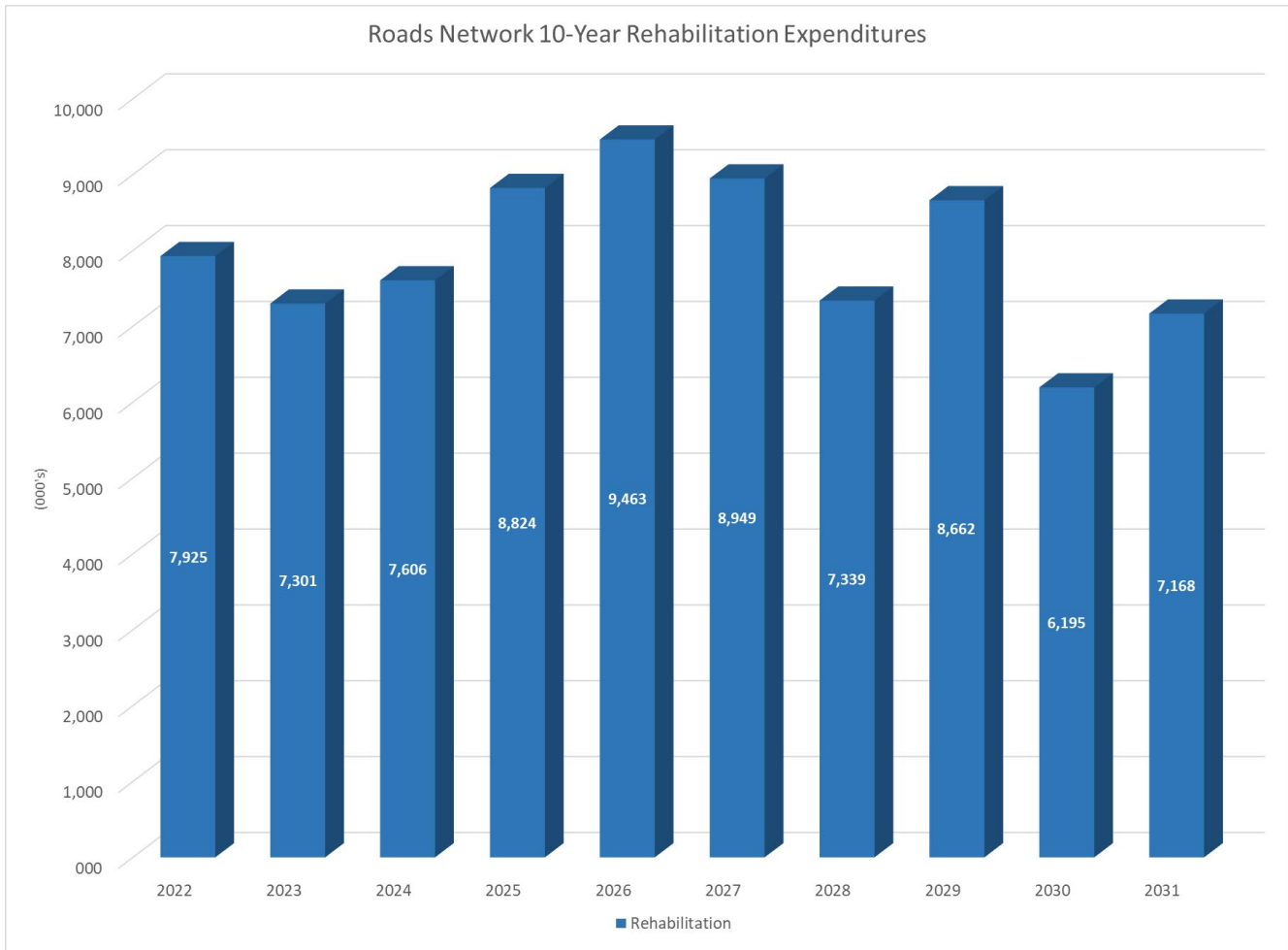
Roads Maintenance Expenditure Requirements

The County projects to see maintenance expenditure growth in line with expected inflation and in consideration of growth in the asset portfolio. The forecasted population and asset portfolio growth is reflected in the long-term operations and maintenance planning, by way of increased salaries, vehicle requirements and their associated costs. However, adjustments to program supplies such as winter maintenance is not adjusted due to varying factors already in existence such as weather prediction. The increase in costs is only reflected once the growth is 'operational.' The ten-year total maintenance expenditures are projected to be \$218.7M with an average annual requirement of \$21.9M over the 2022-2031 time period.



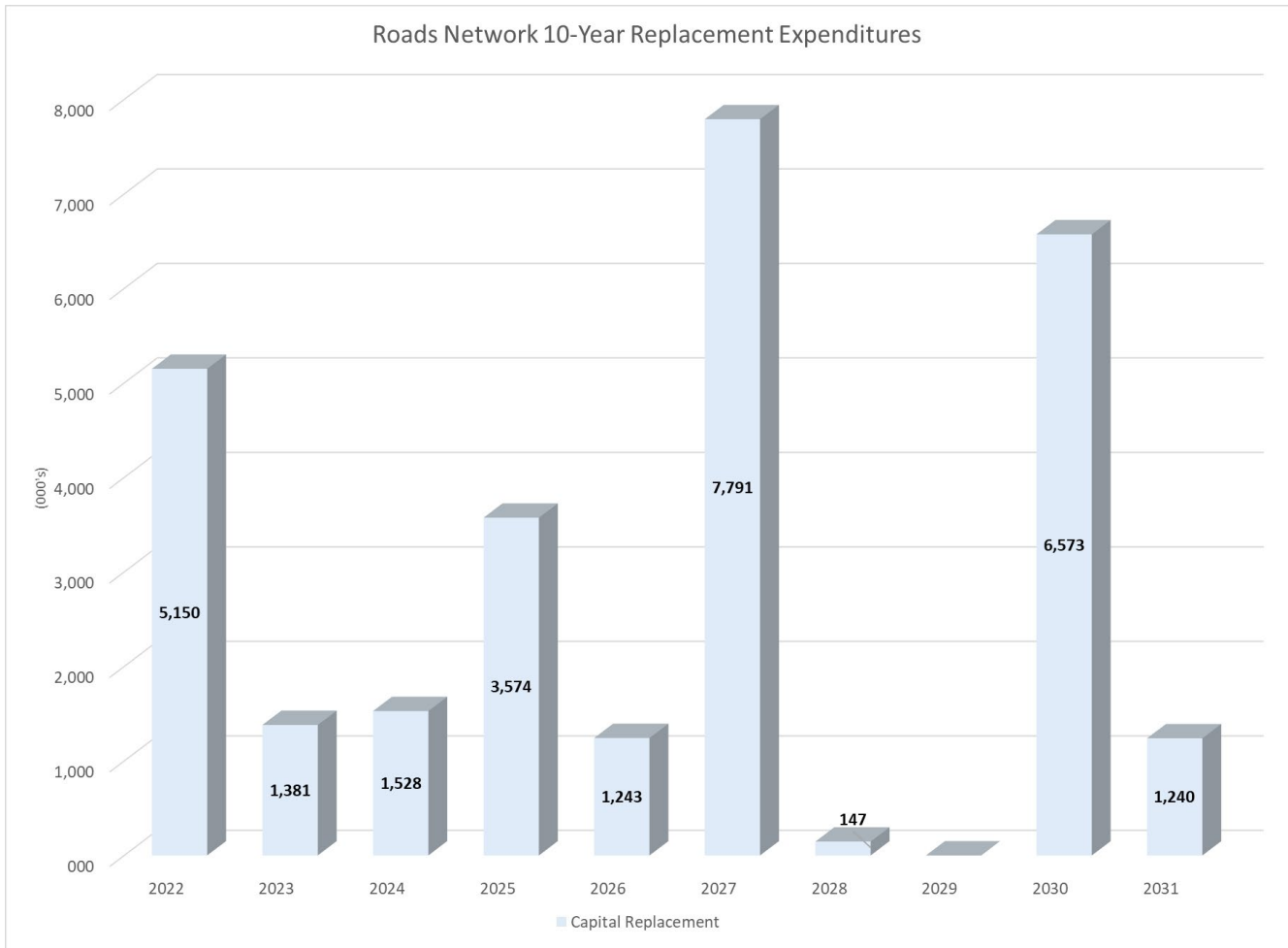
Roads Rehabilitation Expenditure Requirements

To manage asset condition and address asset and related service reliability issues the County performs yearly roads rehabilitation work. The County will continue to review the projected events and may smooth out years in which roads renewal and rehabilitation activities are more significant to meet internal and external resourcing. The total rehabilitation expenditures are anticipated to be \$79.4M between 2022-2031 which equates to an average annual requirement of \$7.9M.



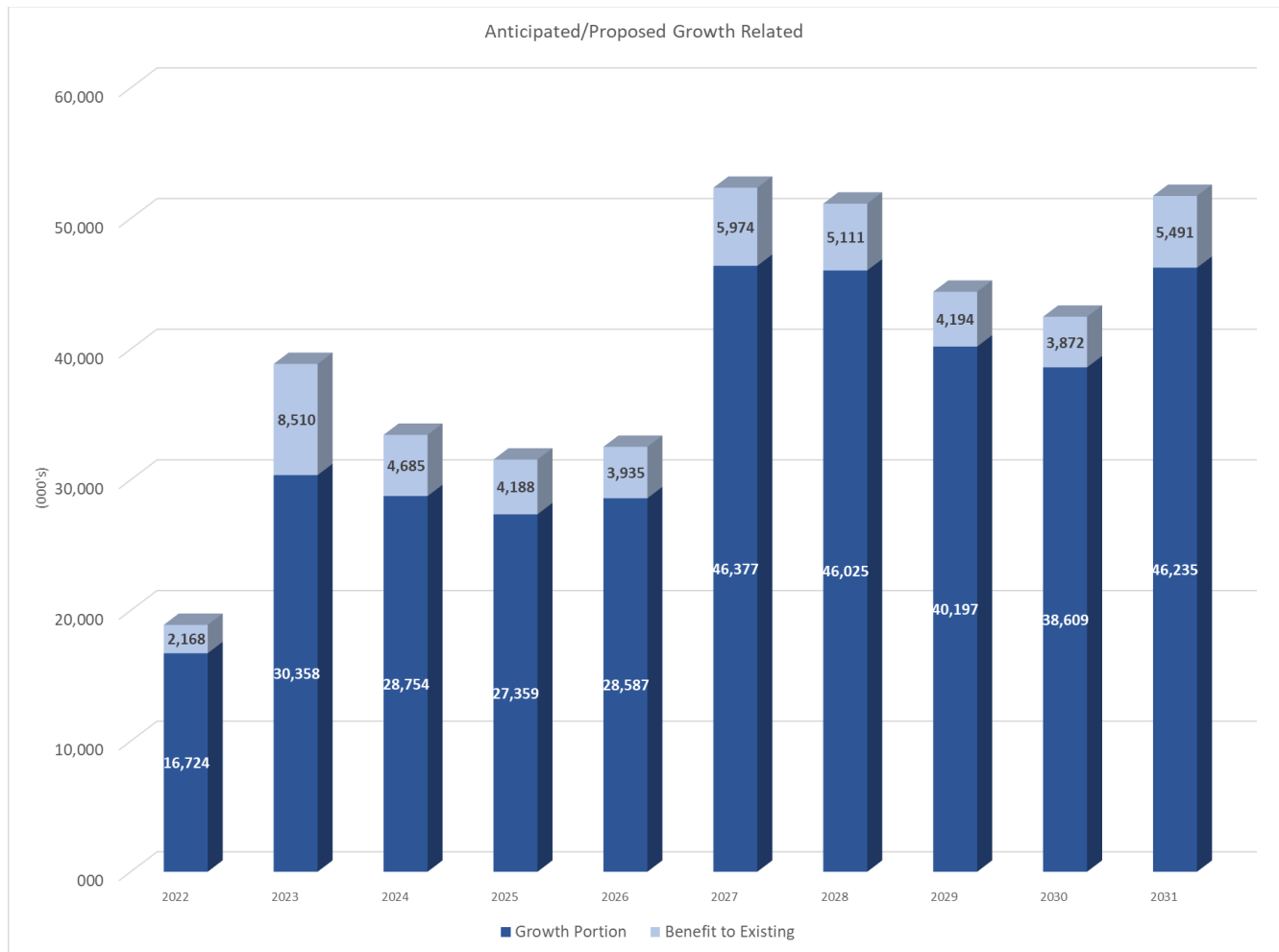
Roads Replacement Capital Expenditure Requirements

Road segment replacements typically occur when a road deteriorates beyond a point where roads rehabilitation is effective, and the road segment has reached the end of its lifecycle useful life. Road replacement work over the ten-year period (2022-2031) totals \$28.6M which equates to an average annual requirement of \$2.9M. The road network capital replacement is mainly driven by work scheduled on County Road 22, County Road 29, County Road 52, and County Road 5.



10-Year Core Infrastructure Growth-Related Asset Requirements

The Transportation Master Plan and Development Charges Study drives the growth-related projects included in the County’s long-term financial plan and asset management plan. The current 10-year financial requirements for growth projects have been determined at \$397M with an average annual requirement of approximately \$40M and are illustrated in the graph below. The County recently completed an updated Development Charges Study effective January 1, 2022. The next iteration of the County’s Asset Management Plan will reflect any changes to projects, costings and timing of projects based on this updated DC study. At this time the County has not committed additional funding to support the benefit to existing for the growth projects. Remaining County levy operating balance available for capital may be used to support the benefit to existing or the amount unfunded may be considered unfunded capital and require debt financing. In future iterations of the asset management plan, once all County asset requirements are detailed, the County can determine the optimal strategy to fund the remaining roads growth projects.

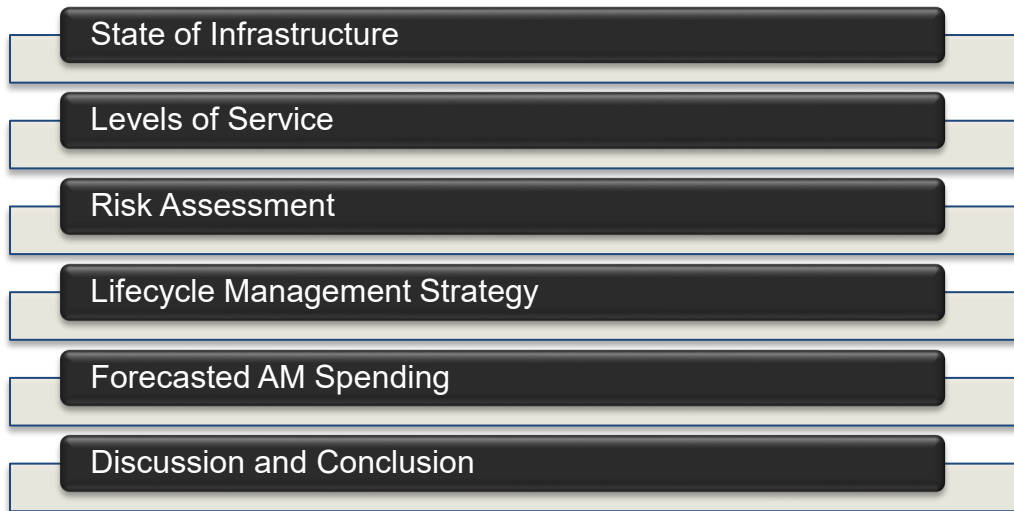


4.6 Discussion and Conclusion

The County has developed an asset management strategy for its roads infrastructure assets that aligns the strategic goals and objectives and provides direction to guide Council, management, and staff. The total replacement value of the County’s road infrastructure is \$2.2B and is overall in very good condition. Maintaining an average pavement condition index of over 80 for the last ten years has ensured the safe and efficient transportation of individuals and goods throughout the County, which has been essential in building a strong economy and quality of life for our community.

The County will continue to measure current service levels in accordance with O. Reg. 588/17, as well as look to enhance the service level reporting and analysis by including additional meaningful and reliable metrics related to the roads network. In addition, a proposed level of service framework will be developed, outlining strategies required to close service level gaps.

5.0 Core Infrastructure – Transportation - Structures



4.1 State of Infrastructure

Quick Facts:

- 112 Bridges; plus 1 Pedestrian Bridge
- 90 Culverts
- Replacement Value – \$357 million
- Asset Condition – Good
- 12% with Dimensional Restrictions
- Average Age – 19 years



Similar to the roads network, structures assist in the safe and efficient movement of vehicular traffic as part of the County's overall transportation infrastructure network. Deteriorating structures can have serious consequences similar to that of the roads network.

The structures network within the County of Simcoe consists of bridges and structural culverts. A bridge is a structure built to span across an obstruction, gap, or facility such as a watercourse, valley, railway, or road, for the passage of vehicles, pedestrians, or cyclists. A structural culvert is a structure, with a span greater than or equal to 3 meters, which acts as a tunnel and is used to allow water to flow under a roadway, typically in the form of a stream. Culverts of less than 3 meters in span are not considered an engineered structure and are therefore not identified separately but are maintained as part of the associated road asset.

5.1.1 Asset Inventory and Valuation

The County's bridges and structural culverts are identified with a unique number issued by County staff. This numbering system generally follows the format XXXYYY where XXX is the road number and YYY is the location of the bridge. For example, OSIMple ID '006040' indicates a bridge on County Road 6 located 4.0km from the starting point of the road segment. The County owns and maintains a total of 203 engineered structures consisting of 112 bridges, 90 structural culverts and one pedestrian bridge with a total replacement value of \$357M as of December 31, 2020. The replacement cost of the structures is originally calculated by finance staff based on average actual cost of historical projects per square meters of a structure. Once a project is within a few years from being completed this cost estimate is updated using project cost estimates provided by an external consultant. The consultant calculates the cost of replacement based on the specifications of the structure and average costs of each component. County staff reviews these figures for reasonability.

Of the 113 bridges, which includes the one pedestrian bridge, 12% have dimensional restrictions mainly related to narrow shoulders and narrow lanes. Of the 90 structural culverts 11% have dimensional restrictions related to narrow shoulders. All the bridges and structural culverts support vehicular traffic with the exception of one bridge which is for pedestrian snowmobile use. There are 164 structures or 81% located on County owned roads and the remaining 38 or 19% of structures are located on municipally owned roads with 1 structure being on a snowmobile trail and only accessible via snowmobile (McKinnon Bridge). Lastly, 16 structures or 8% are jointly owned with bordering Counties/Regions and the costs associated for inspection, maintenance, and capital works are shared.

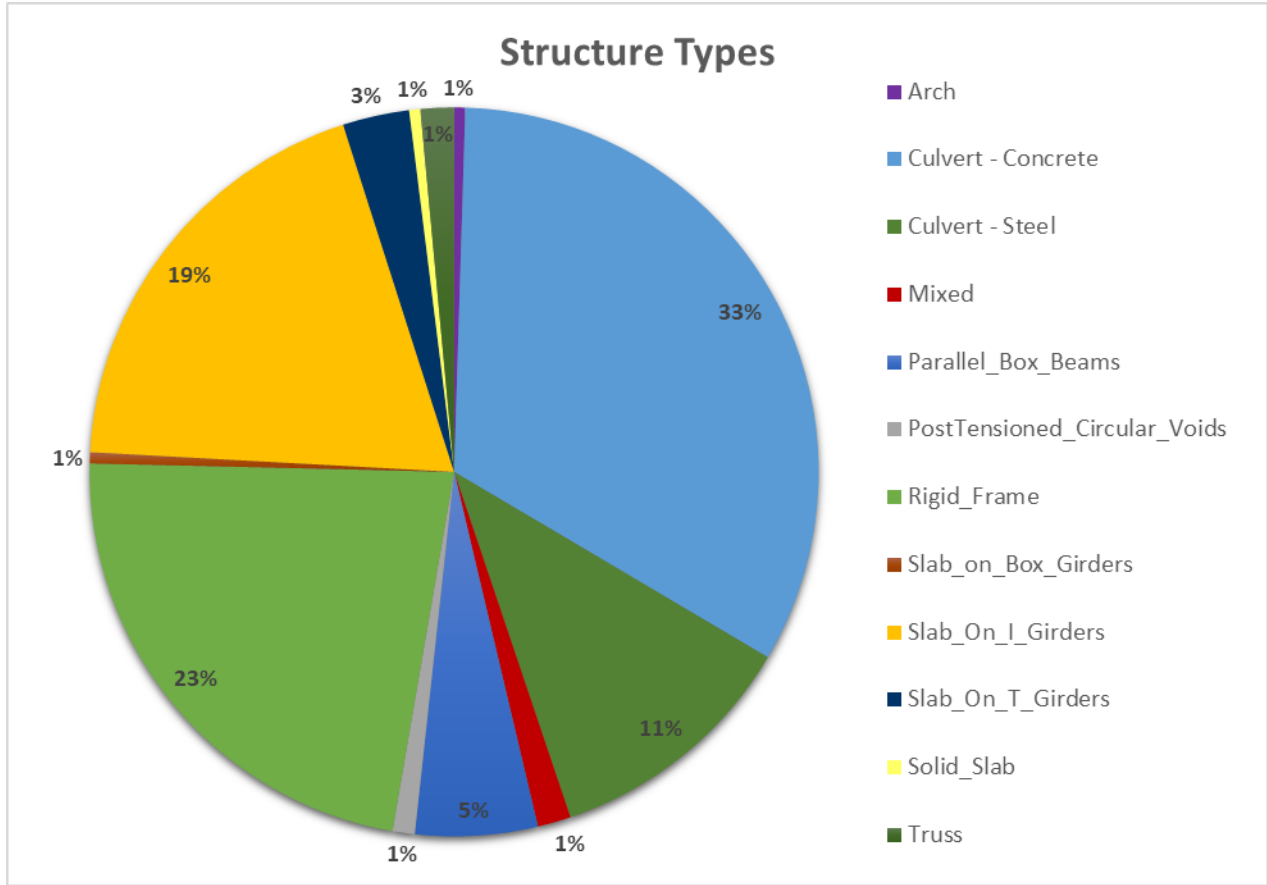
Structure Network	Asset Count	Replacement Cost
Bridges	112	\$257,039,720
Culverts - Concrete	68	\$75,698,400
Culverts – Corrugated Steel	23	\$22,604,800
Pedestrian Bridge	1	\$1,520,820
Structure Network Total	203	\$356,863,740



County Road 90/Mill Street - Elliot Bridge over Nottawasaga River

The County owns multiple types of structures that all serve a unique purpose and apply to different situations. Each structure type has slightly different components and maintenance requirements. The design of structures varies depending on the function of the bridge, the nature of the land where the bridge is located, the material used to construct it, and the funds available to build it. A bridge is made up of multiple elements, these elements consist of the substructure (foundation, abutment, bearings and wingwalls), the superstructure (girders, deck slab, traffic barrier and wearing surface), embankments, approaches, and signage. All these elements are capitalized as one asset and are not differentiated in the County's asset management plan.

There are also different categories of culverts such as: pipe, box, and arch culverts. The County classifies a culvert for lifecycle strategy purposes as either a concrete culvert or a corrugated steel culvert. A structural culvert is also made up of several elements but is less complex than a bridge. These elements consist of the over burden, barrel, traffic barrier, foundation, watercourse, and embankment. Below identifies the types of structures owned and maintained by the County as of December 31, 2020.



The replacement cost breakdown per structure type can be seen below:

Structure Type	Replacement Cost (\$000)
Arch	\$2,387
Culvert - Concrete	\$75,698
Culvert – Corrugated Steel	\$22,605
Mixed	\$24,536
Parallel Box Beams	\$23,185
Post Tensioned Circular Voids	\$12,018
Rigid Frame	\$44,849
Slab on Box Girders	\$1,375
Slab on I Girders	\$132,197
Slab on T Girders	\$8,874
Solid Slab	\$1,934
Truss	\$7,206
Total	\$356,864

5.1.2 Asset Age

Each structure has a year built which is captured in the inventory data and identifies how old the structure is. The Estimated Useful Life (EUL) is established based on industry standards and staff knowledge and is an accounting tool used for amortization, while lifecycle EUL is the life of the asset based on the lifecycle strategy in place. The average age of the County's structures is 23.5 years based on the number of years each asset has been in service.

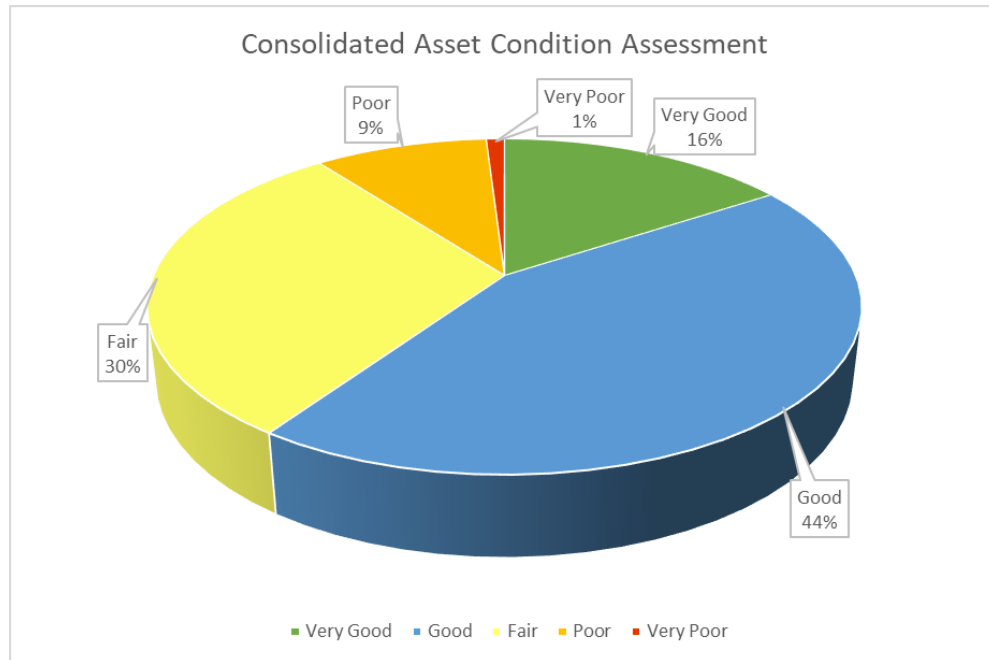
Asset Type	Estimated Useful Life (Both Financial and Lifecycle) (Years)	Average Age (Years)
Bridges	75	23
Culverts - Concrete	75	23.9
Culverts – Corrugated Steel	50	24.7
	Average:	23.5

5.1.3 Asset Condition

Bridge Condition Index

In accordance with the Public Transportation and Highway Improvement Act - Ontario Regulation 104/97, all municipal structures must be inspected every two years under the direction of a professional engineer using the Ministry of Ontario's Structure Inspection Manual (50% of structures are assessed in year 1, the other 50% assessed in year 2). The County complies with this mandate by hiring an external consultant to perform the inspections on all its engineered structures. Once inspections have been completed the Bridge Condition Index (BCI) for each structure is determined based on Ministry of Transportation Ontario methodology. The BCI relates to the condition of the structure and is divided into five levels shown below. The BCI helps to identify maintenance or rehabilitation work that needs to be completed but is not necessarily an indication of the safety of the bridge.

BCI Level	Condition	Number of Structures	% of Inventory
85 - 100	Very Good	32	16%
70 - 84	Good	90	44%
60 - 69	Fair	60	30%
40 - 59	Poor	19	9%
0 - 39	Very Poor	2	1%



As of December 31, 2020, 60% of the County’s structures were in good to very good condition, 30% were in fair condition and the remaining 10% in poor to very poor condition. The average BCI at December 31, 2020, was 72.83 (Good).

Structure Type	Average BCI
Bridge	74.84
Pedestrian Bridge	10.00
Culverts - Concrete	71.35
Culverts – Corrugated Steel	70.05
Average:	72.83

The County strives to maximize the useful life of the structures. Generally, a bridge or a concrete culvert is built for a 75-year design life while corrugates steel pipe culverts have a shorter design life at 50 years. The County aims to ensure structures last their respective design lives by completing maintenance and rehabilitation work at appropriate times until the structure is deemed to be at the end of its life, therefore requiring replacement.

In addition to maximizing the useful life of the structures the County aims to maintain an average BCI of 70 for bridges and an average BCI of 65 for structural culverts. Currently the County exceeds the recommended service levels. The BCI reflects the rehabilitation and replacement work performed up to 2020 and will be updated on an annual basis. A structure with a BCI under 40 is deemed to be in very poor condition, which often creates serviceability

issues and/or relatively high risk of imminent failure or closure of the structure to protect public safety. These structures would be recommended to be scheduled for work within a year. The County has two structures rated as very poor. The structures are listed below along with the lifecycle renewal strategy for each.

Structure Type	Structure Name	BCI	Life cycle Renewal Strategy
Corrugated Steel Pipe Culvert	Culvert 017121 – Conc. 3, Lot 6/7	38	Replacement scheduled in 2025.
Steel Truss Bridge	Bridge 000301 – McKinnon Bridge	10	Structure in an abandoned ROW used/maintained by the snowmobile club. No plan for replacement.

The calculation of BCI can be found in [Appendix D](#)

5.2 Level of Service

The Ontario Regulation 588/17 requires the asset management plan include the current level of service determined with qualitative descriptions and technical metrics. Examples provided in the legislation for community levels of service include description of the traffic that is supported by the County’s structure network, images that illustrate the condition of the structures and how this would affect the use of the structures. Examples provided in the legislation for technical levels of service include the percentage of structures with load or dimensional restrictions and the average bridge condition index of the structures.



County Road 90 – CPR Overhead Bridge - Slab on Concrete I Girders

Community Levels of Service

Service Attribute	Qualitative Description	Current Level of Service
	Description of the traffic that is supported by the bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists)	The County's road network segments are classified as arterial roads and as such the type of traffic supported by the bridges include heavy transport vehicles, motor vehicles, emergency response vehicles and school vehicles. Generally, the County bridges do not have any special provisions for pedestrians or cyclists unless the bridge is in an urban setting with a sidewalk attached.
Quality	<ol style="list-style-type: none"> 1. Description or images of the condition of bridges and how this would affect the use of the bridges. 2. Description or images of the condition of culverts and how this would affect the use of the culverts. 	<p>1& 2. See images below.</p> <p>Overall, the County's bridges and culverts are in good to very good condition and continue to follow the biennial inspection requirements. The OSIM inspection program allows the County to extend the life of the assets, minimize the impacts of service disruptions and ensure the safety of the community.</p>

Illustration of the Different Bridge Condition Index Levels - Bridges Average 2020 BCI – Bridges = 74.84

Very Good
BCI 80 - 100



Good
BCI 70 - 79



Fair
BCI 60 - 69



Poor
BCI 40 - 59



Very Poor
BCI 0 - 38

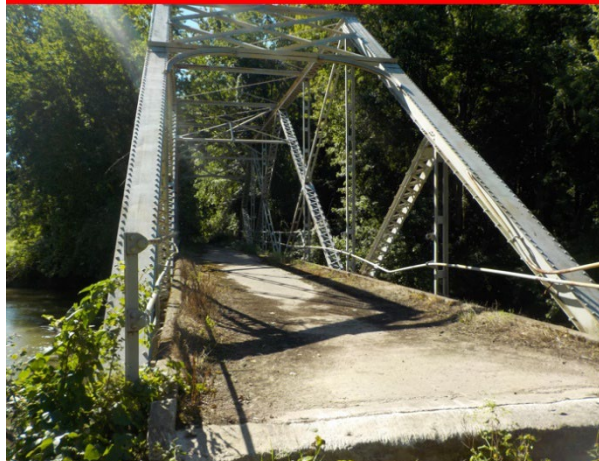
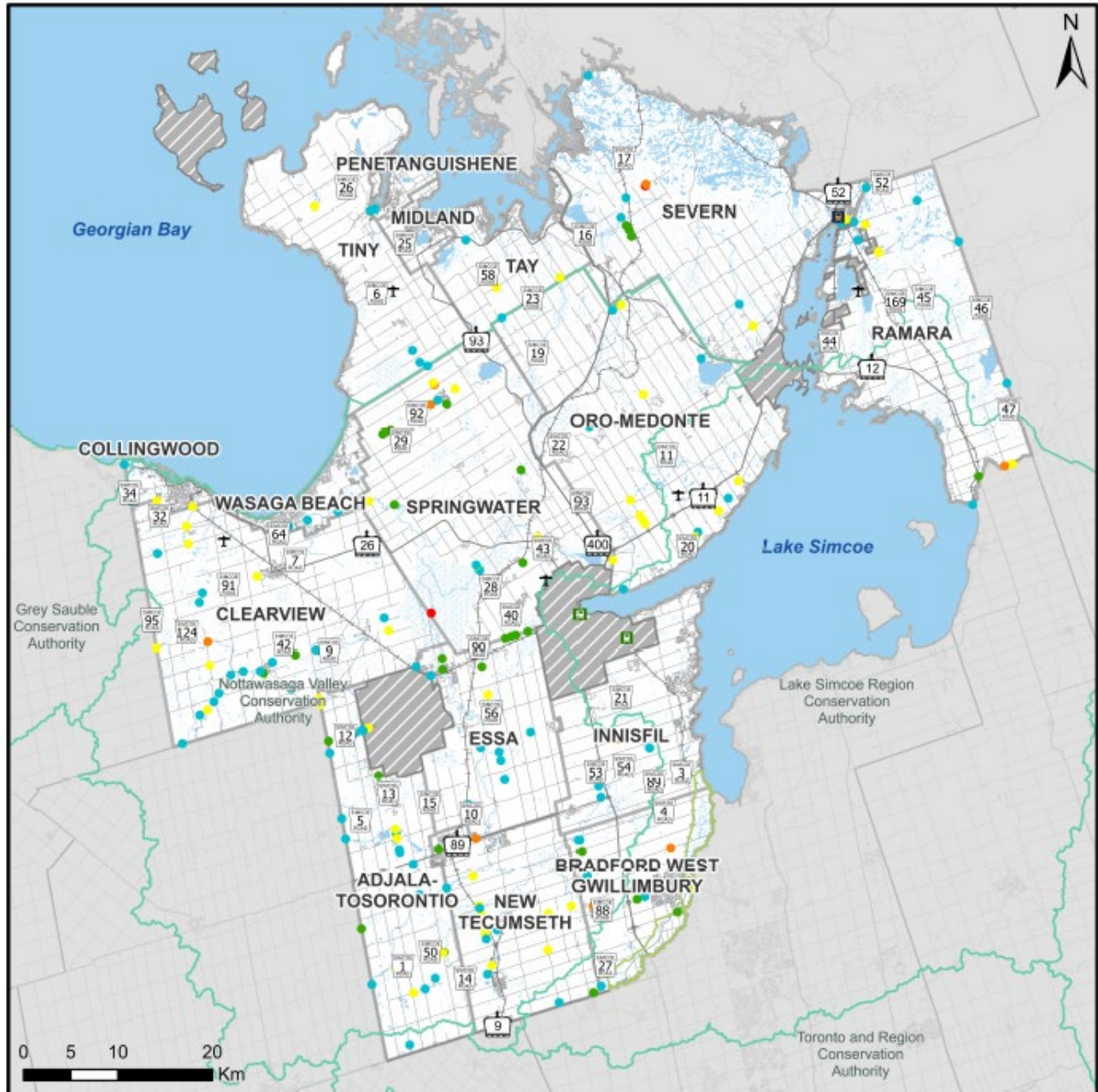


Illustration of the Different Bridge Condition Index Levels – Structural Culverts

Average 2020 BCI – Structural Culverts = 71.02



County of Simcoe Bridge and Structural Culvert Network Map



Simcoe County Bridge Condition Index



Bridge Condition Index

- Very Good (85-100)
- Good (70-84)
- Fair (60-69)
- Poor (40-59)
- Very Poor (0-39)

- ✈ Airport
- Existing GO Station
- Existing VIA Station
- Conservation Authority Administrative Area
- ▭ Greenbelt
- ▨ Lands not subject to this plan



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Technical Levels of Service

The table below outlines the quantitative metrics that determine the technical levels of service as currently set out by O. Reg. 588/17.

Technical Metric	Current Level of Service
Percentage of bridges with loading or dimensional restrictions	11.8%
Narrow lane restrictions	1.5%
Narrow shoulder restrictions	9.9%
Single lane bridge servicing one resident	0.4%
Average bridge condition index - Bridges	74.84
Average bridge condition index - Culverts	71.02

As was mentioned previously, the County aims to maintain an average BCI of 70 for bridges and an average BCI of 65 for structural culverts.

5.3 Risk Assessment

The County evaluates each of its structure assets on both the physical condition as well as the service impact to determine the condition and the urgency of identified needs. To perform this evaluation, a risk score is calculated for each asset based on two factors:

- Bridge Condition Index (BCI) as described above, under 5.1.3 Asset Condition, and
- Service Impact Rating (also known as BSI – Bridge Sufficiency Index) as described below

Service Impact Rating considers the four factors listed below with equal weighting (25%) to identify the impact on the motorists using the County Road network:

1. **Traffic volume:** Ranges from 1 to 5 based on average annual daily traffic
2. **Detour length:** Ranges from 1 to 5 based on Detour Length and 2 additional points if the structure is on an Emergency Detour Route
3. **Geometric and safety improvements required:** Ranges from 0 to 10 based on the criteria noted below:
 - a. Service Impact Rating for Structure Width (Max of 5)
 - i. 5 points for single-lane bridge
 - ii. 3 points for narrow lanes
 - iii. 2 points for narrow shoulder
 - iv. 1 point if in need of sidewalk to improve pedestrian safety

- b. Service Impact Rating for Profile or Alignment (Max of 5)
 - i. 3 points for inadequate sight distances (i.e., visibility)
 - ii. 2 points for inadequate alignment
 - iii. 1 point for inadequate grade, clearance to water (i.e., navigability)
- 4. **Rehabilitation and maintenance history:** Ranges from 0 to 5 based on the criteria noted in the tables below dependant on whether the structure is a bridge or culvert:

Rehabilitation and Maintenance History Service Impact Rating for *Bridges*

Impact Rating	Description
5	Determined to have lapsed on its normal rehabilitation work schedule and the resulting deferral cost is deemed high or the bridge has safety critical elements due to poor condition
4	Near (within 2-3 years) of its normal rehabilitation work schedule and the associated deferral cost is deemed high
3	Determined to have lapsed on its normal rehabilitation work schedule and the resulting deferral cost is deemed low
2	More than three years away from its normal rehabilitation work schedule but structural needs have been identified which may be addressed through structural rehabilitation
1	None of the above applies

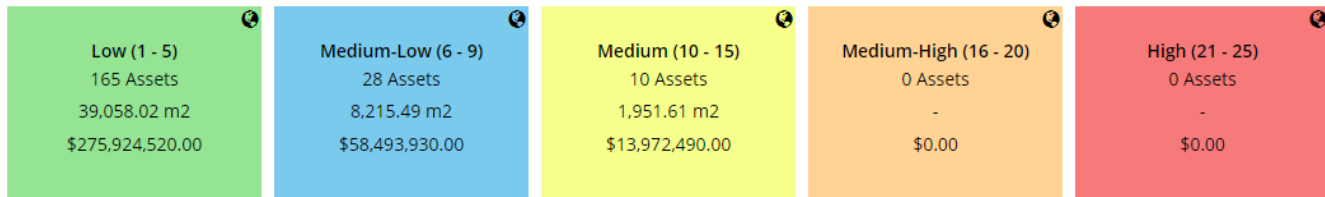
Rehabilitation and Maintenance History Service Impact Rating for *Culverts*

Impact Rating	Description
5	In service longer than the useful life and the general condition is poor or has safety critical elements
4	In service longer than the useful life but the general condition is fair or better
3	In service close to the useful life with no records of rehabilitation
2	In service close to the useful life with records of rehabilitation
1	None of the above applies

All these factors give the County a better indication of whether the structure has a lower or higher urgency of needs rather than BCI (structural condition) alone.

Risk, as described by the probability of failure and the consequence of failure of a structure, is illustrated in the risk matrix table below. The Bridge Condition Index (BCI) is the probability of failure, and the Service Impact Rating is the consequence of failure. Overall, the risk rating associated with the structures is low with 81% of structures having a low-risk rating and 14% having a medium-low risk rating.

Structures Asset Risk Profile



5.4 Lifecycle Management Strategy

The County strives to maximize the useful life of the structures. This is accomplished through ongoing structure maintenance where required, an effective program of rehabilitation and reconstruction, and through the application of effective traffic operation and planning principles. The County's goal is to ensure an acceptable level of service is always maintained. The County's TMP includes strategies and recommendations for managing the transportation network, which includes the County's bridges and culverts. The lifecycle strategies that the County uses in the overall sustainable management of its structure network, which ensures the levels of service outlined for these assets are continually met, are detailed below.

Strategy	Lifecycle Activity	Trigger
Maintenance	Scheduled maintenance and inspections such as sweeping, localized painting of structural steel, lubrication of bearing, culvert cleaning, snow removal, sealing joints, asphalt repairs and bridge condition inspections.	Ongoing
Rehabilitation	Includes restoring or rehabilitating the existing structure back to the original or near original service potential and can include minor or major structure rehabilitation. Activities include: concrete deck patching or overlay, concrete deck upgrades, waterproofing, paving, upgrades to meet the current structure codes or increases to carrying capacity.	BCI ~ 60 Approx. year 27 and year 47
Replacement	Replacement occurs when deterioration of a structure is so significant that the structure has reached the end of its useful life and rehabilitation is no longer appropriate.	BCI ~ 40 76 years
Growth	Growth strategies occur when structures are uploaded or downloaded from municipalities or the Province to the County or if existing county roads require expansion (e.g., roads increasing from 2 to 4 lanes) and a structure falls within this road expansion.	Growth (TMP/DC Study)
Disposal	Bridge or Culvert disposals are infrequent and generally related to downloading an asset to a lower tier municipality.	

5.4.1 Maintenance Activities

Maintenance is an important components of the structure lifecycle. Routine maintenance requires minimal effort to sustain the service life of the structure. The Province provides minimum maintenance standards that the County meets (OSIM inspection requirement). Maintenance costs are reflected in the County's operating budget.

The structure network requires summer and winter activities. Some examples of each are:

Summer Activities	Washing, sweeping, localized painting of structural steel, lubrication of bearing, Culvert cleaning, debris pick up, sealing joints, and asphalt repairs.
Winter Activities	Snow removal, drainage, road patrol

The increase in maintenance costs associated with acquisition\growth activities, are not included in the budget or long-term financial plan until the structure is operational. Likewise, the decrease to maintenance costs associated with a disposal\download are not included in the budget or long-term plan until the structure is no longer part of the County's inventory. Currently the maintenance budget is sufficient for the existing structures.

5.4.2 Rehabilitation Activities

Normal rehabilitation work that is scheduled for structures reference an assumed life span per MTO *Structural Financial Analysis Manual - Appendix A.1.3*. The County does not have a program to mill and resurface top course asphalt for bridge structures; therefore, approximately 25-30 years is considered a duration for a maintenance free period after original construction.

Based on the Bridge Condition Index and Service Impact Rating, structures are prioritized for rehabilitation and replacement. On average, each structure undergoes a minor and major rehabilitation before being fully replaced. Although BCI is the measure of overall asset condition, other factors are considered when prioritizing projects. These include but are not limited to (note: some listed below are already considered in the structures risk calculation):

- Planned projects for the neighbouring road network (to realize cost efficiencies and minimize disruption to residents)
- Accident History
- Traffic Volume
- Load Capacity restrictions
- History of flooding or ice problems

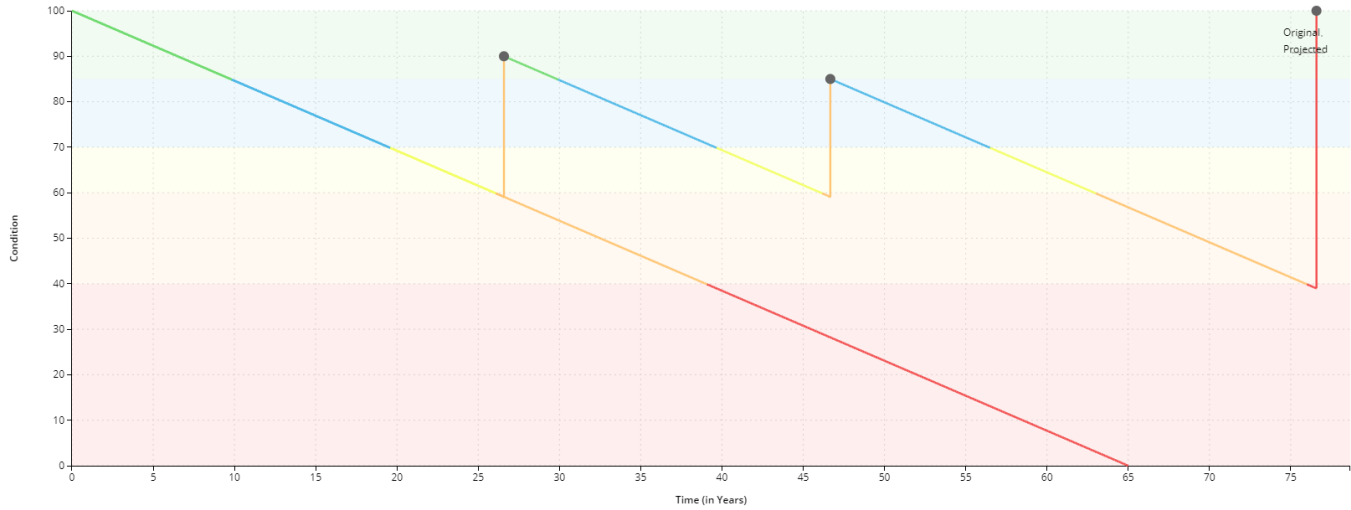
- Growth
- Detour length
- Renewal/rehabilitation and maintenance history

Minor structure rehabilitation projects address structures that are in generally good condition but have minor deterioration that creates a structurally deficient component. Typically, minor rehabilitation projects repair the deterioration allowing a structure to move out of structural deficient status. It also pre-emptively addresses the structural needs to extend the service life and drives the need for a major rehabilitation or replacement of the structure, which can be costly, to the future. Work may include concrete deck patching, concrete deck overlay, waterproofing, paving, and traffic barrier upgrades.

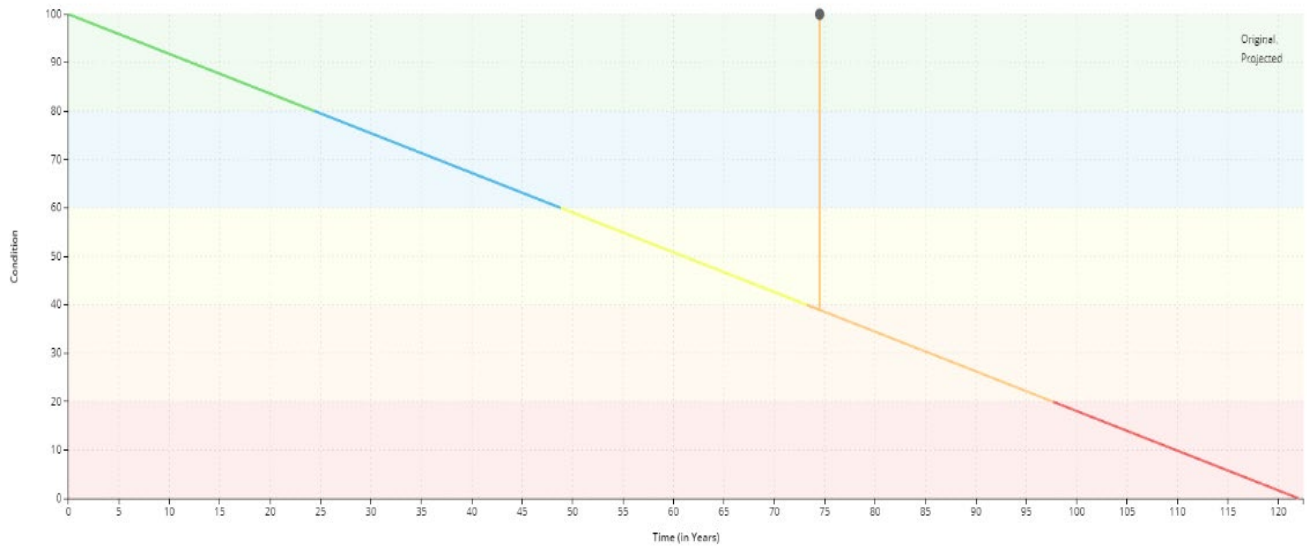
Major structure rehabilitation projects address components of a structure which have deteriorated significantly. Major rehabilitation involves the replacement of major structural elements such as the concrete deck, the complete superstructure including the girders, as well as upgrades to meet the current structure codes or increases to carrying capacity of the structure. During the inspection process, safety critical elements in need of immediate repair are identified. The County strives to address all safety critical elements soon after they are identified. Safety critical issues are given priority in the following budget cycle.

The bridges lifecycle strategy included in the County's asset management system consists of two rehabilitations followed by a full asset replacement. The first rehabilitation is triggered at a BCI of 59, around year 27, and a second rehabilitation is triggered around year 47 when BCI once again reaches 59. The replacement of a bridge is triggered when the BCI reaches 39 and the bridge reaches the end of its useful life at year 75. The data driving the lifecycle events are based on the OSIM inspections. Concrete culverts and corrugated steel culverts typically do not have rehabilitation work completed throughout the assets life, mainly as they are protected from the elements and do not deteriorate at a rate that requires rehabilitation and because of the significant costs associated with rehabilitating a culvert. If a culvert deteriorates quicker than its useful life a full replacement is often more strategically appropriate. Below is the bridge and culvert lifecycle strategies required to maintain the current level of service.

Bridge Rehabilitation and Replacement Strategy		
Event Name	Event Trigger	2021 Event Cost
Rehabilitation 1	BCI = 59 - 60	\$5,000/m ²
Rehabilitation 2	BCI = 59 - 60	\$5,000/m ²
Asset Replacement	BCI = 39 - 40	Actual based on structure type ~ \$7,000/m ²

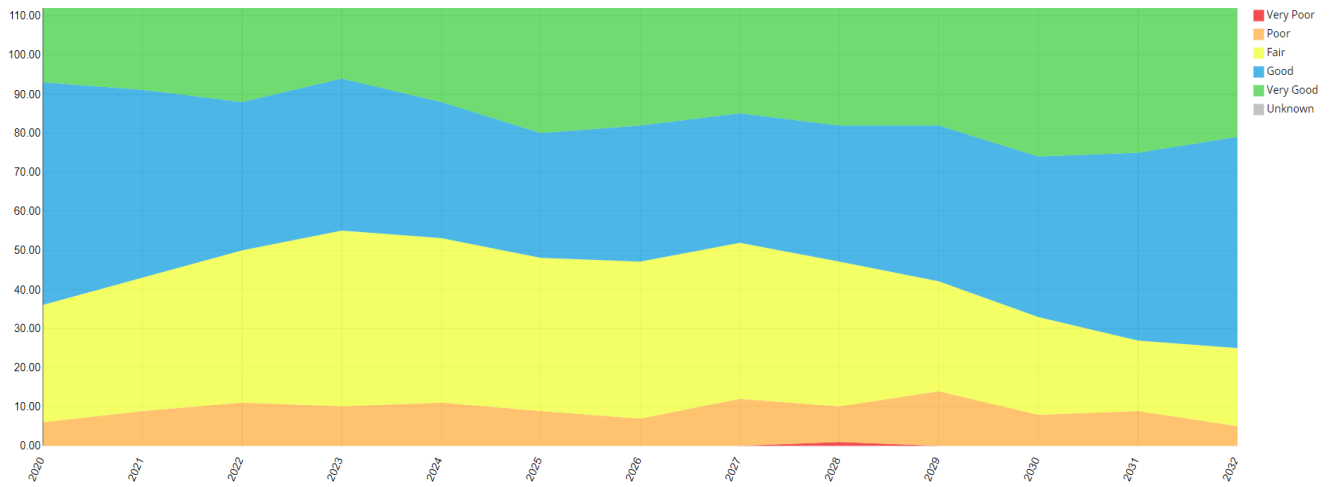


Culvert Deterioration and Replacement Strategy		
Event Name	Event Trigger	2021 Event Cost
Asset Replacement	BCI = 39 - 40	Based on structure type ~ \$8,000/m ²

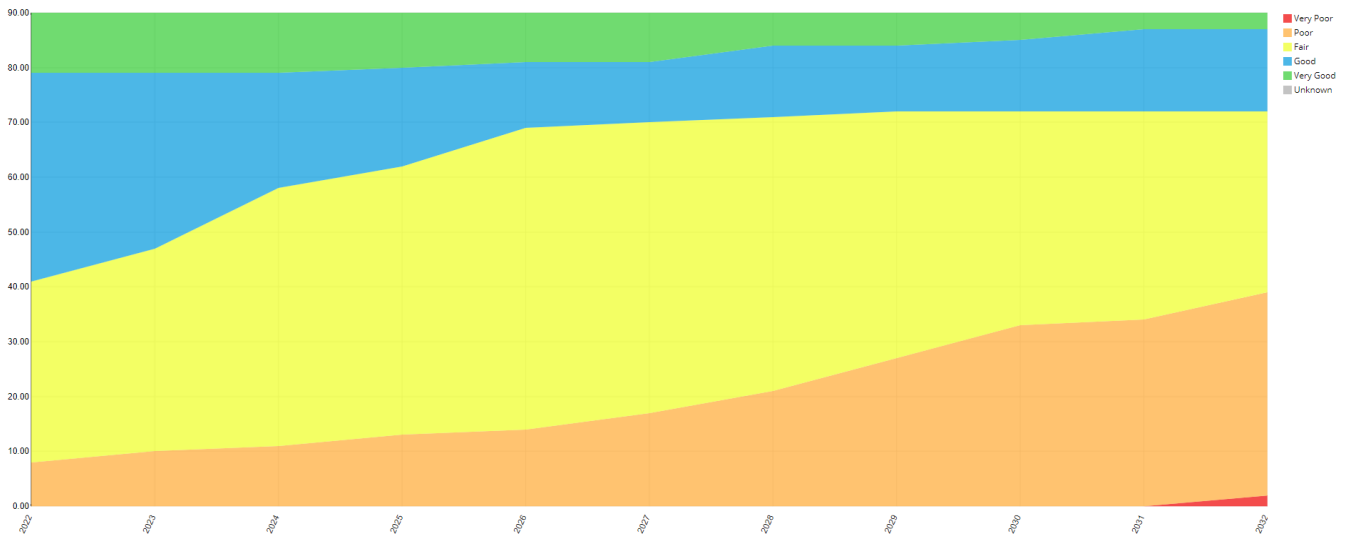


Based on the current lifecycle strategies and current assessed conditions for the County’s structures the graphs below illustrate the projected bridge and culvert conditions over the ten-year planning period. Culverts will see a higher proportion of assets reach the fair and poor ranges as the lifecycle strategy is build and replace at a BCI of approximately 39, which falls into the poor condition range.

Projected Bridge Conditions 2020-2032

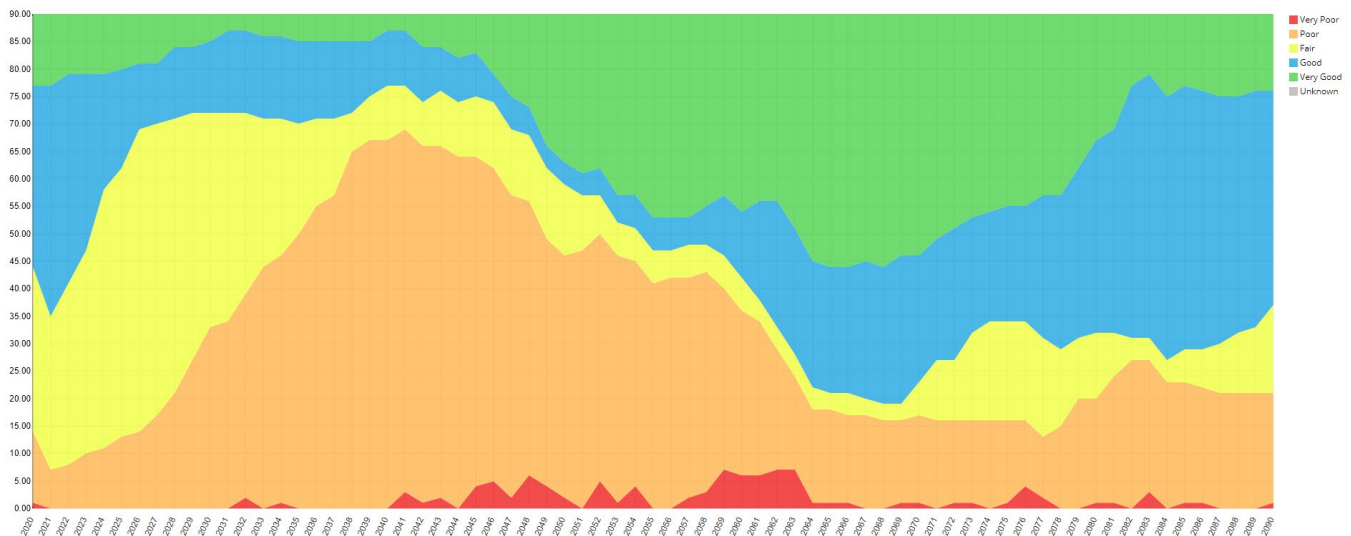


Projected Culvert Conditions 2020-2032



The analysis of the structures based on the current lifecycle strategy indicates that the bridge network will continue to meet the County’s level of service targets. However, due to the nature of the culvert’s strategy being build and replace and the inevitability of degradation to a poor condition, the culverts will hit a critical period of replacement between 2030 and 2060. This is due to the distribution of the culverts in terms of age and current condition, where a significant portion of culverts will need replacement during this time period. To smooth, or flatten, this curve the County will need to strategize and look to accelerate and/or delay some of the timing of the recommended work currently scheduled in the County’s asset management system. This will mitigate the distribution of culverts falling below the target with the understanding that culverts will likely fall slightly below the County’s level of service target for a brief period of time.

Projected Culvert Conditions 2020-2090



5.4.3 Replacement Activities

Structure replacement is required when deterioration of a structure is so significant that the structure has reached the end of its useful service life. The decision to replace a structure is chosen when rehabilitation is determined to be more costly than a complete structure replacement; this typically occurs after previous lifecycle events have been completed. The total approximate replacement cost of County owned structures is \$357M.

5.4.4 Growth Activities

The growth strategy for structures includes any structures that are uploaded from municipalities to the County or downloaded structures from the Province or if a structure is on a roadway that is being widened, for example from two to four lanes then the additional two lanes would be considered growth. The transportation master plan would identify these planned events.



County Road 90/Mill Street - Elliot Bridge over Nottawasaga River

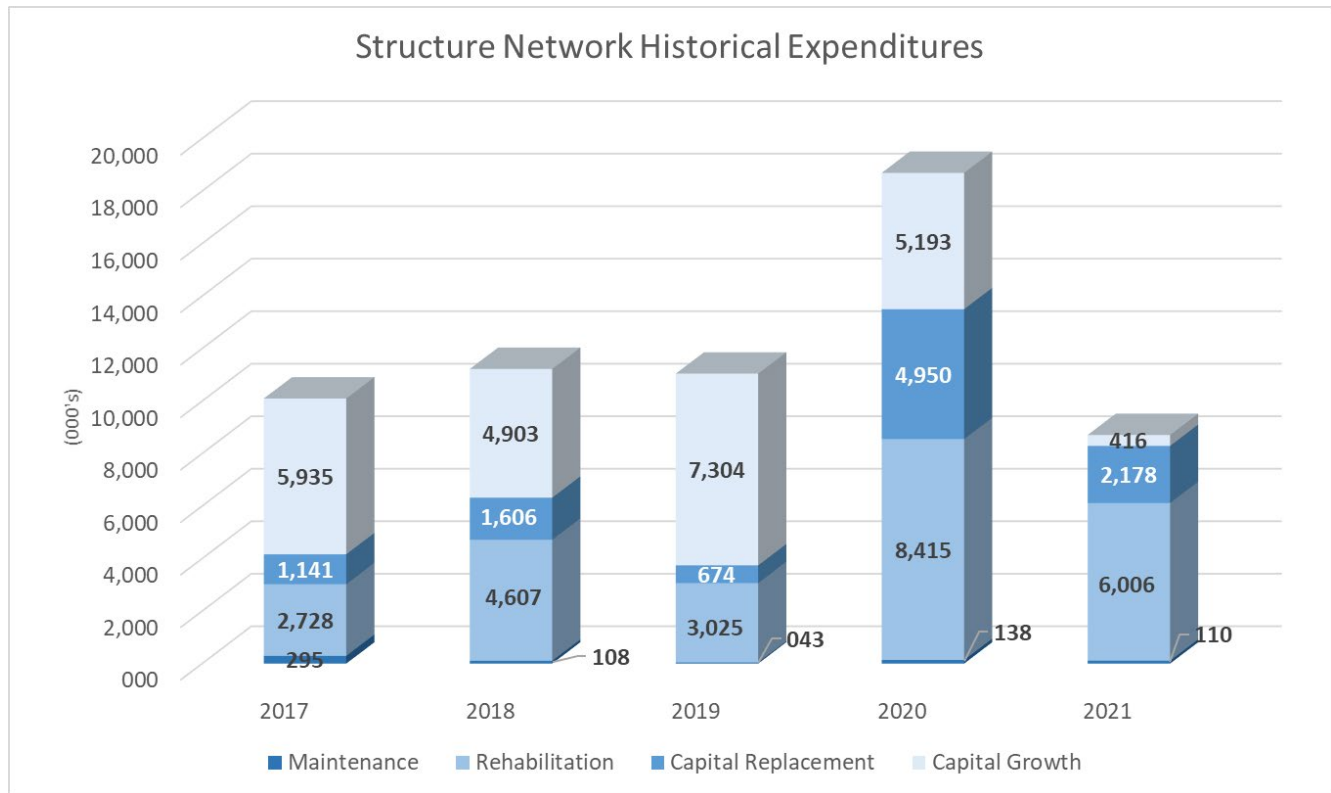
5.5 Forecasted Asset Management Requirements

Historical Spending

Where possible rehabilitation or replacement activities for the bridges and culverts are planned in conjunction with the activities of the road network to minimize disruption and realize cost efficiencies.

The chart and graph below illustrate the historical asset management expenditures (\$ Millions) for the structures network. The County's total maintenance and rehabilitation expenditures for structures were \$694K and \$24.8M respectively from 2017 to 2021. A total of \$34.3M per year was spent on major construction projects, which were almost 70% growth related.

	2017	2018	2019	2020	2021	Total 5-Year
Maintenance	295	108	043	138	110	694
Rehabilitation	2,728	4,607	3,025	8,415	6,006	24,781
Capital Replacement	1,141	1,606	674	4,950	2,178	10,547
Capital Growth	5,935	4,903	7,304	5,193	416	23,752
Total Expenditures	10,099	11,224	11,046	18,695	8,710	59,774
County Levy - Maintenance	295	108	43	138	110	694
County Levy - Capital		2,298	5,561	5,038	5,038	17,935
CCBF	1,252		1,721	8,257	3,345	14,576
Development Charges	2,975	2,452	3,720	2,602	217	11,966
Other Grants/Subsidies						0
Debt	5,577	6,367	0	2,659	0	14,603
Total Revenue	10,099	11,224	11,046	18,695	8,710	59,774

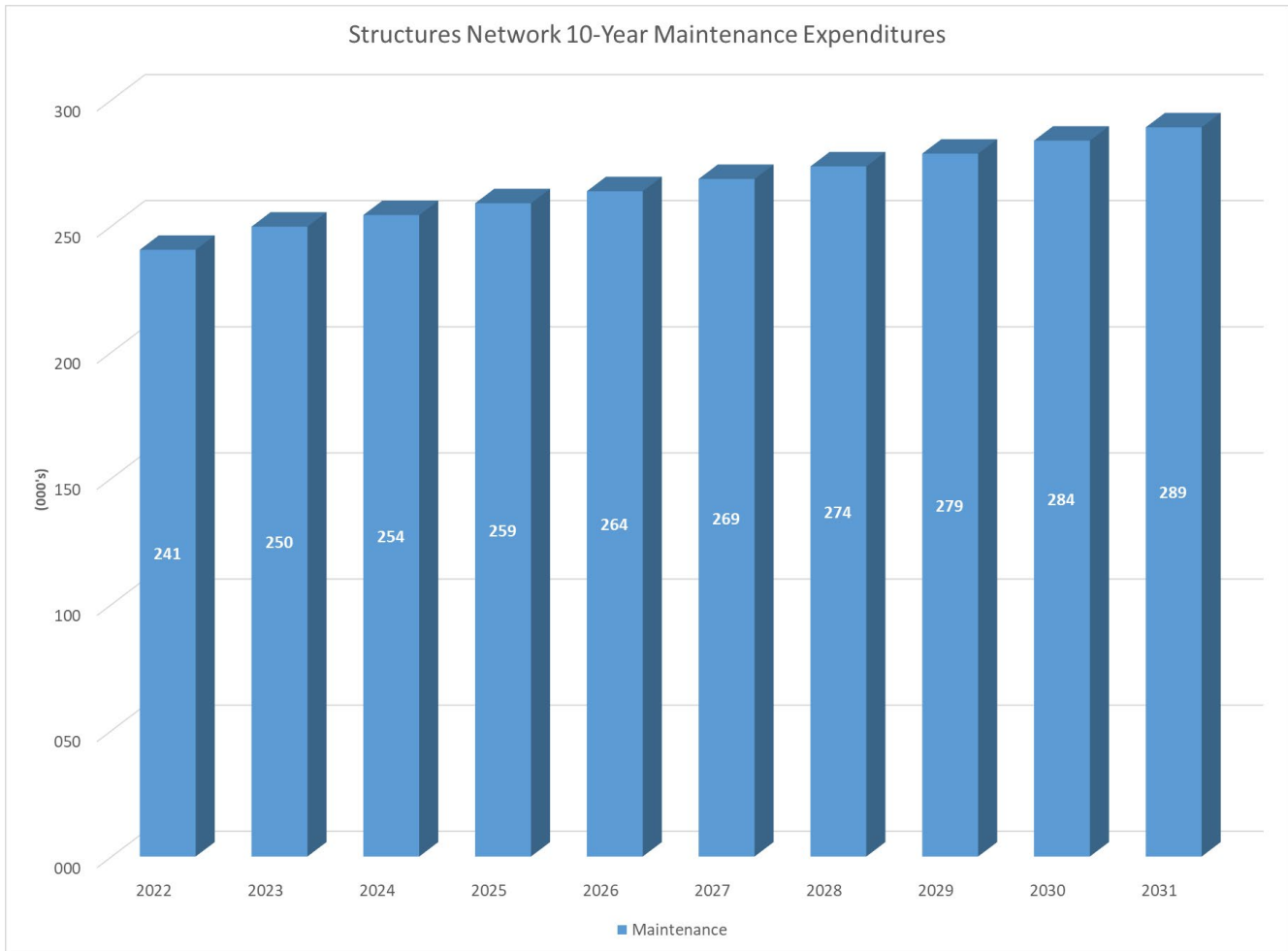


10-Year Existing Core Infrastructure Asset Management Requirements

Using the structures lifecycle strategies for existing assets, detailed in section **5.4 Lifecycle Management Strategy** above, the 10-year financial requirements are determined and illustrated in the sections below. The financial requirements illustrated below from 2022-2031 are inflated based on a yearly 2% inflation factor.

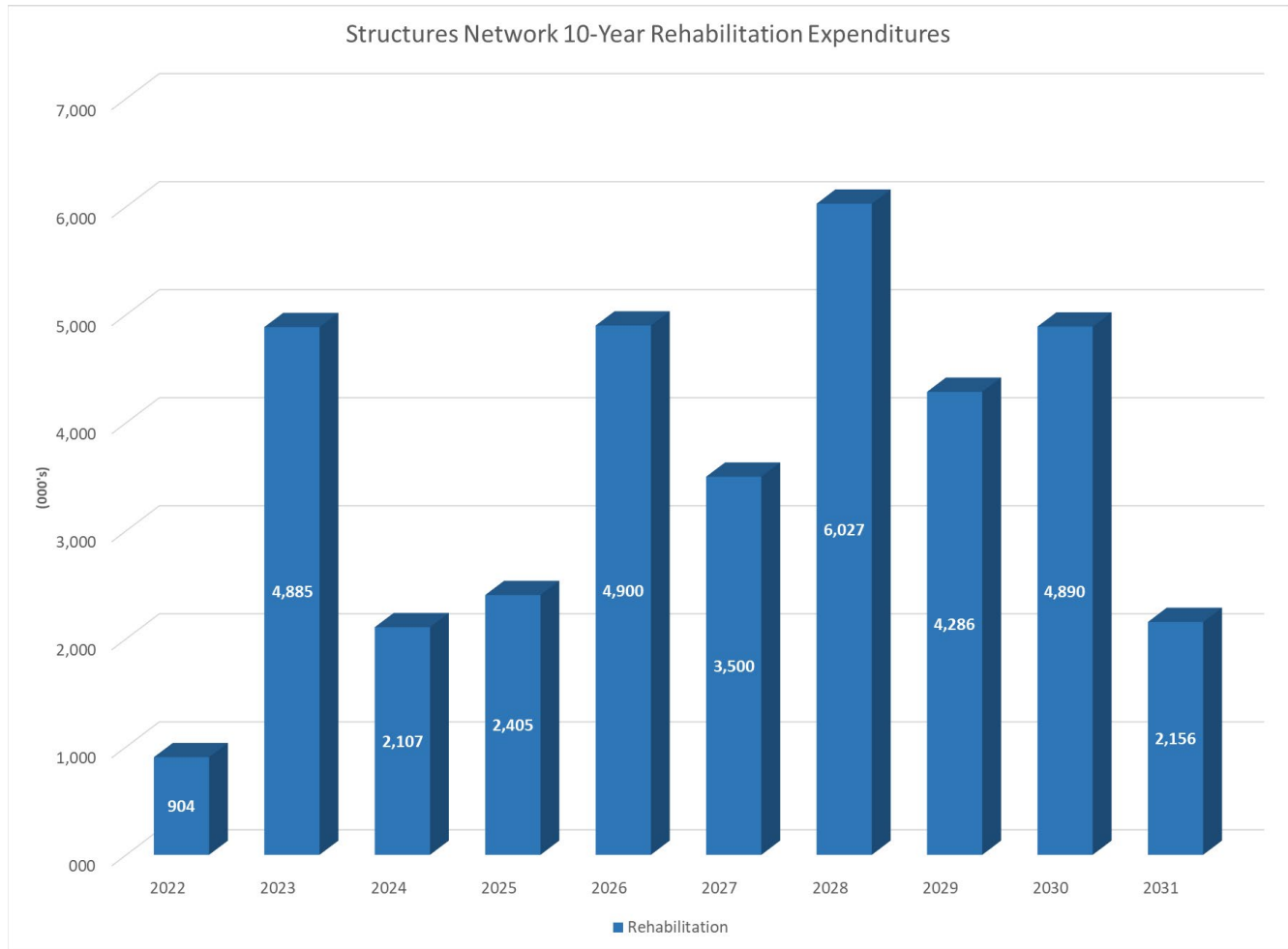
Structures Maintenance Expenditure Requirements

To deliver the defined levels of service the appropriate maintenance strategies need to be implemented throughout the asset’s lifecycle. The County projects to see maintenance expenditures increase in line with inflation. The ten-year total maintenance expenditures tied to structures is projected at \$2.7M over the 2022-2031 time period.



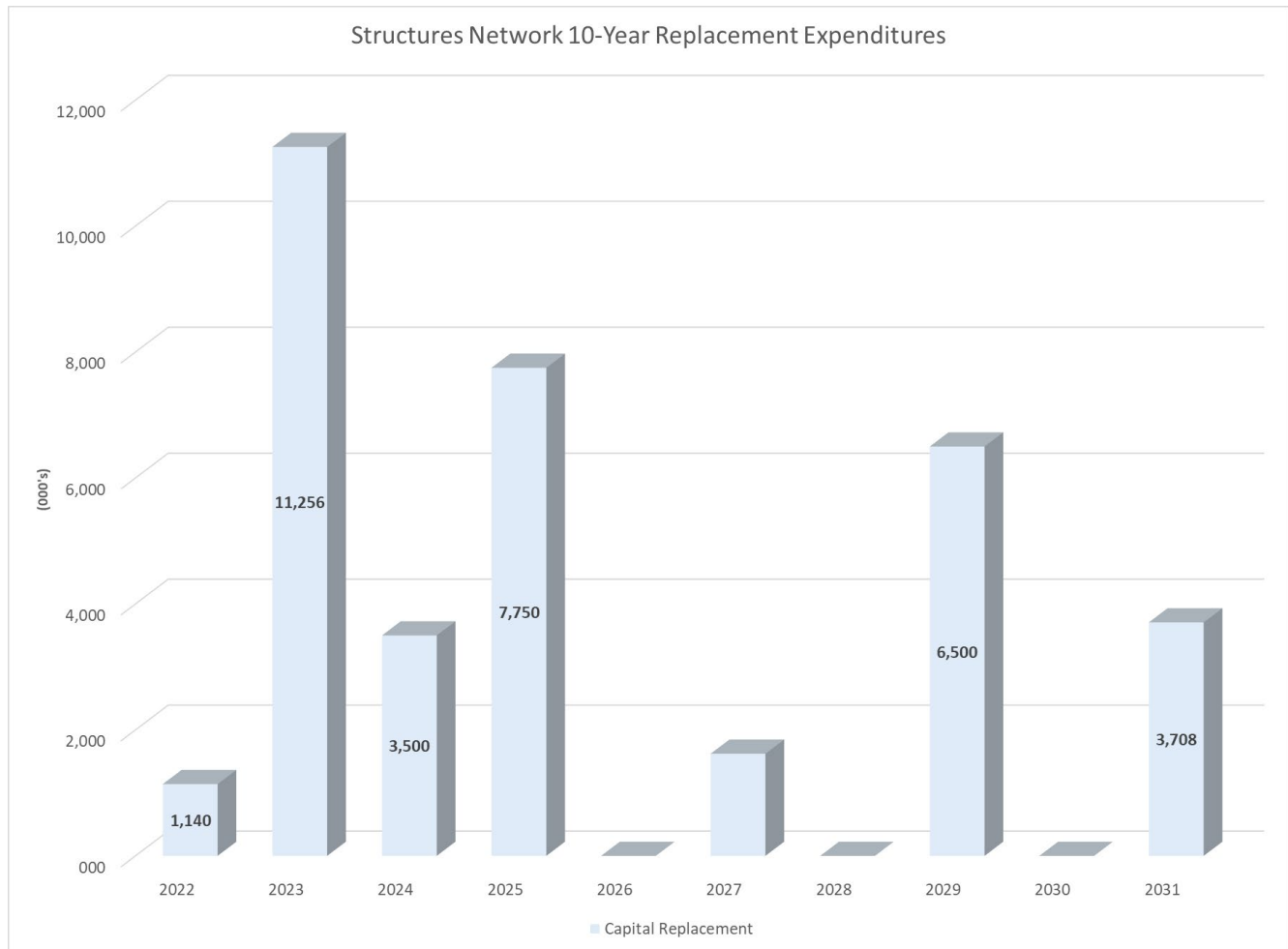
Structures Rehabilitation Expenditure Requirements

To manage asset condition and address asset and related service reliability and safety issues the County performs yearly structures rehabilitation work. Structures rehabilitation requirements fluctuate over the 10-year period based on projected lifecycle events. The County will continue to review the projected events and may smooth out years in which structures rehabilitation activities are more significant to meet internal and external resourcing as well as funding. In total it is projected that \$36.1M will be spent on structures rehabilitation projects over the future 10-year period.



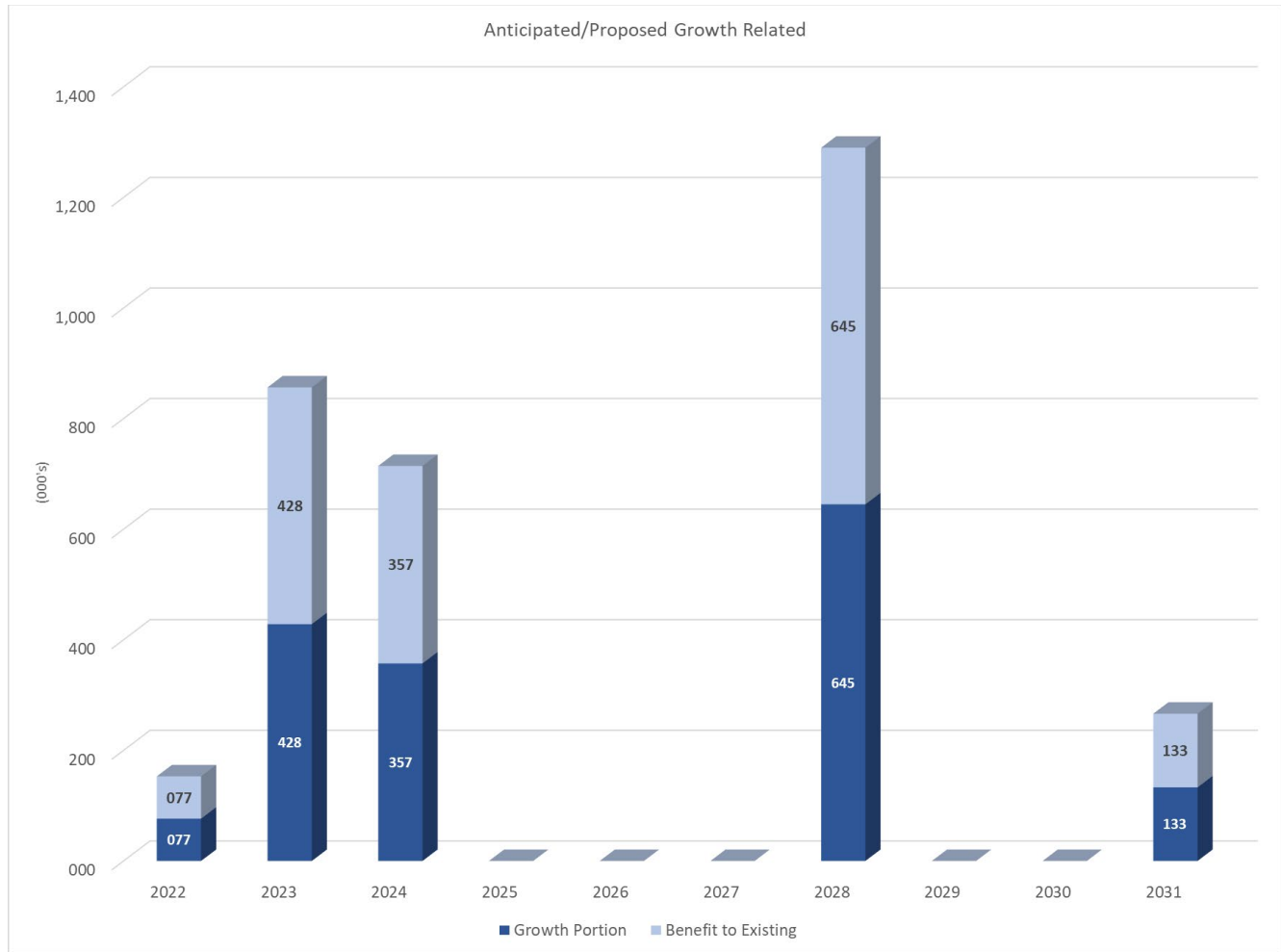
Structures Replacement Expenditure Requirements

Structure replacement is required when deterioration of a structure is so significant that the structure has reached the end of its useful service life. Structure replacement work over the ten-year period (2022-2031) totals \$35.5M. The high replacement cost in 2023 is driven by the replacement of Old Fort Overhead Bridge and the replacement of the four Willow Creek Culverts.



10-Year Structures Infrastructure Growth-Related Asset Requirements

The transportation master plan drives the growth-related projects included in the County’s long-term financial plan and asset management plan. The total capital growth-related expenditures over the ten-year period are approximately \$3.3M. Structures growth projects are generally 50% funded by development charges. At this time the County has not committed additional funding to support the benefit to existing for the growth projects. Remaining County levy operating balance available for capital may be used to support the benefit to existing or the amount unfunded may be considered unfinanced capital and require debt financing. In future iterations of the asset management plan, once all County asset requirements are detailed, the County can determine the optimal strategy to fund the remaining structures growth projects.



5.6 Discussion and Conclusion

Structures are a vital part of the County’s transportation network. Maintaining these assets in a state of good condition is important to the mobility and quality of life for our community; allowing the County to promote and create business, employment, and social opportunities.

An essential component of maintaining the condition of the County’s structures, understanding the current state, and mitigating risks associated with failure is the systematic inspection process in accordance with O. Reg. 104/97 - Standards for Bridges. The County will continue to review condition data and replacement recommendations upon the completion of the OSIM inspections every year, ensuring the structures asset inventory continues to remain in good condition. The County has preserved its structures inventory condition through regular maintenance activities and performing rehabilitation work at the right time. The average age for bridges and structural culverts is 23 years and 24 years respectively. This indicates that there

is not a short-term aging profile issue; however, it will be important to strategize now given the current data and the assumption that between the years 2030 - 2060 there is a significant amount of bridge rehabilitation and culvert replacement projects to be completed.

The County will continue to review the current level of service framework as well as identify the proposed level of service for structures and outline strategies required to close any gaps between the current and proposed levels of service. Additional key performance indicators may be identified to enhance the service level reporting.

6.0 Core Infrastructure – Stormwater



6.1 State of Infrastructure

Quick Facts:

- 33,998m Storm Sewers
- 255 Outlets
- 9 Stormwater Ponds
- Replacement Value – ~ \$14 million
- Asset Condition – Very Good
- Average Age – 9.9 years



The County's storm sewers are located under the county roads and serve the purpose of collecting and directing surface water from the transportation network, as a result of rainfall or snow or ice melt, to prevent flooding. The storm water system collects the surface water into underground pipes and outlets the water to the roadside ditches, eventually making its way to a surface watercourse, lake, or river. The aim is to ensure a safe transportation network for the community and those travelling on the County's transportation network. The County's road network has limited areas that would result in flooding and typically this is only a result of highly intense rainfall.

The most eastern portion of the County, located near Lake Simcoe, is regulated by the Lake Simcoe Region Conservation Authority while the vast majority of the remainder of the County is regulated by the Nottawasaga Valley Conservation Authority. These authorities are public agencies dedicated to conserving, restoring, and preserving a healthy environment by ensuring a sustainable watershed that is resilient to the effects of climate change, population growth and other stressors.

6.1.1 Asset Inventory and Valuation

The County currently has a total of 37,345m of stormwater assets varying in size from 200mm in diameter to 1,200mm in diameter. The breakdown of the asset types can be seen in the table below and include 33,998m of storm sewers, 255 standard outlets with a length of 3,313m and nine stormwater pond outlets. Of the nine stormwater ponds, four stormwater ponds are located along the newly reconstructed Highway 90 and two are along County Road 44. These Ponds collect the surface water run off, economically store peak water fall and allow for improved water quality to be drained as sediment can drop to the bottom of the water.

The replacement cost method for the storm sewers and outlets are on a Cost/Unit bases while the stormwater pond is based on the current cost to construct a replacement pond. In total the County's stormwater assets are valued at approximately \$14.3M. This value is a current best estimation as the stormwater assets have been historically included within the road asset project budget and capitalization process. In future iterations of the AMP the County will work towards segregating stormwater assets for improved asset management and decision making.

Stormwater Type	Asset Count*	Length (m)	Replacement Cost
Storm sewers	1,006	33,998	\$11,500,699
Storm sewer outlet	255	3,313	\$1,072,834
Stormwater pond outlet	9		\$1,711,149
TOTAL	1,270	37,345	\$14,284,682

*Asset count is by each "pipe segment" as different segments have varying pipe diameters and therefore varying cost per meter.

In addition to the storm sewers, outlets and ponds the County owns and maintains four oil grit separators, two infiltration ditches and one stormwater storage tank which all aid in the effective management of stormwater. The oil grit separators are underground storage tanks designed to remove heavy particulates, floating debris, and hydrocarbons from stormwater. Infiltration ditches create a temporary subsurface storage of stormwater runoff, thereby enhancing the natural capacity of the ground to store and drain water. The stormwater storage tank collect rainfall and slowly releases the water over time.



Stormwater Pond - County Road 90 at McKinnon Road



Stormwater Pond Outlet- County Road 90 at McKinnon Road outlet to Pine River

The cost per meter is dependent on the size of the storm pipe. The smaller the diameter of storm pipe the lower the cost per meter. A highlight of some of the cost per meter are shown below:

Pipe size (mm)	Cost per meter
200	\$170
300	\$250
500	\$325
600	\$425
750	\$500
900	\$725
1,200	\$950

6.1.2 Average Age

The County's stormwater system is located beneath the transportation network and the current inventory mainly has the stormwater assets included within the roads asset as a separate component. As such, the estimated useful life and average age of the stormwater network is usually tied to that of the roads as replacement of storm sewers would typically be completed in conjunction with a road or structure replacement. The exceptions to this are the storm water ponds and any new construction with a capitalization date of 2011 or later as the County began segregating the storm sewers from the road segments after 2010. Both the ponds and assets post 2010 have an estimated useful life of 50 years.

Asset Type	Estimated Useful Life (Years)	Average Age (Years)	Count of Assets
Stormwater – pre-2011	40	39.0	1,250
Stormwater – 2011 +	50	4.6	20
Stormwater ponds	50	5.2	9
Average:		38.2	

6.1.3 Asset Condition

The County currently does not have a routine condition inspection process in place for stormwater infrastructure. Closed-circuit television (CCTV) inspections are done on an as-needed basis. Typically, the County would identify an issue with its stormwater system because of a back-up or community complaint of water not dispersing effectively. CCTV

cameras would be used to determine the cause of the backup, which typically could be the results of a collapse, tree root intrusion or a simple failure. Based on the determined issue, appropriate maintenance or repair work would be scheduled. Immediate asset management plans do not call for a County-wide inspection of storm sewers but instead will focus on enhancing the inventory data in the County’s new asset management system and attaching additional attributes to each asset for better reporting and metrics. Over the medium to long-term the County will look to determine a reasonable framework for assessing the condition of its storm sewers. Without assessed condition the average age of the assets can be used to project the condition of the County’s stormwater assets. Using this approach, the stormwater infrastructure is in good to very good condition as shown below.

	Estimated Lifecycle Useful Life (Years)	Average Age (Years)	Condition
Stormwater attached to Road Segment	75	39	Good – V. Good
Stormwater segregated assets	50	4.6	Very Good
Stormwater Ponds	50	5.2	Very Good



Stormwater Pond Outlet - County Road 44 CN Drainage Across from Fowlers Pit



Stormwater Pond - County Road 44 CN Drainage Across from Fowlers Pit

6.2 Level of Service

The Ontario Regulation 588/17 requires the asset management plan to include the current level of service determined with qualitative descriptions and technical metrics. Examples provided in the legislation for community levels of service are descriptions, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system. Examples provided in the legislation for technical levels of service include the percentage of properties in a municipality resilient to a 100-year storm and the percentage of the municipal stormwater management system resilient to a 5-year storm.

Community Levels of Service

The County's storm water systems are built to handle a 5-year storm. The type of stormwater infrastructure required to sustain a 100-year storm would be significant in size and most likely not financially viable to be implemented throughout the County's transportation network. Storm sewers are typically replaced during a road segment or structure replacement project. Understanding that community needs and requirements change while also ensuring a balance between flooding and construction costs, the County evaluates the type of storm sewer to be used in each new project. During the recent reconstruction of County Road 90 four stormwater

ponds were constructed. The stormwater ponds hold water back which controls the amount of water outlet into rivers and lakes etc. This improves the overall quality of storm runoff and economically stores peak water falls, allowing for better water quality to be drained as sediment can drop to the bottom of the pond. The County will look at other opportunities to incorporate stormwater management ponds where appropriate.



County Road 21 Stormwater Outlet



Infiltration Ditch Rocks

Technical Levels of Service

The table below outlines the quantitative metrics that determine the technical levels of service as currently set out by O. Reg. 588/17.

Technical Metric	Current Level of Service
Percentage of properties in municipality resilient to a 100-year storm	Currently No Reliable Data Available
Percentage of the municipal stormwater management system resilient to a 5-year storm.	100%

6.3 Risk Assessment

Risks relating to stormwater asset failure are mitigated through proactive maintenance. Stormwater assets on their own currently do not have a risk assessment approach. It is assumed the asset class will function until the end of its useful life and the need for replacement is typically only considered when a major road construction project is completed unless a significant failure occurs. Due to this connection with the road segment the replacement of a stormwater asset would currently follow the risk assessment and project prioritization of the road network.

6.4 Life Cycle Management Strategy

To ensure the effective and efficient flow of storm water, department staff clean the storm sewer system on an as-needed basis when it becomes apparent there is a blockage. Catch basins are cleaned yearly. When stormwater issues arise CCTV video equipment is used to aid in locating the system defects or any tree root intrusion, and, as necessary, staff remove roots and debris from the storm water system. As the stormwater system is located beneath the transportation network the replacement of storm sewers is typically completed in conjunction with a road or structure replacement.

6.4.1 Maintenance Activities

The maintenance activities for storm water assets would include activities to ensure the surface water can flow efficiently from the surface into stormwater mains without obstruction. Currently, this involves the cleaning of catch basins on a yearly basis. As well, if CCTV inspection is required and subsequently identifies the need for the removal of any roots or blockages within the pipes or in more severe cases the need for a replacement County staff would then schedule a repair or replacement based on the severity.

The construction of the stormwater ponds will require some maintenance as they start to fill with sediment. The County has a maintenance schedule/manual in place which includes an inspection of the ponds and removal of sediment to maintain volume approximately every 10 years in accordance with Ministry guidelines.

6.4.2 Rehabilitation Activities

There are currently no rehabilitation strategies in place for stormwater infrastructure. Assets will undergo some maintenance and inspections based on need which will identify reactive investment requirements. Rehabilitation due to a significant failure, likely a result of a sinkhole, would require excavation and the rehabilitation of the failed storm sewer. However, this event is very rare.

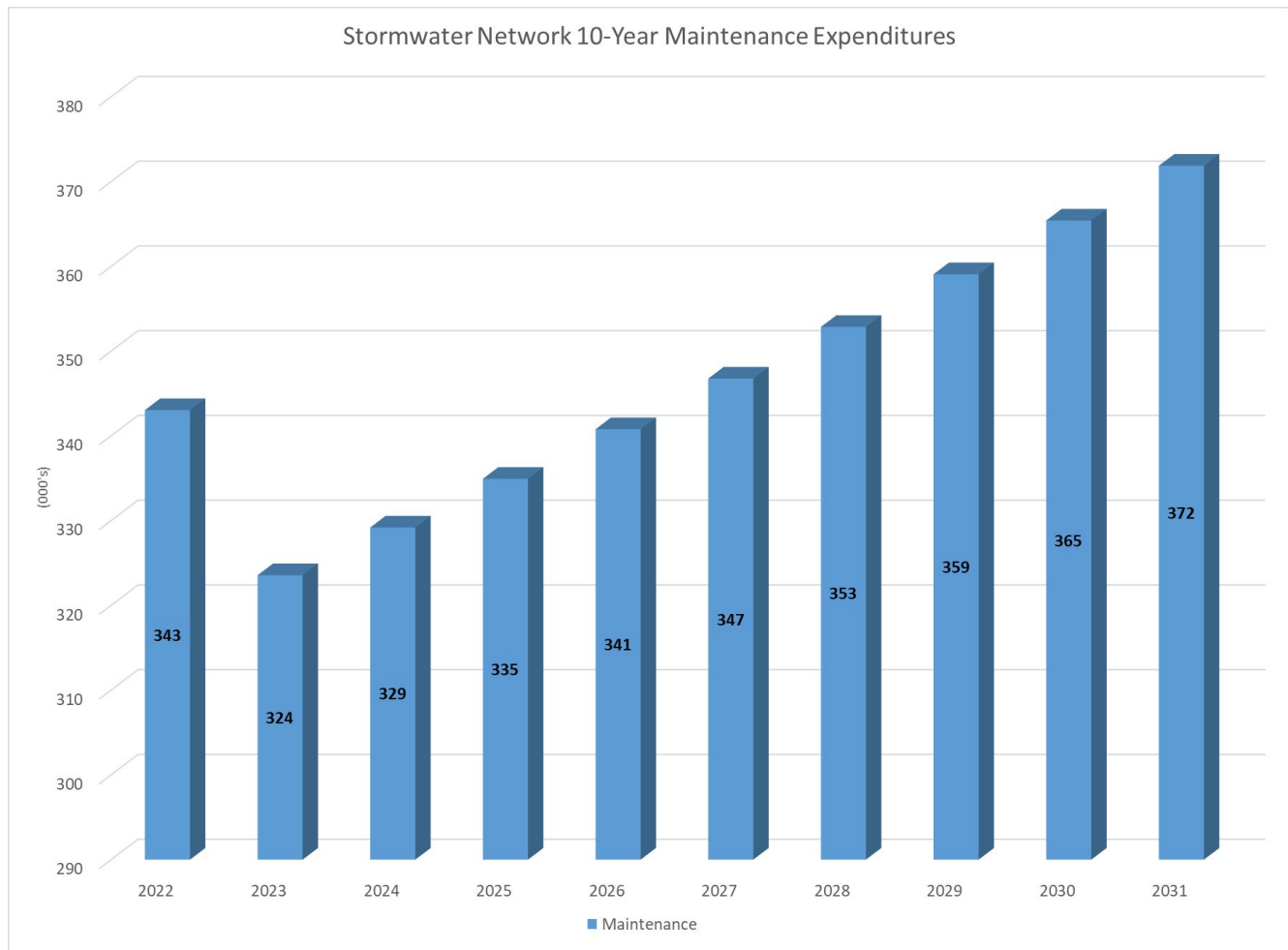
6.4.3 Replacement and Growth Activities

Stormwater assets are typically replaced once they have reached the end of their estimated lifecycle useful lives without many lifecycle activities performed. Replacement of stormwater assets would occur in conjunction with a major road or structures project; allowing for efficiencies and cost savings as the road surface would need to be removed to replace stormwater infrastructure.

6.5 Forecasted Capital Requirements

Based on the assumption that stormwater assets are replaced at the end of their service life, the chart below illustrates the forecasted replacement costs by County Road for the current stormwater network. While observed condition data would provide enhanced accuracy in estimating replacement needs and costs, in the absence of such information, understanding past expenditure patterns and the link between stormwater replacement and major road or structures replacements can inform the forecasting and planning of short, medium, and long-term stormwater infrastructure replacement needs. The forward looking 10-year average annual maintenance cost related to the County's stormwater system is \$347K for the 2022-2031 time period, which is fully funded by County levy.

County Road	Replacement Cost (\$000)
County Road 4	\$1,170
County Road 10	\$1,189
County Road 15	\$157
County Road 21	\$7
County Road 27	\$1,575
County Road 28	\$2,128
County Road 32	\$605
County Road 44	\$586
County Road 50	\$651
County Road 90	\$5,007
County Road 91	\$60
County Road 92	\$12
County Road 93	\$645
County Road 124	\$459
County Road 169	\$34
Total	\$14,285



6.6 Discussion and Conclusion

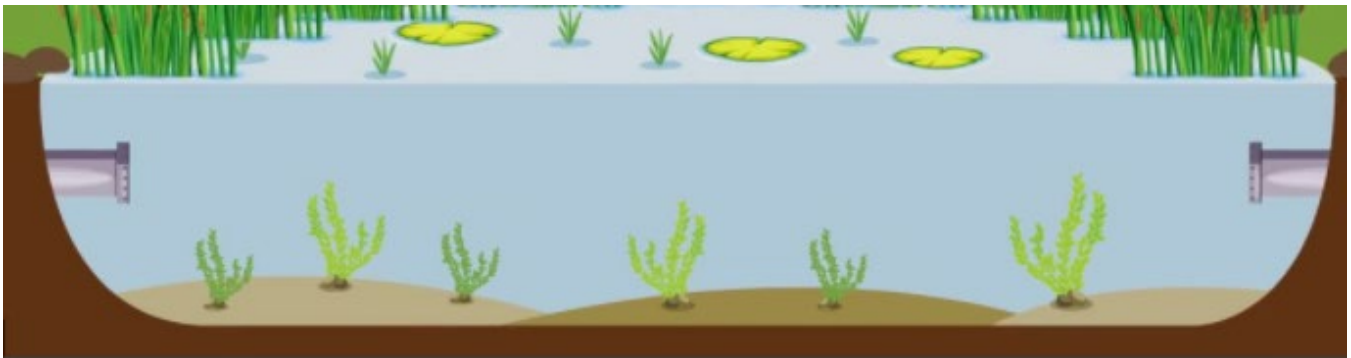
The County's stormwater systems aids in ensuring the safety of our community by draining rainwater or snow or ice melt away from the roads and thereby preventing flooding and unsafe driving conditions. The County's current storm sewers have the capacity for a 5-year storm. Stormwater green infrastructure is another way the County of Simcoe can reduce its environmental impact. Green Infrastructure solutions provide water quality and control with a reduced environmental impact. Two main alternatives to be considered in future projects that the County is either currently or proposing to be used are stormwater ponds and Stormtech chambers. The type of solution used will be dependant on which conservation authority regulates the area in which the stormwater solution is located. Each recommending and preferring one solution over the other. A proposed solution, Stormtech chambers, are designed to protect valuable land and water resources by treating a required water quality volume, while also providing attenuation for peak flow volumes. This is accomplished though volumetric reduction in stormwater through infiltration. In other words, they slow the flow of water down

while also allowing sediment to drop to the bottom for a better quality of water being outlet into roadside ditches, and eventually to a surface watercourse, lake, or river. These provide a cost-effective alternative to above ground ponds for detention, retention, and infiltration applications of surface water. Both solutions provide a sustainable option to manage water volume and water quality dispersing through the outlets and are suited for climate change events.

Although the overall value of the County's stormwater infrastructure is significantly smaller than that of the roads and structures a negative event to the stormwater system can result in transportation network service impacts, which can include surface flooding, erosion, storm sewer backups and damage to the natural environment.



Stormtech Chambers



Stormwater Pond

Current stormwater infrastructure challenges faced by the County and recommendations include:

Challenge	Recommendation
Inventory	<p>The County will strive to segregate historical stormwater assets from the road segment and include them as a separate asset in the asset management system.</p> <p>During the coming roads inspection process GIS coordinates will be collected for the stormwater infrastructure to map inventory more accurately.</p> <p>Identify additional asset attributes to further report on inventory.</p> <p>Review the replacement cost method. The current replacement value is assumed to be completed on its own when in fact the replacement would be completed in conjunction with a road or structure and therefore cost savings may be realized.</p>
Condition	<p>Over the medium to long-term the County will look towards developing a more formal inspection program for the stormwater assets. This may include using CCTV cameras to inspect the storm sewers in addition to annual catch basin cleaning. This will help prioritize projects.</p>
Levels of Service	<p>Continue to measure current levels of service against those identified in the O. Reg. 588/17 and work towards identifying proposed levels of service and strategies that would close any gaps between the current and proposed level of service.</p> <p>Identify additional key performance indicators that would allow for enhanced reporting and decision making.</p>
Risk	<p>The County will work towards developing a separate risk framework for stormwater infrastructure. This will inform project prioritization and lifecycle management strategies with the goal of minimizing risk.</p>

7.0 Financial Strategy

Introduction

Core Infrastructure Financing Strategy Overview

Funding Strategies

Financial Overview

Discussion and Conclusion

7.1 Introduction

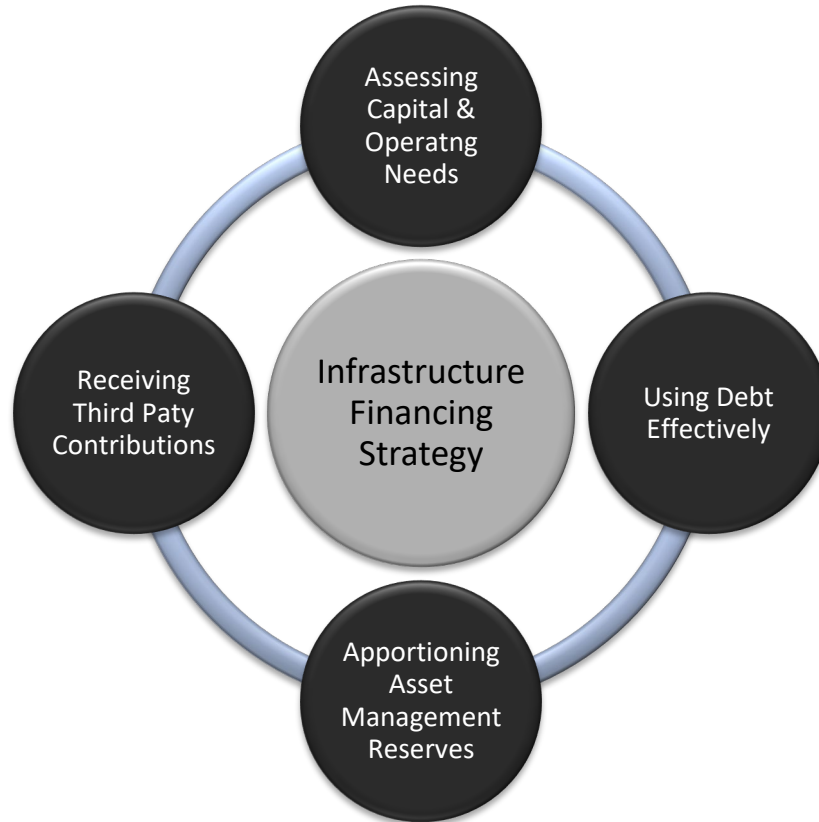
Municipalities with large asset portfolios need to address significant costs to build/acquire, operate, maintain, rehabilitate, and replace assets. This section looks at the link between asset management planning and financial planning.

The financial strategy of an asset management plan sets out the approach to validate adequate funds are available to support the delivery of infrastructure services. It ensures consistency with the outcomes and expected results of the various strategic plans such as the County of Simcoe Strategic Plan and the Transportation Master Plan. The financial strategy is predicated on the current financial state of the County – including operating and capital expenditures and relevant sources of funding such as County levy, third part contributions, asset management reserves, and debt. The financing strategy is meant to strengthen current budgeting processes by reinforcing a long-term perspective on the impact of providing appropriate service levels and the required revenues versus the affordability to the community.

7.2 Core Infrastructure Financing Strategy Overview

The financing strategy of the Core Infrastructure Asset Management Plan includes:

- Assessing capital and operating needs
- Using debt effectively
- Apportioning asset management reserves
- Receiving third party contributions



Assessing Capital & Operating Needs:

- The operating budget is used to support the day-to-day operations & maintenance that provide services to the community. Staff salaries, supplies, roads renewal, rehabilitation and fuel for vehicles are examples of expenditures that are funded from the operating budget.
- The capital budget is used to plan and fund the construction of core infrastructure assets with long life spans. Debt financing and reserve funds are used to support capital needs and manage fluctuations over the ten-year duration of the County's financial plan.

The County has a levy supported budget of which Capital budgets are linked to operating budgets through reserve fund contributions, debt servicing costs (principal and interest payments) and operating surplus. Currently, operating surplus is the mechanism the County uses to allocate a portion of current year revenues, from property taxes, to use as a source of capital financing.

Reserve and reserve fund contributions and debt servicing costs are incorporated into operating budgets thereby impacting the amount of current year funding required by the County. These contribute to intergenerational equity because most debt is applied to growth and service improvement projects and not to lifecycle expenditures.

Using Debt Effectively & Apportioning Asset Management Reserves

In 2020, the County maintained its AA credit rating for a 7th straight year (since 2015). Standard and Poor's notes:

"...the County displays strong governance and management practices, such as the application of multi-year budgets, which helps promote stable operations. Simcoe's recent history of posting positive operating results, application of strict controls on debt issuance, and conservative debt and investment policies which limit their exposure to market related risks and help ensure relatively smooth debt servicing costs all act as evidence of the County's strong management and governance."

The County of Simcoe places importance on the use of pay-as-you-go financing and saving in advance of future needs via the use of reserves and reserve funds, while at the same time striving to limit the amount of debt required to fund its annual lifecycle capital budgets. Simcoe's effective use of debt is evidenced by the strong AA credit rating.

Moving forward, a critical funding strategy for the County of Simcoe's existing core infrastructure involves the use of asset management reserves as a funding source. This will stabilize the County's funding requirements preventing spikes in levy rates when significant expenditures are needed for infrastructure at given points in time. Reserves would also be available should unanticipated emergencies arise. The core infrastructure asset management reserve will have a yearly contribution which will include an escalation factor. This reserve contribution is within the typical capital budget use of operating balance available for capital and therefore there is no new levy impact.

Receiving third party contributions.

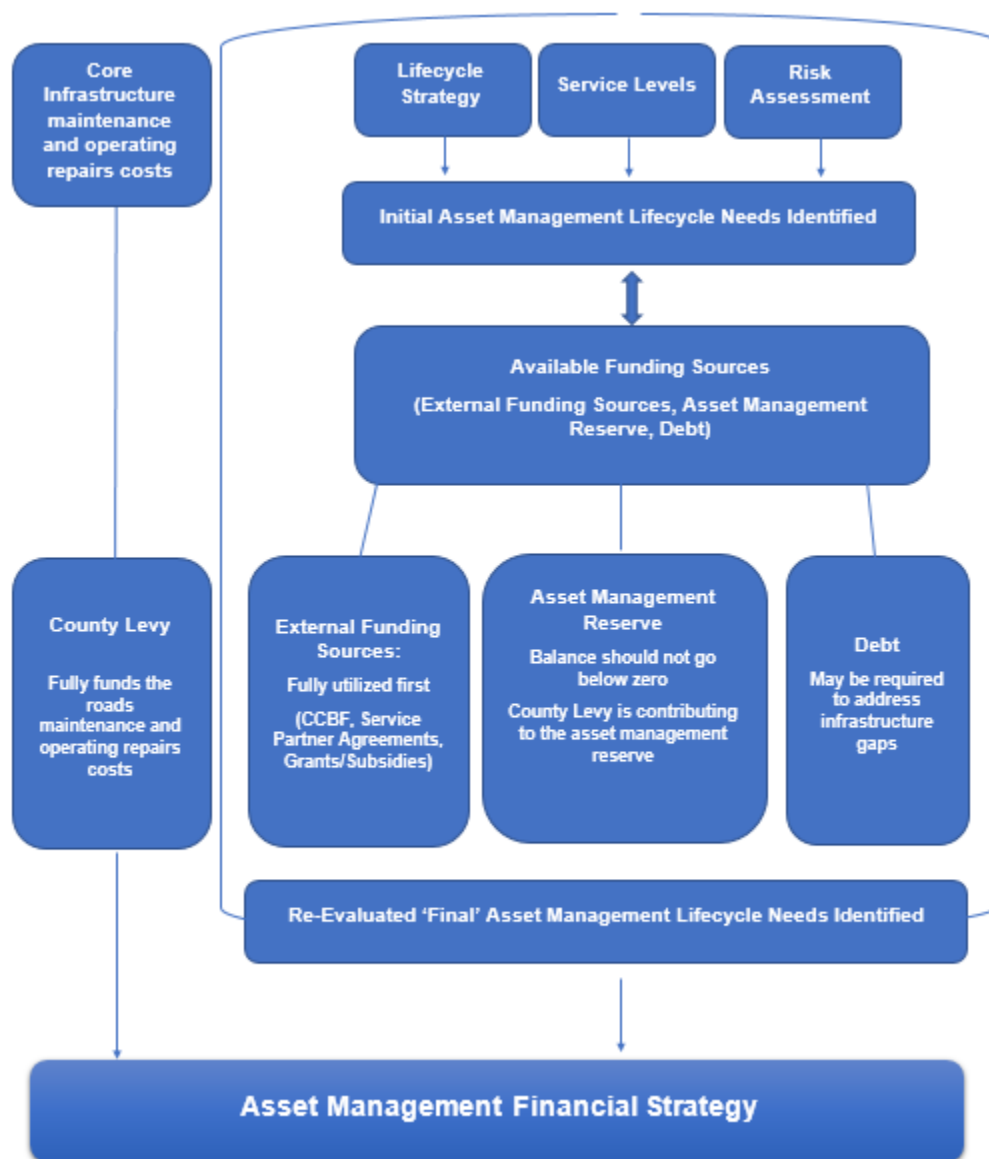
Receiving third party contributions range from senior government funding to other grants and subsidies. The Canada Community-Building fund is considered a third-party contribution, however, aside from this funding source for core infrastructure minimal to no additional third-party funding is expected to be available to finance any infrastructure expenditure requirement.



Intersection of County Road 21 & County Road 4 (Innisfil Beach Rd. & old Hwy. 11)

Asset Management Financial Strategy Decision Tree

The flow chart below aims to illustrate the County’s asset management financial strategy decision making process in relation to existing assets. The core infrastructure financing strategy utilizes an initial asset management needs assessment based on the lifecycle strategies, current service levels and a risk assessment. Internal and external capacity requirements (personnel) are also considered. At the same time, available funding sources to support the various lifecycle events are considered to ultimately determine final asset management needs and a corresponding financial strategy.



7.3 Funding Strategies

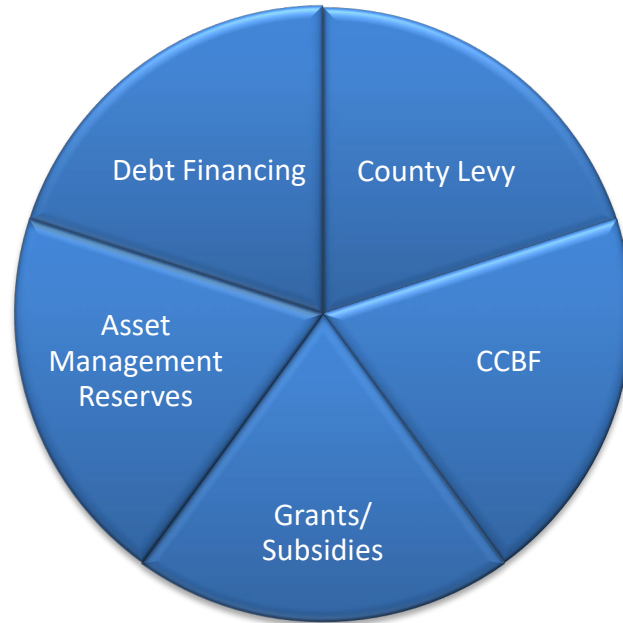
The County of Simcoe recognizes the need to adopt an approach to financial management that shifts the emphasis to service delivery with a long-term financial planning horizon. The County's long-term financial management principles as outline in the strategic plan include:

- Ensure long-term financial sustainability
- Deliver services in a cost-effective and efficient manner
- User Fees (*ensure user fees recover program operating costs*)
- Manage capital assets to maximize long-term community benefit
- Implement a capital funding plan to address he County's requirements
- Maintain reserves at appropriate levels
- Prudent Investment Management

The County's asset management plan will not be used in isolation, but quite oppositely, will be a tool used to ensure adequate funds are available to deliver the lifecycle management strategies identified at the desired levels of service. It will support and strengthen the overall long-term financial planning process, which provides context for the annual budget process and is essential to meeting the goal of sustainable infrastructure and service planning.

This asset management plan contains the necessary information to optimize the County's infrastructure financing strategies and considers the revenue sources as listed below with further details outlined in the sub-sections that follow.

Available Funding Sources to Support Existing Core Infrastructure Expenditures:



7.3.1 Available Funding Sources to Support Existing Core Infrastructure

County Levy

County Levy is a source of funding for core infrastructure assets by the County. It is a funding source that is used to fund the operating, maintenance, and roads renewal and rehabilitation. Any operating balances the County maintains in a given year can be used to fund Capital expenditures.

Canada Community-Building Fund

As of June 29, 2021, the Gas Tax Fund was renamed the Canada Community-Building Fund (CCBF). This name better reflects the program's evolution over time and will not alter or modify the objectives or requirements of the program.

The program provides predictable, long-term, stable funding for Canadian municipalities to help address local infrastructure priorities. As was announced in the Economic Action Plan 2013, the renewed fund is indexed at two percent per year. Specific allocations to municipalities will be determined through federal-provincial gas tax fund agreements. Allocation for 2019 – 2024 will be based on Census 2016 data. Currently, the County uses the program to support roads and structures renewal and rehabilitation projects as well as transit needs.

Annual Grants/Subsidies

The County applies for grants from senior levels of government on an ongoing basis to aid with its infrastructure replacement needs. The Ontario Community Infrastructure Fund (OCIF), which is a provincial funding program, has also historically provided funds to support roads projects. OCIF is not a permanent or predictable funding source and therefore is not included as revenue in future years where contribution amounts are unknown.

Asset Management Reserves and Reserve Funds

Under the Municipal Act, Council has the authority to establish reserves as required. Reserves and reserve funds can be formed to meet specific liabilities such as replacement/rehabilitation or acquisition of capital assets. Asset management reserves and/or reserve funds form an important component of the overall financial strategy within the County's asset management plan and in support of Ontario Regulation 588/17. Annually the County of Simcoe commits a significant investment towards its capital assets. These assets support County programs and services and enhance the quality of life of residents within the County. Developing and maintaining reserves and/or reserve funds specific to the County's existing capital assets ensures the long-term sustainability of the asset management program and the ongoing vitality and financial strength of the County. **Section 7.3.3** below will further detail the core infrastructure asset management reserve requirements based on this asset management plan financing strategy.

Debt Financing

Section 401 of the Municipal Act grants Council the authority to issue debentures, when deemed in the best interest of the taxpayers, to finance its own capital expenditures. Debt can be used as a smoothing tool to reduce the tax impact in a specific year.

“Best Interest” for the County of Simcoe will be consistent with the County’s Strategic Directions, which includes fiscal management that contains both financial principles and policies.

The County of Simcoe’s Capital Financing and Debt Policy POL-FIN-006 as approved by Council in September 2011 established strategies for the prudent financing of the County’s infrastructure needs. The primary objectives of the County’s capital financing and debt program include:

- Adhering to statutory requirements
- Ensuring long-term financial flexibility and sustainability
- Limiting financial risk exposure
- Minimizing the long-term cost of financing
- Matching the term of the capital financing to the useful life of the related asset

A municipality may only issue new debt provided that the projected financial charges related to the outstanding debt will be within the annual debt repayment limit prescribed by the Ministry of Municipal Affairs and Housing (MMAH). This limit is set at 25% of a municipality’s own source revenues less debt charges and financial commitments. In the event that the projected financial charges will exceed the Annual Repayment Limit (ARL), a municipality may still issue new debt if authority has been previously received from the Ontario Municipal Board (OMB).

The County has a current debt service capacity/Annual Repayment Limit of approximately \$49M per year for payments relating to debt and financial obligations under provincial guidelines based on the 2020 Financial Information Return. This would allow additional borrowing if needed. The additional borrowing, which the County of Simcoe could undertake over a 5-year, 10-year, 15-year and 20-year period, is illustrated below at a 5% interest rate, ***for information purposes only.***

Period	Maximum Borrowing
20 years	\$562M
15 years	\$468M
10 years	\$349M
5 years	\$195M

7.3.2 Financing Strategies by Lifecycle Activity - Core Infrastructure

A highlight of the financing strategy categorized based on the type of lifecycle activity (specific to core infrastructure) follows:

Maintenance – Maintenance costs will be included in the County's operating budget. These expenses will be funded with County levy or annual grants.

Rehabilitation – In the case of roads rehabilitation, the Canada Community-Building Fund would be used first, followed by any annual grants such as OCIF. Currently the County's asset management financing strategy ensures budgeted roads renewal and rehabilitation projects do not exceed the available Canada Community-Building and OCIF funding. The Canada Community-Building and OCIF funding would also be applied to structures rehabilitation projects and then any remaining structures rehabilitations balance would be supported by the County's core infrastructure asset management reserve.

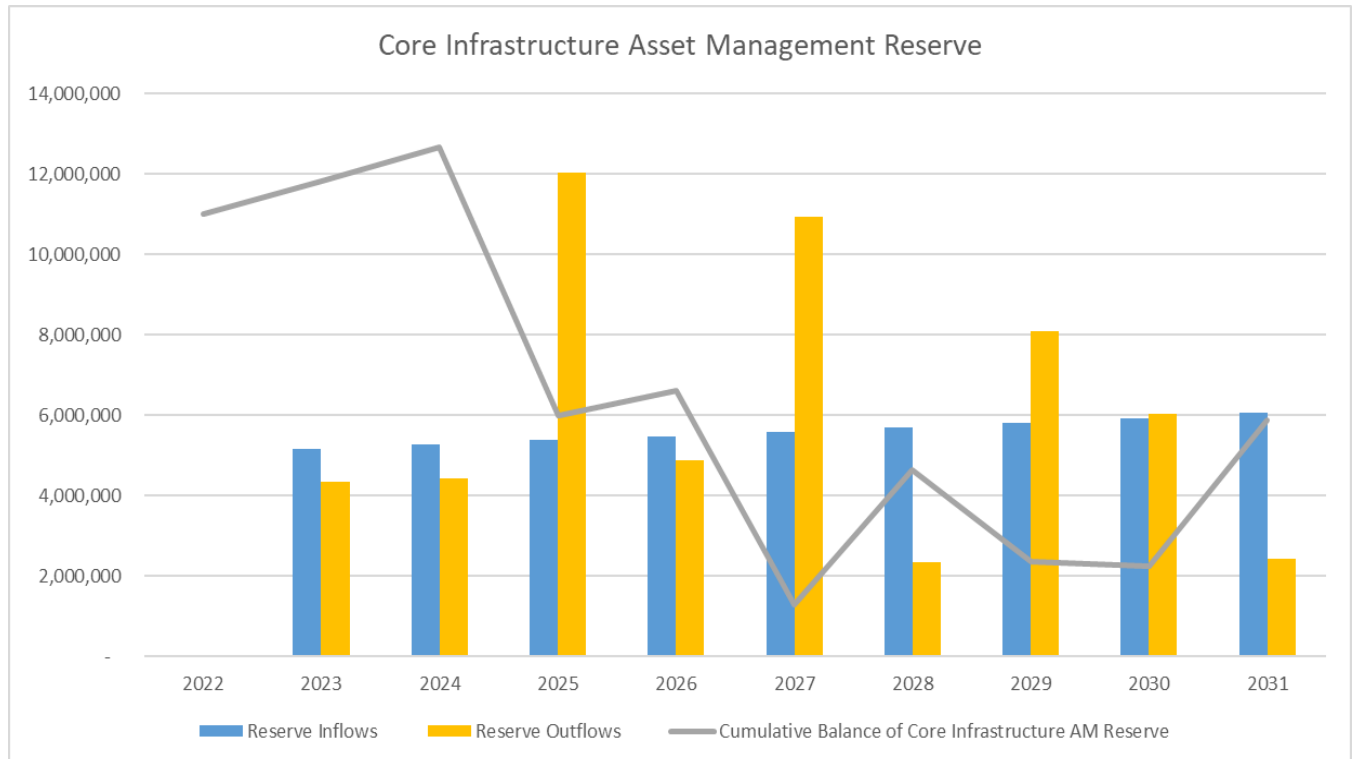
Replacement – Any balance remaining of the Canada Community-Building or OCIF funding would be applied to replacement projects and then the County's core infrastructure asset management reserve would support any remaining core infrastructure replacement projects. In specific situations or years where expenditures are significant, and all the above funding sources have been exhausted debt financing options will be considered.

Growth – Development charges are used first to fund any growth-related infrastructure projects. Historically available County levy, reserves, or debt financing would follow in the order listed.

7.3.3 Core Infrastructure Asset Management Reserve

The County's asset management financial strategy identified an average annual asset management reserve requirement based on the total 10-year lifecycle activity requirements in today's dollars for existing assets, net of all known funding. The remaining requirement was calculated at an average annual core infrastructure asset management reserve contribution of ~\$5M in today's dollars. This was used as the baseline for the determination of a core infrastructure asset management reserve contribution. The baseline was then inflated annually to match expenditure inflation. This reserve contribution is within the typical capital budget use of operating balance available for capital and therefore there is no new levy impact. This asset management reserve contribution will continue to be evaluated based on the rolling 10-year asset management requirements for existing assets and inflationary factor analysis to ensure the County has sufficient cash flow to meet its financial obligations for the replacement and

rehabilitation of existing capital assets as required and that reserve contributions are in-line with increases seen in construction and material costs. This annual asset management reserve contribution will also mitigate tax rate impacts to the community. The graph below illustrates the yearly asset management reserve contributions, withdrawals, and the cumulative reserve balance.



Based on the ability of the County to fund existing infrastructure expenses from available funding sources including the County levy and CCBF revenue as well the formalization of a core infrastructure asset management reserve contribution, the County does not have an infrastructure deficit for existing core assets. Overall, the County is in good financial standing to maintain and fund the maintenance, renewal, rehabilitation, and replacement of its existing core infrastructure assets.

7.4 Financial Overview

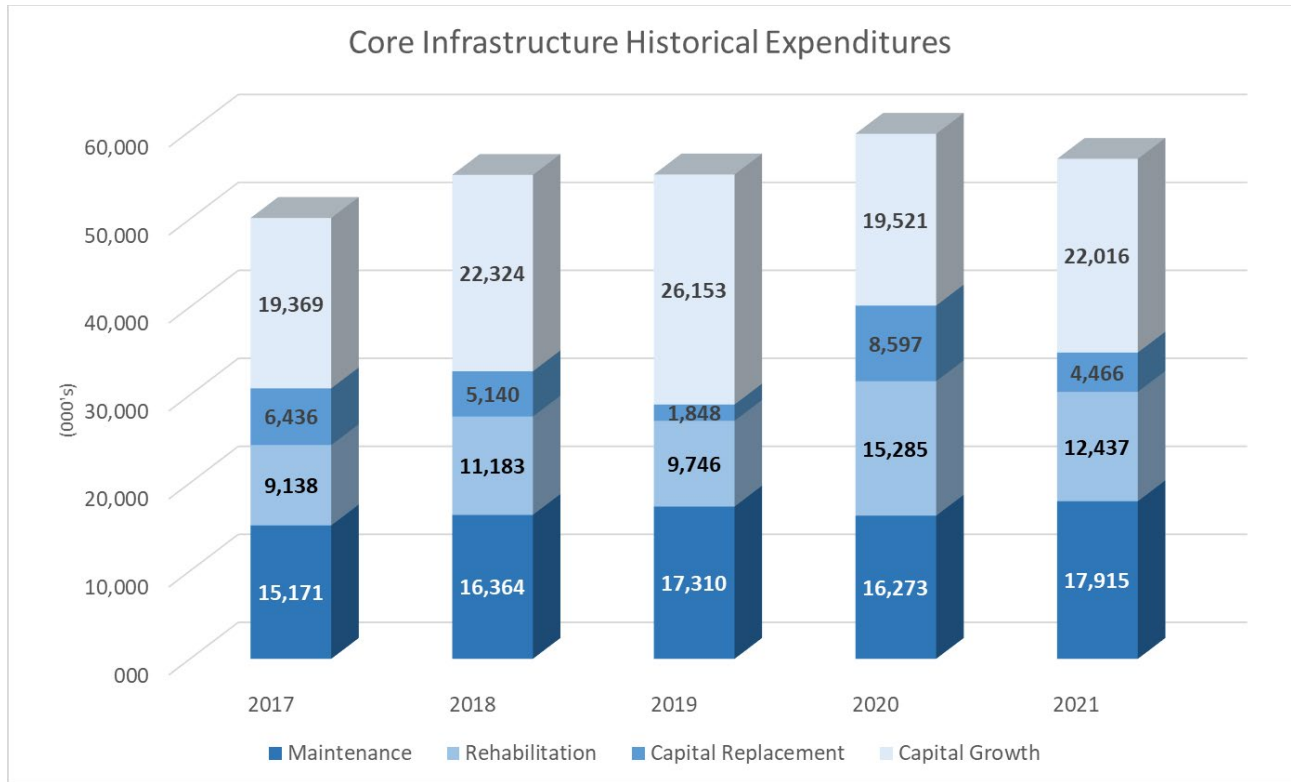
The County is committed to adhering to a strong asset management financial plan which will allow the County to implement the lifecycle management strategies previously discussed, thus ensuring asset conditions meet service levels. Furthermore, a strong financial plan demonstrates the County has integrated asset management planning with financial planning and has made full use of all available infrastructure financing tools.

7.41. Historical Spending and Revenue Sources

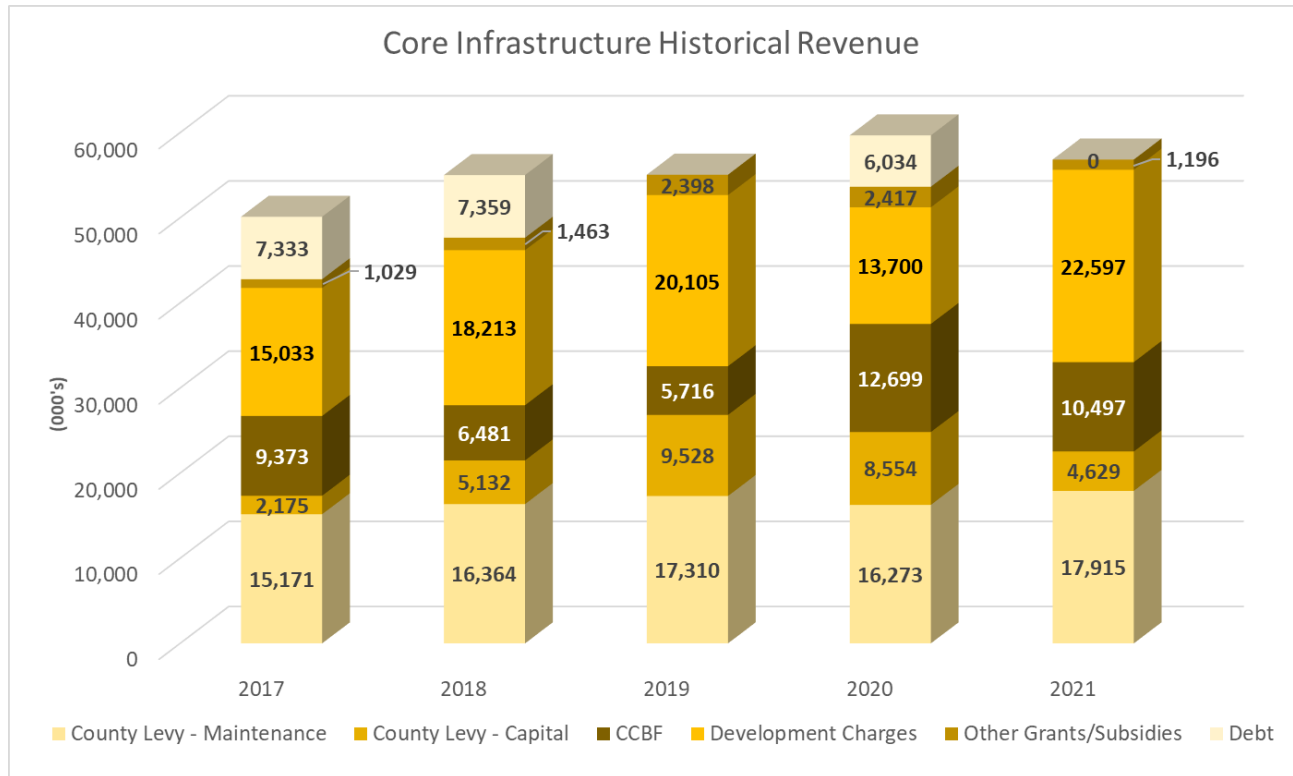
An understanding of historical infrastructure spending provides insight into previous funding gaps and spikes in spending. Using this knowledge aids in future financial planning and budgeting processes.

Historical Financial Details (\$ 000)							
	2017	2018	2019	2020	2021	Total 5-Year	5-Year Average
Maintenance	15,171	16,364	17,310	16,273	17,915	83,033	16,607
Rehabilitation	9,138	11,183	9,746	15,285	12,437	57,790	11,558
Capital Replacement	6,436	5,140	1,848	8,597	4,466	26,486	5,297
Capital Growth	19,369	22,324	26,153	19,521	22,016	109,383	21,877
Total Expenditures	50,114	55,011	55,057	59,676	56,834	276,693	55,339
County Levy - Maintenance	15,171	16,364	17,310	16,273	17,915	83,033	16,607
County Levy - Capital	2,175	5,132	9,528	8,554	4,629	30,018	6,004
CCBF	9,373	6,481	5,716	12,699	10,497	44,766	8,953
Development Charges	15,033	18,213	20,105	13,700	22,597	89,647	17,929
Other Grants/Subsidies	1,029	1,463	2,398	2,417	1,196	8,503	1,701
Debt	7,333	7,359	0	6,034	0	20,725	4,145
Total Revenue	50,114	55,011	55,057	59,676	56,834	276,693	55,339

Based on the historical financial review of each asset group, the County has invested (including both capital and operating budgets) approximately \$277M between 2017 and 2021, equating to an average of \$55.3M per year as shown above. The County's average operating expenditures related to maintaining the core infrastructure network was \$16.6M and the average spend on rehabilitation work was \$11.6M during this time period. An average of \$27.1M per year was spent on major construction projects, which were mainly growth related. The historical breakdown of expenditures for the core infrastructure network is shown below.



Funding for these core infrastructure expenditures have been through one or a combination of these sources: County levy, development charges (for growth projects), the Canada Community-Building Fund (previously known as Federal Gas Tax), and Ontario Community Infrastructure Funding. Any spending beyond the available monies in the above sources would require debt financing. Between 2017 and 2021 the average County levy, Canada Community-Building Fund, and OCIF was \$23M, \$9M and \$1.7M respectively. The average annual Development Charges to support growth related expenditures was \$17.9M during that same period with an average of \$4M being supported by debt. The breakdown of historical revenue allocation is shown below.



7.4.2 10-Year Existing Core Infrastructure Asset Requirements

The annual requirements represent the average amount of revenue the County needs to allocate annually to each asset/asset category in order to maintain the lifecycle activities identified at the desired service level. The projects discussed below include a 2% inflation factor yearly.

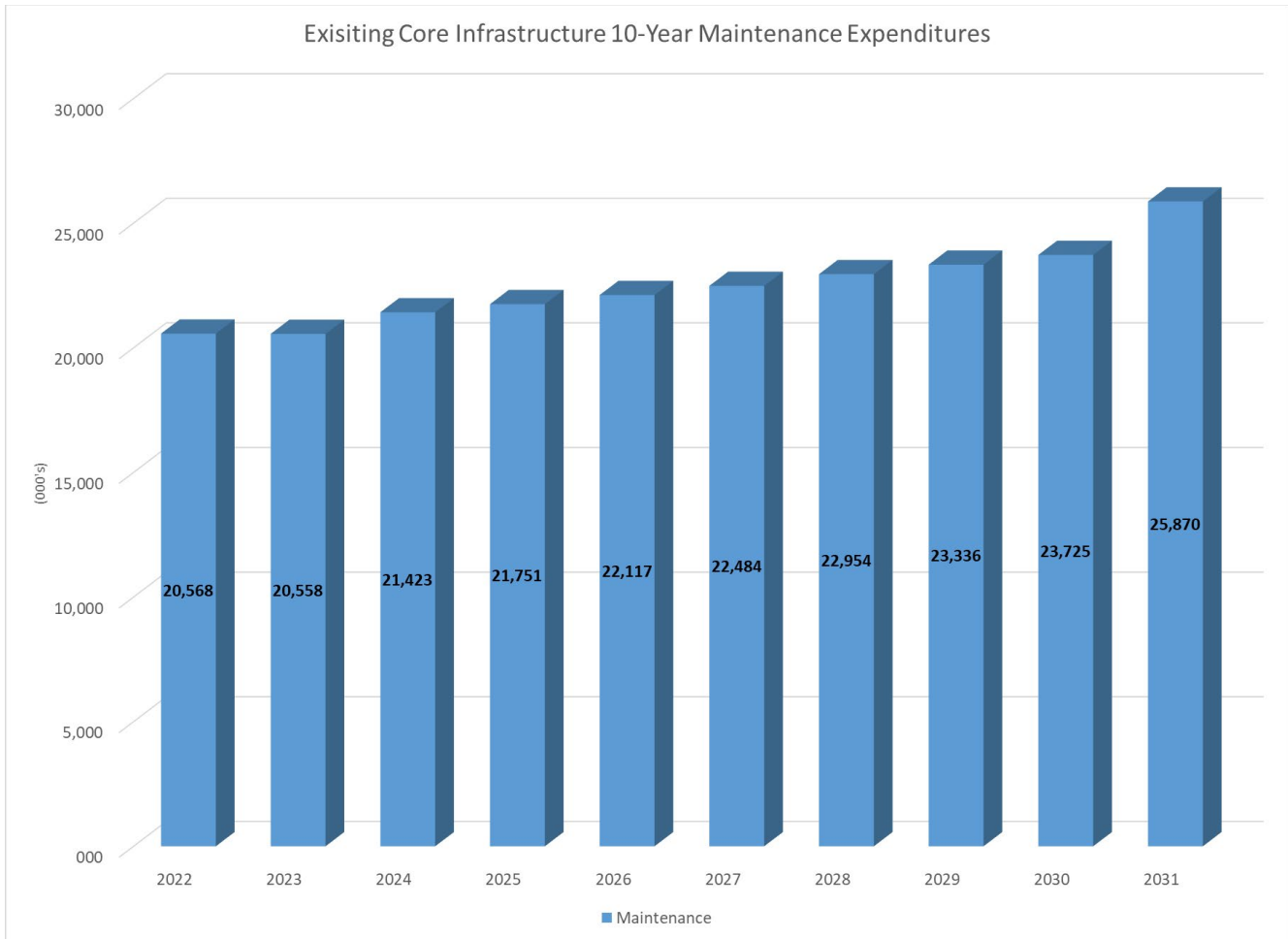
For the roads and structures network the **Lifecycle Strategy Scenario** is used. First and foremost, In general, it would not be reasonable to assume the roads or bridges could be left in a state to deteriorate to a condition rating of zero as the assets would be unusable. Secondly, by performing the lifecycle activities the lifecycle useful lives of the assets are extended beyond the financial useful life and safety to the community is ensured. The 2022 to 2031 10-year asset management requirement for existing core infrastructure is \$404M which results in an average annual requirement of \$40.4M (see chart below for breakdown). To further validate the lifecycle strategy scenario is the optimal strategy an analysis from the County’s asset management software indicates the average annual requirement for existing county owned assets over the **full** life of each asset category is \$47.2M; whereas the average annual requirement following a build and replace strategy for the core infrastructure would result in \$94.6M. Overall, it is more cost effective to perform the lifecycle strategies over the build and replace strategy.

2022-2031 Asset Management Requirements – Expenditures and Revenue

Expenditures	2022-2031	Operating	Capital
Maintenance	224,787	224,787	
Rehabilitation	115,492	79,432	36,060
Capital Replacement	64,104		64,104
Subtotal - Existing AM Expenditures	404,383	304,219	100,164
Growth Project Expenditures	400,634		400,634
Total 10-Year AM Expenditures	805,017	304,219	500,798
Revenue			
County Levy - Maintenance	224,787	224,787	
CCBF	117,601	78,236	39,365
Asset Management Reserve	55,510		55,510
OCIF	6,485	1,196	5,289
Development Charges	350,866		350,866
Benefit to Existing (County Levy/Debt)	49,768		49,768
Total 10-Year AM Revenue	805,017	304,219	500,798

Existing Core Infrastructure Maintenance Expenditures

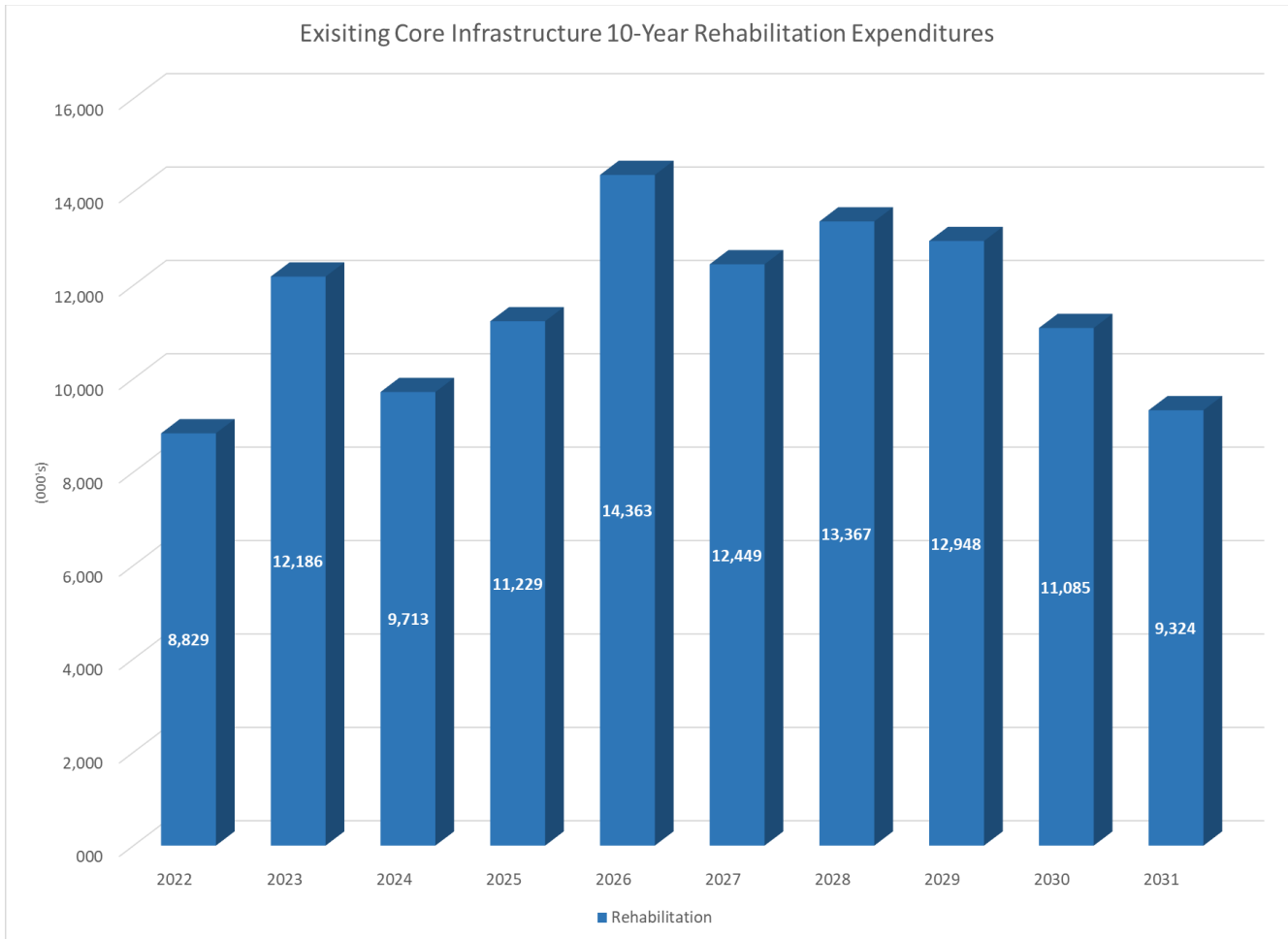
The suitable maintenance strategies need to be implemented throughout an assets life in order to ensure the defined levels of service for that asset category are being delivered. The County expects to see asset management maintenance expenditure growth in line with inflation and growth in the asset portfolio. The ten-year total maintenance expenditures are budgeted at \$225M between 2022-2031.



Existing Core Infrastructure Rehabilitation Expenditures

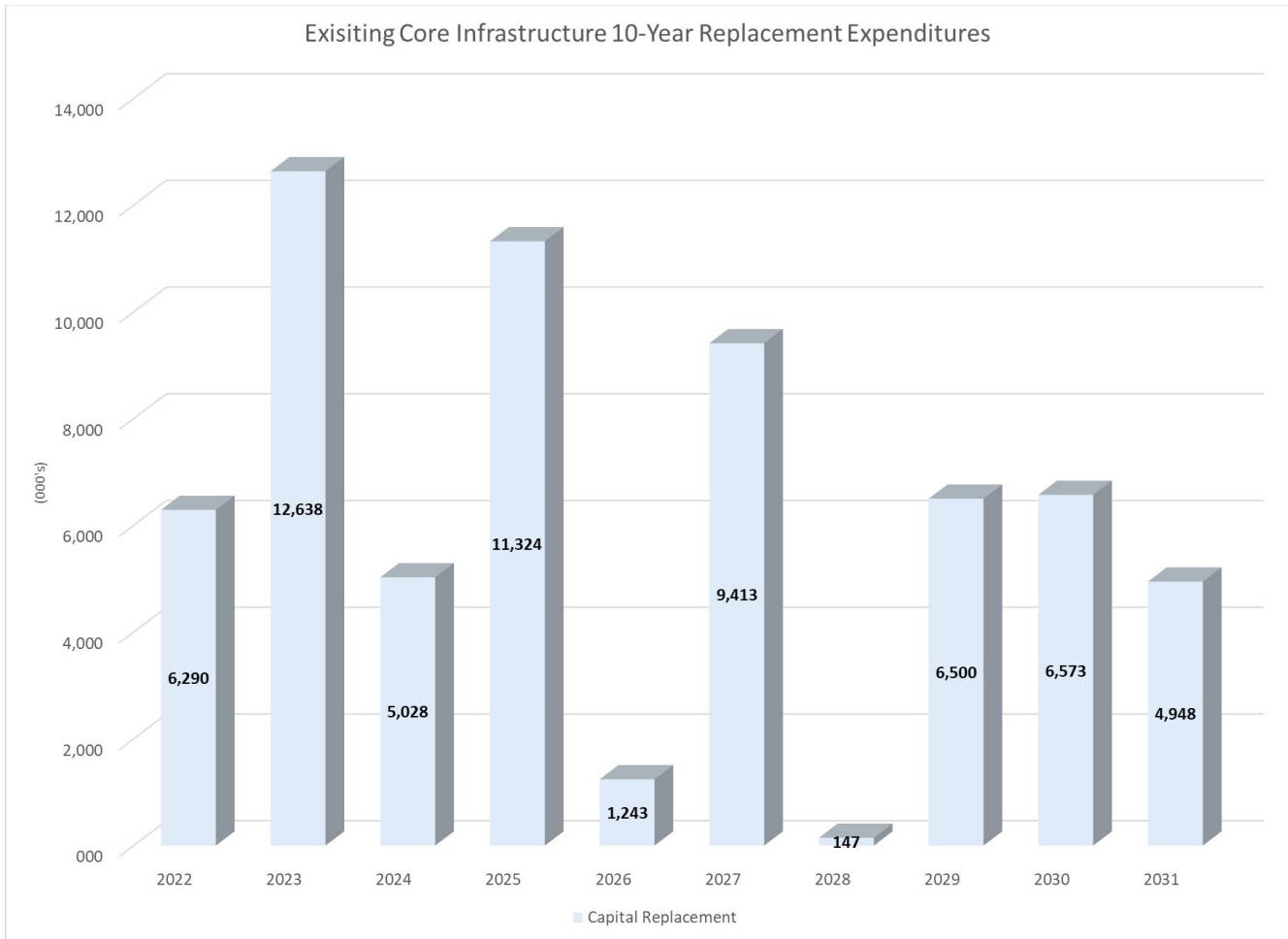
Road rehabilitation work includes restoring the existing road back to the original or near original service potential by immediately improving the pavement condition. Although the total yearly costs associated with road rehabilitation can be significant, historically on average \$6M per year; while the anticipated future average annual requirement will be closer to \$7.9M, these events are currently included in the County’s operating budget. The total road segment rehabilitation expenditures are anticipated to be \$79.4M between 2022-2031.

Structures rehabilitations are considered capital expenditures. The capital requirements fluctuate over the 10-year period based on projected lifecycle events. The County will continue to review the projected events and may smooth out years in which structures rehabilitation activities are more significant to meet internal and external resourcing as well as funding availability. \$36.1M is anticipated to be spent on structures rehabilitation work over the future 10-year period.



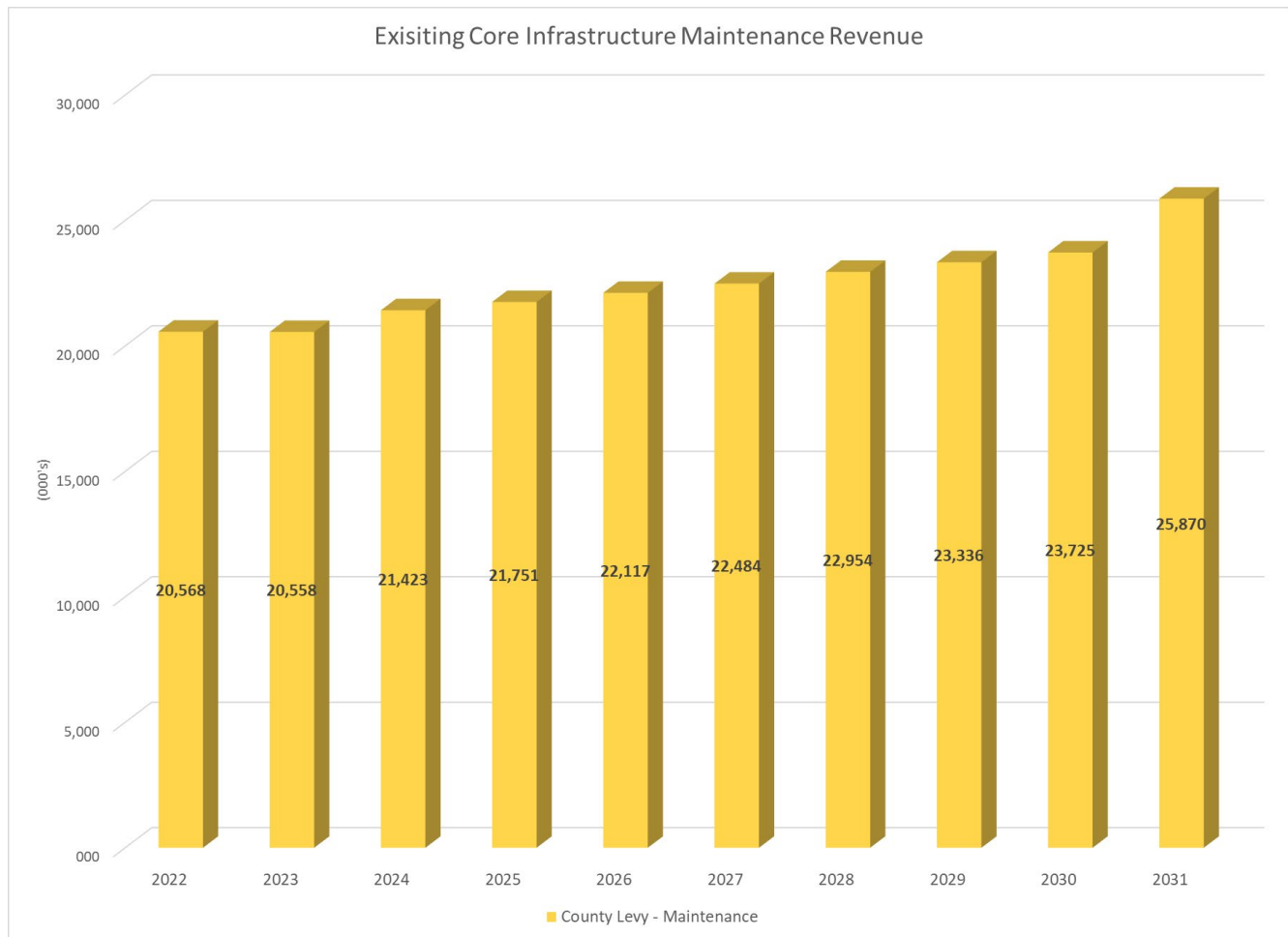
Existing Core Infrastructure Capital Replacement Expenditures

Core infrastructure replacements typically occur when a road or structure deteriorates beyond a point where rehabilitation is effective and the asset has reached the end of its lifecycle useful life. Core infrastructure replacement work over the ten-year period (2022-2031) totals \$64.1M which equates to an average annual requirement of \$6.4M. \$28.6M of the \$64.1M is driven by road replacement work while \$35.5M is structures replacement.



10-Year Existing Core Infrastructure Funding - Maintenance

The County levy fully funds the maintenance activities required in the County's asset management program. The total County levy requirement to support all transportation and engineering maintenance expenditures for the core infrastructure over the 2022-2031 10-year period is \$225M.

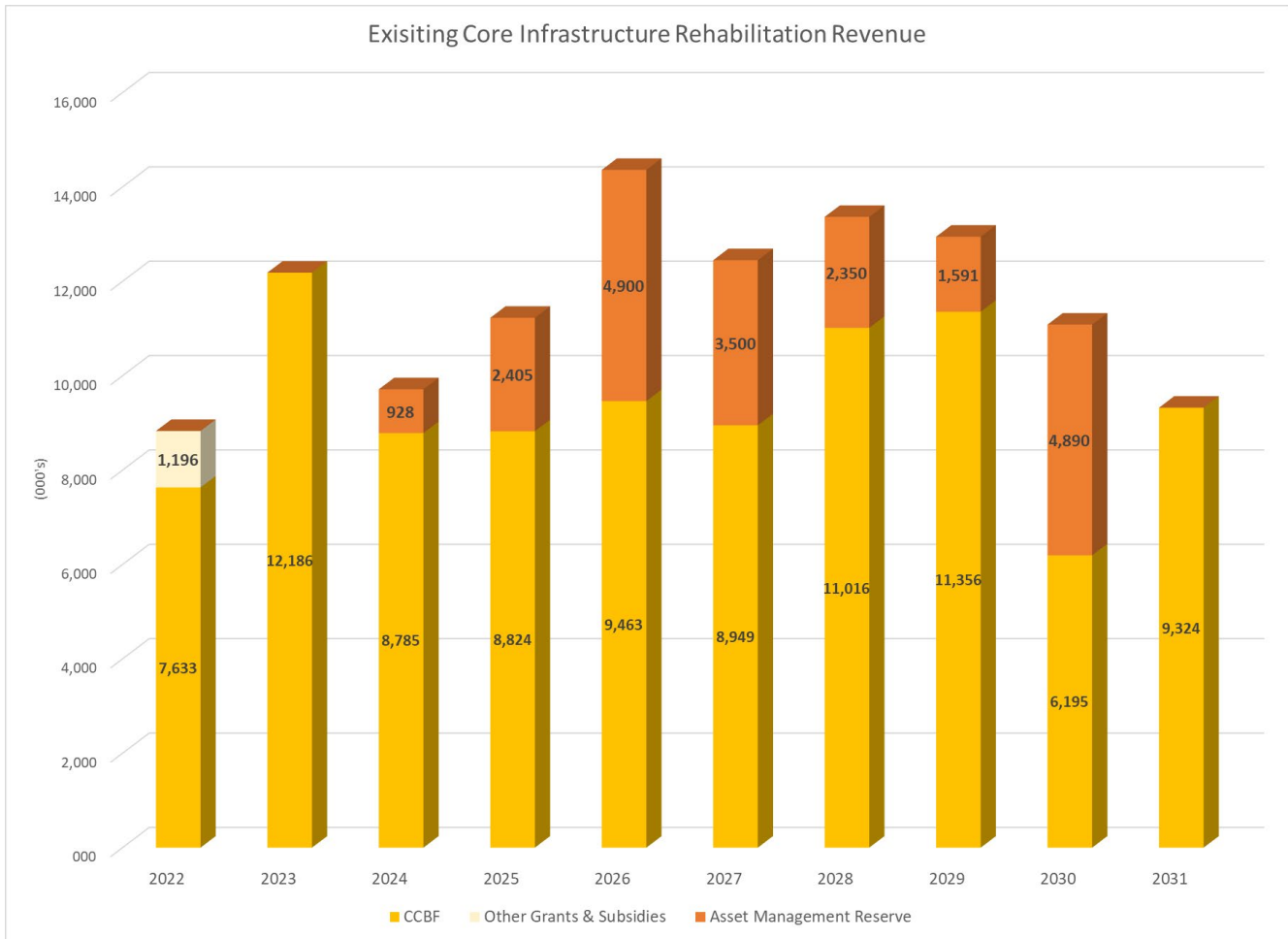


10-Year Existing Core Infrastructure Funding - Rehabilitation

The County’s roads rehabilitation expenditures are consistently fully funded by the Canada Community-Building Fund and any Ontario Community Infrastructure Fund (OCIF) revenue if received. OFIC is a provincial funding program, which also provides funds to support core infrastructure projects. Additional 2022 OCIF funding was announced to the County and will be included in the financial strategy; however, since OCIF is not a permanent or predictable funding source it is not included as revenue in future years.

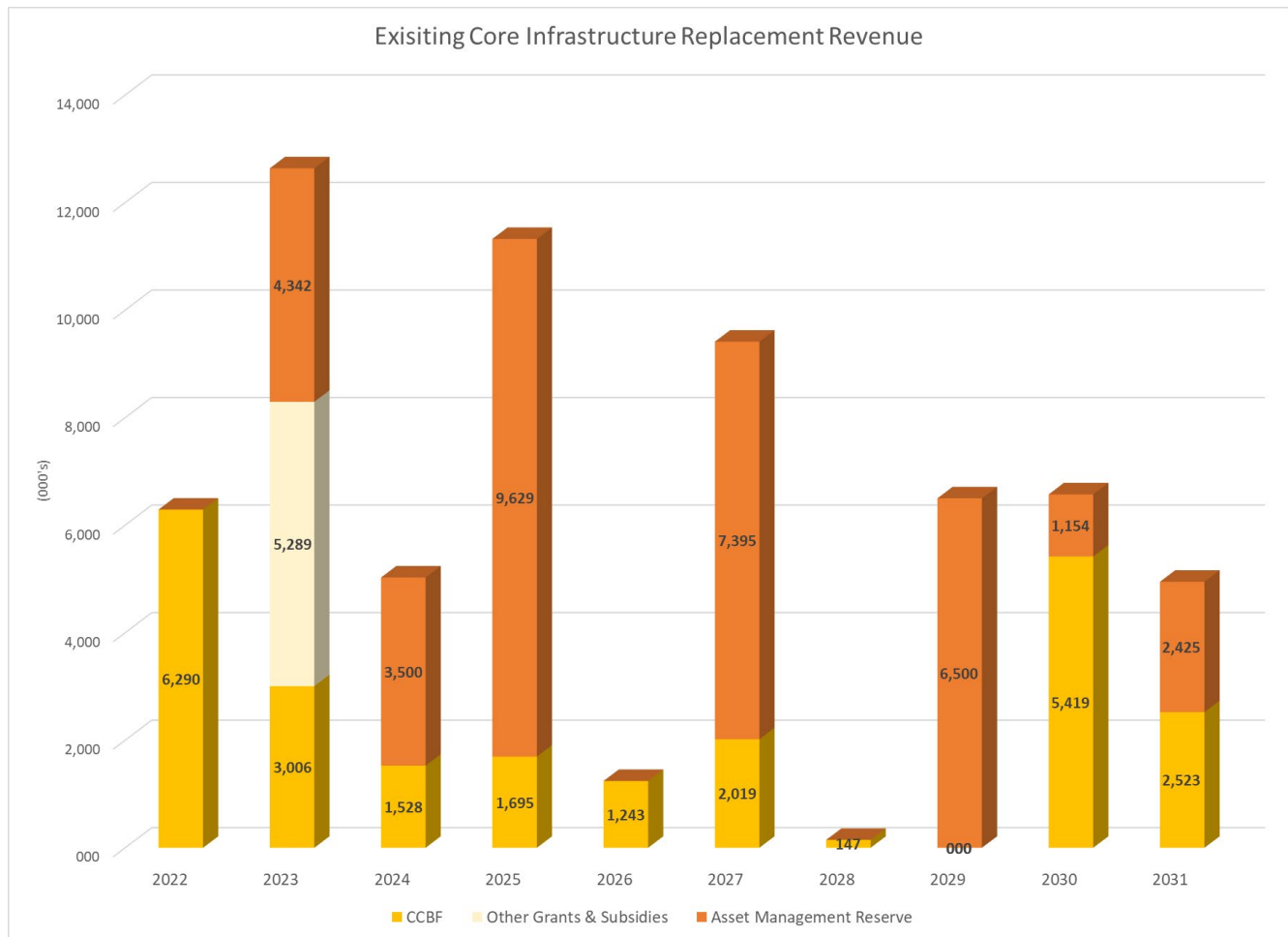
The rehabilitation work on the County’s structures network would be funded by any remaining CCBF or OCIF funding. Any remaining funding requirement for structures rehabilitation is proposed to be funded by the core infrastructure asset management reserve.

In total \$93.7M in CCBF and \$1.2M in OCIF funding over the ten-year period (2022-2031) will fund the core infrastructure rehabilitation projects. The remaining \$20.6M requirement will be supported by the asset management reserve.



10-Year Existing Core Infrastructure Funding – Replacement

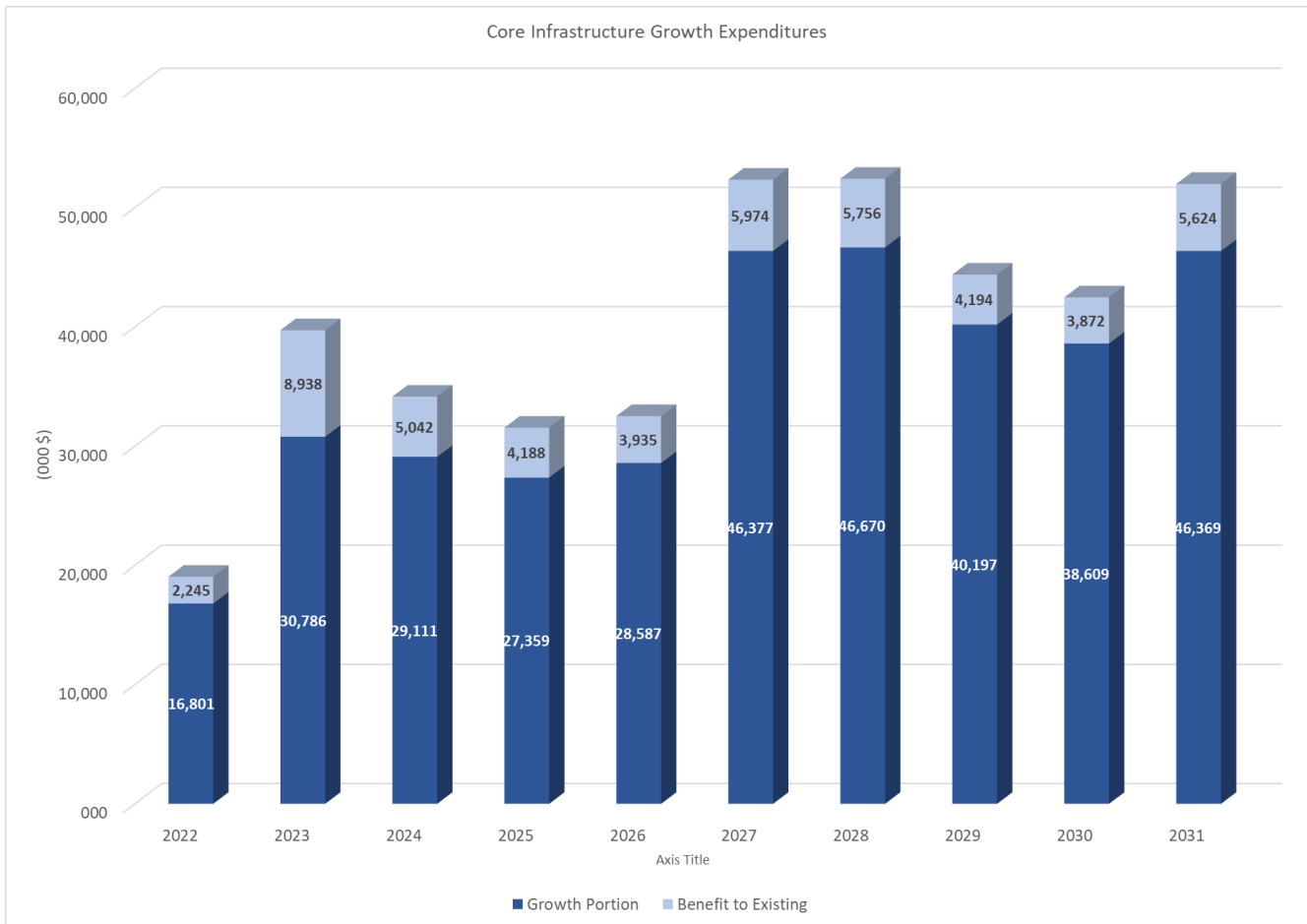
The core infrastructure replacement work over the ten-year period, totalling \$64.1M, will be funded by \$23.9M of CCBF revenue, \$5.3M of OCIF revenue and the remaining \$34.9M will be supported by the core infrastructure asset management reserve.



7.4.3 10-Year Core Infrastructure Growth-Related Asset Requirements

The County continues to experience steady growth which drives the scale of the County of Simcoe’s services and therefore the infrastructure assets required to support the services. This growth increase is considered in both the Development Charges Study and Transportation Master Plan which identifies the County roads or structures that are projected to have an increase in the number of lanes on the road or considered a service enhancement such as intersection improvements or the inclusion of a round-about on the County road. The 10-year financial requirements for growth projects have been determined and are illustrated in the graph below. The total growth project expenditures are \$400.6M over the ten-year period. The County recently completed an updated Development Charges Study effective January 1, 2022. The next iteration of the County’s Asset Management Plan will reflect any changes to projects, costings and timing of projects based on this updated DC study. Growth related structures projects are generally funded by 50% development charges, while roads growth projects are more heavily funded by development charges. The 10-year total development charge revenue to support core infrastructure growth projects is anticipated to be \$350.9M.

At this time the County has not committed additional funding to support the benefit to existing for the growth projects. Remaining taxation levy operating balance available for capital may be used to support the benefit to existing or the amount unfunded may be considered unfinanced capital and require debt financing. In future iterations of the asset management plan, once all County asset requirements are detailed, the County can determine the optimal strategy to fund the growth projects.



7.5 Discussion and Conclusion

Annually the County of Simcoe commits a significant investment towards its core infrastructure assets. The County has developed an asset management strategy for its core assets which aligns the strategic goals and objectives of the County and provides direction to guide Council, management, and staff on asset management related investment requirements. The County recently developed an Asset Management Reserve and Reserve Fund Policy. This policy is essential to effectively manage infrastructure investment needs to sustain existing County assets and minimizes the taxation levy capital requirement fluctuations over time. The asset management reserve will form an integral part of the financial strategy. Based on the County's current asset management strategies and service level targets it can be concluded that there is adequate funding available to meet current projected needs.

The County is forecasted to continue to see steady growth which directly impacts the growth seen in the core infrastructure portfolio. Growth presents both opportunities and challenges and one area the County must address in relation to the growth-related projects is the funding options to support the benefit to existing which is not funded by development charges. The County plans to address this in a coming iteration of the AMP.

As the County's asset management program progresses and the effects of implemented strategies are monitored there will be a heightened understanding which will further aid in enhanced decision-making and help prioritize investment decisions during the short and long-term.



8.0 Conclusions and Recommendation

In Summary

AMP Comparison - Previous to current version

Compliance with O. Reg. 588/17

Recommendations and Conclusion

8.1 In Summary

This AMP is a strategic document that describes the state of the County's core infrastructure and the approaches used to manage the assets over their lifecycle to achieve desired service levels at the lowest lifecycle cost.

The County owns \$659M worth of core assets based historical cost with a current replacement cost of \$2.6B as of December 31, 2020. Of the asset categories addressed in this core asset management plan, the County has exceeded the current service levels allowing for the County's assets to maintain an overall condition rating of good to very good.

The County has made great advancements in the areas of identifying, recording, and measuring its assets since the inception of the PSAB 3150, which required all assets to be recorded and measured by municipalities for the first time. The County has implemented reliable and sophisticated systems to assist in this area. The County's financial enterprise resource planning system is fully integrated into the purchasing and recording of assets. Furthermore, the new asset management system will enhance the ability to manage the County's assets, monitor conditions, review, and analyze life cycle strategies, evaluate project prioritization based on risk, condition and funding availability and tie the asset management plan to the annual budgets and long-term financial plan.

Based on the analysis of each asset group within the plan, the table below summarizes the current 10-year funding requirement, overall condition, and risk for the core service areas.

Asset Category	10-Year Existing Asset Requirements (000's)	Overall Condition Rating	Overall Risk Rating
Roads Network	326,718	82.91	Low
Structures	74,198	72.83	Low
Storm Water	3,467	Good – Very Good	Low
TOTAL	404,383		Low

The County forecasts a 10-year average annual requirement of \$40.4M for existing core infrastructure asset management activities related to maintaining, rehabilitating, and replacing assets currently owned by the County. Growth-related 10-year average annual requirements also totaled \$40M.

8.2 Asset Management Plan Comparison – Previous to Current Version

This document is the second AMP produced by the County of Simcoe. The first asset management plan was approved by Council in 2016. This Core Infrastructure Asset Management Plan builds on the initial iteration and leverages improved data and new tools/systems to provide a more detailed document related to the County's Core Infrastructure.

The most significant changes from the 2016 County of Simcoe Asset Management Plan and the updated County of Simcoe Core Infrastructure Asset Management Plan include:

- The inclusion of only core infrastructure assets as directed by O. Reg. 588/17. All other assets will be updated in advance of the July 1, 2024 deadline.
- Expansion of storm water asset
- Revision and segregation of the Bridges and Structural Culverts service levels
- Inclusion of a core infrastructure asset management reserve to support existing assets, policy previously approved through AUC 2022-032
- Updated financial requirements based on most recent available data (2021 & 2020 in some instances)

Asset Category	10-Year Existing Asset Requirements (000's)	
	Current AMP	Previous AMP
Roads Network	326,718	113,307
Structures	74,198	95,450
Storm Water	3,467	NA
TOTAL	404,383	208,757

A comparison between the previous and current asset management plans shows the County has continued to maintain a high level of service for its core infrastructure, ultimately resulting in a low level of risk to the County of Simcoe.

8.3 Compliance with the Ontario Regulation 588/17

The County's 2021 Asset Management Plan is compliant with the July 1, 2022 regulation requirements and includes all directly owned roads, bridges, structural culverts, and stormwater infrastructure assets of the County of Simcoe. This plan details any areas that require additional work prior to the next asset management plan release, which will include all County owned assets at the current service levels.

Phase 1 - Current Levels of Service: Core Assets by July 1, 2022				
Service Area	State of Infrastructure	Current Levels of Service	Lifecycle Management and Risk Strategy	Financing Strategy
Roads	Compliant	Compliant	Compliant	Compliant
Bridges & Culverts	Compliant	Compliant	Compliant	Compliant
Stormwater	Compliant	Compliant	Compliant	Compliant
Phase 2 - Current Levels of Service: All Assets by July 1, 2024				
Service Area	State of Infrastructure	Current Levels of Service	Lifecycle Management and Risk Strategy	Financing Strategy
Facilities	In Progress	In Progress	In Progress	In Progress
Fleet	Compliant	Compliant	Compliant	In Progress
Equipment	In Progress	Not Started	Not Started	Not Started
Green Infrastructure	In Progress	Not Started	Not Started	Not Started
Lake Simcoe Regional Airport	In Progress	Not Started	Not Started	Not Started

8.4 Recommendations and Conclusion

The County of Simcoe has made a proactive decision to elevate its asset management program and staff are committed to taking on the sizeable opportunity. The County is dedicated to reviewing and revising the asset management program and plan as more information becomes available or is enhanced to establish updated annual investment needs. In creating this plan, a third-party consultant carried out a current state assessment. This, in conjunction with a wholesome asset management program gap analysis performed by internal staff, helped to identify key asset management areas for improvements. These outcomes have been documented and communicated to the senior management team with a plan of action to address the gaps. None of the areas identified affect the County's compliance with the requirements of O. Reg. 588/17 Phase 1 – Current Levels of Service for Core Assets.

Recommended actions that will advance the asset management program across the County of Simcoe include but are not limited to:

- Enhance asset inventories and data quality within the new asset management software.
- Expand and standardize the asset management program, integrating the asset management framework across the organization and optimize system implementation usage to drive asset investment decisions.
- Review risk calculation components of all assets, ensuring the calculations remain relevant and appropriate based on the asset category.
- Finalize current levels of service for non-core assets and look at additional KPI's for all asset categories.
- Document a financial strategy for non-core assets.
- Establish asset management governance.
- Foster asset management community engagement.
- Enhance asset management risk mitigation including climate change impacts:
 - Without considering climate change impacts there is risk of damage or loss to assets resulting in additional costs.

9.0 Appendices

Appendix A – Definitions

Asset Management – The coordinated activity of an organization to realize value from assets.

Asset Management Plan – The County's Core Infrastructure Asset Management Plan which combines multi-disciplinary management techniques (technical and financial) over the life cycle of municipal infrastructure assets to provide a specific level of service in the most cost-effective manner and manage risks associated with municipal infrastructure assets. This typically includes plans to invest, design, construct, acquire, operate, maintain, renew, rehabilitate, replace, and decommission assets.

Benefit to Existing – The amount of benefit derived from a project that is attributable to existing population and employment.

Book Value – The value at which an asset is carried on a balance sheet. To calculate, take the original cost of the asset less the accumulated depreciation.

Closed-Circuit Television – The video/televised inspection of storm sewers

County – The Corporation of the County of Simcoe

Consequence of Failure – A measure of the direct and indirect impacts on the County in the event of an asset failure.

Core Infrastructure Asset - All or part of physical structures that form the foundation of development, and by or through which a public service is provided to the County, such as County roads, bridges, stormwater, as well as any other thing by or through which a public service is provided to the County.

Development Charges - Fees collected from developers to help pay for the cost of infrastructure required to provide municipal services to the new development, ensuring 'growth pays for growth.'

Green Infrastructure Asset – Defined by O. Reg 588/17, means an infrastructure asset consisting of natural or human-made elements that provide ecological and hydrological functions and processes and includes natural heritage features and systems, parklands, stormwater management systems, street trees, urban forests, natural channels, permeable surfaces, and green roofs.

Historical Cost – A measure of value in which the price of an asset on the balance sheet is based on its original acquisition cost when acquired by the company. If the asset was assumed was downloaded or uploaded to the County from the province or a lower tier municipality, the historical cost is estimated to be the replacement cost at the time of the transaction.

Historical Spending – The total costs associated with a specific asset or asset group incurred between a specific range in dates or from the purchase of the asset.

Lane-kilometres – a kilometre long segment of roadway that is a single lane in width. For example, for a four-lane wide road, there are four lane kilometers in one kilometer of road.

Level of Service – The statement that describes the output or objectives the County intends to deliver to its customers.

Lifecycle activities – the activities undertaken with respect to a municipal infrastructure asset over its useful life including acquisition, constructions, maintenance, renewal, rehabilitation, replacement or growth and disposal or decommissioning and all engineering and design work associated with those activities.

Lower Tier Municipality - A local municipality that forms part of an upper-tier municipality for municipal purposes. The lower tier municipalities in the County of Simcoe are responsible for water and sewer services, public libraries, recreation services, fire and police services and permitting to name a few.

Maintaining Level of Service –The activities that would need to be undertaken to maintain the current levels of service being provided or established by the City to meet legislation requirement.

Replacement Cost – The actual cost to replace an asset in new condition in current dollars.

Standard Cross Section – A road section that conform to all County and Provincial Standards and Specification (i.e., 30 m Right of Way or greater) This would apply to all rural or urban cross section. This would include all the MTO roads that were transferred to the County and existing County roads that have been fully reconstructed. The placement of asphalt will be 100 mm or greater. For example, County Road 20 (all segments are considered standard cross sections)

Standard Cross Section < 100 mm - A road section where we have reconstructed the roadway (with less than 100 mm) and the rehabilitation treatment is less than 100 mm of asphalt. For example, County Road 3 (all segments are considered standard cross section <100mm)

Non-Standard Cross Section - A road section that has not been reconstructed by the County of Simcoe, regardless of the rehabilitation treatment forecasted. For example, County Road 169 (all segments are considered non-standard cross section)

Tangible Capital Asset – Before an item can be recognized as a tangible capital asset for financial reporting, it must satisfy two criteria:

1. It must satisfy the definition of a tangible capital asset
2. It must have a value that can be measured

A Tangible Capital Asset is a non-financial asset having physical substance that:

- Is used on a continuing basis in the County's operations
- Has a useful life beyond one year?
- Is not re-sold in the ordinary course of operations
- Is not art or a historic treasure

Useful Life – the total period during which a municipal infrastructure asset is in use or is available to be used

Net Book Value – The original value/cost of the asset minus any depreciation/amortization or impairment costs made against the asset.

Appendix B – List of Acronyms

AADT: Average Annual Daily Traffic

AMP: Asset Management Plan

BCI: Bridge Condition Index

CCBF: Canada Community-Building Fund

CCTV: Closed-Circuit Television

DC: Development Charges

DMI: Distress Manifestation Index

EUL: Estimated Useful Life

GIS: Geographic Information System

LOS: Level of Service

OCIF: Ontario Community Infrastructure Fund

PCI: Pavement Condition Index

RCR: Ride Comfort Rating

TCA: Tangible Capital Asset

TMP: Transportation Master Plan

Appendix C – Expected Road Segment Uploads

Extracted from the County of Simcoe 2014 Transportation Master Plan

Proposed Time Frame	Road	Limits	Length (km)	Existing Lane kms	Anticipated Cost (\$M)
Short-term	Line 7, Oro-Medonte	Highway 11 to CR 22	12.6	25.2	30
Short-term	Line 6, Oro-Medonte	CR 22 to Mt. St. Louis Rd.	6.4	12.8	15
Short-term	Mt. St. Louis Rd, Oro-Medonte	Line 6, Oro-Medonte to Highway 400	1.3	2.6	3
Short-term	Line 3 N, Oro-Medonte	CR 23 to CR 19	5.2	10.4	13
Short-term	Line 7 N, Oro-Medonte	CR 19 to Highway 400	3	6	8
Medium-term	Flos Road 4, Springwater	Highway 93 to Springwater/Clearvie w boundary	19.7	39.4	48
Medium-term	12 Conc. Sunnidale, Clearview	Springwater/Clearvie w boundary to CR 7	8.6	17.2	21
Long-term	27/28 Sideroad, Clearview	Highway 26 to CR 124	8.2	16.4	20
Long-term	Division Road, Severn	Highway 12 to Highway 11	8.9	17.8	21
Long-term	4 th Line, Innisfil	CR 53 to CR 39	9.4	18.8	23

Appendix D – Bridge Condition Index Calculation

The BCI is calculated as follows:

$$BCI = (\sum CEV / \sum TRV) \times 100$$

Where TRV is total element replacement value and CEV is current element value, calculated as follows:

TRV = Total Element Quantity x Replacement Cost of Element

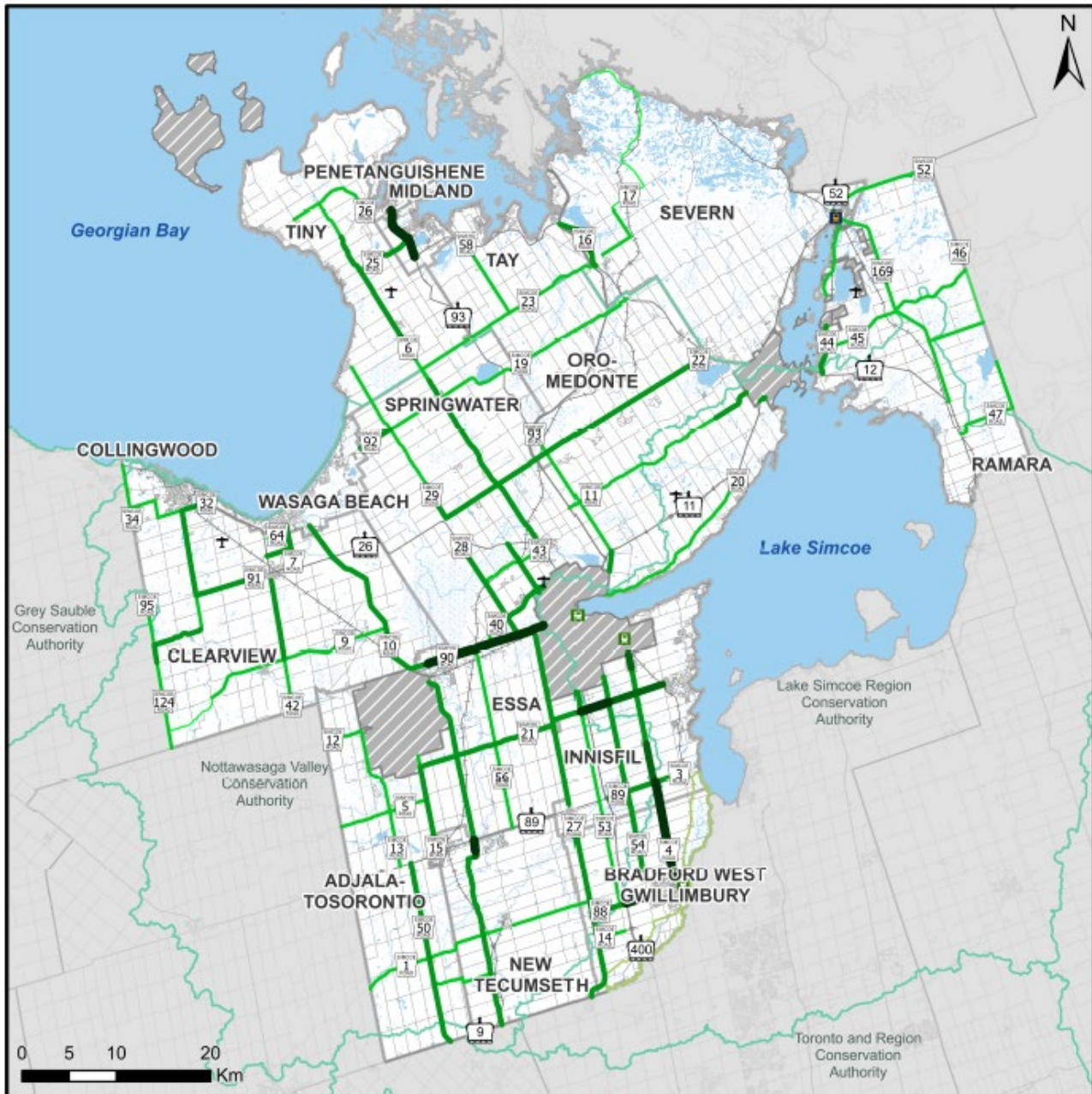
CEV = Total Element Quantity x Quantity Condition State Weight Factor x Replacement cost of element

The BCI varies between 0 and 100, where 0 indicates that the bridge is in poor condition and 100 indicates that the bridge is in excellent condition as defined in OSIM.

The BCI can be used to estimate the current bridge value (depreciated) as follows:

$$\text{Current Bridge Value} = \text{Replacement Cost} \times BCI / 100$$

Appendix E – Average Annual Daily Traffic Map



**Simcoe County
Average Annual Daily Traffic Count**



- Average Annual Daily Traffic Count
- 1 - 999
 - 1,000 - 4,999
 - 5,000 - 11,999
 - 12,000 - 14,999
 - 15,000 - 26,000

- ✈ Airport
- 🚏 Existing GO Station
- 🚉 Existing VIA Station
- 🌿 Conservation Authority
- 📐 Administrative Area
- 🌿 Greenbelt
- 🚫 Lands not subject to this plan

GIS
GEOGRAPHICAL INFORMATION SYSTEMS

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