2024

ASSET MANAGEMENT PLAN

GENERAL TAX LEVY

The **TOWNSHIP** *of*

MALAHIDE

A proud tradition, a bright future.

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Definitions

CL Centreline

BCI Bridge Condition Index

UL Useful Life

GTF Federal Gas Tax Fund

G/S Gravel

HCB High-Class Bituminous

HVAC Heating, Ventilation, and Air Conditioning

IJPA Infrastructure for Jobs and Prosperity Act

KPI Key Performance Indicator

LCB Low-Class Bituminous

LOS Levels of Service

MMS Minimum Maintenance Standards

OCIF Ontario Community Infrastructure Fund

OSIM Ontario Structure Inspection Manual

ULR Useful Life Remaining

The preparation of this project was carried out with assistance from the Government of Canada and the Federation of Canadian Municipalities. Notwithstanding this support, the views expressed are the personal views of the authors, and the Federation of Canadian Municipalities and the Government of Canada accept no responsibility for them.

1. INTRODUCTION

OVERVIEW

The main objective of an asset management plan is to use a municipality's best available information to develop a comprehensive long-term plan for capital assets. In addition, the plan should provide a sufficiently documented framework that will enable continuous improvement and updates of the plan, to ensure its relevancy over the long-term.

The Township's goals and objectives with respect to asset management are identified in the Township's Strategic Asset Management Policy. A major theme within that policy is for the Township's physical assets to be managed in a manner that will support the sustainable provision of municipal services to Township residents.

Through the implementation of the asset management plan, the Township's practice should evolve to provide services at levels proposed within this document. Moreover, infrastructure and other capital assets should be maintained at condition levels that provide a safe and functional environment for its residents. Therefore, the asset management plan, and the progress with respect to its implementation, will be evaluated based on the Township's ability to meet these goals and objectives.

The following assets are included in this asset management plan:

- Roads;
- Bridges and structural culverts;
- Streetlights and sidewalks;
- Guiderails;
- Fleet;
- Facilities & public spaces (buildings, parks, and cemeteries); and
- Equipment

LEGISLATIVE CONTEXT

Asset management planning in Ontario has evolved significantly over the past decade. Before 2009, capital assets were recorded by municipalities as expenditures in the year of acquisition or construction. The long-term issue with this approach was the lack of a capital asset inventory, both in the municipality's accounting system and financial statements. As a result of revisions to section 3150 of the Public Sector Accounting Board handbook, effective for the 2009 fiscal year, municipalities were required to capitalize tangible capital assets, thus creating an inventory of assets.

In 2012, the province launched the Municipal Infrastructure Strategy. As part of that initiative, municipalities and local service boards seeking provincial funding were required to demonstrate how any proposed project fits within a detailed asset management plan. In addition, asset management plans encompassing all municipal assets needed to be prepared by the end of 2016 to meet Federal Gas Tax agreement requirements.

To assist in defining the components of an asset management plan, the Province produced a document entitled Building Together: Guide for Municipal Asset Management Plans. This guide documented the components, information, and analysis that were required to be included in municipal asset management plans under this initiative. The province's Infrastructure for Jobs and Prosperity Act, 2015 (IJPA) was proclaimed on May 1, 2016. This legislation detailed principles for evidence-based and sustainable long-term infrastructure planning. IJPA also gave the province the authority to guide municipal asset management planning by way of regulation.

In late 2017, the province introduced O. Reg. 588/17 under IJPA. The intent of O. Reg. 588/17 is to establish a standard format for municipal asset management plans. Specifically, the regulations require that asset management plans be developed that define the current and proposed levels of service, identify the lifecycle activities that would be undertaken to achieve these levels of service, and provide a financial strategy to support the levels of service and lifecycle activities. This plan has been developed to address the requirements of O. Reg. 588/17 utilizing the best information available to the Township at this time.

Watson & Associates Economists Ltd. (Watson) was retained by the Township of Malahide (Township) in 2018 to update the Township's Strategic Asset Management Policy and Asset Management Plan (dated November 29, 2013). In 2022, Township Staff undertook an update of the Watson plan (dated February 20, 2019), ensuring the Township's asset management practices were compliant with Ontario Regulation 588/17.

Due July 1, 2024, O. Reg. 588/17 requires municipal asset management plans to be updated for all capitalized assets. The changes should include updated asset inventories, current levels of service, lifecycle activities, and funding strategies. This plan will be a tool for Township staff and Council to use during various decision-making processes, including the annual budgeting and future capital grant applications. This plan will serve as a road map for sustainable infrastructure planning going forward. With this current update to the asset management plan, the intent is to continue compliance with Ontario Regulation 588/17.

PLAN DEVELOPMENT

The asset management plan was developed using a program that leverages the Township's asset management principles as identified within its strategic asset management policy, capital asset database information, and staff input in identifying current and proposed levels of service, as informed by the Council, as well as proposed asset management strategies.

The development of the Township's asset management plan is based on the steps summarized below:

Inventory	Compile available information pertaining to the Township's capital assets to be included in the plan, including attributes such as size/material type, useful life, age, accounting valuation and current valuation. Update current valuation, where required, using benchmark costing data or applicable inflationary indices.
State of Local Infrastructure	Define and assess the state of local infrastructure through current asset conditions, based on a combination of Township staff input, existing asset reports, and an asset age-based condition analysis.
Levels of Service	Define and document current levels of service, as well as proposed levels of service, based on discussions with Township Council and staff, and consideration of various background reports.
Lifecycle Activities	Develop a strategy that provides for the activities required to sustain the levels of service discussed above. The strategy summarizes these activities in the forecast of annual capital and operating expenditures required to achieve these level of service outcomes.
Financing Strategy	Develop a financing strategy to support the lifecycle management strategy. The funding strategy informs how the capital and operating expenses arising from the asset management strategy will be funded over the forecast period, and may be accommodated in the annual budget process.
Document	Document the comprehensive Asset Management Plan in a formal report to inform future decision-making and to communicate planning to municipal stakeholders.
Publish	Make the Asset Management Plan and all relevant background information and reports available to the public. The Asset Management Plan, Strategic Asset Management Policy, and relevant reports to Council will be available on the Township's website, in addition to all background information made available upon request.

STATE OF LOCAL INFRASTRUCTURE

This is an analysis of the Township's assets, the condition of these assets, and the current replacement costs of the assets.

O. Reg. 588/17 requires that for each asset category included in the asset management plan, the following information must be identified:

- Summary of the assets;
- Replacement cost of the assets;
- Average age of the assets (it is noted that the Regulation specifically requires average age to be determined by assessing the age of asset components);
- Information available on condition of assets; and
- Approach to condition assessments (based on recognized and generally accepted good engineering practices where appropriate)

LEVELS OF SERVICE

Asset management plans must identify the current levels of service being provided for each asset category by July 1st, 2024 per O. Reg. 588/17. For core municipal infrastructure assets (Bridges and Culverts, Roads, Wastewater, and Water), both the qualitative descriptions pertaining to community levels of service, and metrics pertaining to technical levels of service, are prescribed by O. Reg. 588/17. Current community and technical levels of service are based on data from the 2023 data collection period.

Proposed levels of service will need to be identified for each asset category by July 1st, 2025 per O. Reg 588/17. The proposed service levels will require a detailed explanation of why they are appropriate, give options with associated risks in regards to long-term sustainability, explain why they differ from current service levels and whether they are achievable and affordable. The proposed service levels for each asset category have not been included in this version of the plan, to be identified in future versions to maintain compliance with O. Reg. 588/17.

LIFECYCLE MANAGEMENT

Lifecycle management strategies are required to maintain the current and proposed levels of service. A lifecycle management strategy identifies the recommended lifecycle activities required to achieve desired levels of service. Lifecycle activities are the specified actions that can be performed on assets in order to increase service level and extend service life. These actions can be carried out on a planned schedule in a prescriptive manner, or through a reactionary approach where the treatments are only carried out when specified conditions are met. O. Reg. 588/17 requires that all potential lifecycle

activity options be presented, with the aim of analyzing these options in search of identifying the set of lifecycle activities that can be undertaken at the lowest cost to maintain current levels of service or to provide proposed levels of service.

Asset management plans must include a 10-year capital plan that forecasts the lifecycle activities resulting from the lifecycle management strategy. What follows are the lifecycle management strategies for all asset classes contained within this asset management plan, with each section focusing on an individual asset category. Although a considerable amount of effort has been spent on developing lifecycle management strategies informed by observed asset conditions, there are still some assets for which the lifecycle management strategy is age-based. The expenditure forecasts resulting from the lifecycle management strategies for each asset category are also included and have been developed for a 20-year forecast period.

FUNDING STRATEGY

A funding strategy should sustainably fund the lifecycle management strategies of an asset. The funding strategy contained herein focuses on examining how the Township can fund the lifecycle activities required to maintain its assets at the current and/or proposed levels of service. The strategies presented are a suggested approach which should be examined and re-evaluated during the annual budgeting processes to ensure the sustainability of the Township's financial position as it relates to its assets.

O. Reg. 588/17 requires a 10-year capital plan that forecasts the costs of implementing the lifecycle management strategy and the lifecycle activities required therein. The funding strategy in this asset management plan has been developed for a 20-year forecast period, where adequate data allowed, to enable the Township to evaluate the sustainability of its assets over a longer-term horizon. The funding strategy forecast (including both expenditure and revenue sources) was prepared consistent with the Township's departmental budget structure so that it can be used in conjunction with the annual budget process. Various financing options, including reserve funds, debt, and grants were considered. The recommended funding strategy identifies rehabilitation and replacement activities required over the forecast period. An overall funding strategy was prepared for all assets contained within this plan.

GROWTH

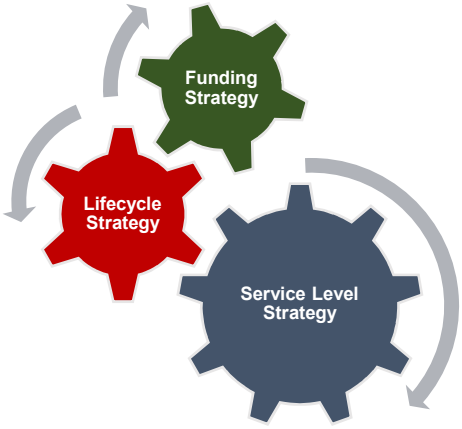
For municipalities with a population of less than 25,000, as reported by Statistics Canada in the most recent official census, assumptions need to be made regarding future changes in population and how those changes will affect asset lifecycle activities required to maintain current levels of service. The 2021 population estimate of the Township of Malahide, as reported by Statistics Canada, was 9,308. This represents an increase of

0.2% from the previous census estimate in 2016. Assuming that growth remains at this level for the next ten years, the current lifecycle activities outlined in this report will remain sufficient to maintain the current levels of service.

MAINTENANCE AND INTEGRATION

It should be noted, that while this report covers a forecast period of 20 years, the full lifecycle of the Township's assets were considered in the calculations. In this context, the asset management plan should be updated as the strategic priorities and capital needs of the Township change. This can be accomplished in conjunction with specific legislative requirements (i.e. 5-year review of asset management plan under Infrastructure for Jobs and Prosperity Act), as well as the Township's annual budget process. Further integration into other Township financial/planning documents would assist in ensuring the ongoing accuracy of the asset management plan, as well as the integrated financial/planning documents. The asset management plan has been developed to allow linkages to a number of strategic documents, as identified in the Township's Strategic Asset Management Policy. Township staff have the tools available to perform updates to the asset management plan as necessary.

In the future, the asset management plan will continue to be updated by Township staff to more closely integrate with other studies and reports pertaining to Township assets. For example, the strategies identified in this asset management plan should be updated to include the biennial OSIM and Road Needs Study reports. When updating the asset management plan, it should be noted that the state of local infrastructure, proposed levels of service, lifecycle management strategy, and financing strategy are integrated and impact each other. For example, the financing strategy outlines how the asset management strategy will be funded. The lifecycle management strategy illustrates the costs required to maintain expected levels of service at a sustainable level. The proposed levels of service component summarizes and links each service area to specific assets contained in the state of local infrastructure section and thus determines how these assets will be used to provide expected service levels.



2. ROAD NETWORK

STATE OF LOCAL INFRASTRUCTURE

ASSET CLASS SUMMARY

The Township currently owns and manages 273 centreline kilometres of road assets with a 2023 replacement value totaling approximately $487 million. The replacement value has been estimated based on market prices collected through the Township of Malahide's procurement process. The road network consists of roads with various surface types, including high-class bituminous (HCB), low-class bituminous (LCB), and gravel (G/S). These assets reside in urban, semi-urban, and rural roadside environments. Table 2-1 and Table 2-2 provide breakdowns of the road network by surface type and environment.

The entirety of the road network, on average, was 24 years old in 2023. There are relatively few HCB (4%) roads in the network, with the majority of the road network consisting of LCB roads (76%), and gravel roads (20%). In the context of roadside environment, the majority of the network is comprised of rural roads (94%). Figure 2-1 maps the road network by surface material in order to visualize the Township's current circumstances.

Table 2-1

Road Network – surface Type

Surface Type	Centreline Kilometers	Percentage (%) of Total Centerline Kilometers	Average Age	Replacement Cost (2023 $)
HCB	11	4%	19	$26,110,850
LCB	206	76%	24	$433,246,000
G/S	56	20%	32	$27,673,006
TOTAL	273	100%	24	$487,029,856

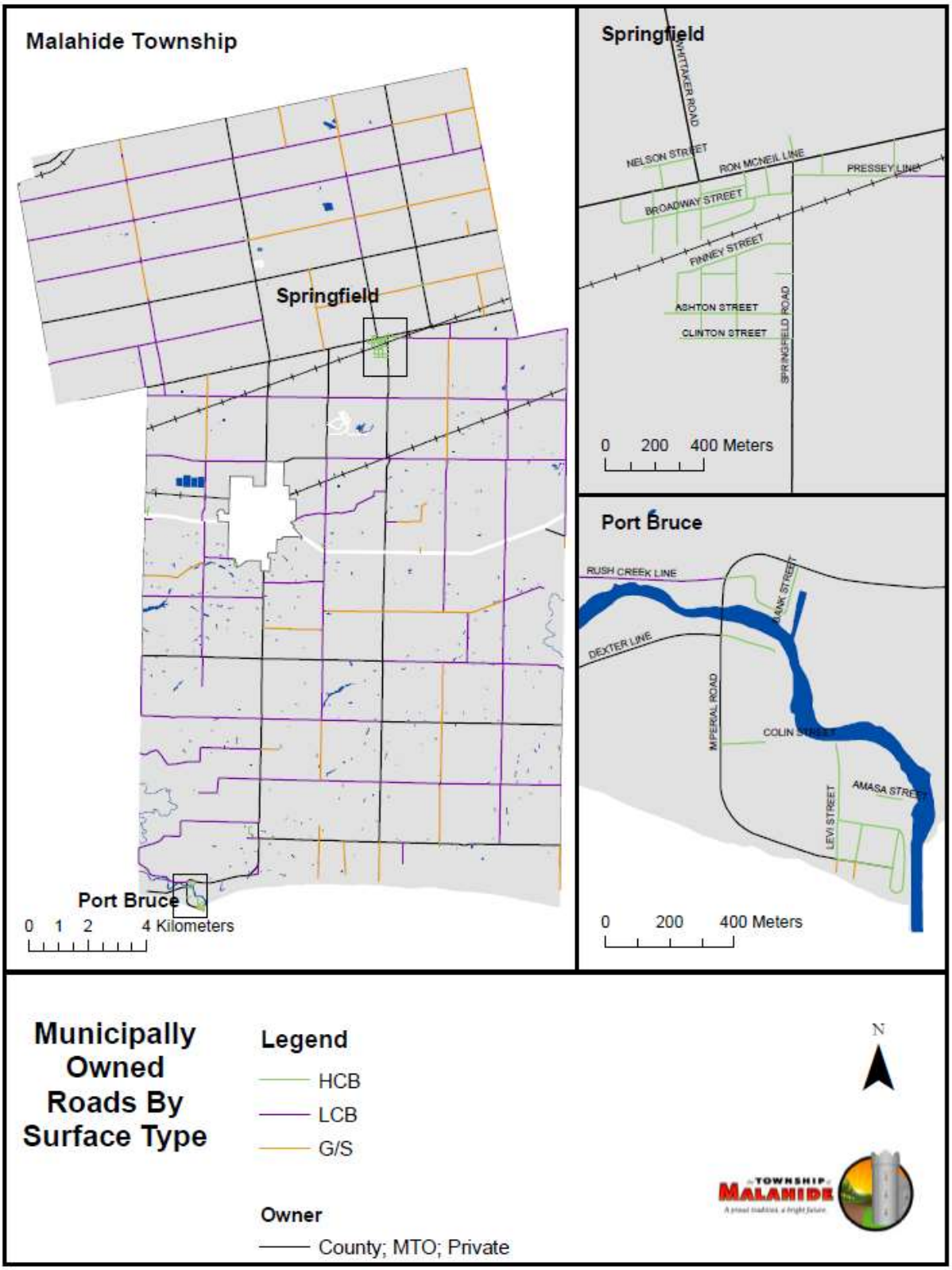
Table 2-2

Road Network – Roadside Environment

Roadside Environment	Centreline Kilometers	Percentage (%) of Total Centerline Kilometers	Average Age	Replacement Cost (2023 $)
Urban	2	1%	9	$3,597,850
Semi-Urban	14	5%	23	$32,075,134
Rural	257	94%	25	$451,356,872
TOTAL	273	100%	24	$487,029,856

Figure 2-1

Roads by Surface Type Map



CONDITION

While asset age may provide some limited context to the functional state of an asset, an assessed physical condition is a better measure of where an asset is in its lifecycle. Physical condition therefore provides a more accurate estimate of an asset's remaining service life. The Township's Asset Management Plan provides a physical condition rating for each road segment in the network. This physical condition rating is provided on a scale of 0-100, with 100 being a perfect condition and 0 indicating an asset at the end of its service life. To better communicate the condition of the road network, these numeric condition ratings have been segmented into qualitative condition states. Figure 2-2 summarizes the various physical condition ratings and the condition state they represent.

Figure 2-2

Road Condition States Defined with Respect to Physical Condition

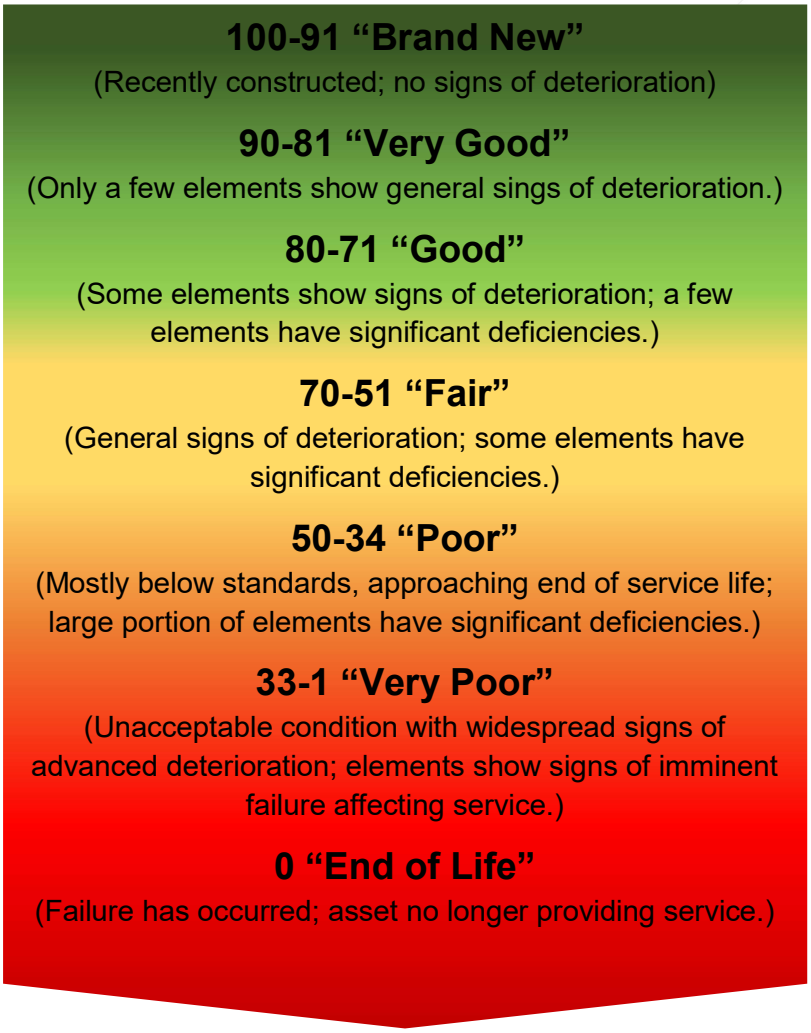


Table 2-3 examines the average condition of the road network by surface type, which is weighted based on centreline kilometres. Adjustments to the physical condition are performed annually based on the lifecycle degradation profiles developed in the Township's Asset Management Plan, or set to known values when capital improvements are completed (i.e. rehabilitation), or upon inspection. The physical condition ratings utilized in this plan are estimated to represent condition states as of mid-2023.

As illustrated in Table 2-3, high-class and low-class bituminous roads are in a "Good" condition state on average, while gravel roads are in a "Fair" condition state. Assessed across the entire road network, all road segments are at an average physical condition rating of 71, or currently in a "Good" condition state.

Table 2-3

Road Condition Analysis

Surface Type	Centreline Kilometers	Physical Condition (Weighted Average)	Average Condition State
HCB	11	66	**Fair**
LCB	206	72	**Good**
G/S	56	53	**Fair**
TOTAL	273	67	**Fair**

LEVELS OF SERVICE

CURRENT LEVEL OF SERVICE

The level of service currently provided by the Township's road network is, in part, a result of the state of local infrastructure identified above. A levels of service analysis defines the current levels of service and enables the Township to periodically evaluate these service levels.

Road assets have prescribed levels of service reporting requirements under O. Reg. 588/17. These requirements include levels of service reporting from two different levels, i.e. community levels of service and technical levels of service. Community levels of service describe service levels in terms that residents understand and reflect their scope and quality expectations of the road network. Technical levels of service describe the scope and quality of Township roads through performance measures that can be quantified, evaluated, and detail how effectively a municipality provides services. Table 2-4 presents the current levels of service measures, (*) as mandated by O. Reg. 588/17.

Table 2-4

Road Network - Current Level of Service (2023)

COMMUNITY LEVELS OF SERVICE	TECHNICAL LEVELS OF SERVICE
Paved roads are in “good” condition on average. 	Average Network Pavement Condition Index (PCI) Value for paved roads:* **PCI 71**
Unpaved roads are in “fair” condition on average. 	Average Network Surface Condition for unpaved roads:* **PCI 53**
The municipality is well-connected by the road network. **Refer to *Figure 2-1 Roads by Surface Type Map* on page 12 for detailed road network visual aid.**	Total number of lane-kilometres as a proportion of square kilometres of land area of the community:* **1.33 KM** Arterial (MMS 1 to 2): **0.00 KM/KM^2** Collector (MMS 3 to 4): **1.02 KM/KM^2** Local (MMS 5 to 6): **0.37 KM/KM^2**

LIFECYCLE MANAGEMENT

LIFECYCLE ACTIVITIES

This section pertains to the lifecycle activities that the Township currently employs in the management of its roads network. Table 2-5 details the costs associated with undertaking road network lifecycle activities, by surface type. The costs are presented on a cost per center lane kilometre basis, as identified through the Township's procurement process.

Table 2-5

Average Road Treatment Costs by Surface Type (per cl-km)

Treatment	Surface Type	Cost/cl-km (2023 $)
Resurfacing - R1	HCB	$371,815
Resurfacing - R2	HCB	$512,650
Micro-surfacing - MICRO	HCB	$42,750
Crack sealing - CRK	HCB	$5,000
Single Surface Treatment - SST	LCB	$37,620
Single Surface Treatment - SSTedge	LCB	$52,610
Double Surface Treatment – DSTrehab	LCB	$279,700
Reconstruction - REC	HCB/LCB	$1,668,000
Reconstruction - RNS	HCB	$2,350,000
Reconstruction - BS	G/S	$495,932
Gravel Surface - GRR	G/S	$31,554

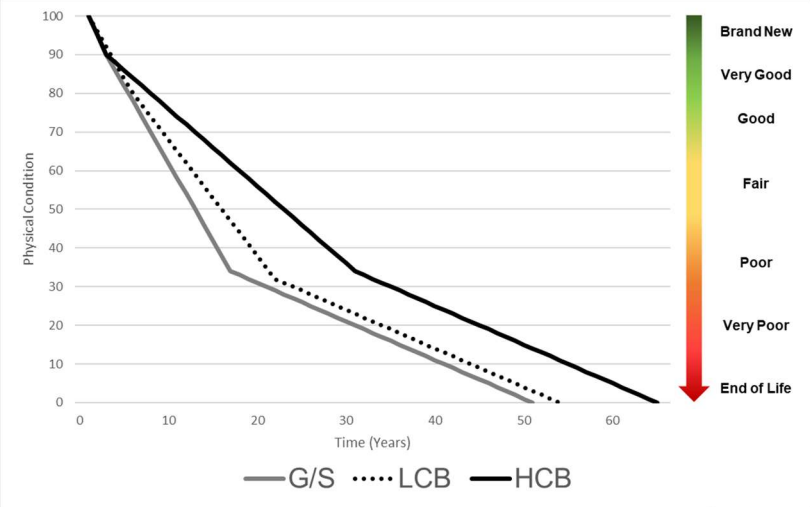
DEGRADATION PROFILES

Assets deteriorate over time, eventually reaching a point where they have no remaining service life left. However, the path each asset takes in reaching its end of life differs, even for assets of the same type. A condition rating identifies where along the path any particular asset lays, or in other words, how long an asset has left before it reaches its end of life. Therefore, condition and service life are linked, and can be plotted graphically to visually represent the degradation curve of an asset.

Figure 2-3 presents the degradation profile of roads by surface type. Through the process of conducting regular road condition inspections, the Township will be able to further refine these degradation profiles.

Figure 2-3

Road Degradation Profiles



DECISION CRITERIA

Table 2-6 presents the decision criteria for triggering a specific road treatment. When the decision criteria for a given road asset are met, the corresponding treatment is eligible to be applied. When a treatment is applied, the condition of the asset is improved by the amount specified in the “Gain to Condition” column, but not to exceed the amount listed in the “Maximum Condition Threshold” column.

Table 2-6

Roads Treatment Decision Criteria

Treatment	Surface Type	Decision (Condition Range)	Gain to Condition	Maximum Condition Threshold
R1	HCB	71-69	+30	99
R2	HCB	54-52	+45	99
MICRO	HCB	81-79	+9	90
CRK	HCB	95-93	+3	97
SST	LCB	95-96	+3	99
SSTedge	LCB	90-40	+3	90
DSTrehab	LCB	33-0	+100	100
REC	HCB/LCB	36-0	+100	100
RNS	HCB	34-0	+100	100
BS	G/S	40-0	+100	100
GRR	G/S	80-40	+12	96

EXPECTED LIFECYCLE AND ASSOCIATED RISK

Combining the treatments, degradation profiles, and decision criteria presented herein results in a complete lifecycle management strategy. Figure 2-4, Figure 2-5, and Figure 2-6 present an illustrative example of the expected lifecycle of HCB, LCB, and gravel roads, respectively. The dashed, vertical lines represent points of intervention in the representative road's expected life. The lifecycle path of the asset is represented by the solid lines, following the degradation profiles presented above. Finally, the dotted line demonstrates the expected lifecycle of a road segment were it to not receive any treatments over the course of its service life.

For an HCB road, one R1 and one R2 resurfacing treatments would be performed on a road segment before a full reconstruction takes place. Further, between the resurfacing cycles, crack sealing and micro-surfacing treatments would be carried out as an efficient means of improving the service levels provided. For an LCB road, one SST and six SSTedge surface treatments would be performed on a road segment before a DSTrehab rehabilitation treatment takes place. For gravel roads, twelve GRR gravel resurfacing treatments would be performed on a road segment before a BS rehabilitation takes place.

Figure 2-4

Lifecycle Strategy Example – High-Class Bituminous Roads (HCB)

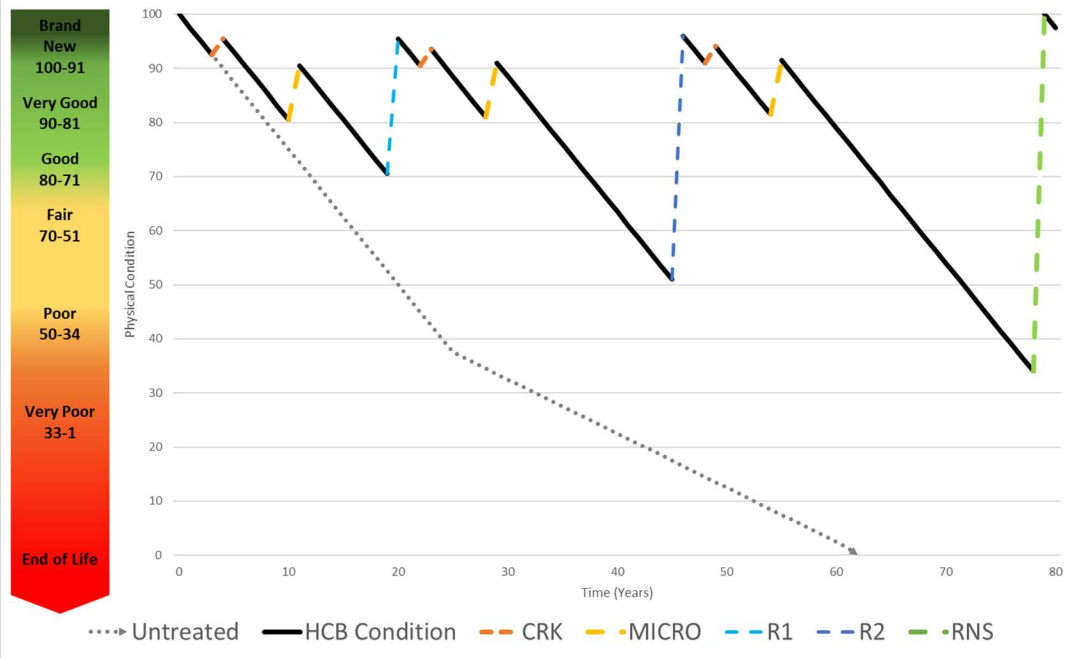


Figure 2-5

Lifecycle Strategy Example – Low-Class Bituminous Roads (LCB)

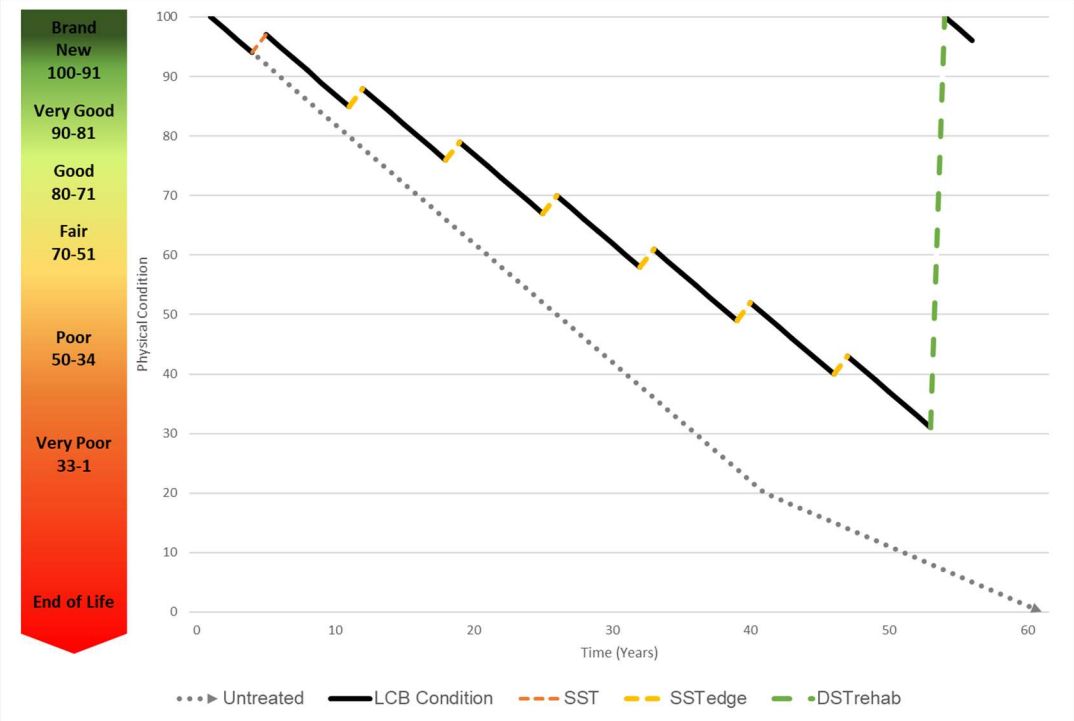
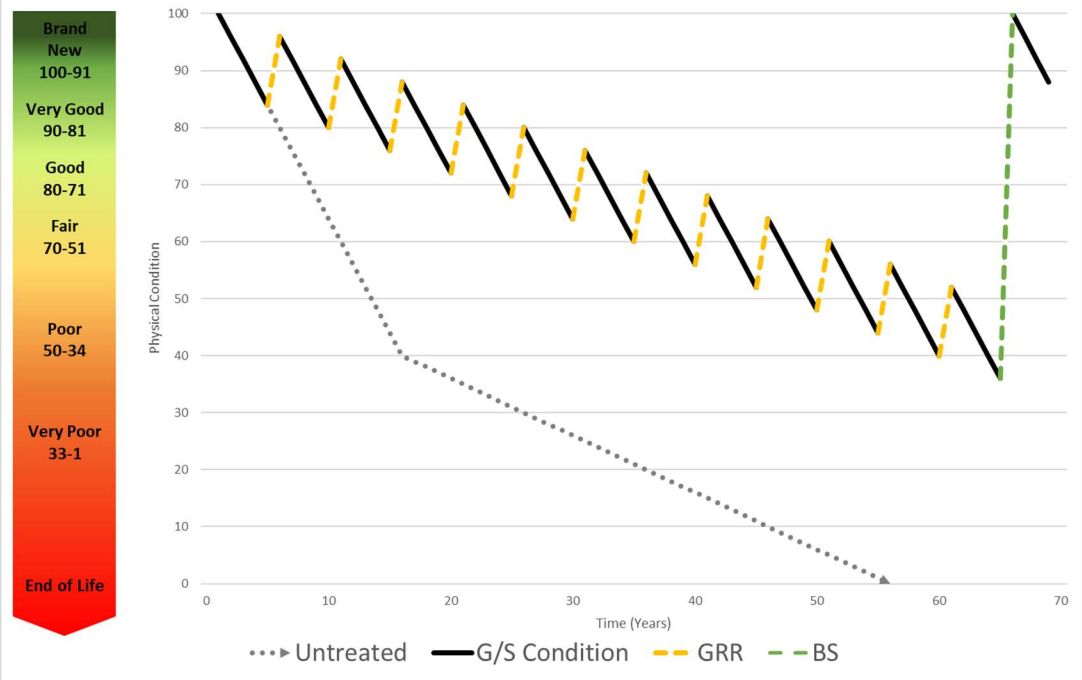


Figure 2-6

Lifecycle Strategy Example – Gravel Roads



FORECASTS

NETWORK FORECASTS

The lifecycle replacement activities planned for road segment assets are projected to cost approximately $121.4 million over the 20-year forecast period. For a detailed breakdown of costs, refer to Table A-1 in Appendix A: Network Cost Forecasts.

Figure 2-7 presents the 20-year expenditure forecast that results from following the lifecycle management strategy detailed above. This forecast illustrates the annual expenditures without any consideration to budgetary constraints. Over the 20-year forecast period, the average annual expenditures would be approximately $6 million, following the work plan as outlined. Substantial investment in road segment assets in urban environments is forecasted for the villages of Springfield, Port Bruce, and Orwell during the 20-year forecast period.

In recent years, increases and decreases in fuel, asphalt, and sand have been disproportionate to the Consumer Price Index. As such, consideration should be given to annual adjustments in road funding, which are more reflective of the actual experience.

Figure 2-7

Road Network Expenditure Forecast

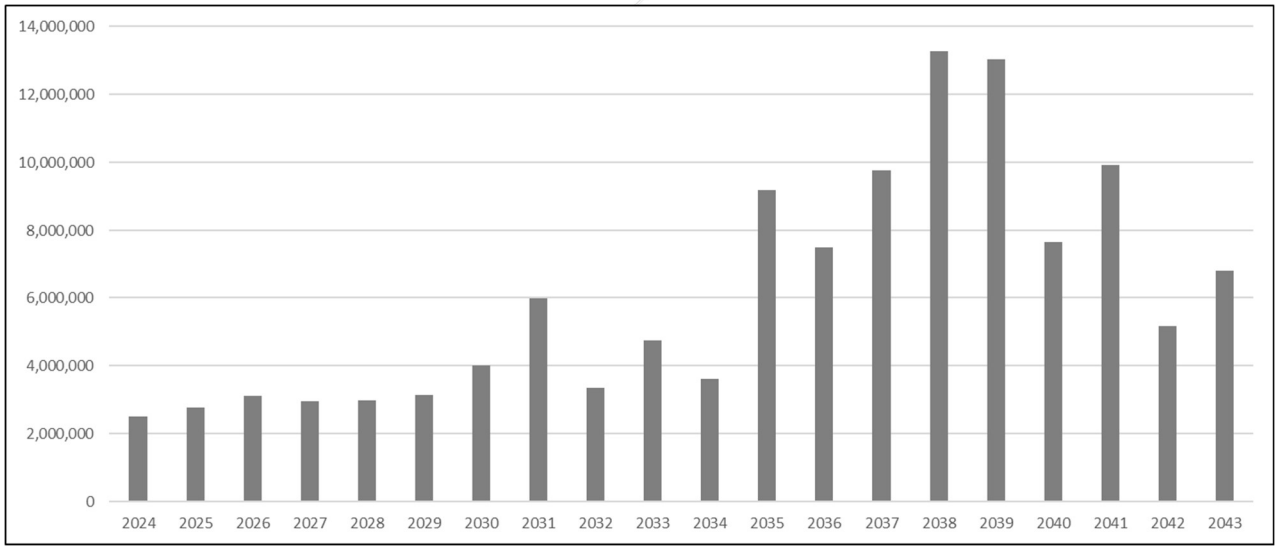
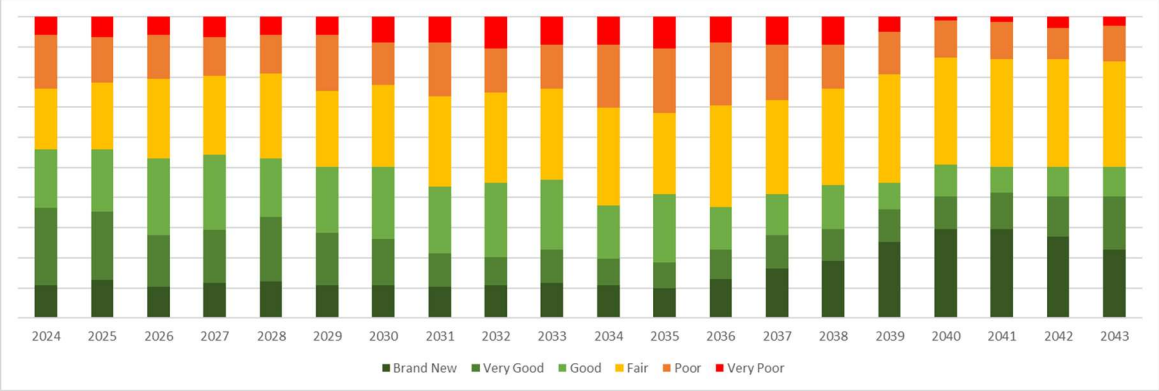


Figure 2-8 demonstrates the roads network service levels over the forecast period as a result of implementing the current lifecycle management strategy. This strategy will enable the Township to move towards a sustainable position of maintaining the current levels of service for roads assets.

Figure 2-8

Road Network Condition Forecast



ELEMENT FORECASTS

Figures 2-9, 2-10, and 2-11 display the average condition trend that results from executing the lifecycle management strategy over the 20-year forecast period for each road surface type. The average condition trend of the gravel surface roads and low-class bituminous surface roads maintain a “good” to “fair” condition state, on average, during the forecast period. High-class bituminous surface roads move from a “poor” condition state to a “very good” condition state with significant investment in reconstruction during the forecast period.

Figure 2-9

Element Forecast - Gravel Surface Roads

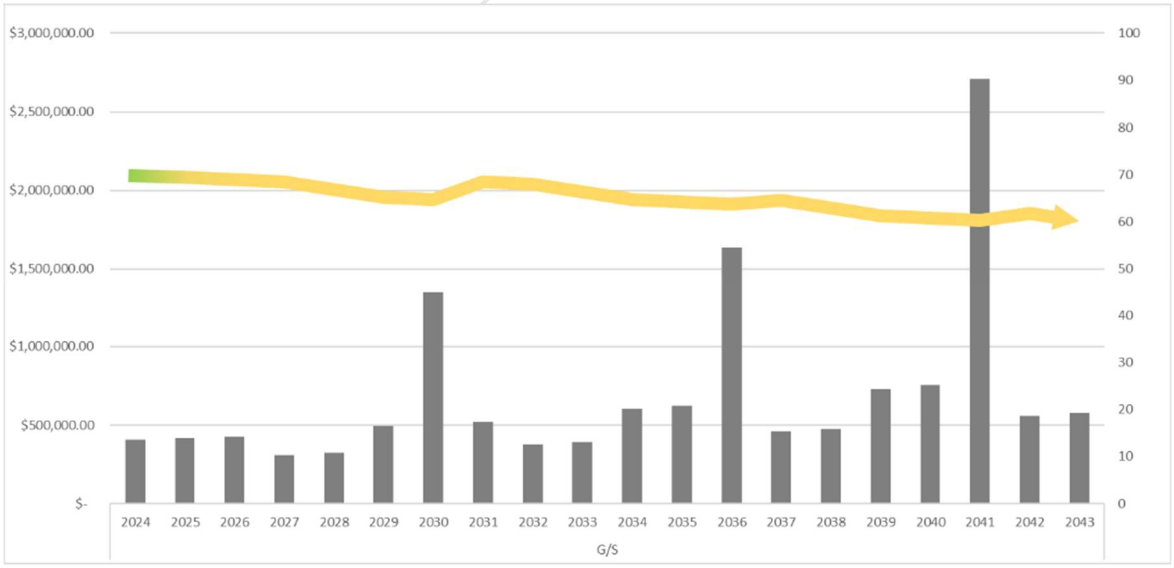


Figure 2-10

Element Forecast – Low-Class Bituminous Surface Roads

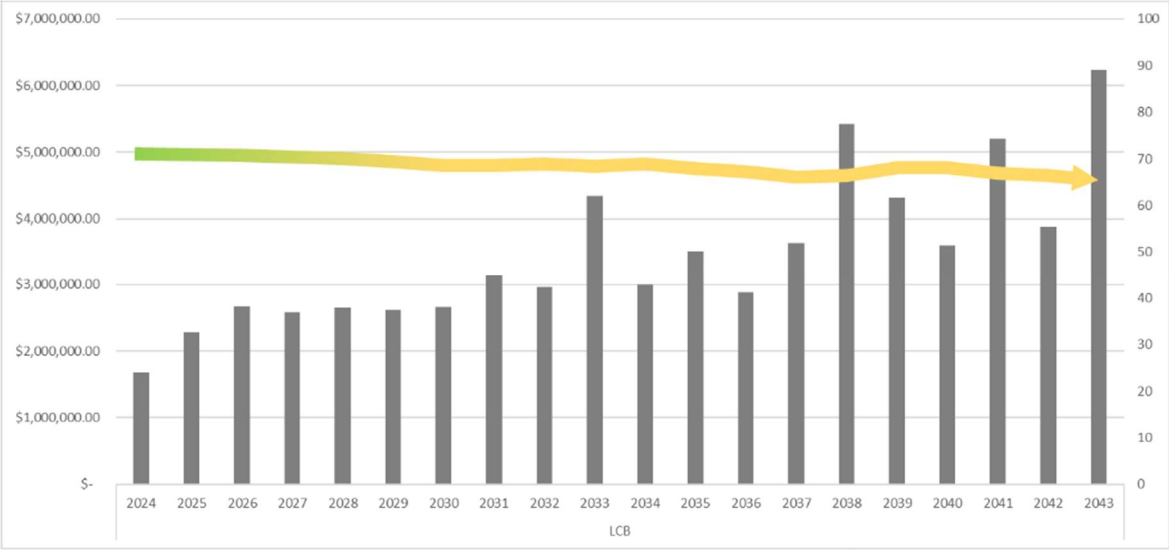
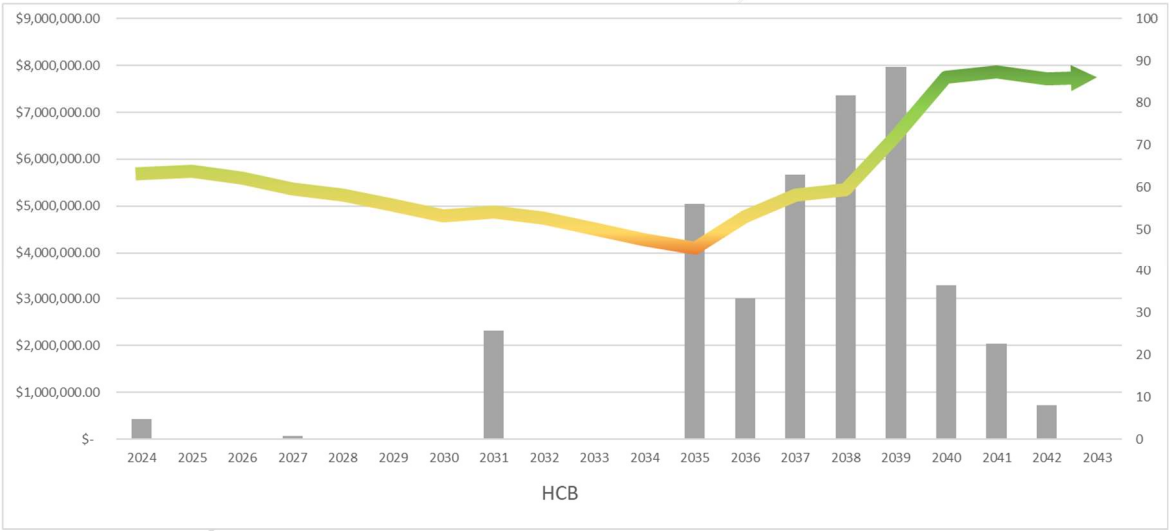


Figure 2-11

Element Forecast – High-Class Bituminous Surface Roads



3. BRIDGES AND STRUCTURAL CULVERTS

STATE OF LOCAL INFRASTRUCTURE

ASSET CLASS SUMMARY

The Township currently owns and manages 14 bridges and 19 structural culverts, with a 2023 total replacement value totaling approximately $40.4 million. The replacement value has been estimated based on replacement costs from the Township's 2020 Bridge and Culvert Inspection (OSIM) report as prepared by MEDA Engineering & Technical Services (dated October, 2020).

Table 3-1 provides a summary of count, age, and replacement value for the current bridge and culvert network. The average age of the Township's 19 culverts averages 40 years, while the average age of the 14 bridges is 21 years.

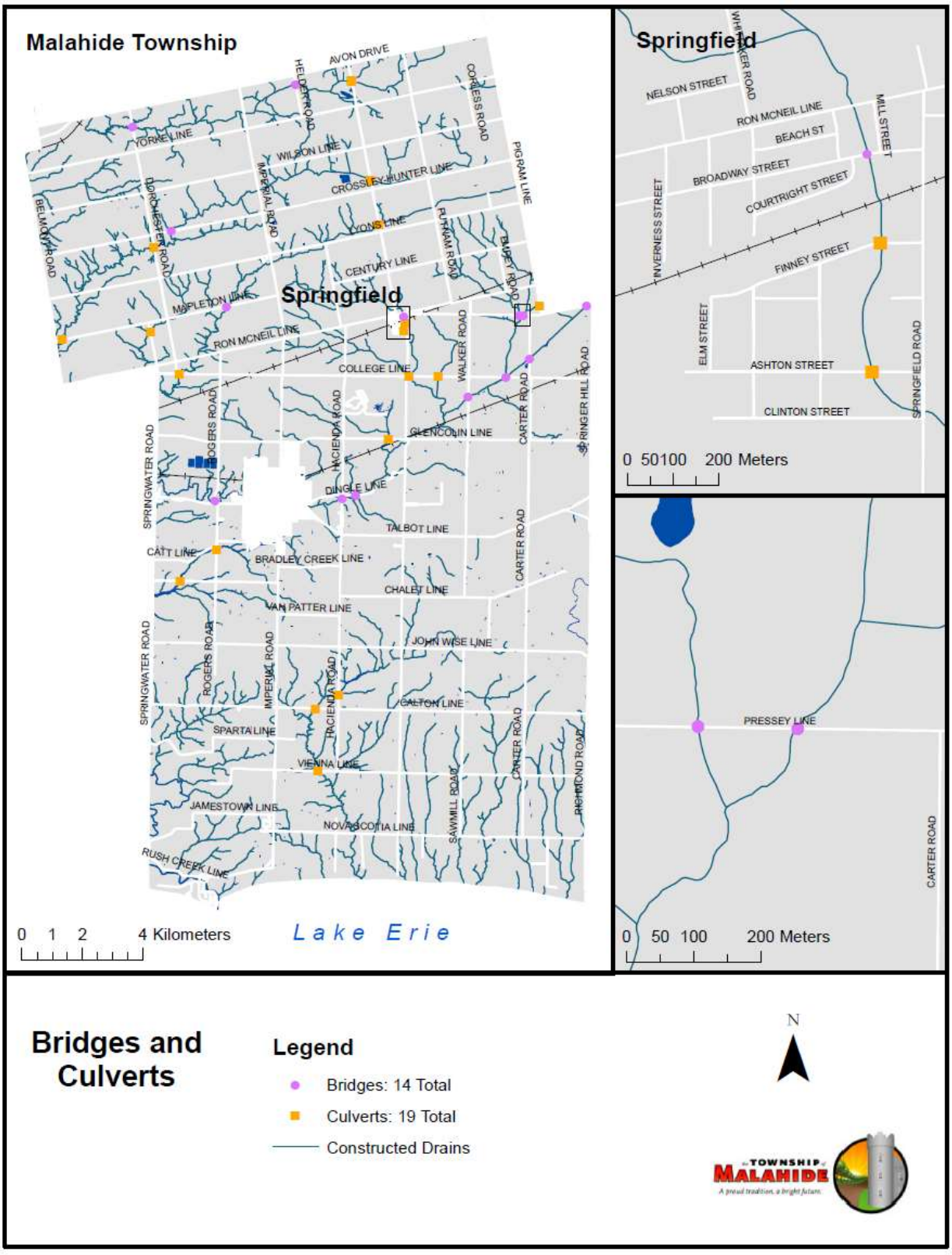
Figure 3-1 maps the bridge and culvert network to visualize the Township's current asset distribution.

Table 3-1
Bridge and Culvert Infrastructure Summary

Type	Quantity	Average Age	Replacement Cost (2023 $)
Bridges	14	21	$21,116,700
Culverts	19	40	$19,292,600
TOTAL	33	32	$40,409,300

Figure 3-1

Bridges and Culverts Map



CONDITION

The Township's 2022 Bridge and Culvert Inspection and Assessment Report (OSIM), as prepared by Spriet Associates Engineers & Architects (dated July, 2022), assessed the condition of the bridge and culvert network, applying a bridge condition index (BCI) for assets. A BCI score is provided on a numeric scale of 0-100, and is a measure of the overall condition of the structure based on an evaluation of individual components. To better communicate the condition of the bridge and culvert network, the numeric condition ratings have been segmented into condition states as summarized in Figure 3-2.

Figure 3-2

Bridge and Culvert condition States Defined with Respect to BCI

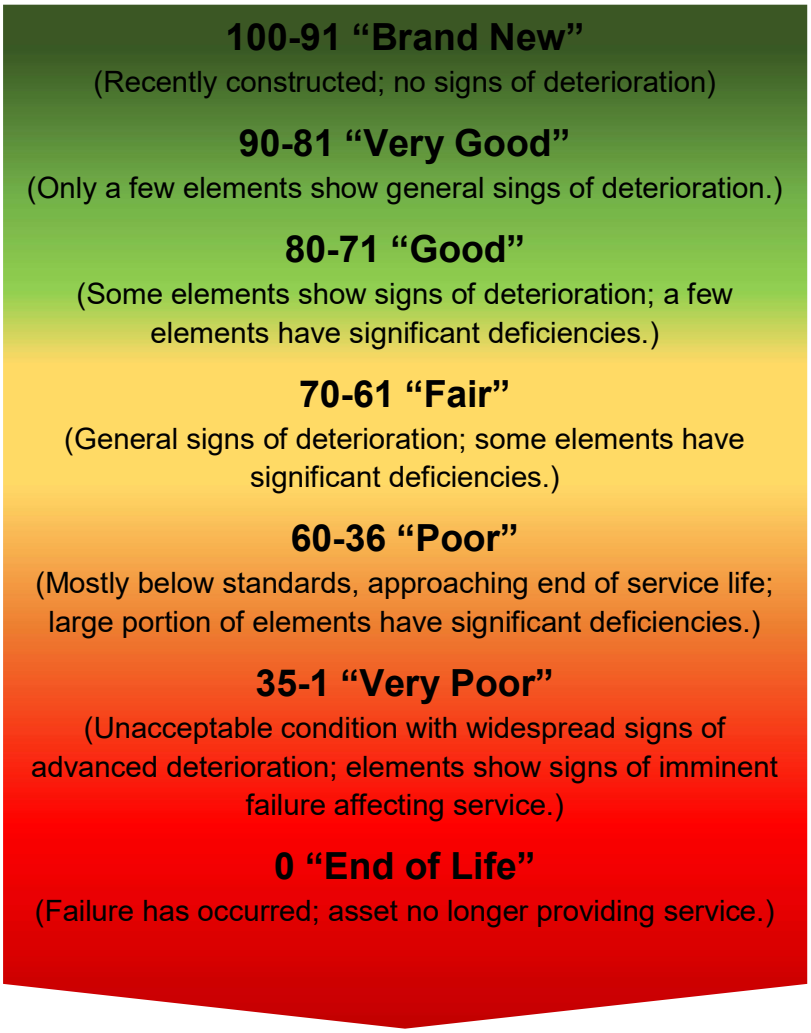


Table 3-2 examines the average condition rating of the bridge and culvert network. The condition of the structures comes from the Township's 2022 OSIM report. On average, bridges and culverts are in a "Good" condition state. Assessed for the entire bridge and culvert network, all structures provide an average BCI of 73.

Table 3-2

Bridge and Culvert Condition Analysis

Type	Quantity	Average BCI	Lowest Observed BCI	Average Condition State
Bridge	14	81	64	Very Good
Culvert	19	68	49	Fair
TOTAL	33	73	49	Good

LEVELS OF SERVICE

CURRENT LEVEL OF SERVICE

The levels of service currently provided by the Township's bridge and culvert network is, in part, a result of the state of local infrastructure identified above. A level of service analysis defines the current levels of service and enables the Township to periodically evaluate these service level objectives. Bridges and culverts are utilized by all levels of vehicles, i.e. passenger vehicles, emergency vehicles, pedestrians, cyclists, slow-moving vehicles, heavy transport vehicles, etc., and allow the passage of drainage throughout the Township.

Bridge and culvert assets have prescribed levels of service reporting requirements under O. Reg. 588/17. These requirements include levels of service reporting from two different levels, i.e. community levels of service and technical levels of service. Community levels of service objectives describe service levels in terms that residents understand and reflect their scope and quality expectations of the bridge and culvert network. Technical levels of service describe the scope and quality of Township bridges and culverts through performance measures that can be quantified, evaluated, and detail how effectively a municipality provides services. Table 3-3 presents the current levels of service as mandated by O. Reg. 588/17 (*) and as set by the Township.

Table 3-3

2023 Bridge and Culvert Current Levels of Service

COMMUNITY LEVELS OF SERVICE	TECHNICAL LEVELS OF SERVICE
Bridge assets are currently in a "Very Good" condition on average, and meet the requirements of Ontario Regulation 104/97: Standards for Bridges.  (RCRO0020 Crossley Hunter)	Average Bridge Condition Index (BCI) value for bridge assets: * **BCI 81**
Structural culvert assets are currently in a "Fair" condition on average, and meet the requirements of Ontario Regulation 104/97: Standards for Bridges.  (RCOL0050 College Line)	Average Bridge Condition Index (BCI) value for structural culvert assets: * **BCI 68**
There are no bridge or structural culvert assets with traffic usage restrictions (e.g. heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists, etc.).	Percentage of assets with traffic usage restrictions: * **0%**

LIFECYCLE MANAGEMENT

LIFECYCLE ACTIVITIES

This section will detail the lifecycle activities (capital treatments) as set forth in the 2020 OSIM report. The treatments that the Township currently employs in the management of its bridges and culverts include:

Bridge	Culvert
Rehabilitation – Standard	Reconstruction
Rehabilitation – Including Jacking the Deck	
Reconstruction	

Table 3-4 details the costs for the lifecycle activities listed above. These costs are presented as a percentage of estimated replacement cost for the entire bridge, which are derived from averages present in the 2020 OSIM report. The "Rehabilitation – Includes Jacking the Deck" treatment is a flag from the 2020 OSIM report, where this treatment is only performed if the recommended rehabilitation treatment for a bridge required jacking of the deck. As this is a costly endeavour, the percent of replacement cost attributed to this treatment is greater than standard rehabilitations. After completing a rehabilitation treatment that includes jacking of the deck, or a reconstruction, this flag is removed, and all subsequent rehabilitations will be standard rehabilitations, until such a time as it is deemed that a jacking of the deck treatment would be necessary again.

Table 3-4

Bridge and Culvert Treatment Costs as Percent of Total Replacement

Treatment	Applies To	% of Replacement Cost
Rehabilitation – Standard	Bridge	22%
Rehabilitation – Includes Jacking the Deck	Bridge	43%
Reconstruction	Bridge & Culvert	100%

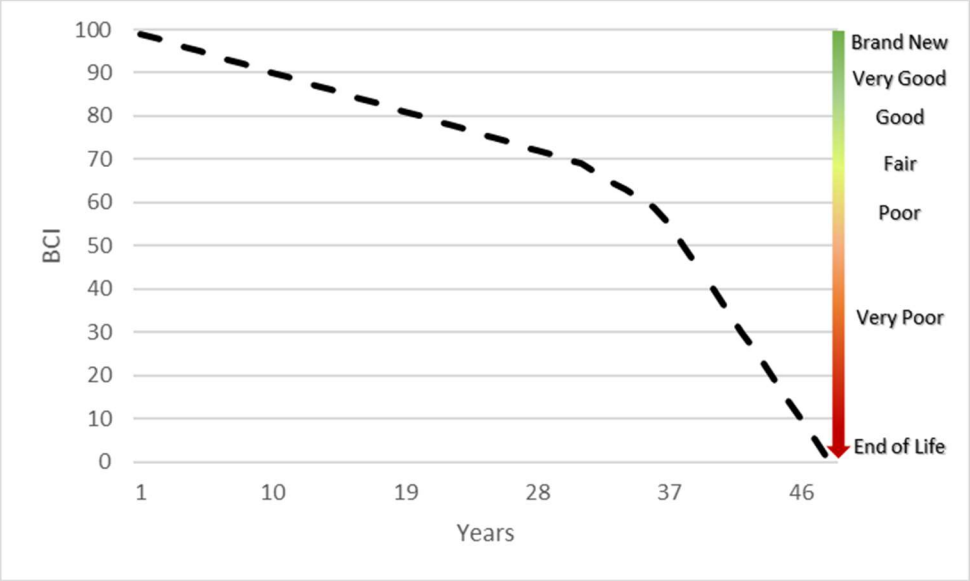
DEGRADATION PROFILES

Assets deteriorate over time, eventually reaching a point where they have no remaining service life left. However, the path each asset takes in reaching its end of life differs, even for assets of the same type. A condition rating identifies where along the path any particular asset lays, or in other words, how long an asset has left before it reaches its end of life. Therefore, condition and service life are linked, and can be plotted graphically to visually represent the degradation curve of an asset.

Figure 3-2 presents the degradation profile of bridges and culverts that has been developed based on information contained in the Township's 2020 OSIM report. Through the process of conducting the required bi-annual bridge and culvert inspections, the Township will be able to further refine the degradation profile associated with these assets.

Figure 3-3

Bridges & Culverts Degradation Profile



DECISION CRITERIA

Table 3-5 presents the decision criteria, developed by referencing the 2020 OSIM report, for triggering specific bridge and culvert treatments. When the decision criteria for a given asset are met, the corresponding treatment is eligible to be applied. When a treatment is applied, the BCI of the asset is improved by the amount specified in the "Gain to Condition" column, but not to exceed the amount listed in the "Maximum Condition Threshold" column.

Table 3-5

Bridge and Culvert Treatment Decision Criteria

Asset Type	Treatment	BCI Range	Flag – Requires Jacking of Deck	Gain to Condition	Maximum Condition Threshold
Bridge	Rehabilitation – Incl. Jacking of Deck	45-36	True	+99	99
	Rehabilitation – Standard	45-36	False	+99	99
	Reconstruction	35-0	N/A	+100	100
Culvert	Reconstruction	35-0	N/A	+100	100

EXPECTED LIFECYCLE AND ASSOCIATED RISK

Combining the treatments, degradation profiles, and decision criteria results in a complete lifecycle management strategy. Figure 3-4 and 3-5 present illustrative examples of the expected lifecycle for bridges and culverts, respectively. The dashed, vertical lines represent points of intervention in the representative asset's expected life. The lifecycle path of the asset is represented by the solid lines, following the degradation profile presented above. Finally, the dotted line demonstrates the expected lifecycle of an asset were it to not receive any treatments over the course of its service life.

The lifecycle strategy as defined for bridges is a preservation strategy, which means that an asset will only receive rehabilitation treatments and not be reconstructed, assuming the window of opportunity to conduct the rehabilitation treatments has not passed. In other words, as long as budgetary constraints never prevent a bridge rehabilitation from occurring as it becomes due, a bridge will never degrade to a point that it needs to be reconstructed. For example, a representative bridge will degrade from some BCI greater than 45, and upon reaching a BCI of 45, the bridge will be triggered for a rehabilitation, which in turn increases its BCI to 99. This process will loop ad infinitum until such a time as budgetary pressures prevent the rehabilitation from occurring. If the fiscal limits prevent the bridge from being treated for some time period that the bridge's BCI falls to 35 or below, only then will a reconstruction be triggered.

The lifecycle strategy for culverts is to reconstruct (replace) when the designated BCI is reached. While this strategy is simple—and may not appear to be significantly different from an age-based replacement strategy—because it is informed by the assessed condition this strategy results in more accurate forecasting. As the asset's condition is regularly re-assessed biennially, the timing of the eventual reconstruction could vary significantly from an age-based approach. For example, if the environment that the culvert resides in causes it to degrade quicker or slower than the expected average, and the

assessed condition rating reflects this, then the eventual replacement will be triggered at a different time than an age-based approach.

In addition to the biennially scheduled OSIM inspections, an enhanced review will be conducted on structures as they approach the forecasted rehabilitation/reconstruction period. The enhanced review will consider the condition of individual structure components as well as environmental factors, traffic, and other risks. Reviewing these associated risks will ensure the recommended rehabilitation or reconstruction period optimizes budget requirements and reflects the level of service an asset provides.

Figure 3-4

Lifecycle Strategy – Bridges

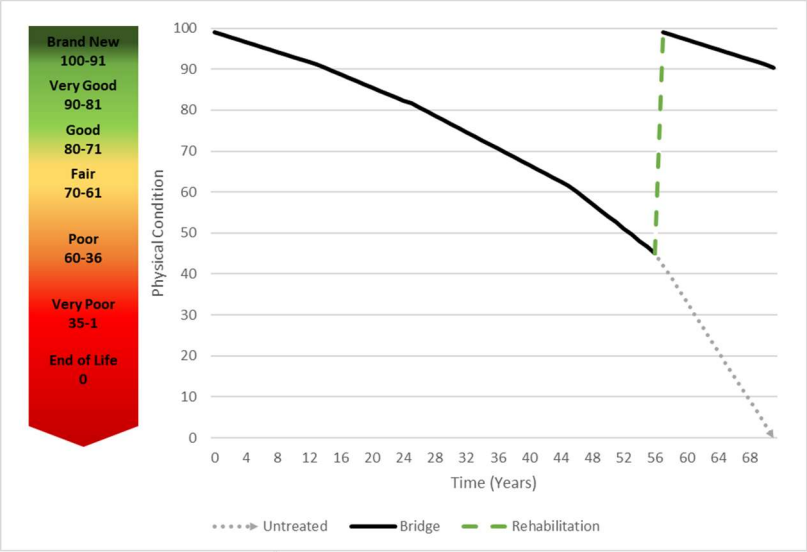
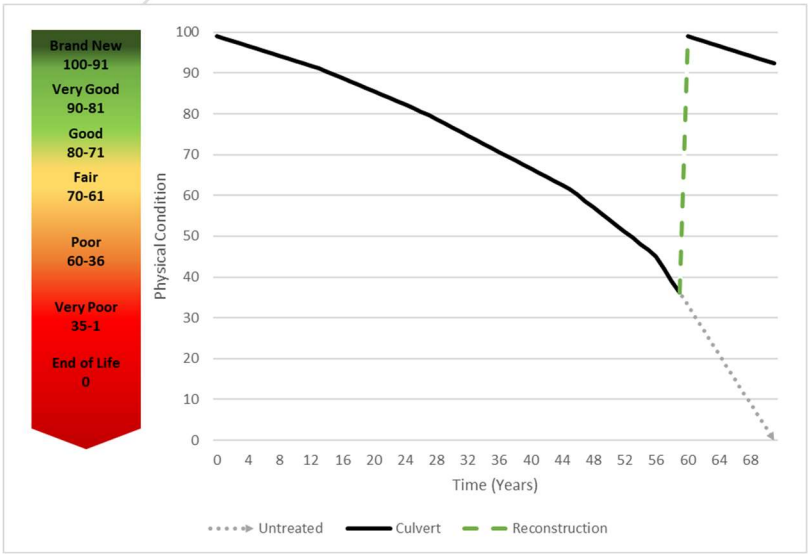


Figure 3-5

Lifecycle Strategy – Structural Culverts



FORECASTS

NETWORK FORECASTS

The lifecycle replacement activities planned for road segment assets are projected to cost approximately $20.7 million over the 20-year forecast period. For a detailed breakdown of costs, refer to Table A-2 in Appendix A: Network Cost Forecasts.

Figure 3-6 presents the 20-year expenditure forecast that results from following the lifecycle management strategy detailed above. This forecast illustrates the annual expenditures without any consideration to budgetary constraints. Over the 20-year forecast period, the average annual expenditure would be approximately $1 million.

The expenditure forecast includes a capital inflation factor of 3.5% annually, which aligns closely with the historical 20-year annual average rate of inflation as witnessed in Statistics Canada's Building Construction Price Index. The forecast also includes a 20% estimated cost for engineering, environmental assessments, and geotechnical studies, etc., for major projects.

Figure 3-6
Bridge & Culvert Expenditure Forecast

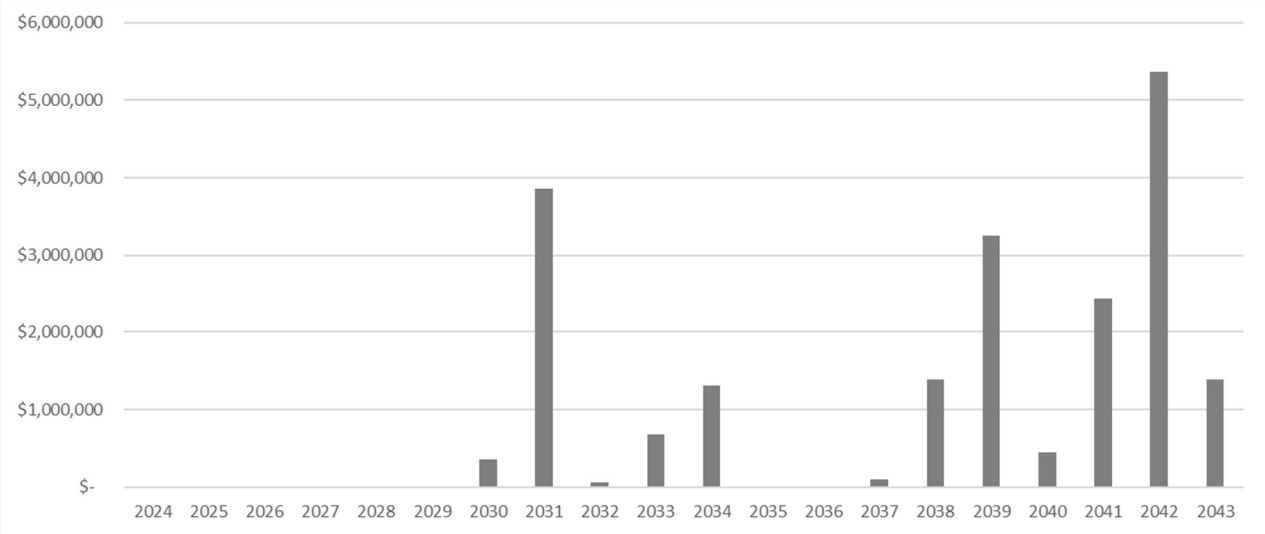
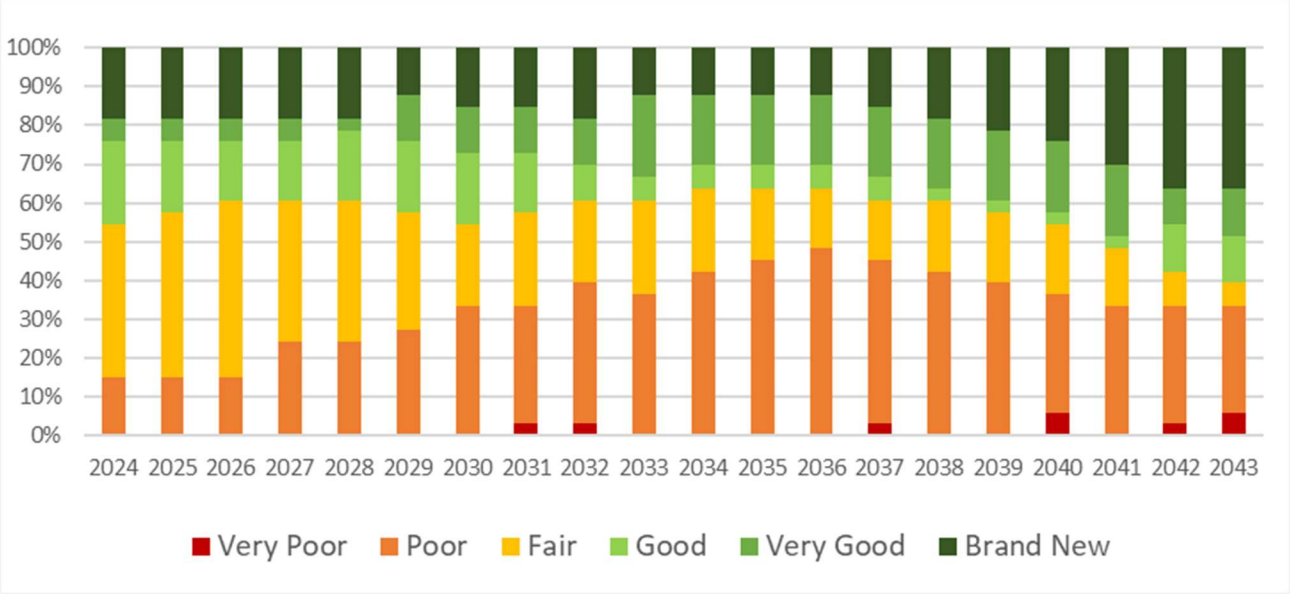


Figure 3-7 demonstrates the bridge and culvert network percentage of service level states over the forecasted period as a result of implementing this lifecycle management funding strategy. This funding strategy will enable the Township to move towards a sustainable position of maintaining the current levels of service for bridge and culvert assets.

Figure 3-7

Bridge & Culvert Network Service Level States



ASSET TYPE FORECASTS

Figures 3-8 and 3-9 display the average condition trend that results from executing the lifecycle management strategy over the 20-year forecast period for each asset type. Structural culvert assets maintain a “fair” condition state during the forecast period, and the average condition of bridges moves from a “good” to “fair” condition state during the forecast period. Significant investment in bridge and structural culvert assets during the forecast period will result in a return to a “good” condition state on average for bridges and will maintain the “fair” condition state for structural culverts.

Figure 3-8

Asset Type Forecast – Bridges

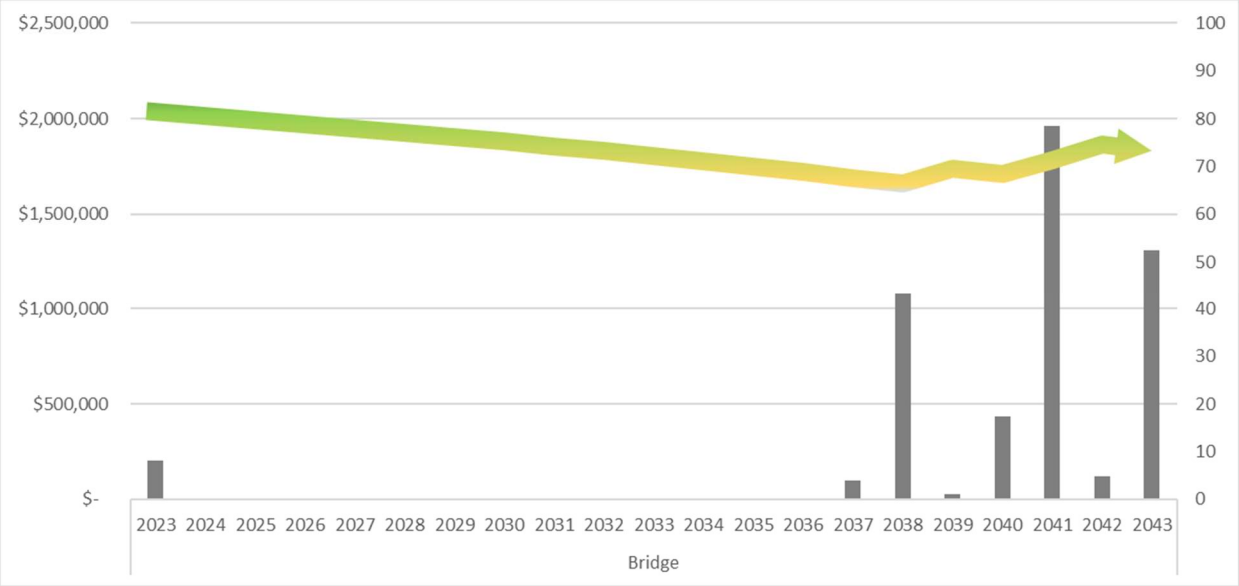
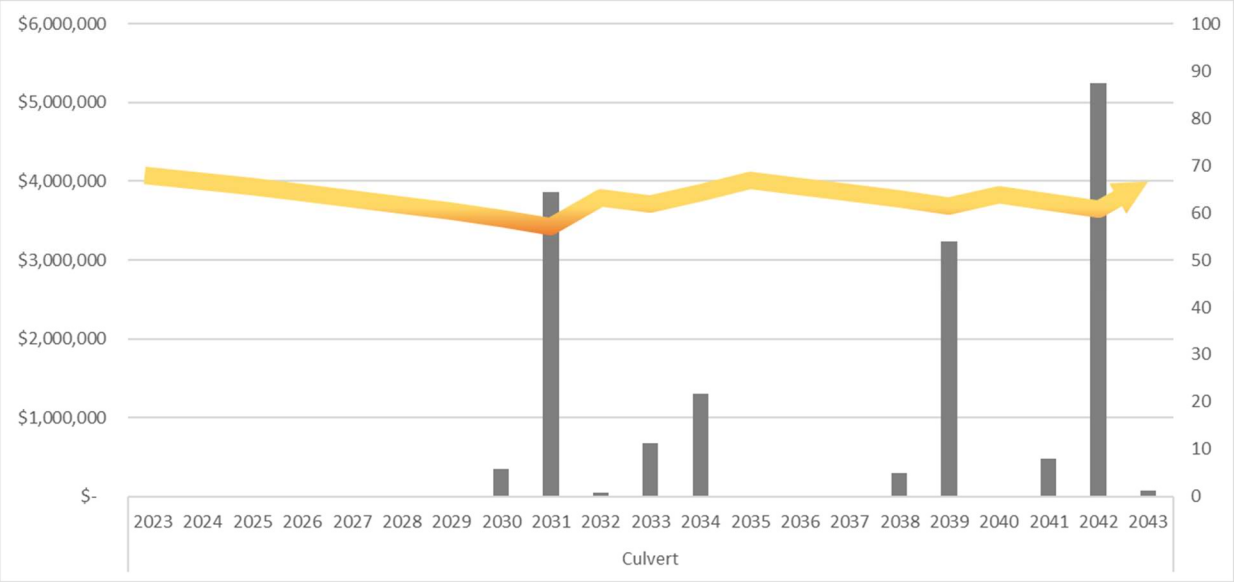


Figure 3-9

Asset Type Forecast – Structural Culverts



4. SIDEWALKS AND STREETLIGHTS

STATE OF LOCAL INFRASTRUCTURE

ASSET CLASS SUMMARY

The Township currently owns 5 km of sidewalks, and 144 street lights—each consisting of a head and an arm. The 2023 replacement value totaling approximately $937,000. The replacement value has been estimated based on inflating historical cost. Table 4-1 provides a summary of quantity, age, and replacement value for the current sidewalk and streetlight network.

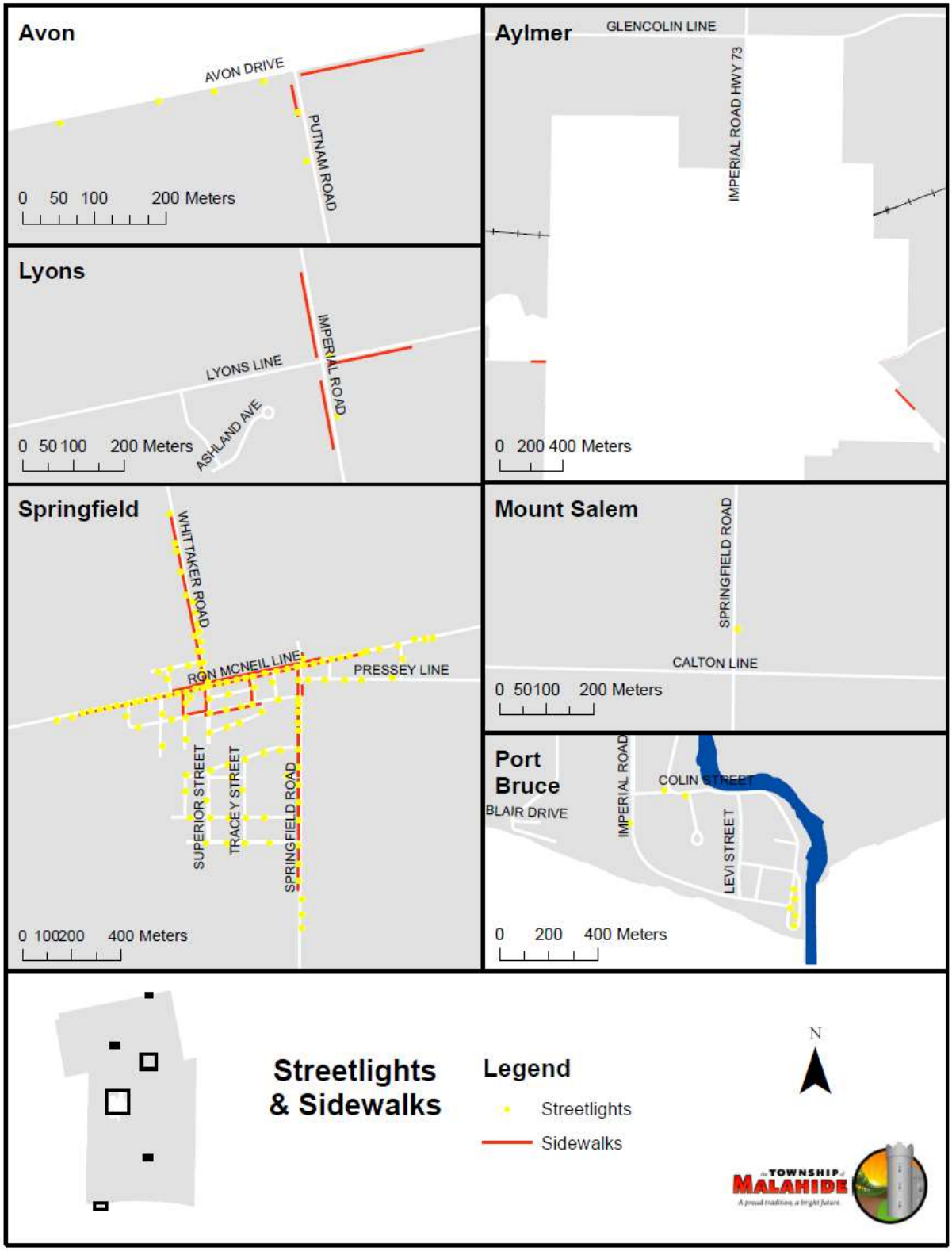
Figure 4-1 maps the sidewalk and streetlight assets to visualize the Township's current asset network.

Table 4-1

Sidewalk and Streetlight Infrastructure Summary

Type	Quantity	Average Age	Replacement Cost (2023 $)
Sidewalk	4.996 km	13	$802,800
Streetlights – Head & Arm	144	9	$134,200
TOTAL			$937,000

Figure 4-1
Sidewalk and Streetlight Network Map



CONDITION

The Township Staff assessed the condition of the sidewalk and streetlight network, applying a condition state for the percentage of useful life remaining for assets. The percentage of useful life remaining is based on a predetermined useful life for sidewalks is 50 years, and for streetlights is 20 years. To better communicate the condition of the sidewalk and streetlight network, the numeric condition ratings have been segmented into qualitative condition states as summarized in Table 4-2.

Figure 4-2

Sidewalk and Streetlight Condition States Defined with Respect to Useful Life

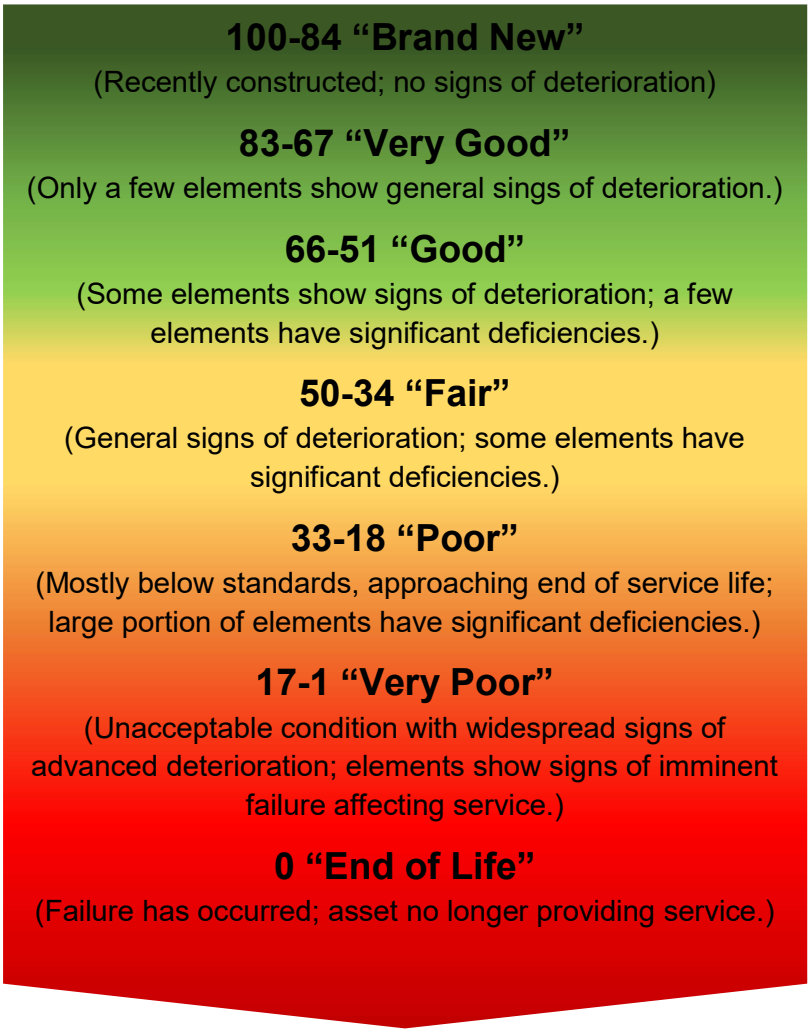


Table 4-2 details the weighted average condition rating of sidewalks (based on length) and streetlights (overall unit). The condition of the assets comes from a combination of the percentage of useful life remaining and visual condition inspections. On average, the network is in a "Very Good" condition state. The lowest observed condition in the sidewalk and streetlight network is 37 "Fair" in the asset category of Sidewalks.

Table 4-2

Sidewalk and Streetlight Condition Analysis

Type	Quantity	Average % of Useful Life Remaining (ULR)	Average Condition State
Sidewalks	4.996 km	76	"Very Good"
Streetlights	144	56	"Good"
TOTAL			"Very Good"

LEVELS OF SERVICE

CURRENT LEVELS OF SERVICE

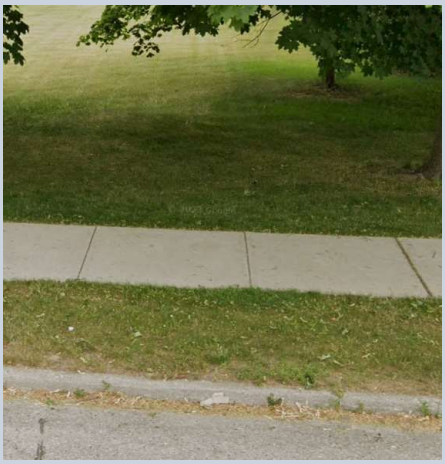
The levels of service currently provided by the Township's sidewalk and streetlight network is, in part, a result of the state of local infrastructure identified above. A level of service analysis defines the current levels of service and enables the Township to periodically evaluate these service levels.

Sidewalks and streetlight assets do not have prescribed levels of service reporting requirements under O. Reg. 588/17. The Township has set performance measures for levels of service beyond the requirements under regulation. These performance measures will follow the format of two different service levels, i.e. community levels of service and technical levels of service. Community levels of service objectives describe service levels in terms that customers understand and reflect their scope and quality expectations of the sidewalk and streetlight network. Technical levels of service describe the scope and quality of Township sidewalks and streetlights, through performance measures that can be quantified, evaluated, and detail how effectively a municipality provides services.

Table 4-3 presents the current levels of service as set by the Township.

Table 4-3

2023 Sidewalk and Streetlight Network Current Levels of Service

COMMUNITY LEVELS OF SERVICE	TECHNICAL LEVELS OF SERVICE
Sidewalk assets are in a “Very Good” condition on average.  (Ron McNeil Line)	Average sidewalk condition: **76**
Streetlight assets are in a “Good” condition on average.  (Ron McNeil Line)	Average streetlight condition: **56**

LIFECYCLE MANAGEMENT

LIFECYCLE ACTIVITIES

This section will detail the lifecycle activities (capital treatments) as prescribed by Township staff. The Township currently only performs reconstruction treatments in the management of its sidewalk assets, and replacement of streetlights – arms and head. The costs to perform a reconstruction treatment on a sidewalk or a replacement of a component of a streetlight are therefore simply the currently evaluated replacement cost, as of 2023.

DEGRADATION PROFILES

Assets deteriorate over time, eventually reaching a point where they have no remaining service life left. However, the path each asset takes in reaching its end of life differs, even for assets of the same type. A condition rating identifies where along the path any particular asset lays, or in other words, how long an asset has left before it reaches its end of life. Therefore, condition and service life are linked, and can be plotted graphically to visually represent the degradation curve of an asset.

Figure 4-3 and 4-4 present the degradation profiles of sidewalks and streetlights, respectively. Through the process of conducting annual sidewalk condition assessments, the Township will be able to collect data to further refine the degradation profile. For example, a sidewalk will degrade from a condition of “Brand New” to “Very Good” and from “Very Poor” to “End of Life” very rapidly.

Figure 4-3
Sidewalk Degradation Profile

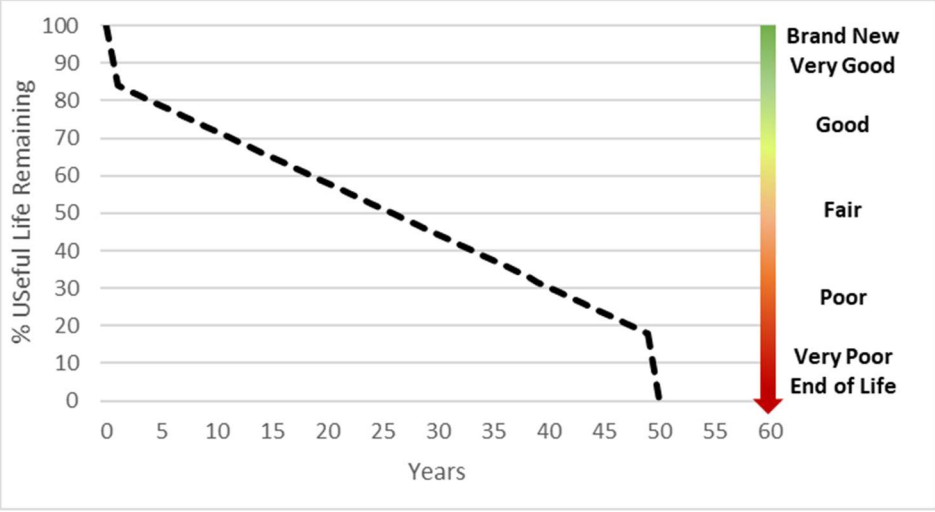
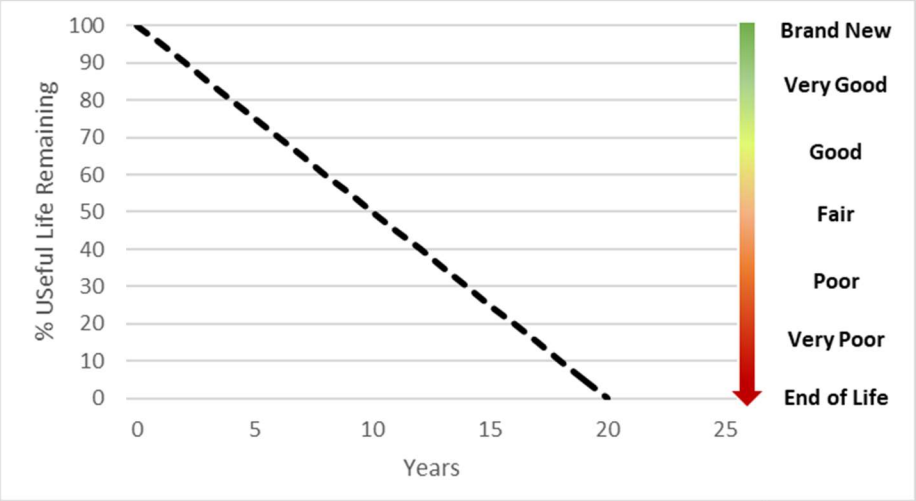


Figure 4-4

Streetlight Degradation Profile



DECISION CRITERIA

Table 4-4 presents the decision criteria—developed through discussions amongst Township staff—for triggering sidewalk reconstruction and streetlight replacements. When the decision criteria for a given asset are met, the corresponding treatment is eligible to be applied. When a treatment is applied, the condition of the asset is improved by the amount specified in the "Gain to Condition" column, but not to exceed the amount listed in the "Maximum Condition Threshold" column.

Table 4-4

Sidewalk and Streetlight Treatment Decision Criteria

Treatment	Condition Range	Gain to Condition	Maximum Condition Threshold
Reconstruction - Sidewalks	18-0	+100	100
Replacement - Streetlights	5-0	+100	100

EXPECTED LIFECYCLE

Combining the treatments, degradation profiles, and decision criteria presented herein results in a complete lifecycle management strategy. Figure 4-5 and 4-6 present an illustrative example of the expected lifecycle for sidewalks and streetlights, respectively. The dashed, vertical lines represent points of intervention in the representative asset's expected life. The lifecycle path of the asset is represented by the solid lines, following the degradation profile presented above. Finally, the dotted-line represents what would happen to the asset if left untreated.

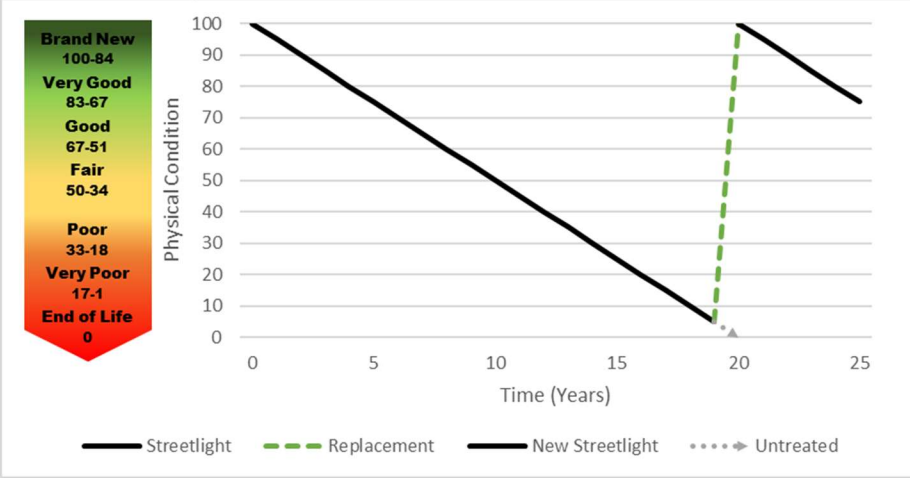
The lifecycle strategy for sidewalks is to reconstruct when an asset reaches a condition of “Very Poor” or “End of Life”. The strategy for streetlights is to replace the two components of a streetlight when they fail. While these strategies are simple, they are informed by the assessed condition and thus results in more accurate forecasting. As the sidewalk asset’s condition is re-assessed over time, the eventual timing of reconstruction could vary significantly from an age-based approach. The streetlight asset’s condition is age-based, however the failure could vary significantly from the forecasted average. For example, if the environment that the asset resides in causes it to degrade quicker or slower than the expected average, and the assessed condition rating reflects this, then the eventual replacement will be triggered at a different time than would be indicated by an age-based approach.

Figure 4-5

Lifecycle Strategy – Sidewalks

Figure 4-6

Lifecycle Strategy – Streetlights



FORCASTS

NETWORK FORECASTS

The lifecycle replacement activities planned for road segment assets are projected to cost approximately $249,000 over the 20-year forecast period. For a detailed breakdown of costs, refer to Table A-3 in Appendix A: Network Cost Forecasts.

Figure 4-7 presents the 20-year expenditure forecast that results from following the lifecycle management strategy detailed above. This forecast illustrates the annual expenditures without any consideration to budgetary constraints. Over the 20-year forecast period, the average annual expenditure would be approximately $12,500.

Significant capital expenditures would not be expected for approximately 30 years. Streetlights in Springfield and Avon reach their 20-year estimated useful life expectancy in 2034. While they are forecasted to be replaced at that time, condition assessments will be undertaken to determine at more accurate replacement schedule.

The expenditure forecast includes a capital inflation factor of 3.5% annually, which aligns closely with the historical 20-year annual average rate of inflation as witnessed in Statistics Canada's Building Construction Price Index.

Figure 4-7

Sidewalk & Streetlight Network Expenditure Forecast

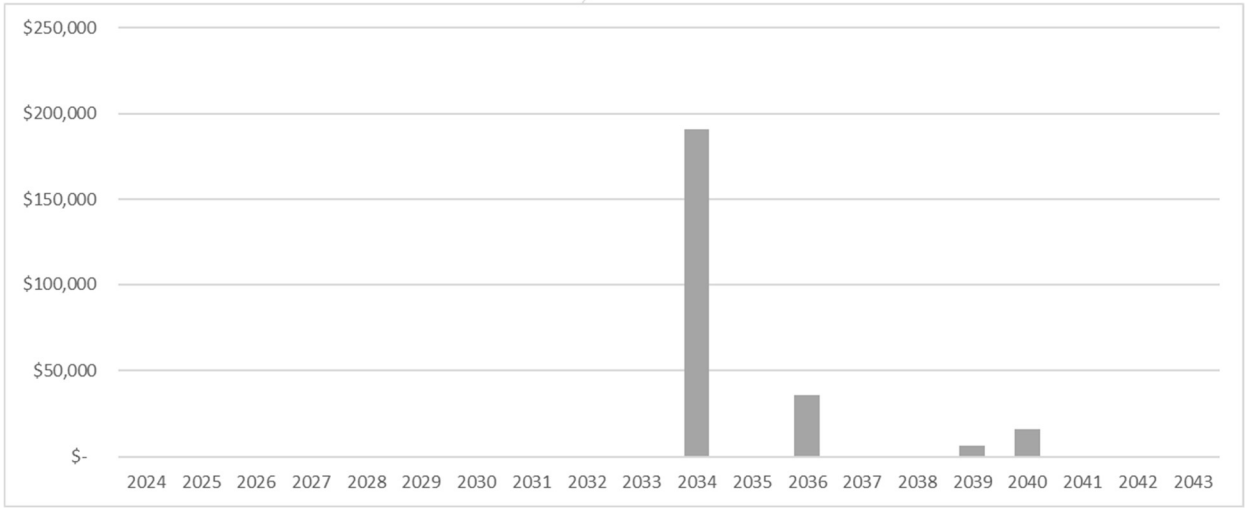
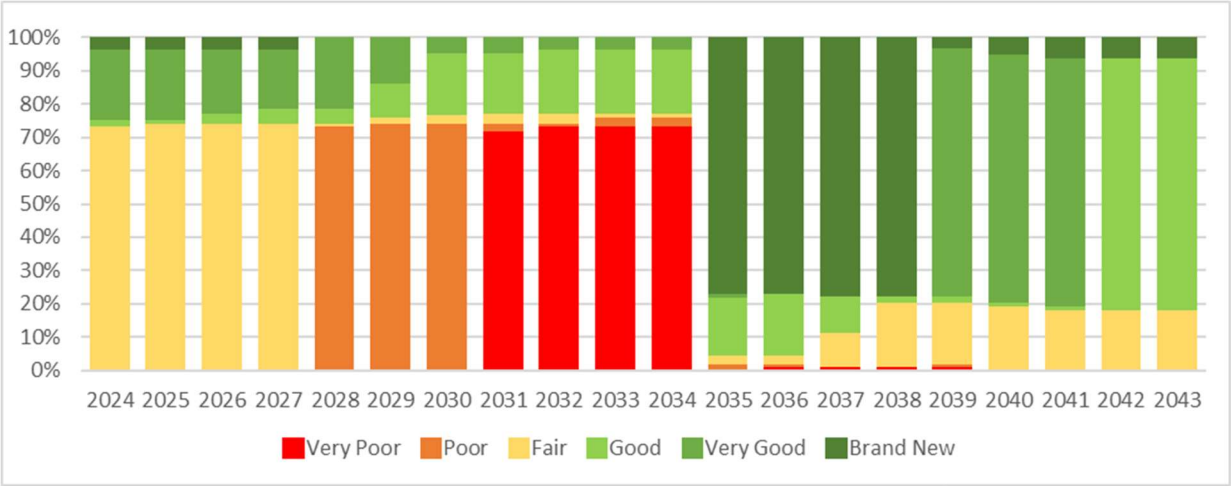


Figure 4-8 demonstrates the sidewalk and streetlight network service levels over the forecast period as a result of implementing this lifecycle management funding strategy. This funding strategy will enable the Township to move towards a sustainable position of maintaining the current levels of service for sidewalk and streetlight assets.

Figure 4-8

Sidewalk & Streetlight Network Condition Forecast

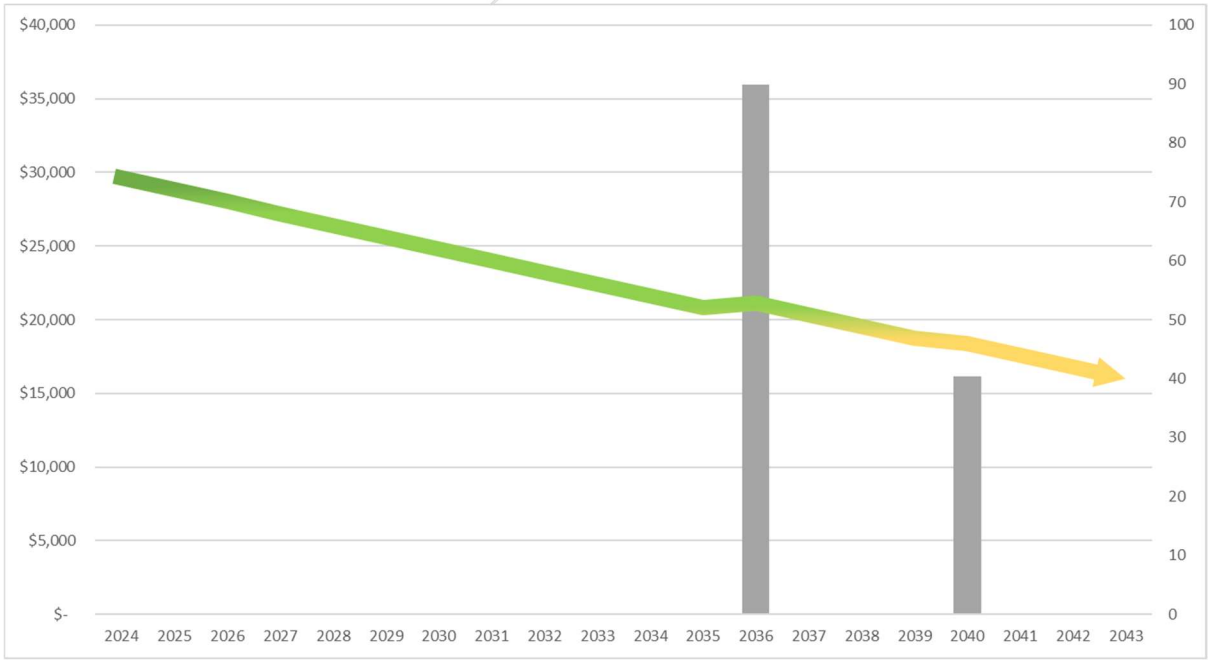


ASSET TYPE FORECASTS

Figures 4-9 and 4-10 display the overall average annual condition state of streetlight and sidewalk assets that result from executing the lifecycle activities as set forth in the lifecycle management strategy over the 20-year forecast period. The sidewalk network is expected to move from a “Very Good” condition state to a “Fair” condition state by the end of the forecast period.

Figure 4-9

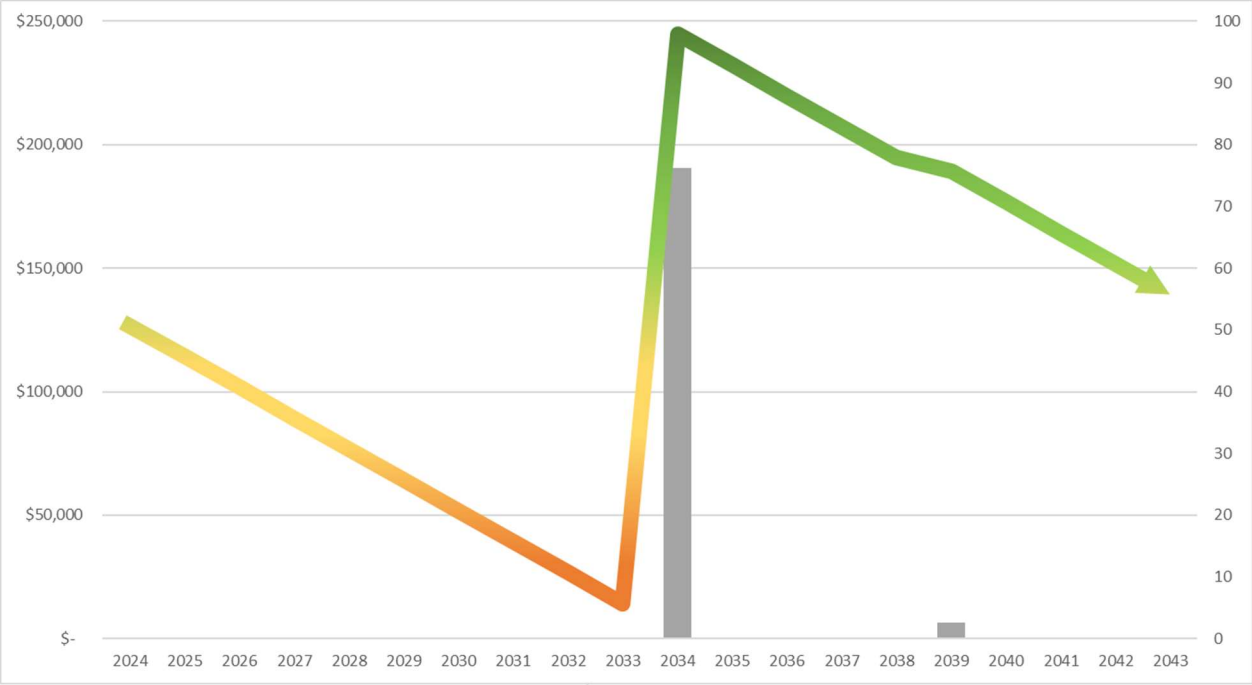
Asset Type Forecast - Sidewalks



The streetlight network is expected to move from a “Fair” condition state to a “Brand New” condition state in 2034 as a result of significant investment in streetlight assets in the village of springfield and Avon.

Figure 4-10

Asset Type Forecast - Streetlights



5. FACILITIES AND PUBLIC SPACES

STATE OF LOCAL INFRASTRUCTURE

ASSET CLASS SUMMARY

The Township currently owns and manages 7 Facilities, 7 parks, 3 ball diamonds, and 10 cemeteries, and a pier with a 2023 replacement value totaling approximately $29 million. The asset class summary has been informed by the Township's prior Asset Management Plan, by estimates provided from Township staff, by the Facilities Consolidation and Optimization Plan as prepared by Stirling Rothesay Consulting Inc. (November 22, 2021), and by the Building Condition Assessments as prepared by McIntosh Perry (October 24, 2023). Figure 5-1 maps the facility network to visualize the Township's current asset locations.

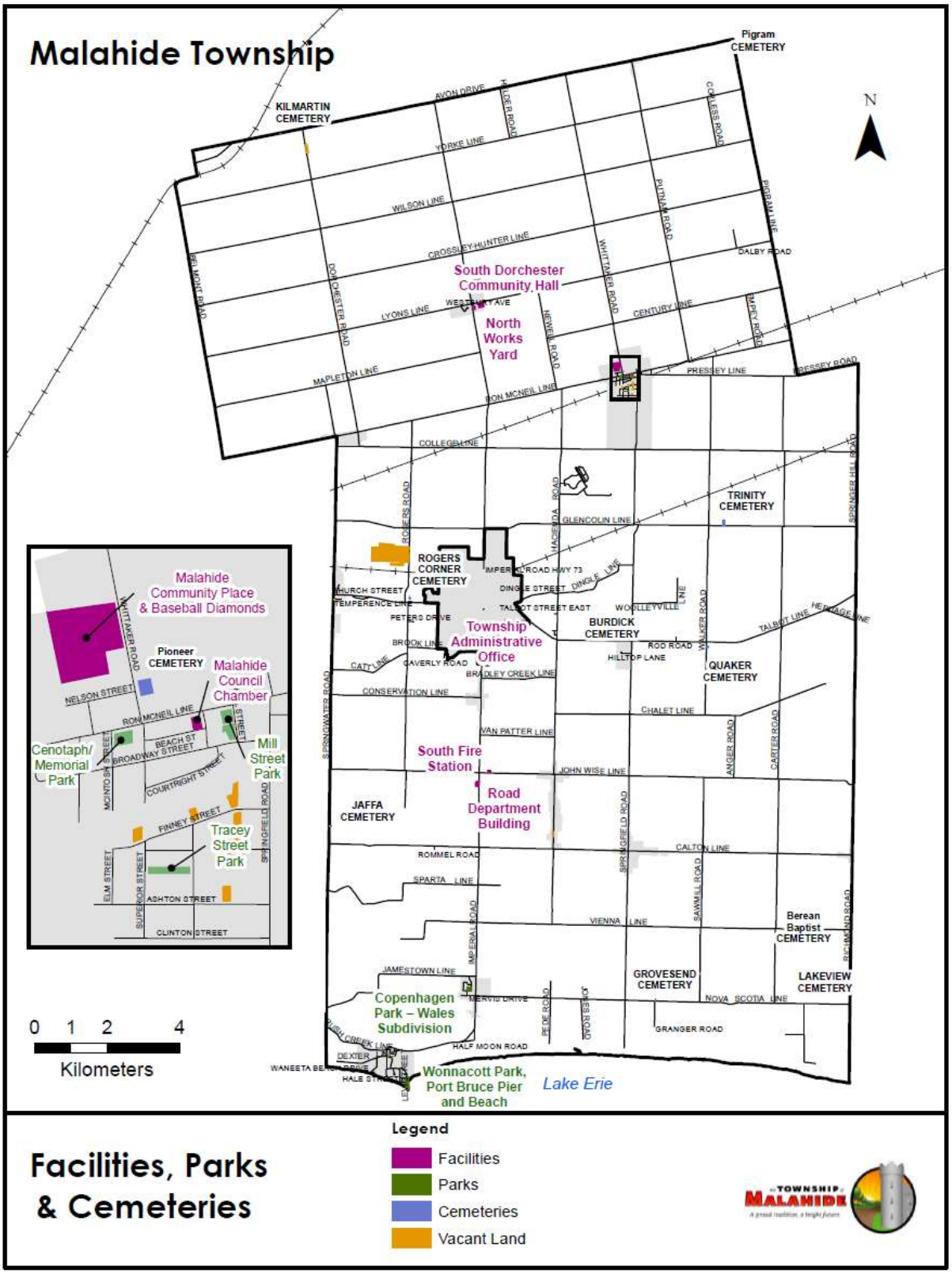
Table 5-1 summarizes the state of facilities, ball diamonds, parks, cemeteries, open space, and vacant land. The category "open space" pertains to areas servicing facilities or parks that are located on the same property (e.g. parking lots, curbs, etc.). The average age of the networks is just over 9 years old, with building components averaging 16 years, ball diamond components averaging 7 years, and park components averaging 7 years. The average age of cemetery components is currently unknown.

Table 5-1

Facility & Public Space Infrastructure Summary

Type	Number of Sites	Average Age	Replacement Cost (2023 $)
Facilities	7	16	$22,584,300
Ball Diamonds	3	7	$280,450
Parks	7	7	$656,200
Cemeteries	10	Unknown	$324,000
Pier	1	4	$2,814,000
Open Space	8	12	$1,971,100
Vacant Land	10	Unknown	$422,800
TOTAL	46	9	$29,052,850

Figure 5-1
Facility Network Map



CONDITION

The condition of facilities and public spaces is assessed in a combination of third-party consultant assessments, internal Township staff condition assessments, and age-based assessments based on industry best practices. Condition assessments are made both of the overall asset and of the defined components of an asset, which differ by asset type. Each component is assigned a condition rating based on a numeric scale of 0-100, with 51 or above being “Good” or better, and 50 or below being “Fair” or worse. For the purposes of this report, the individual components evaluated by Township staff have been aggregated into higher-level overall asset conditions to match the treatments that can be modelled.

These high-level component groupings are:

- Facilities – Exterior and interior building elements, mechanical and electrical equipment, overall condition;
- Ball Diamonds - Surface, lighting, fencing;
- Parks - Playground structures and surfaces, trails, fences, picnic tables, etc.;
- Cemeteries – fences only;
- Pier – Surface, shore protection, benches;
- Open Space – Parking lot surfaces, walkway surfaces, signage, curbs, and fences;
- Vacant Land – Condition is not assessed.

To better communicate the condition of these assets, the numeric condition ratings have been segmented into qualitative condition states, as summarized in Figure 5-2. Table 5-2 examines the average condition of these assets. The condition inspections were carried out in the summer of 2023, and represent the most up-to-date information available to the Township at this time.

Figure 5-2

Facility & Public Space Condition States Defined with Respect to Condition

100-84 "Brand New"
(Recently constructed; no signs of deterioration)

83-67 "Very Good"
(Only a few elements show general sings of deterioration.)

66-51 "Good"
(Some elements show signs of deterioration; a few elements have significant deficiencies.)

50-34 "Fair"
(General signs of deterioration; some elements have significant deficiencies.)

33-18 "Poor"
(Mostly below standards, approaching end of service life; large portion of elements have significant deficiencies.)

17-1 "Very Poor"
(Unacceptable condition with widespread signs of advanced deterioration; elements show signs of imminent failure affecting service.)

0 "End of Life"
(Failure has occurred; asset no longer providing service.)

Table 5-2

Facility & Public Space Condition Analysis

Facility Type	Number of Sites	Average Condition	Average Condition State
Facilities	7	55	Good
Ball Diamonds	3	64	Good
Parks	7	80	Very Good
Cemeteries	10	33	Poor
Open Space	8	74	Very Good
Pier	1	91	Brand New
TOTAL	36	66	Good

LEVELS OF SERVICE

CURRENT SERVICE LEVELS

The levels of service currently provided by the Township's facility & public space network is, in part, a result of the state of local infrastructure identified above. A level of service analysis defines the current levels of service and enables the Township to periodically evaluate these service level objectives.

Facility & public space assets do not have prescribed levels of service reporting requirements under O. Reg. 588/17. The Township has set performance measures for levels of service beyond the requirements under regulation. These performance measures will follow the format of two different service levels, i.e. community levels of service and technical levels of service. Community levels of service objectives describe service levels in terms that customers understand and reflect their scope and quality expectations of the facility network. Technical levels of service describe the scope and quality of Township facilities & public spaces, through performance measures that can be quantified, evaluated, and detail how effectively a municipality provides services. Table 5-3 presents the current levels of service as set by the Township.

Table 5-3

2023 Facility & Public Space Network Current Levels of Service

COMMUNITY SERVICE LEVELS	TECHNICAL PERFORMANCE MEASURES
Facilities are in "Good" condition on average.  (Malahide Community Place, Springfield)	Average facility condition: **55**
Parks are in "Very Good" condition on average.  (Wonnacott Park, Port Bruce)	Average park condition: **80**

Ball Diamonds are in "Good" condition on average.  (Malahide Community Place, Springfield)	Average ball diamond condition: **64**
Cemeteries are in "Poor" condition on average.  (Burdick Cemetery, Talbot Line)	Average cemetery condition: **33**
The pier is in "Brand New" condition on average.  (Port Bruce)	Average pier condition: **91**
Open spaces are in "Very Good" condition on average.  (Malahide Community Place, Springfield)	Average open space condition: **74**

LIFECYCLE MANAGEMENT

LIFECYCLE ACTIVITIES

The treatments that the Township currently employs in the management of its facilities and public spaces consists of the replacement of components that fall into the categories described in the *Condition* section above. This strategy is intended to replace the common high-level components of an asset that deteriorate over time. It is assumed that by replacing these components over time, and through continual maintenance activities of the asset as a whole, the overall condition of an asset will remain in fair or better condition. This implies that the core structural and sub-structural components of a facility or public space asset will not degrade appreciably. Therefore, the reconstruction or relocation of a facility or public space asset has not been modeled within this plan.

If circumstances arise in which a reconstruction is deemed necessary, then the outputs of this strategy would need to be modified in light of these changes. As some examples, a building's capacity could be deemed insufficient for Township needs or some event could harm the structural or sub-structural elements of a building, both of which could necessitate the reconstruction or relocation of an asset. In such cases, the existing capital plans for these assets would need to be readdressed through an update to this asset management plan.

Table 5-4 details the costs of these replacement treatments for facilities, by facility type. For all components except for core structural, sub-structural, siteworks, or the purchase of land, these costs are presented as a percentage of the total estimated replacement cost of the entire building. These percentages were estimated from the 2023 Building Condition Assessment report as prepared by McIntosh Perry, which provides replacement costs of the elements of various building types, and through discussions with Township staff.

Table 5-4
Component Costs as Percent of Total Replacement Cost

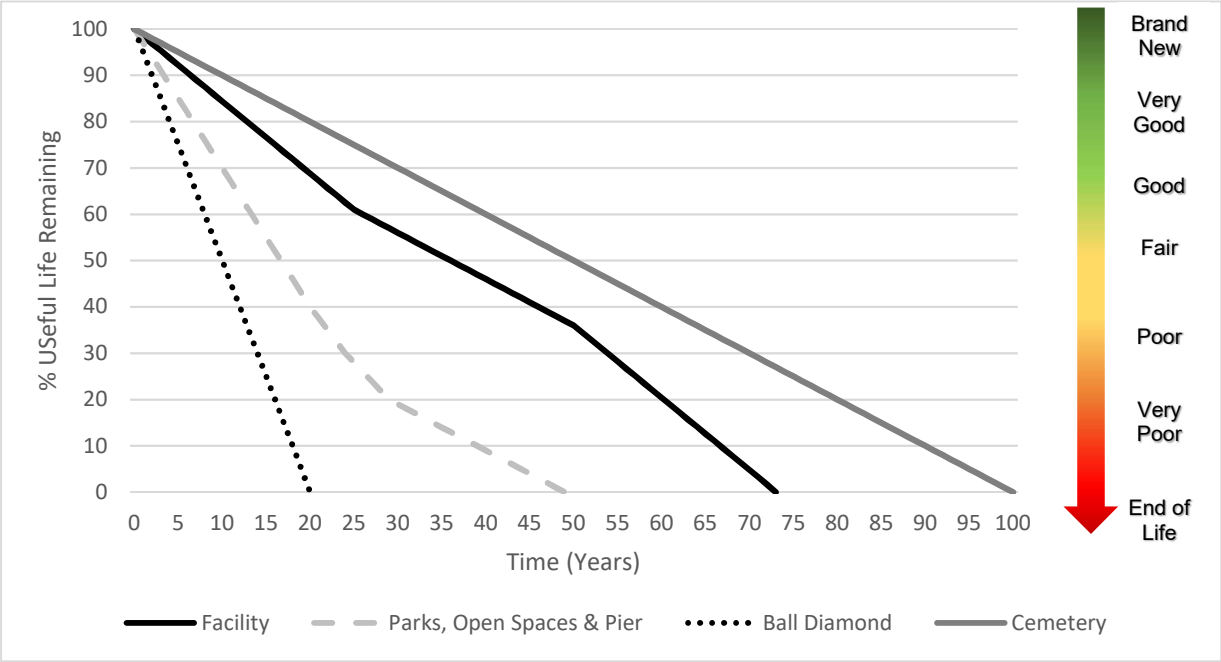
Treatment	Applies To	% of Total Replacement Cost
Exterior Building Elements	Facilities	5%-15%
Interior Building Elements	Facilities	2%-4%
Mechanical Equipment	Facilities	10%-20%
Electrical Equipment	Facilities	5%-10%
Surface	Ball Diamond	5%-10%
Lighting	Ball Diamond	5%-10%
Fencing	Ball Diamond	10%-20%
Playground Equipment & Surfaces	Parks	10%-20%
Shelters, Benches & Picnic Tables	Parks	5%-10%
Trails & Fences	Parks	10%-20%
Fences	Cemeteries	100%

DEGRADATION PROFILES

Assets deteriorate over time, eventually reaching a point where they have no remaining service life left. However, the path each asset takes in reaching its end of life differs, even for assets of the same type. A condition rating identifies where along the path any particular asset lays, or in other words, how long an asset has left before it reaches its end of life. Therefore, condition and service life are linked, and can be plotted graphically to visually represent the degradation curve of an asset. As some of high-level components consist of a variety of elements, of which there may be differing timeframes to reach the end of life condition state, some assumptions had to be made. For example, the Interior – Flooring component of buildings can consist of many different flooring types (i.e. tile, vinyl, carpets, etc.) which may have different expected useful lives. In these cases, an attempt was made to set the expected time to the predominant type.

Figures 5-3 presents the degradation profiles of facility and public space assets that have been developed. Through the process of conducting subsequent facility condition assessments, the Township will be able to further refine these degradation profiles. As mentioned in the *Condition* section, the condition assessments are on a 0-100 scale, with “Brand New” (100) and “End of Life” (0) start- and end-points.

Figure 5-3
Facility Degradation Profile



DECISION CRITERIA

Table 5-5 presents the decision criteria—developed through discussions with Township staff—for triggering facility component rehabilitation. When all of the decision criteria for a given asset are met, the corresponding component treatment is eligible to be applied. When a treatment is applied, the condition of the asset component is improved by the amount specified in the "Gain to Condition" column, but not to exceed the amount listed in the "Maximum Condition Threshold" column. Decision criteria are set to minimize risk of failure and risk to public safety.

Table 5-5
Facility Component Treatment Decision Criteria

Treatment	Condition Range	Gain to Condition	Maximum Condition Threshold
Facility & Ball Diamond Component Replacement	33-18	+100	100
Pier Component Replacement	33-18	+100	100
Park & Cemetery Component Replacement	17-1	+100	100
Open Space Component Replacement	17-1	+100	100

EXPECTED LIFECYCLE

Combining the treatments, degradation profiles, and decision criteria presented herein results in a complete lifecycle management strategy. Figure 5-4 to 5-6 present illustrative examples of the expected lifecycle of facility and public space asset components. The dashed, vertical line represent points of intervention in the representative asset's expected life. The lifecycle path of the asset is represented by the solid lines, following the degradation profile presented above. Finally, the grey, dotted line demonstrates the expected lifecycle of an asset were it to not receive any treatments over the course of its service life. The lifecycle strategy for facility, ball diamond, and pier components is to reconstruct when a condition 33 ("Poor") to condition 0 ("End of Life") is reached. The lifecycle strategy for park, cemetery, and open space components is to reconstruct when a condition 17 ("Very Poor") to condition 0 ("End of Life") is reached. While this strategy is simple, it is informed by the assessed condition and thus results in more accurate forecasting. As the asset's condition is assessed over time, the eventual reconstruction could vary significantly from an age-based approach. For example, if the environment that the component resides in causes it to degrade quicker or slower than the expected average, and the assessed condition rating reflects this reality, then the timing of an eventual replacement will be different time than would be indicated by an age-based approach.

Figure 5-4
Lifecycle Strategy – Facility Components

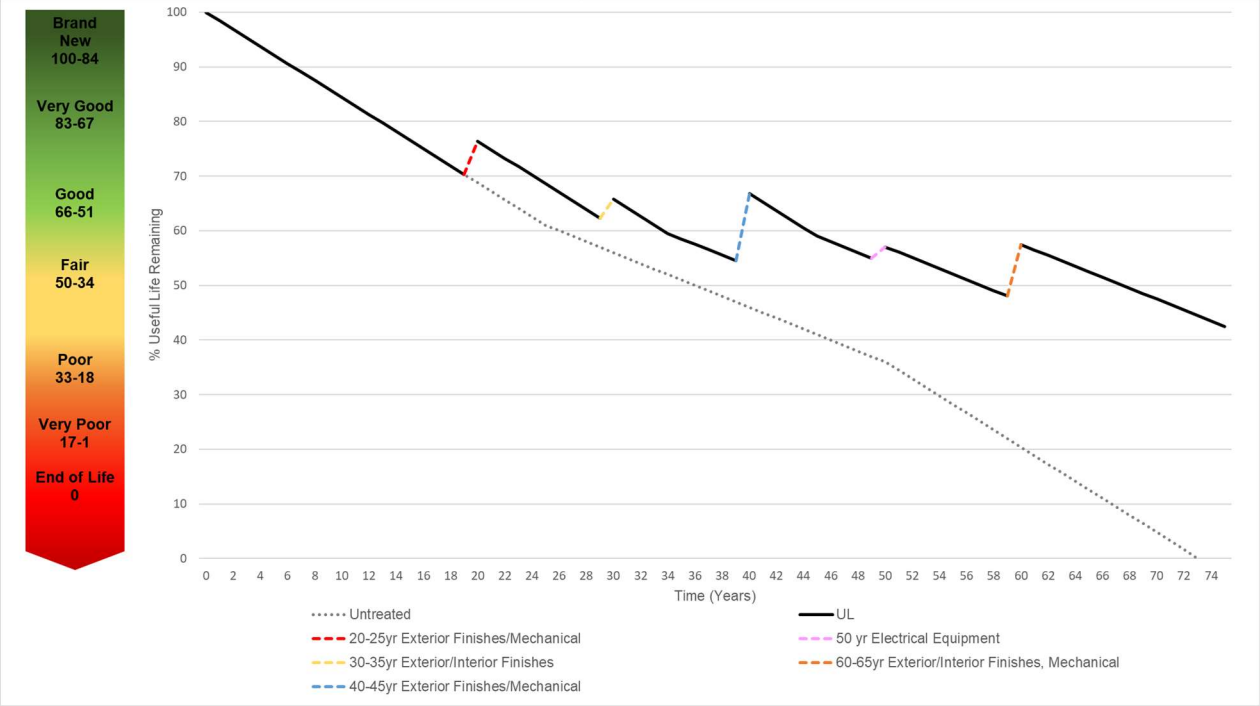


Figure 5-5
Lifecycle Strategy - Open Spaces

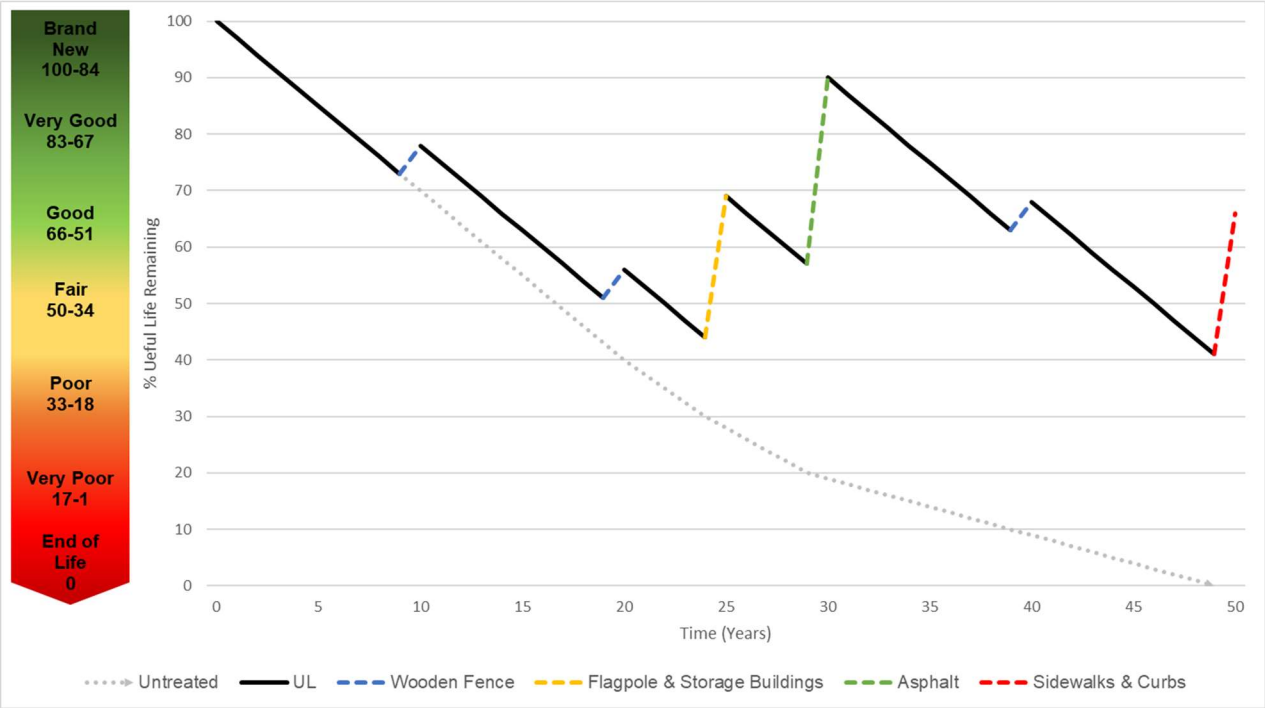
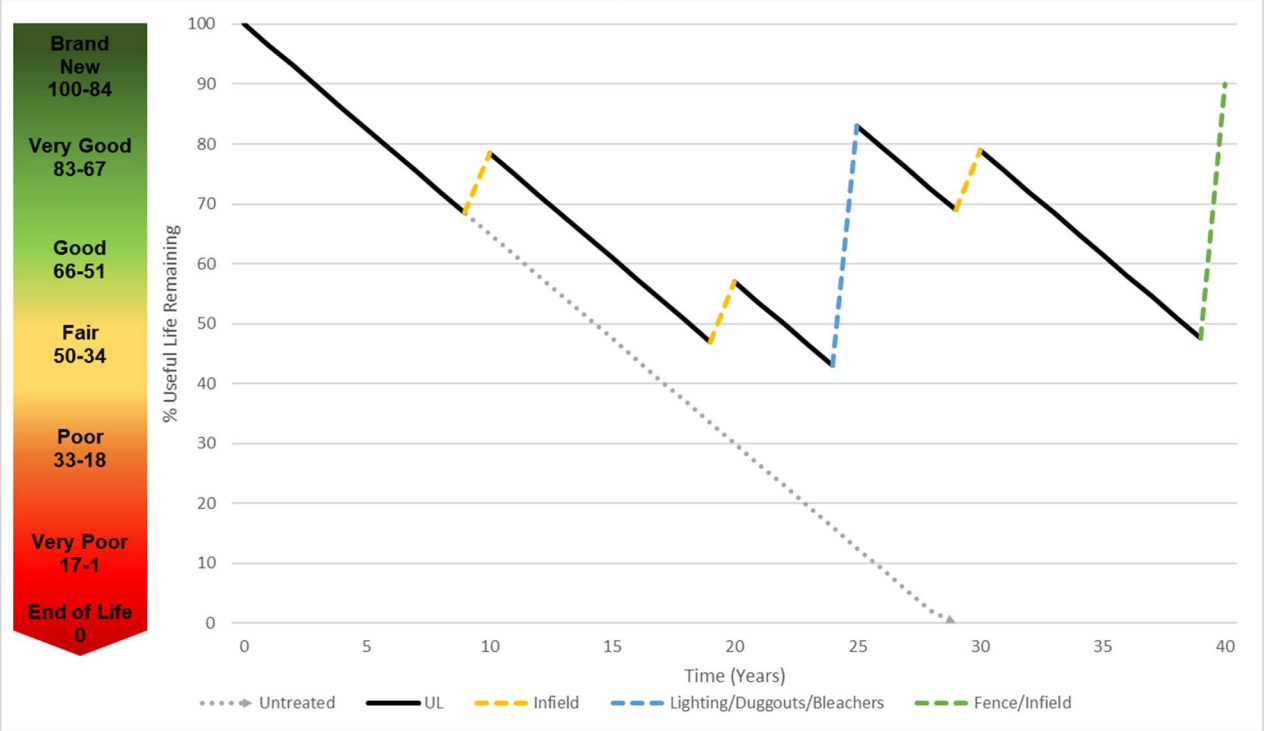


Figure 5-6
Ball Diamond Degradation Profile



FORECASTS

NETWORK FORECASTS

The lifecycle replacement activities planned for facility & public space assets are projected to cost approximately $9.8 million over the 20-year forecast period. For a detailed breakdown of costs, refer to Table A-4 in Appendix A: Network Cost Forecasts.

Figure 5-7 presents the 20-year expenditure forecast that results from following the lifecycle management strategy detailed above. This forecast illustrates the annual expenditures without any consideration to budgetary constraints. Over the 20-year forecast period, the average annual expenditure would be approximately $488,900.

Significant capital expenditures are expected towards the end of the forecast period with investments in facility rehabilitations being projected. While rehabilitations are forecasted at that time, condition assessments will be undertaken to determine at more accurate replacement schedule.

The expenditure forecast includes a capital inflation factor of 3.5% annually, which aligns closely with the historical 20-year annual average rate of inflation as witnessed in Statistics Canada's Building Construction Price Index.

Figure 5-7

Facility & Public Space Management Strategy – Funding Requirements

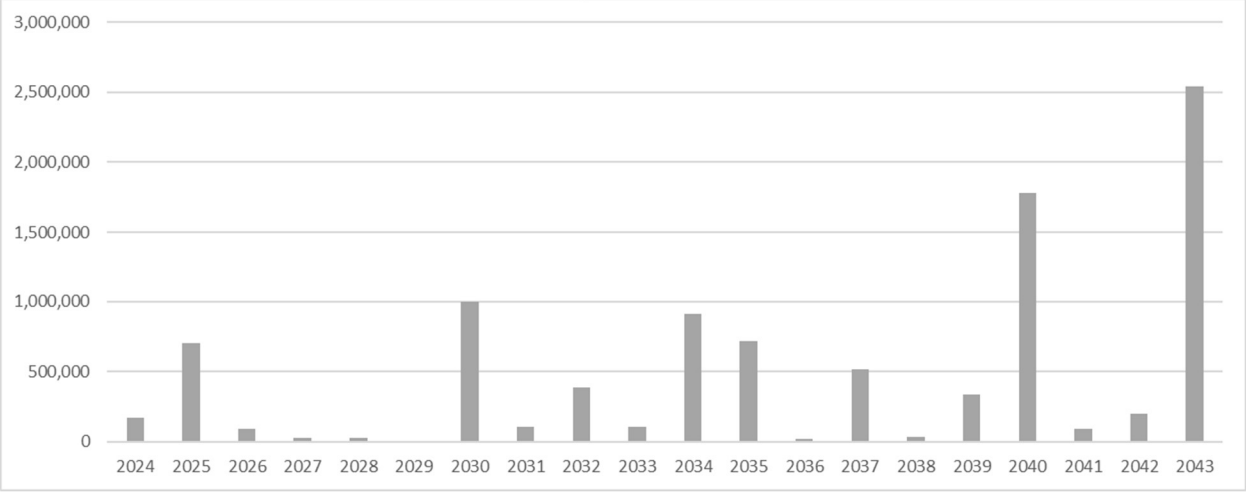
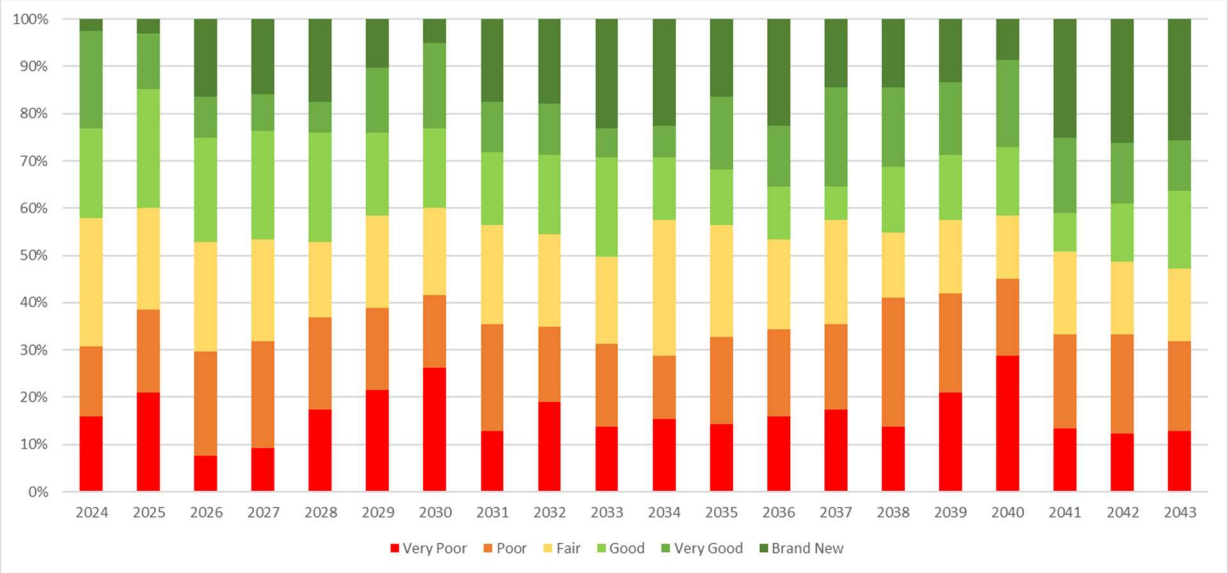


Figure 5-8 demonstrates the equipment asset network service levels over the forecast period as a result of implementing this lifecycle management funding strategy. This funding strategy will enable the Township to move towards a sustainable position of maintaining the current levels of service for facility & public space assets.

Figure 5-8

Facility & Public Space Lifecycle Management Strategy – Network Service Levels

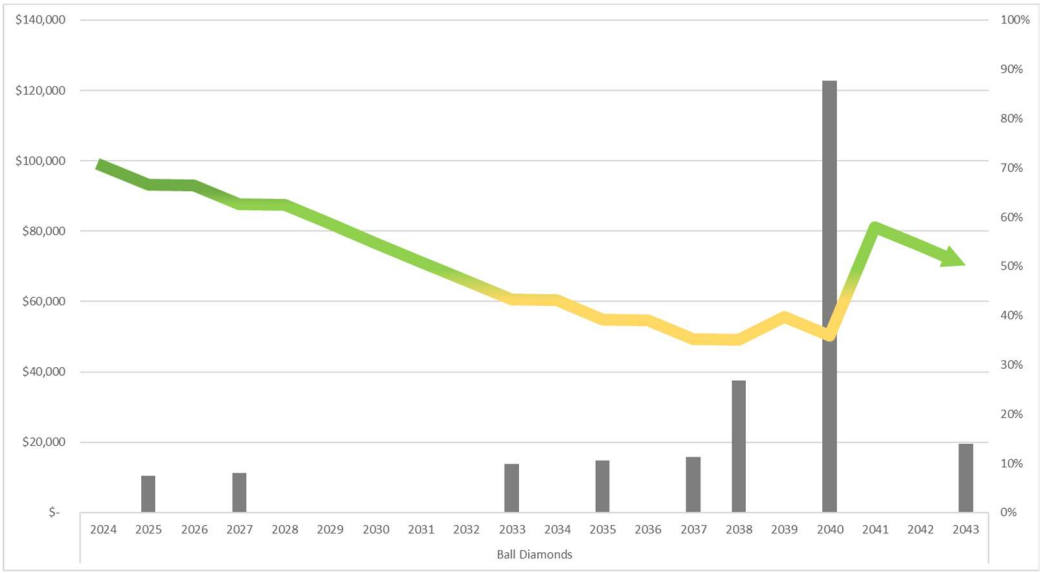


CATEGORY FORECASTS

Figure 5-9 displays average condition trend of the ball diamonds that results from executing the lifecycle activities over the 20-year forecast period. This asset category moves from a condition state of “very good” to “fair by 2040 when the infield lighting and dugout shelters are forecasted to be replaced. After this rehabilitation the ball diamonds are projected to return to a ‘good’ condition state.

Figure 5-9

Element Forecast – Ball Diamonds



6. EQUIPMENT

STATE OF LOCAL INFRASTRUCTURE

ASSET CLASS SUMMARY

The Township currently owns and manages approximately 2000 pieces of tangible asset equipment, with a 2023 replacement value totaling approximately $2.7 million. The replacement value has been based on inflating historical cost.

Table 6-1 provides a summary of quantity, and current replacement value of Township equipment assets, by department of ownership. The average age of equipment is 9 years, with Fire equipment averaging 9 years, Roads equipment averaging 11 years, Facility equipment averaging 9 years, and Administrative equipment averaging 6 years.

Table 6-1

Equipment Infrastructure Summary

Type	Quantity	Average Age	Replacement Cost (2023 $)
Fire Equipment	1000	9	$1,737,600
Roads Equipment	70	11	$536,200
Facility Equipment	850	9	$326,400
Administrative Equipment	70	6	$130,200
TOTAL	2000	9	$2,730,400

CONDITION

The Township currently employs a combination of visual inspections, physical inspections, and age-based condition ratings to inform the condition states of equipment assets. As identified herein, some of the asset classes covered within this plan do not have assessed conditions. For those assets without an assessed condition, the analysis focuses on an asset's age relative to its theoretical useful life. For purposes relevant to the Lifecycle Management Strategy (please see the following chapter), instead of relying on condition to describe the degradation profiles of these assets, the percentage of remaining useful life has been utilized. To better communicate where these assets are in their lifecycle, the percentage of remaining useful life has been segmented into qualitative condition states.

Figure 6-1 details how the percentage of remaining useful life is converted to these condition states. It is important to note that a condition state of “Very Poor” for these types of assets does not necessarily mean that the asset is performing poorly. It simply signals that the “End of Life” is approaching, and a replacement or other corrective treatment will be required soon.

There are legislated service lives for several types of firefighting equipment, including bunker gear and self-contained breathing apparatuses. The National Fire Protection Association, Occupational Health & Safety regulations, and the Minister of Labour all set industry-wide best practices on the useful life of firefighting equipment. Therefore, it is imperative that firefighting equipment be replaced as the remaining useful life reaches zero percent.

Figure 6-1

Condition States Defined with Respect to Percentage of Remaining Useful Life

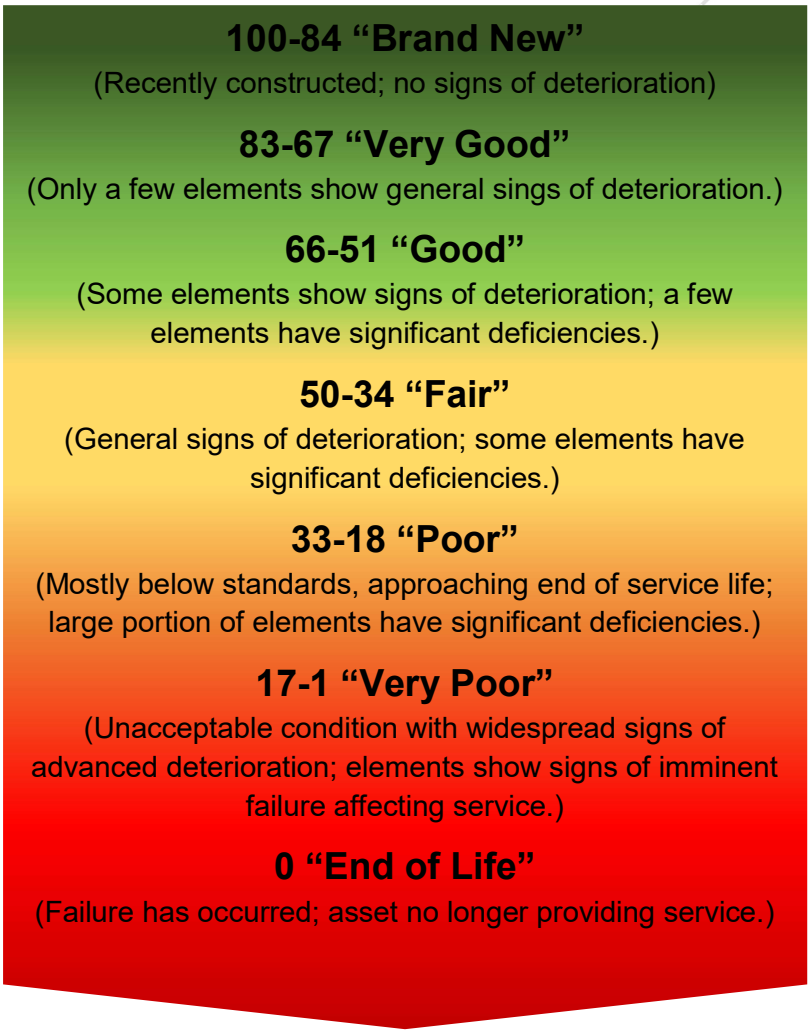


Table 6-2 details the average percentage of equipment assets that are in a condition state of “End of Life.” As presented, the average percentage of remaining useful life of all equipment assets is currently 47%, or a “Fair” condition state. Fire and Roads equipment are averaging a “Fair” condition state, with 46% and 39% remaining useful life respectively. Facility equipment is, on average, in a “Good” condition state, with 52% remaining useful life. Administrative equipment is, on average, in a “Poor” condition state, with 33% remaining useful life. Overall, 11% of the Township’s equipment is past its useful life, but may still be in usable condition as a “back-up” to in-service assets.

Table 6-2

Equipment Condition Analysis

Type	Quantity	% Remaining Useful Life	Average Condition State	% of Equipment Past Useful Life
Fire Equipment	1000	46%	Fair	3%
Roads Equipment	70	39%	Fair	1%
Facility Equipment	850	52%	Good	0%
Administrative Equipment	70	33%	Poor	7%
TOTAL	2000	47%	Fair	11%

LEVELS OF SERVICE

CURRENT LEVELS OF SERVICE

The level of service currently provided by the Township’s equipment assets is, in part, a result of the state of local infrastructure identified above. A level of service analysis defines current levels of service and enables the Township to periodically evaluate these service levels. Equipment assets have no prescribed level of service reporting requirements under O. Reg. 588/17. The Township has set performance measures for levels of service beyond the requirements under regulation. These performance measures will follow the format of two different service levels, i.e. community levels of service and technical levels of service. Community levels of service objectives describe service levels in terms that customers understand and reflect their scope and quality expectations of the fleet network. Technical levels of service describe the scope and quality of the fleet network, through performance measures that can be quantified, evaluated, and detail how effectively a municipality provides services. Table 6-3 presents the current levels of service as set by the Township.

Table 6-3

2023 Equipment Level of Service

COMMUNITY SERVICE LEVELS	TECHNICAL SERVICE LEVELS
Equipment assets utilized by the Fire Department are in "Fair" condition on average. 	Average Fire Department equipment condition: **ULR: 46%**
Equipment assets utilized by the Roads Department are in "Fair" condition on average. 	Average Roads Department equipment condition: **ULR: 39%**
Equipment assets utilized by the Administrative Department are in "Poor" condition on average. 	Average Administrative Department equipment condition: **ULR: 33%**
Equipment assets utilized by the Facility Department are in "Good" condition on average. 	Average Facility Department equipment condition: **ULR: 52%**

LIFECYCLE MANAGEMENT

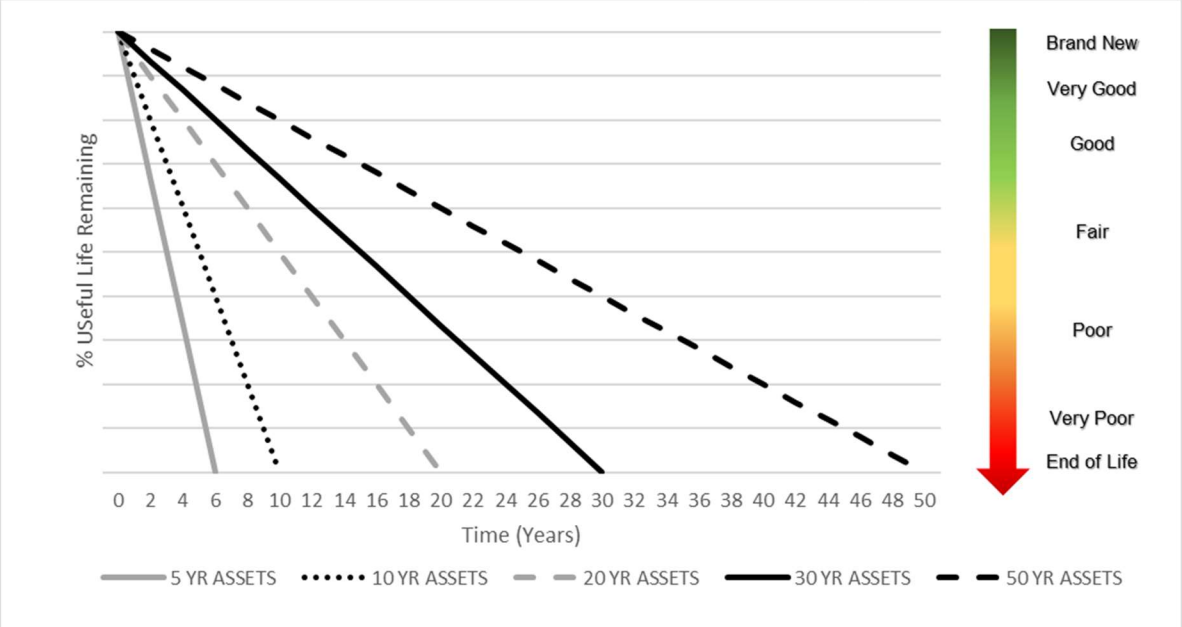
LIFECYCLE ACTIVITIES

The Township currently only performs replacement treatments in the management of its age-based assets. The costs to perform a replacement treatment is therefore simply the currently evaluated replacement cost, as of 2023.

DEGRADATION PROFILES

For equipment assets, a straight-line degradation profile simply details what percentage of service life is left in light of an expected useful life. Figure 6-2 depicts the degradation profile that applies to all equipment assets (i.e. inspected and age-based assets).

Figure 6-2
Equipment Asset Degradation Profile



DECISION CRITERIA

Table 6-4 depicts the decision criteria with respect to equipment asset lifecycle activities. For equipment assets, when an asset reaches the end of its service life, either by reaching the end of it's expected lifecycle through usage failure or as a result of an inspection, a replacement treatment is triggered, resulting in the acquisition of a new equipment asset. When the decision criteria for a given asset are met, the corresponding treatment is eligible to be applied. When a treatment is applied, the condition of the asset is improved by the amount specified in the "Gain to Condition" column, but not to exceed the amount listed in the "Maximum Condition Threshold" column.

Table 6-4

Equipment Asset Decision Criteria

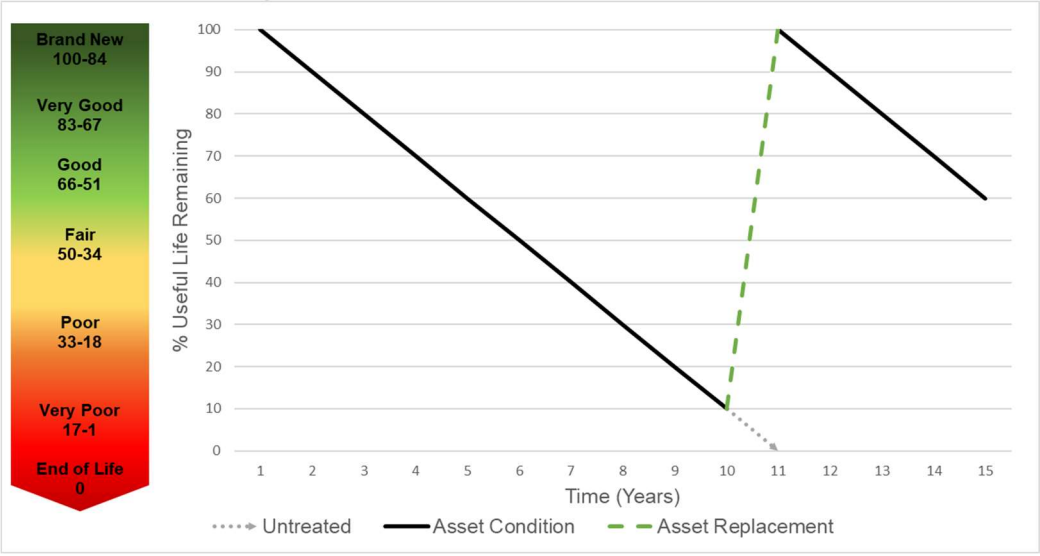
Treatment	Condition Range	Gain to Condition	Maximum Condition Threshold
Equipment Asset Replacement	17-0	+100	100

EXPECTED LIFECYCLE

Combining the treatments, degradation profiles, and decision criteria presented herein results in a complete lifecycle management strategy. Figure 6-3 presents an illustrative example of the expected lifecycle for age-based assets with an expected useful life of 10 years. The dashed, vertical line represent points of intervention in the representative asset's expected life. The lifecycle path of the asset is represented by the solid lines, following the degradation profile presented above.

Figure 6-3

Lifecycle Strategy – Equipment Assets (10-year lifecycle example)



FORECASTS

NETWORK FORECASTS

The lifecycle replacement activities planned for equipment assets are projected to cost approximately $5.67 million over the 20-year forecast period. For a detailed breakdown of costs, refer to Table A-5 in Appendix A: Network Cost Forecasts.

Figure 6-4 presents the 20-year expenditure forecast that results from following the lifecycle management strategy detailed above. This forecast illustrates the annual expenditures without any consideration to budgetary constraints. Over the 20-year forecast period, the average annual expenditure would be approximately $283,500.

Significant capital expenditures are expected in approximately 10 years. Fire services breathing apparatus (cylinders and packs) will reach their 15-year estimated useful life expectancy in 2033. While they are forecasted to be replaced at that time, condition assessments will be undertaken to determine at more accurate replacement schedule.

The expenditure forecast includes a capital inflation factor of 3.5% annually, which aligns closely with the historical 20-year annual average rate of inflation as witnessed in Statistics Canada's Building Construction Price Index.

Figure 6-4

Equipment Management Strategy – Funding Requirement

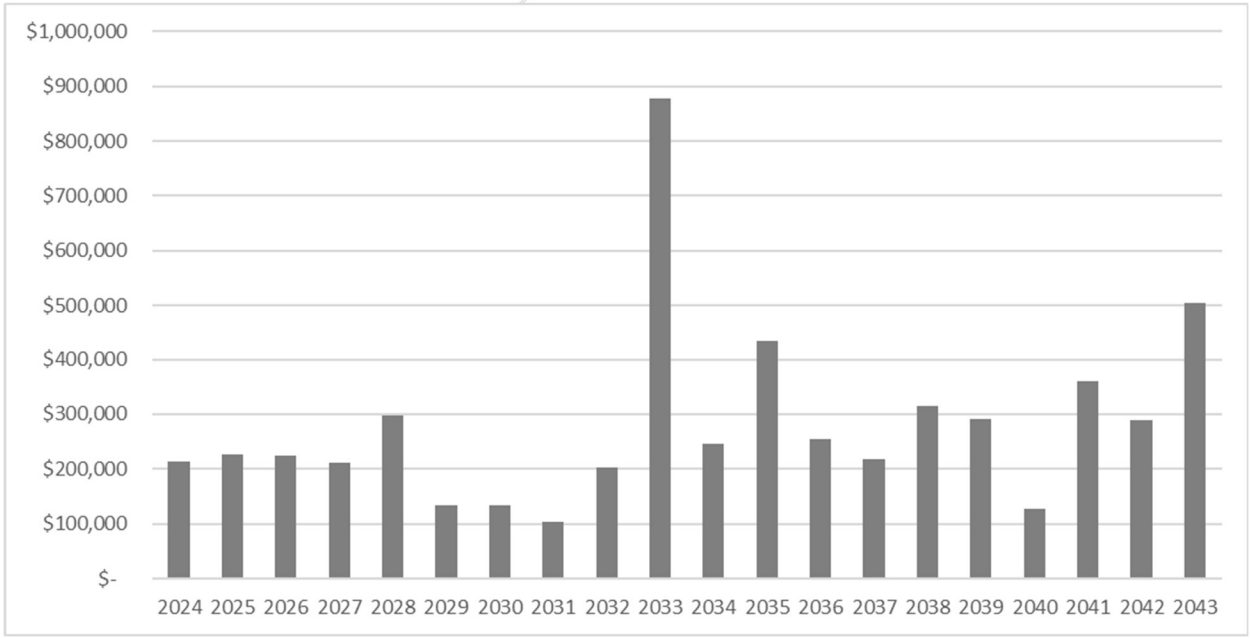
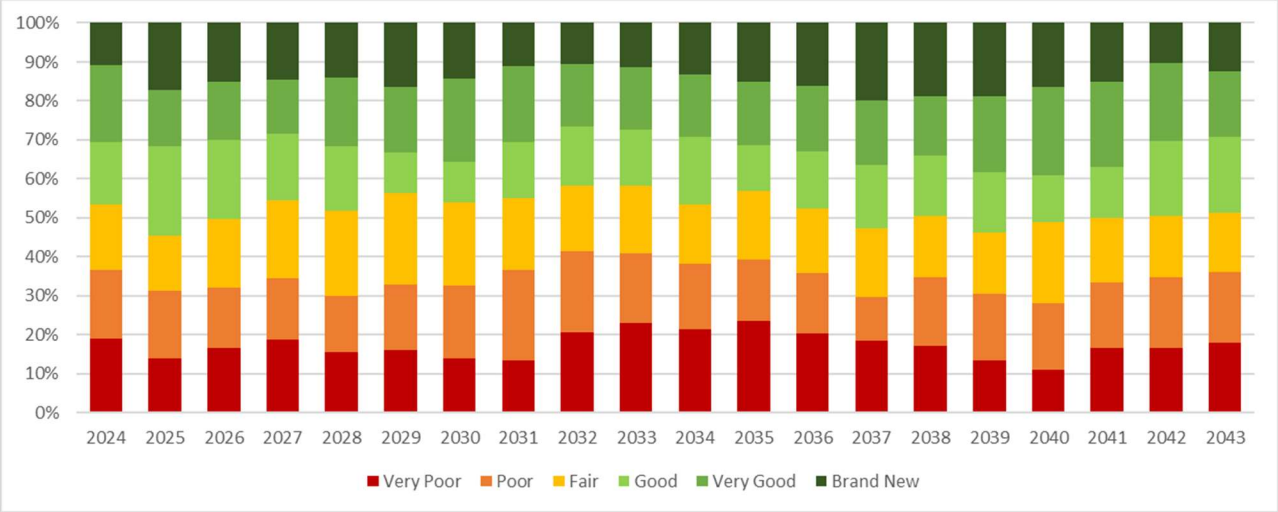


Figure 6-5 demonstrates the equipment asset network service levels over the forecast period as a result of implementing this lifecycle management funding strategy. This funding strategy will enable the Township to move towards a sustainable position of maintaining the current levels of service for equipment assets.

Figure 6-5

Equipment Management Strategy – Network Service Levels



EQUIPMENT BY OWNERSHIP FORECASTS

Figures 6-6 to 6-9 display the equipment asset average condition trend that results from executing the lifecycle activities over the 20-year forecast period by each equipment ownership department respectively.

Figure 6-6

Asset Ownership Forecast – Fire Department

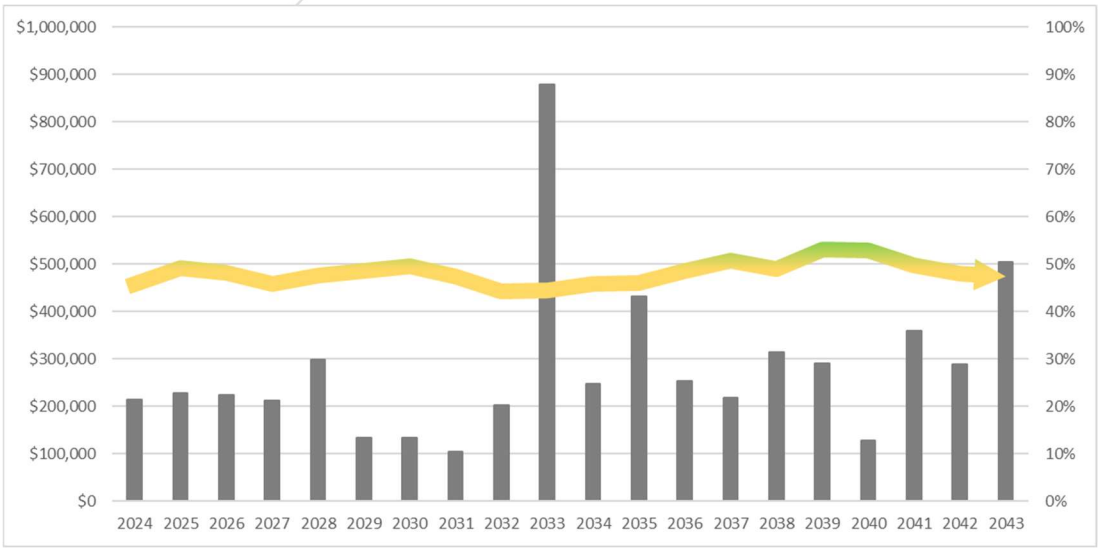


Figure 6-7

Asset Ownership Forecast – Roads Department

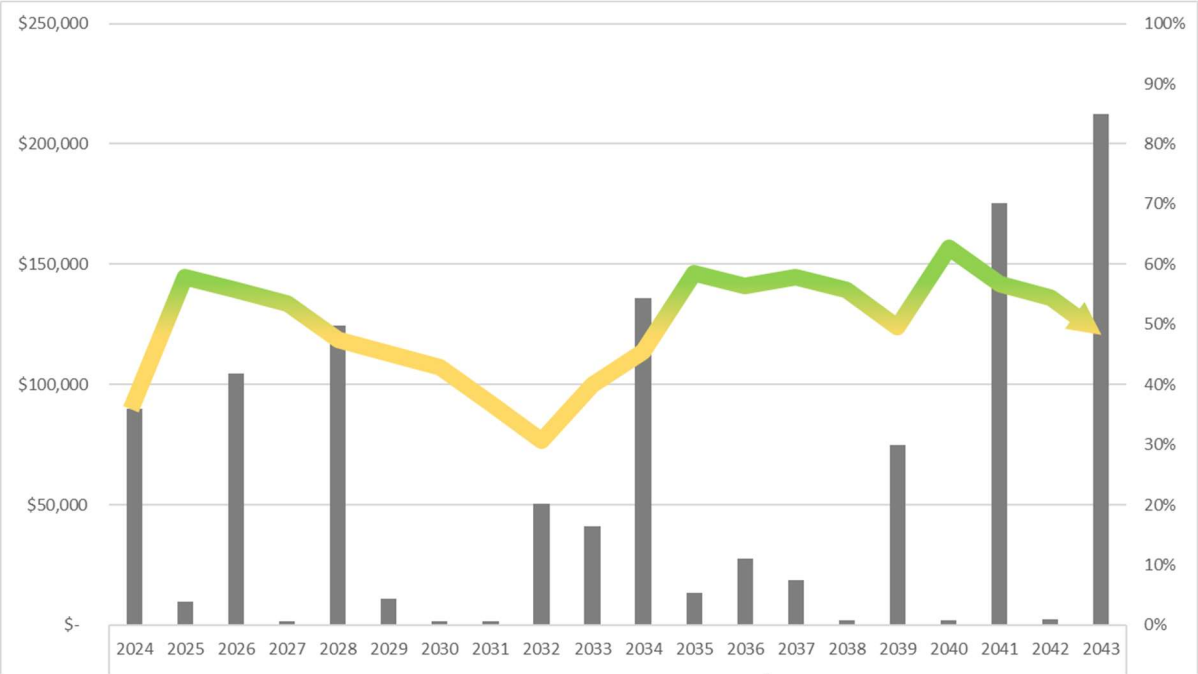


Figure 6-8

Asset Ownership Forecast – Facility Department

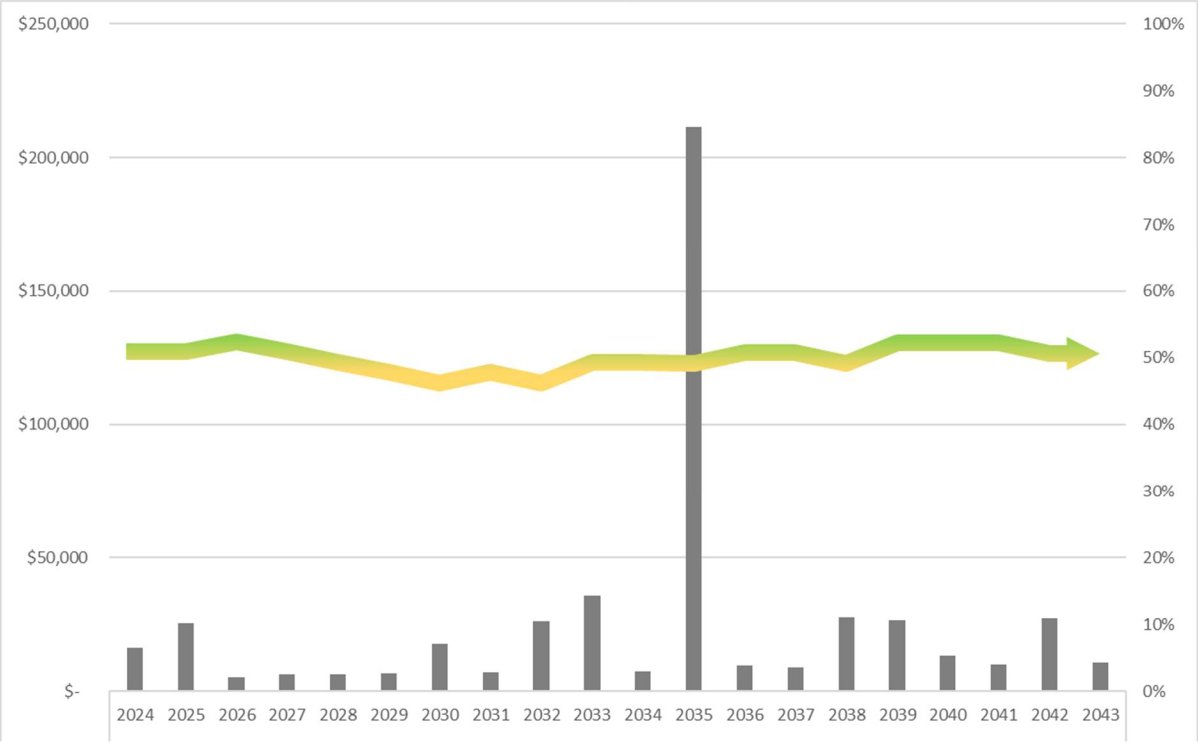
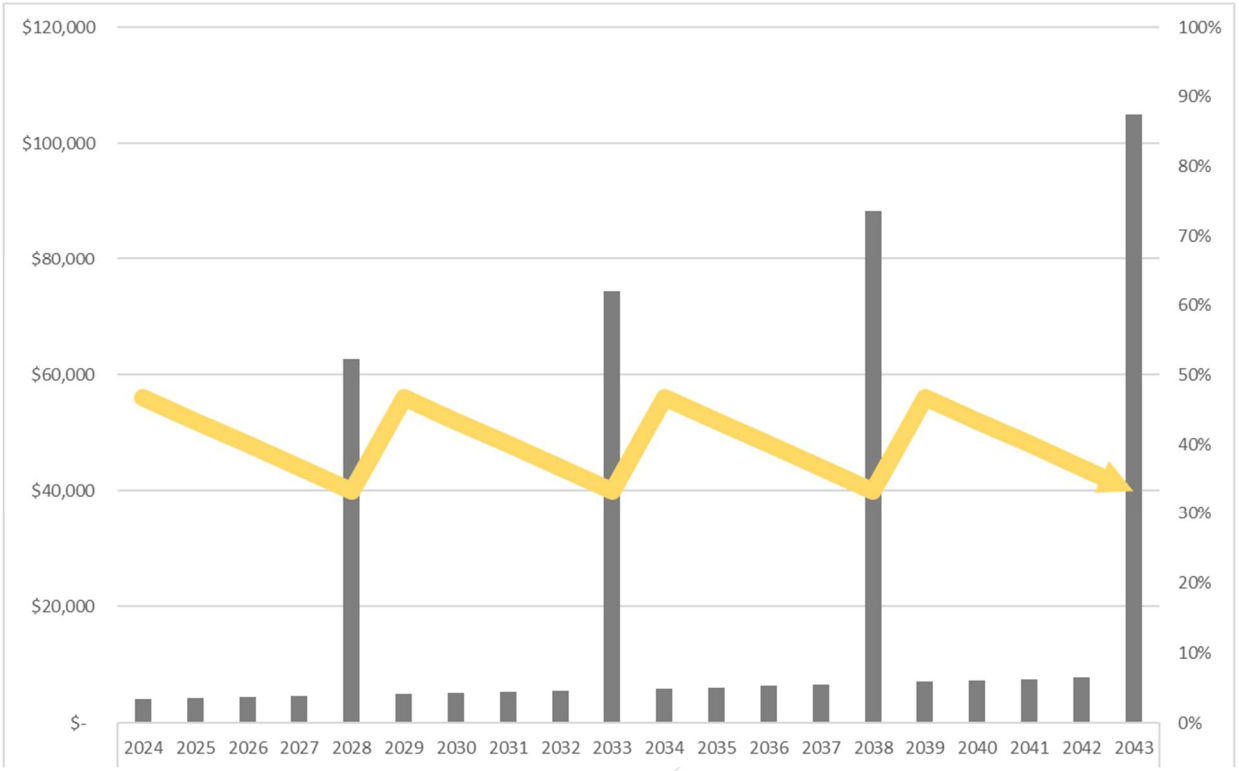


Figure 6-9

Asset Ownership Forecast – Admin Department



7. FLEET

STATE OF LOCAL INFRASTRUCTURE

ASSET CLASS SUMMARY

The Township currently owns and manages 41 vehicles, with a 2023 replacement value totaling approximately $12.6 million. The replacement value has been based on current market value. Table 7-1 provides a summary of quantity, age, and replacement value of the current fleet network, by department of ownership. The average age of the vehicles in the network is 8 years old, with Fire vehicles averaging 12 years, and all other vehicles averaging 7 years. There is currently one fire service vehicle, and one other vehicle that were in-service in 2023 and included in the total replacement cost below, but are not to be replaced upon the end of their useful life.

Table 7-1

Fleet Infrastructure Summary

Type	Quantity	Average Age	Replacement Cost (2023$)
Fire Service Vehicles	11	12	$5,832,900
Light Vehicles	15	5	$989,700
Heavy Vehicles	9	8	$3,979,000
Construction Vehicles	6	8	$1,772,500
TOTAL	41	8	$12,574,100

CONDITION

Traditionally, the condition analysis of fleet has been focused solely on an asset's age relative to its theoretical useful life. For purposes relevant to the Lifecycle Management Strategy (please see the following section), the percentage of remaining useful life will continue to be used as a description of condition, however age will be one of several relevant factors used to describe the degradation profiles of these assets.

A condition analysis of vehicles may include age, mileage, engine hours, annual maintenance costs, and relevant recommendations by insurance underwriters, to determine the percentage of remaining useful life. Mileage, as an indicator of the degree of vehicle usage, is a more significant parameter than age as it indicates relative wear and tear on the power train as well as the electrical, mechanical and hydraulic systems on the vehicle. In some cases, more constant usage can be more beneficial to a vehicle

than incidental use throughout the year, as moving parts are continuously lubricated. In other cases, such as on construction sites, the increased usage in a rough environment puts a much greater strain on all the vehicle components. Some vehicles are mostly used for site-specific work, such as backhoes and front-end loaders, so a better measure of use for these type vehicles are the hours they have been operating.

Annual maintenance costs will also be evaluated when considering the condition of a fleet asset. Evaluating the cost to repair a vehicle in most recent two years, helps to define investments in extending the life of the vehicle. The higher the expenditure, the more incentive to retain the vehicle in order to capture a return on the investment. For instance, it would not be fiscally prudent to spend $15,000 to replace hydraulics with the expectation to replace the vehicle the following year. Estimating next year's repair costs is also important as replacing the vehicle before incurring large anticipated expenses is usually a good practice, assuming the vehicle is beginning to meet or exceed other criteria such as life expectancy, mileage, and reliability. An analysis of annual cost trends is an important part of a fleet condition analysis.

While there are no legislative requirements with respect to service lives of fire vehicles (i.e. tankers, rescue trucks, and pumpers), specific age-based service life schedules are recommended by insurance underwriters. Failure to follow the replacement schedules of fire vehicles as recommended by insurance underwriters can result in increased insurance premiums for the Township and its residents. Therefore, it is imperative that fire vehicles be replaced according to these recommendations. From a level of service perspective, the intent is to ensure that no fire vehicles fall beyond their useful lives.

To better communicate where fleet assets are in their lifecycle, the condition has been segmented into qualitative condition states. Figure 7-1 details how the percentage of remaining useful life is converted to these condition states. It is important to note that a condition state of "Very Poor" for these types of assets does not necessarily mean that the asset is performing poorly. It simply signals that the "End of Life" is approaching, and a replacement or other corrective treatment will be required soon.

Figure 7-1

Condition States Defined with Respect to Percentage of Remaining Useful Life

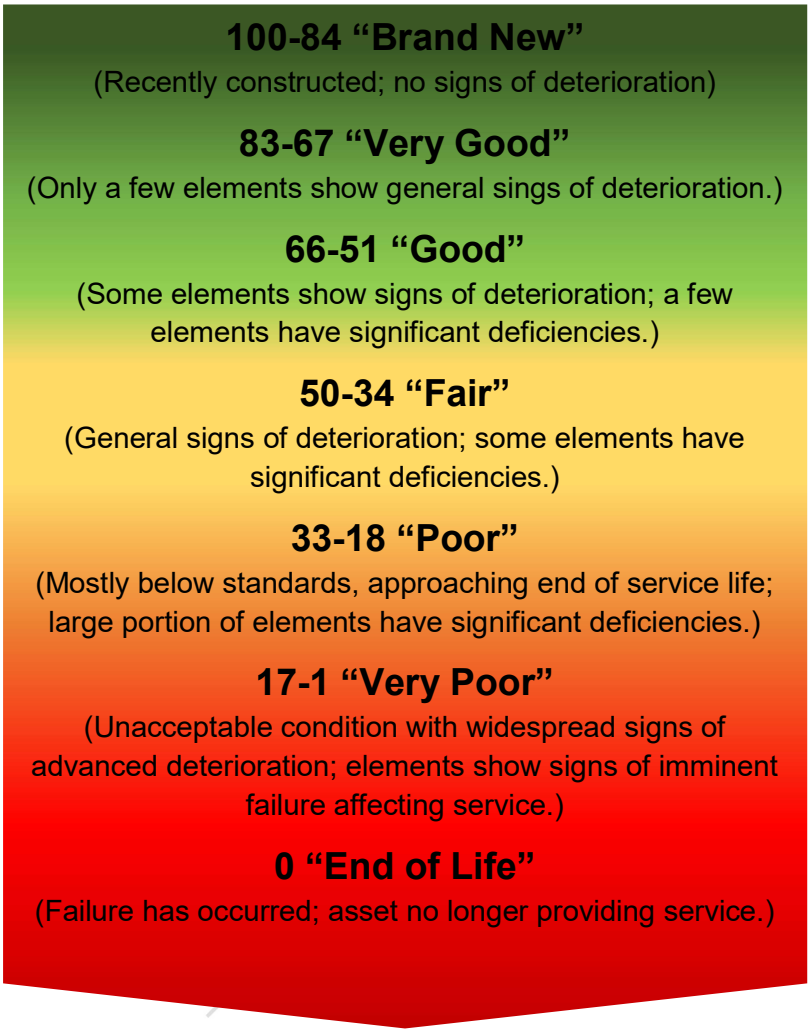


Table 7-2 details the average condition rating of the fleet network. As presented, the average percent remaining useful life of the fleet network is currently 40%, or a "Fair" condition state. Fire vehicles are, on average, in a "Fair" condition state, with approximately 48% remaining useful life. All other vehicles are, on average, in a "Fair" condition state with approximately 38% remaining useful life.

Table 7-2

Fleet Condition Analysis

Type	Quantity	% Remaining Useful Life	Average Condition State
Fire	11	48%	"Fair"
Other Vehicles	30	38%	"Fair"
TOTAL	41	40%	"Fair"

LEVELS OF SERVICE

CURRENT LEVEL OF SERVICE

The levels of service currently provided by the Township's fleet network is, in part, a result of the state of local infrastructure identified above. A level of service analysis defines the current levels of service and enables the Township to periodically evaluate these service levels. Fleet assets are used to provide a variety of services ranging from transportation, emergency services, construction and maintenance activities, snow removal, to the patrolling of road assets throughout the Township.

Fleet assets have no prescribed levels of service reporting requirements under O. Reg. 588/17. The Township has set performance measures for levels of service beyond the requirements under regulation. These performance measures will follow the format of two different service levels, i.e. community levels of service and technical levels of service. Community levels of service objectives describe service levels in terms that customers understand and reflect their scope and quality expectations of the fleet network. Technical levels of service describe the scope and quality of the fleet network, through performance measures that can be quantified, evaluated, and detail how effectively a municipality provides services. Table 7-3 presents the current levels of service as set by the Township.

Table 7-3
2023 Fleet Levels of Service

COMMUNITY SERVICE LEVELS	TECHNICAL SERVICE LEVELS
Fleet assets utilized by the Fire Department are in "Fair" condition on average. 	Average condition of Fire Vehicles: **ULR: 48%**

Fleet assets categorized as "Heavy" are in "Fair" condition on average. 	Average condition of Heavy Vehicles: **ULR: 35%**
Fleet assets categorized as "Light" are in "Fair" condition on average. 	Average condition of Light Vehicles: **ULR: 36%**
Fleet assets categorized as "Construction" are in "Fair" condition on average. 	Average condition of Construction Vehicles: **ULR: 40%**

LIFECYCLE MANAGEMENT

LIFECYCLE ACTIVITIES

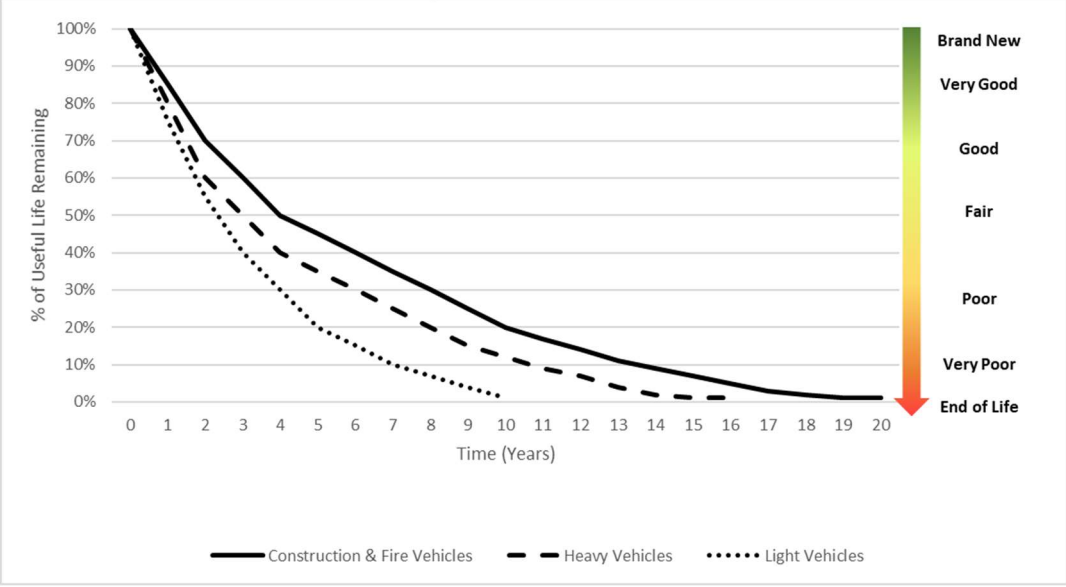
The Township currently only performs replacement treatments in the management of its fleet assets. The costs to perform a replacement treatment is therefore simply the currently evaluated replacement cost, as of 2023. There are many maintenance activities performed on a fleet asset throughout its useful life, however these activities are described and assessed as operational repair costs, and not capital treatments.

DEGRADATION PROFILES

For fleet assets, prioritization for replacement is a cumulative result derived from age and mileage as the highest risk factors, but also incorporates operational considerations to identify expected deterioration. Preventative maintenance activities and annual repair costs are analysed to help quantify the impact that operations are having on the useful life of a vehicle. This evaluation will need to be updated annually in conjunction with the replacement forecasts to capture the most recent assessment of each vehicle's cost and performance. This method is intended to help make an informed decision as to when it is prudent to replace a specific vehicle in the fleet. Figure 7-2 depicts the average degradation profiles that apply to fleet vehicles covered in this section.

Figure 7-2

Age-Based Asset Degradation Profile



DECISION CRITERIA

Table 7-4 presents the decision criteria for triggering replacements of fleet assets. When the decision criteria for a given asset are met, the corresponding treatment is eligible to be applied. When a treatment is applied, the condition of the asset is improved by the amount specified in the “Gain to Condition” column, but not to exceed the amount listed in the “Maximum Condition Threshold” column.

Fire vehicles are also subject to an age-based decision criteria, therefore the Useful Life Remaining range may be overridden by the age of the vehicle.

Table 7-4

Fleet Treatment Decision Criteria

Asset Type	Treatment	Useful Life Remaining % Range	Age	Gain to Condition	Maximum Condition Threshold
Fire Vehicles	Replacement	17-0	Maximum 20 Years	+100	100
Other Vehicles	Replacement	17-0	N/A	+100	100

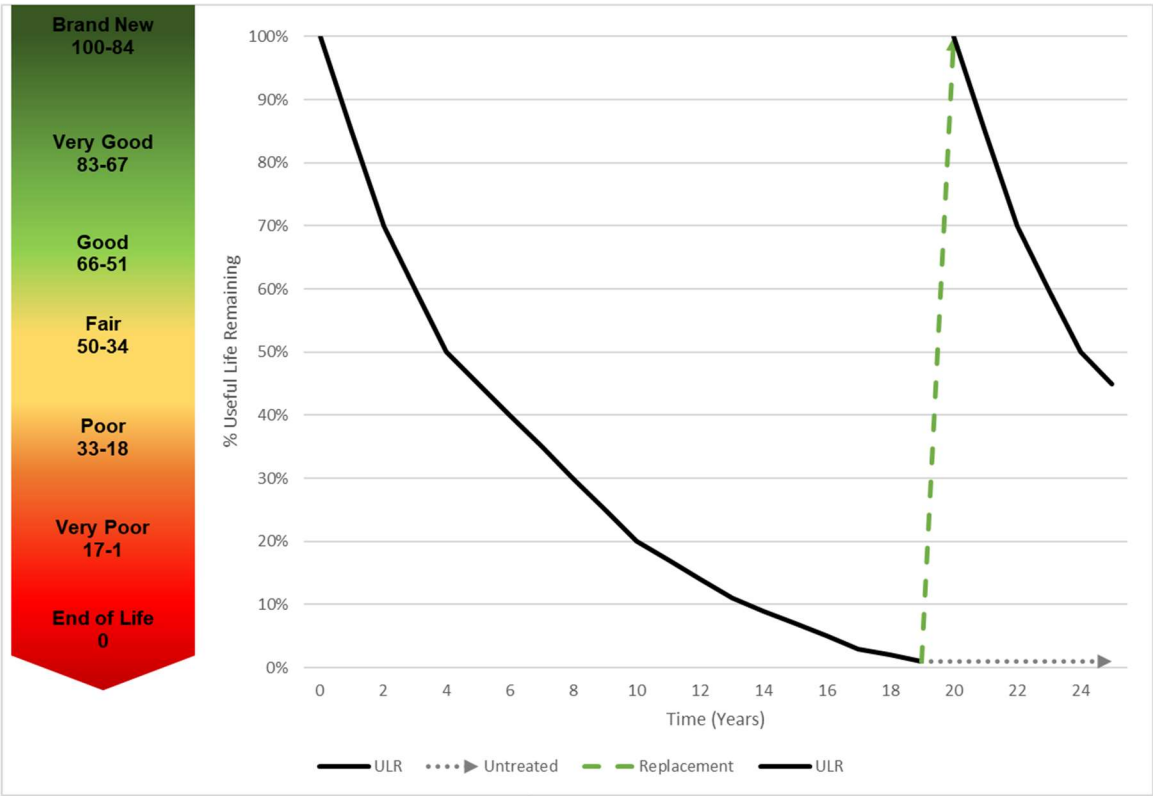
EXPECTED LIFECYCLE AND ASSOCIATED RISK

Combining the treatments, degradation profiles, and decision criteria presented herein results in a complete lifecycle management strategy. An enhanced review will be conducted on fleet as they approach the forecasted replacement period. The enhanced review will consider the condition of individual fleet assets as well as environmental factors, services provided by the asset, and other risks. Reviewing these associated risks will ensure that the recommended replacement period optimizes budget requirements and reflects all elements of the asset and the level of service it provides.

Figure 7-3 presents an illustrative example of the expected lifecycle for fleet assets with an expected useful life of 20 years (fire vehicles). The dashed, vertical line represent points of intervention in the representative asset’s expected life. The lifecycle path of the asset is represented by the solid lines, following the degradation profile presented above. The grey, dotted line represents the path of the asset if left untreated.

Figure 7-3

Lifecycle Strategy – Fleet (Fire Vehicle example)



FORECASTS

NETWORK FORECASTS

The lifecycle replacement activities planned for fleet assets are projected to cost approximately $1.1 million over the 20-year forecast period. For a detailed breakdown of costs, refer to Table A-6 in Appendix A: Network Cost Forecasts.

Figure 7-4 presents the 20-year expenditure forecast that results from following the lifecycle management strategy detailed above. This forecast illustrates the annual expenditures without any consideration to budgetary constraints. Over the 20-year forecast period, the average annual expenditure would be approximately $21,900.

Significant capital expenditures are expected in approximately 12 years when two Fire services fleet Tankers will reach their 20-year estimated useful life expectancy. The expenditure forecast includes a capital inflation factor of 3.5% annually, which aligns

closely with the historical 20-year annual average rate of inflation as witnessed in Statistics Canada's Building Construction Price Index.

Figure 7-4

Fleet Management Strategy – Funding Requirements

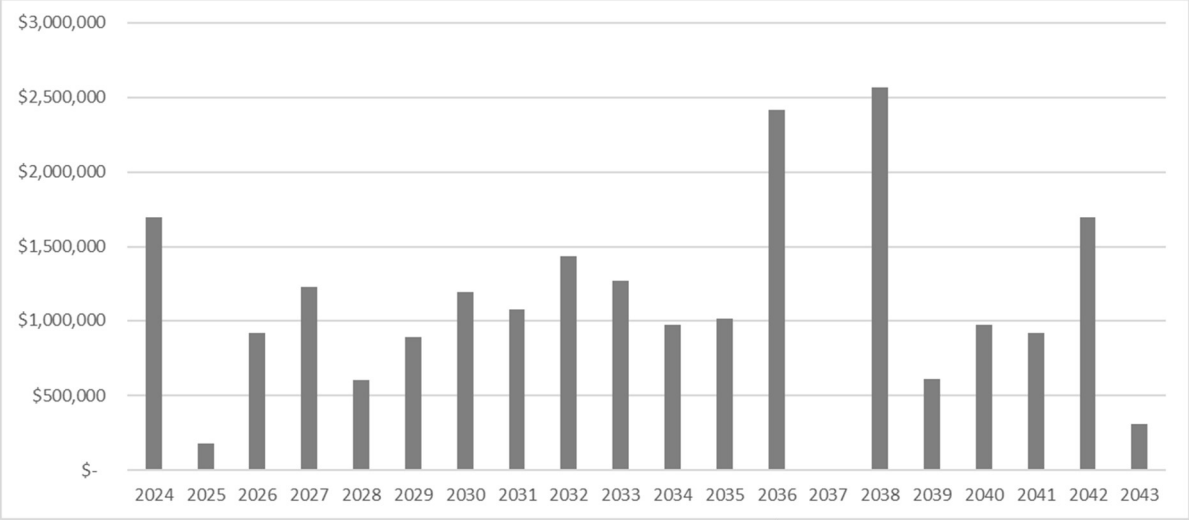
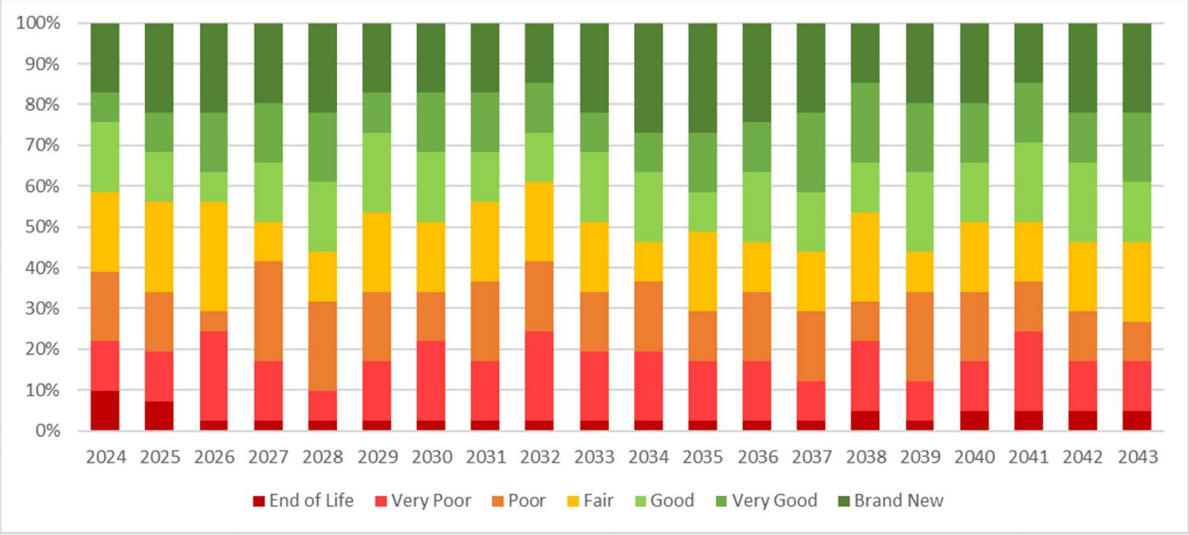


Figure 7-5 demonstrates the fleet network service levels over the forecast period as a result of implementing this lifecycle management funding strategy. This funding strategy will enable the Township to move towards a sustainable position of maintaining the current levels of service for fleet assets.

Figure 7-5

Network Condition Forecast



FLEET TYPE FORECASTS

Figures 7-6 to 7-7 display the fleet average condition trends, by fleet type, that results from executing the lifecycle activities forecast period. The average condition trend of the network is expected to remain in the “Fair” to “Good” condition state range during the forecast period.

Figure 7-6

Fleet Type Forecast – Fire Vehicles

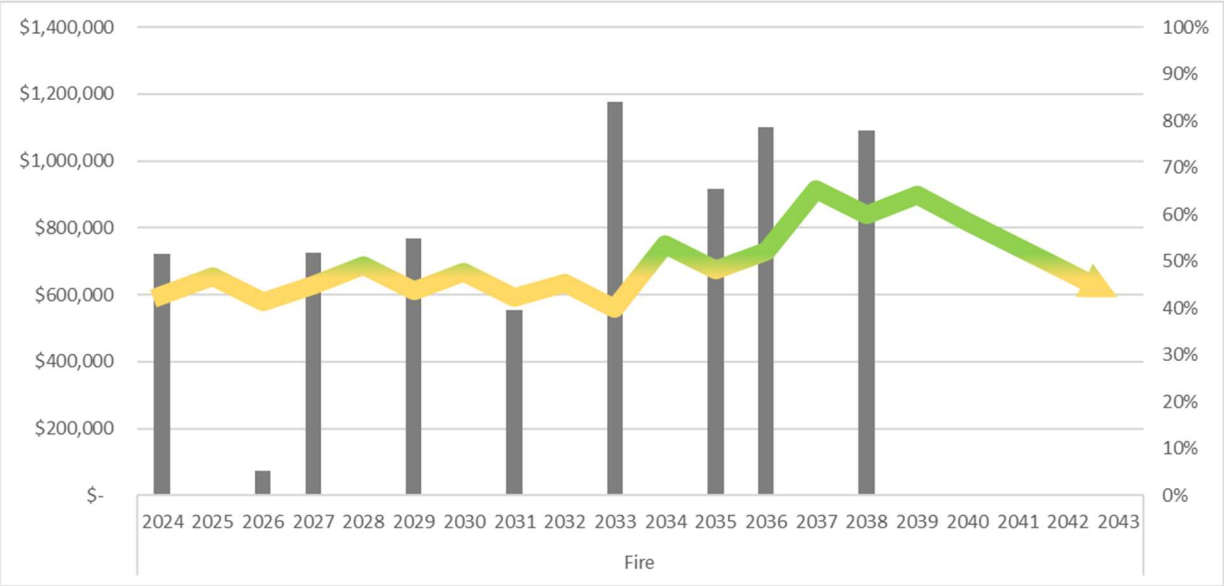
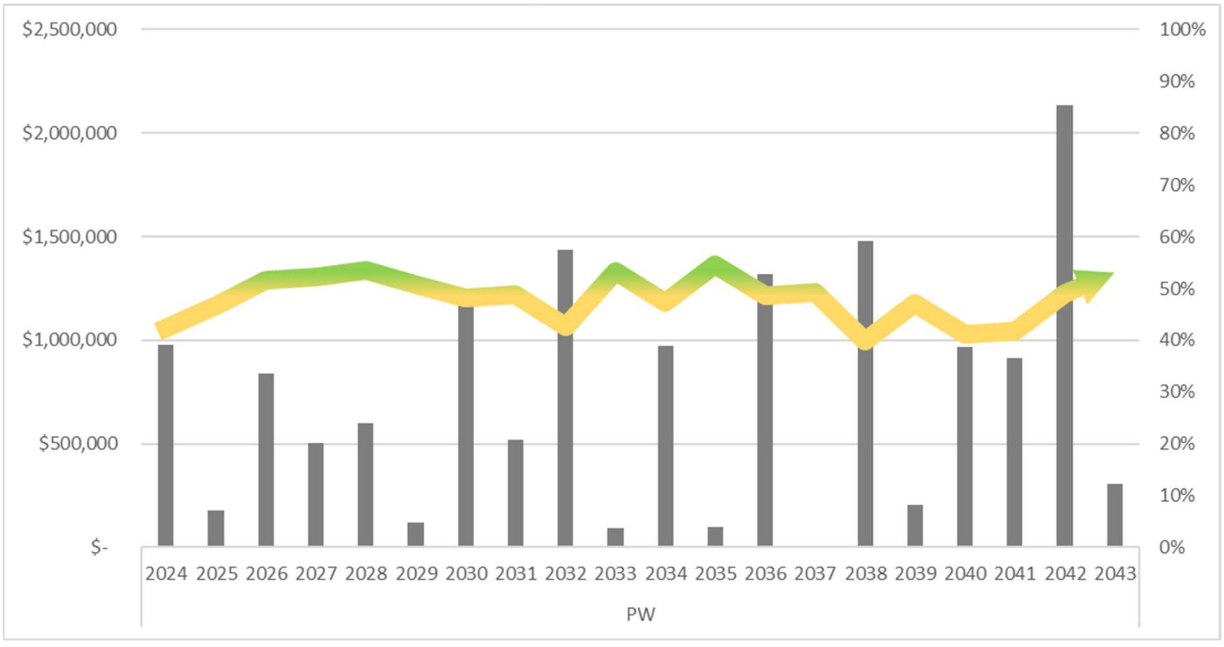


Figure 7-7

Fleet Type Forecast – Other Vehicles



8. GUIDERAIL

STATE OF LOCAL INFRASTRUCTURE

ASSET CLASS SUMMARY

The Township currently owns and manages 6281 metres of guiderails, with a 2023 replacement value totaling approximately $2,876,700. The replacement value has been based on current market cost.

Table 8-1 provides a summary of quantity, expected useful life, age, and replacement value of the current guiderail network, by material type. It should be noted that total replacement of a guiderail asset segment will require conformity with applicable regulations.

While Table 8-1 describes the current replacement cost of guiderail as a like-for-like replacement, future replacement costs projected for cable guiderail assets will be at the steel guiderail unit costs.

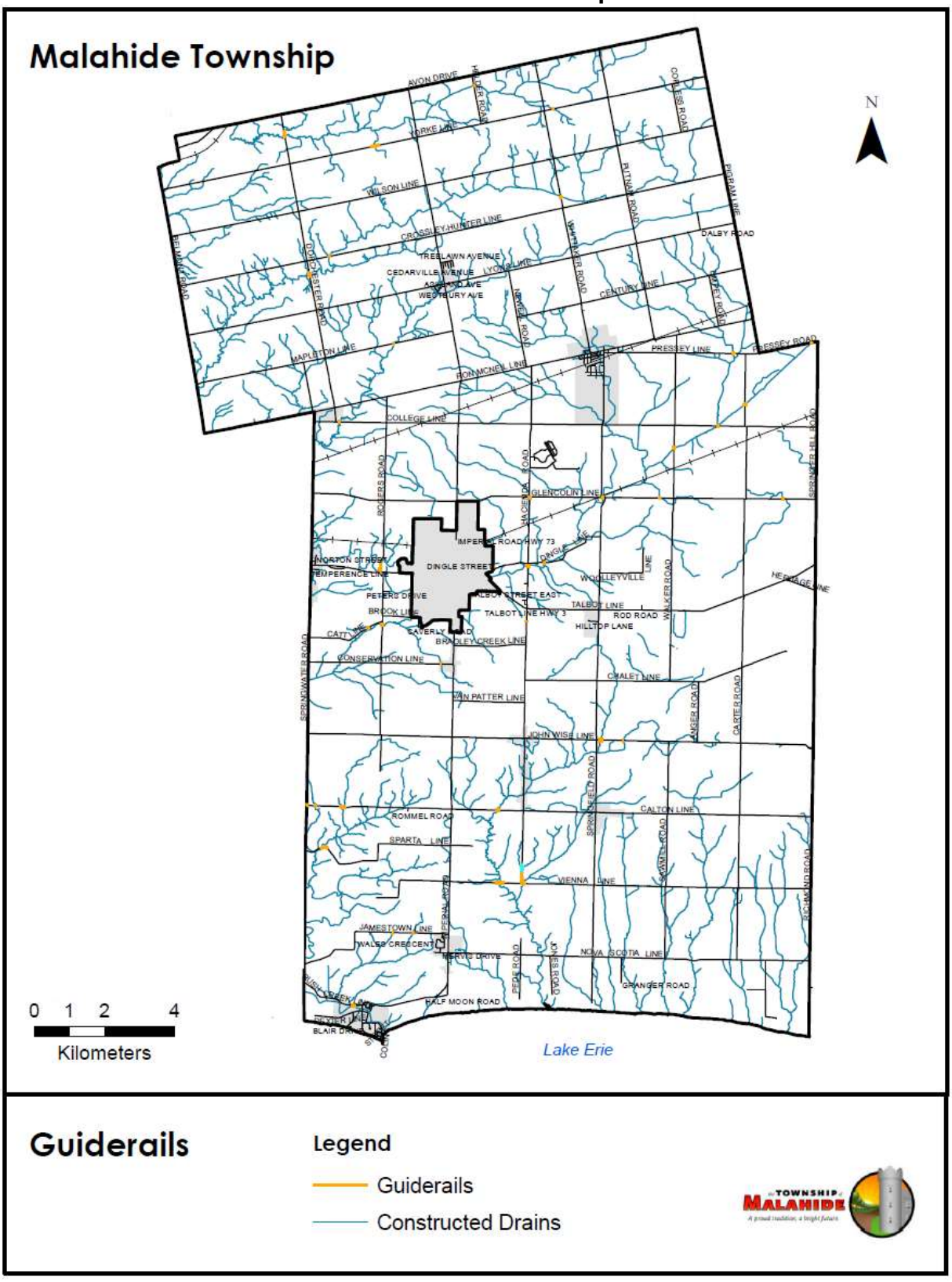
Table 8-1

Guiderail Infrastructure Summary

Type	Quantity (m)	Replacement Cost (2023$)
Cable Guiderail	3,785	$1,543,100
Steel Guiderail	2,497	$1,333,600
TOTAL	6,281	$2,876,700

Figure 8-1

Guiderail Network Map

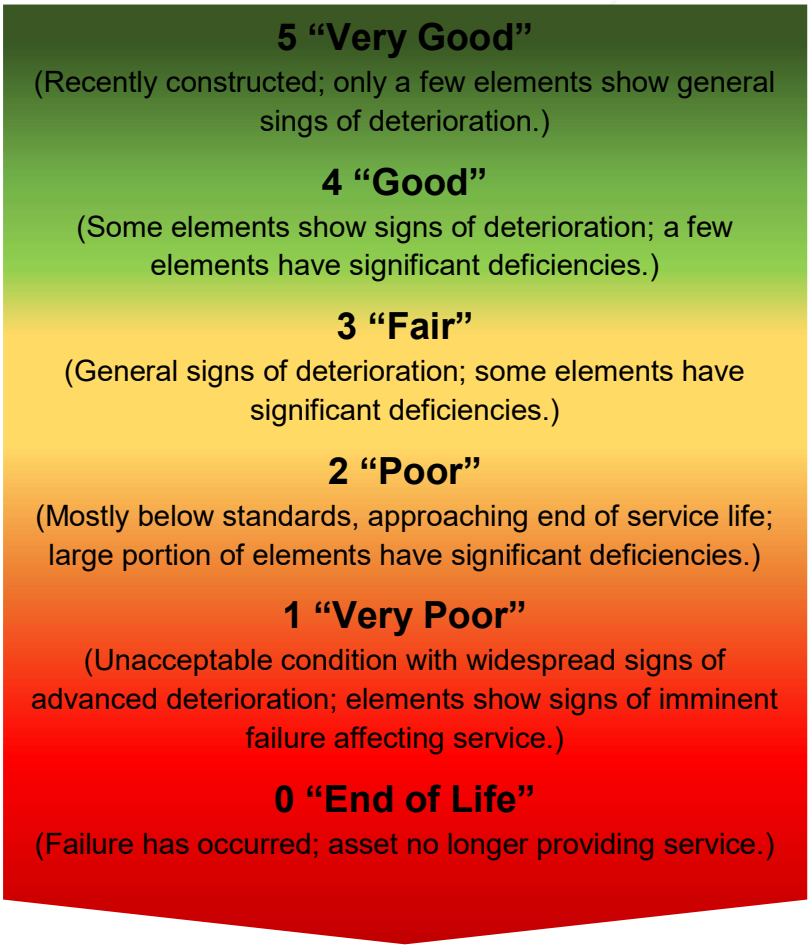


CONDITION

Township staff have developed methodology to conduct condition assessments of guiderail network assets. The condition assessments consist of visual inspections of several defined components, such as cable, posts, and end treatments, etc., that differ for cable and steel guiderail assets. For the purposes of this report, the individual components evaluated by Township staff have been aggregated into a higher-level overall condition score. Each guiderail asset is assigned a condition rating based on a numeric scale of 0-5, with 4 or above being “Good” or better, and 3 or below being “Fair” or worse. Figure 8-2 details how the 0-5 condition rating is converted to these condition states. It is important to note that a condition state of “Very Poor” for these types of assets does not necessarily mean that the asset is performing poorly. It simply signals that the “End of Life” is approaching, and a replacement or other corrective treatment will be required soon.

Figure 8-2

Condition States Defined with Respect to Condition Ratings



The Township currently uses visual inspections only to inform condition. Table 8-2 details the weighted average percentage (based on length) of the guiderail network that is in a condition state of “Poor” or worse. As presented, the average condition state of the guiderail network is “Good”. However, 3% of cable guiderail are in a “Poor” condition state or worse. On average, steel guiderail is in better condition than cable guiderail.

Table 8-2

Guiderail Current Condition

Type	Quantity (m)	Average Condition Rating	Average Condition State
Cable Guiderail	3,900	4	Good
Steel Guiderail	1,323	5	Very Good
TOTAL	5,223	4.5	Good

LEVELS OF SERVICE

CURRENT LEVELS OF SERVICE

The level of service currently provided by the Township’s guiderail network is, in part, a result of the state of local infrastructure identified above. A level of service analysis defines current levels of service and enables the Township to periodically evaluate these service levels.

Guiderail assets have no prescribed level of service reporting requirements under O. Reg. 588/17. The Township has set performance measures for levels of service beyond the requirements under regulation. These performance measures will follow the format of two different service levels, i.e. community levels of service and technical levels of service. Community levels of service objectives describe service levels in terms that customers understand and reflect their scope and quality expectations of the fleet network. Technical levels of service describe the scope and quality of the fleet network, through performance measures that can be quantified, evaluated, and detail how effectively a municipality provides services. Table 8-3 presents the current levels of service as set by the Township.

Table 8-3

2023 Guiderail Network Level of Service

COMMUNITY LEVELS OF SERVICE	TECHNICAL LEVELS OF SERVICE
Cable guiderails are in "Good" condition on average. 	Average condition of Cable Guiderails: **4**
Steel guiderails are in "Very Good" condition on average. 	Average condition of Steel Guiderails: **5**

LIFECYCLE MANAGEMENT

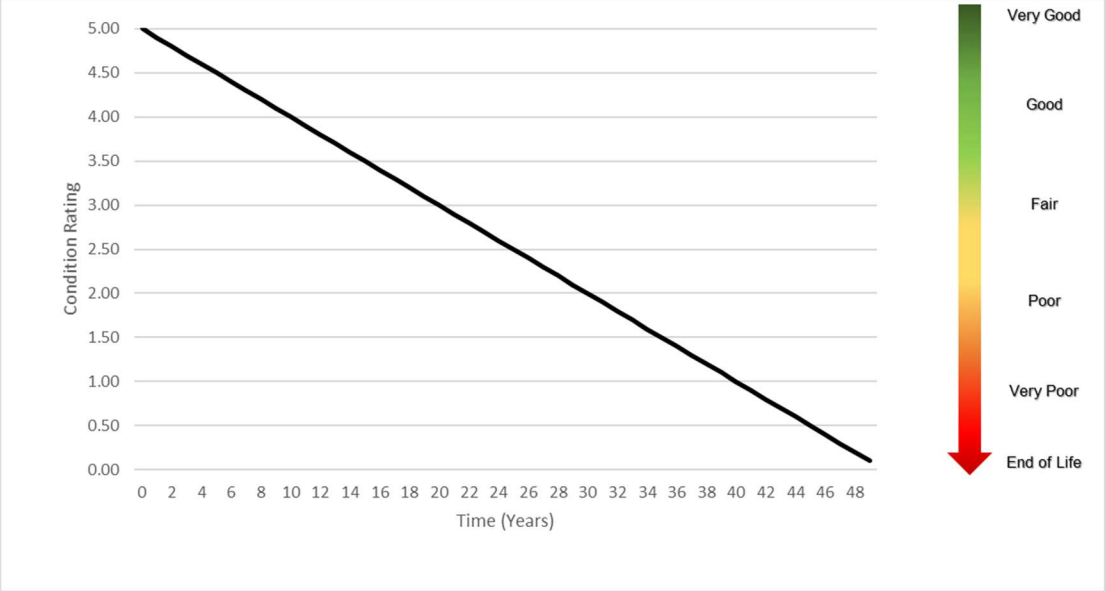
LIFECYCLE ACTIVITIES

The Township currently only performs replacement treatments in the management of its guiderail assets. The costs to perform a replacement treatment is therefore simply the currently evaluated replacement cost, as of 2023.

DEGRADATION PROFILE

For guiderail assets, a straight-line degradation profile simply details what percentage of service life is left in light of an expected useful life. Figure 8-3 depicts the degradation profile that applies to assets covered in this section.

Figure 8-3
Guiderail Asset Degradation Profile



DECISION CRITERIA

For guiderail assets, when an asset reaches a condition state of “Poor” or worse a replacement treatment is triggered, resulting in the reconstruction of the asset. It should be noted, guiderail assets may be subject to replacement as a result of a vehicle collision. A replacement treatment on a guiderail asset will result in the same gain to condition, regardless of cause.

Table 8-4

Guiderail Treatment Decision Criteria

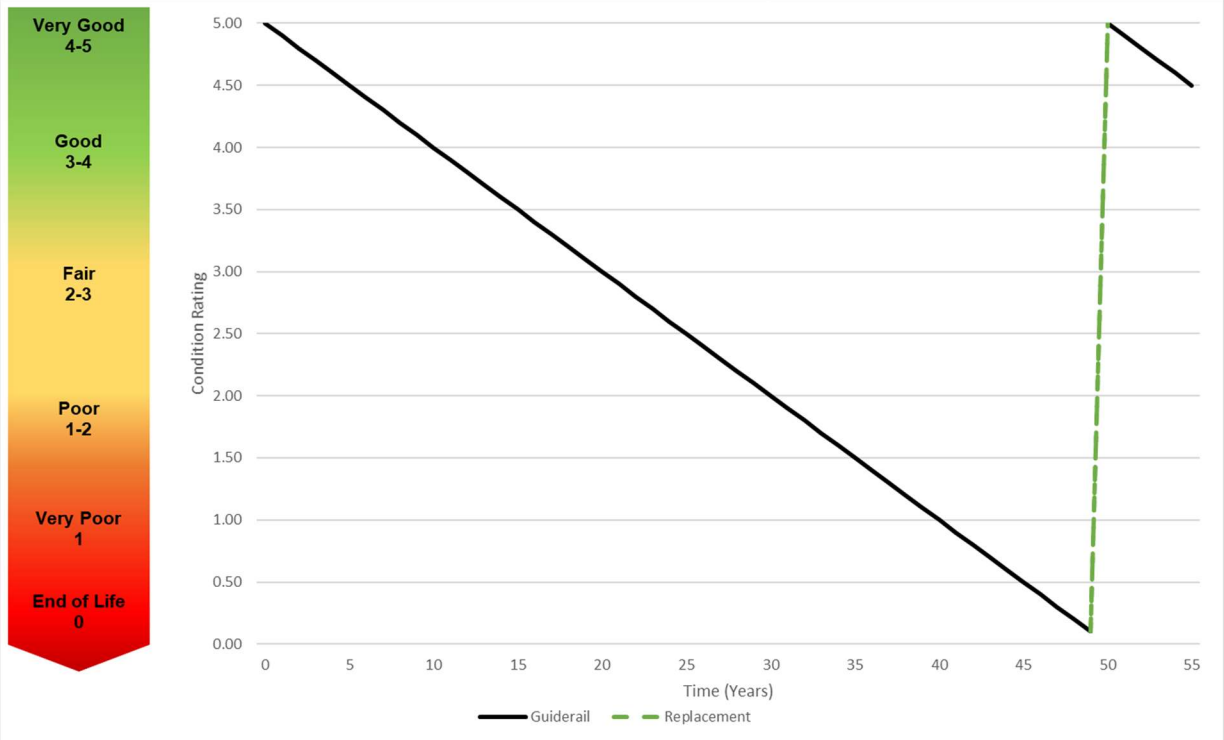
Asset Type	Treatment	Condition Rating Range	Gain to Condition
Guiderail	Replacement	2-0	+5

EXPECTED LIFECYCLE AND ASSOCIATED RISK

Combining the treatments, degradation profiles, and decision criteria presented herein results in a complete lifecycle management strategy. Figure 8-4 presents an illustrative example of the expected lifecycle for guiderail assets with an expected useful life of 50 years. The dashed, vertical line represent points of intervention in the representative asset's expected life. The lifecycle path of the asset is represented by the solid lines, following the degradation profile presented above.

Figure 8-4

Lifecycle Strategy – Guiderail Assets (50-year lifecycle example)



FORECASTS

NETWORK FORECAST

The lifecycle replacement activities planned for guiderail assets are projected to cost approximately $53,900 over the 20-year forecast period. For a detailed breakdown of costs, refer to Table A-7 in Appendix A: Network Cost Forecasts.

Figure 8-5 presents the 20-year expenditure forecast that results from following the lifecycle management strategy detailed above. This forecast illustrates the annual expenditures without any consideration to budgetary constraints. Over the 20-year forecast period, the average annual expenditure would be approximately $2,700. Significant capital expenditures are expected in approximately 13 years when guiderail on Jamestown line are projected to approach an end of life condition rating. While they are forecasted to be replaced at that time, condition assessments will be undertaken to determine at more accurate replacement schedule.

The expenditure forecast includes a capital inflation factor of 3.5% annually, which aligns closely with the historical 20-year annual average rate of inflation as witnessed in Statistics Canada's Building Construction Price Index.

Figure 8-5
Network Funding Requirements

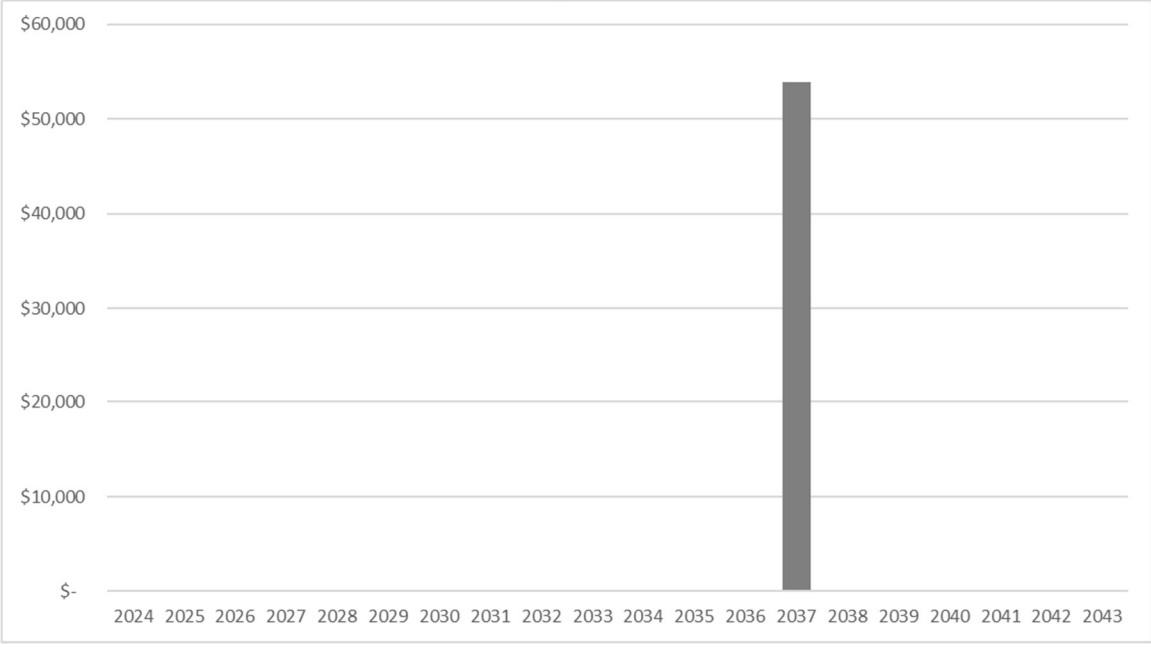
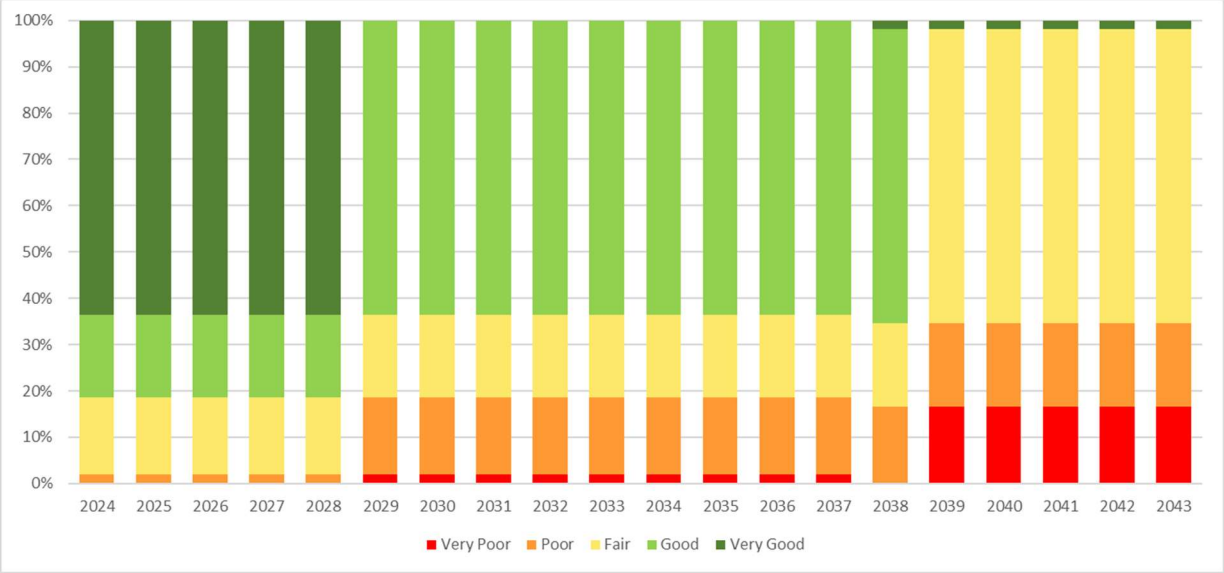


Figure 8-6 displays the condition states of guiderail assets, as a percentage of the total metres of assets, that result from executing the lifecycle activities as set forth in the lifecycle management strategy over the 20-year forecast period.

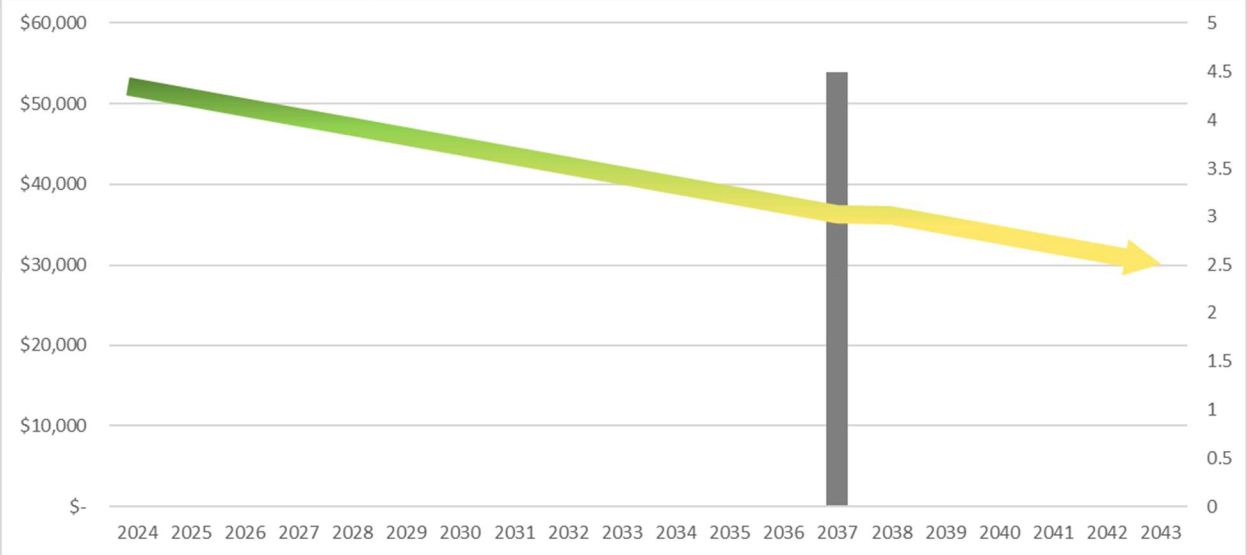
Figure 8-6
Network Condition Forecast



ASSET FORECAST BY TYPE

Figure 8-6 displays the guiderail average condition trend that results from executing the lifecycle activities as set forth in the lifecycle management strategy over the 20-year forecast period. Guiderail assets that have a total replacement will be replaced with steel beams per regulation. The average condition trend of the guiderail network is expected to move from a “Very Good” condition state to a “Fair” condition state at the end of the forecast period.

Figure 8-6
Asset Type Forecast – Steel Guiderail



9. OVERALL FUNDING STRATEGY

FUNDING SOURCES

Table 9-1 summarizes the recommended strategy to fund the asset lifecycle costs identified for taxy levy-based. These funding forecasts were based on the funding sources identified in the Township's 2024 budget.

The lifecycle costs required to sustain established levels of service are being recovered through several methods:

- Ontario Community Infrastructure Fund (OCIF) formula-based funding is identified for years in which the funding amount is known (2023-2024). The 2024 level of OCIF funding is then maintained for the remaining years of the forecast, recognizing the OCIF as a stable and long-term funding source for capital projects.
- Gas tax funding has been shown as a stable and long-term funding source for eligible capital projects. Annual funding estimates are based on Township's 2024 budget, the funding in subsequent years has been maintained at the 2024 level.
- Provincial/Federal grant funding has not been included in this forecast as its future availability is unknown.
- Debt financing is not required, the financing strategy does not include debt financing over the forecast period.
- The Township will be dependent upon maintaining healthy capital reserves/reserve funds in order to provide the remainder of the required lifecycle funding over the forecast period. This will require the Township to proactively adjust amounts being transferred to these capital reserves during the annual budget process.

FUNDING SHORTFALL

This funding strategy has been developed to be fully funded, and therefore no funding shortfall has been identified. However, this means that if identified grants are not received at expected amounts then shortfalls may present themselves if service level expectations are maintained. In such an event, the difference could be made up through increases to the revenue streams over-and-above those presented hereafter.

TAX LEVY IMPACT

While the annual funding requirement may fluctuate, it is important for the Township to implement a consistent, yet increasing, annual investment in capital so that the excess annual funds can accrue in capital reserve funds. Table 9-1 presents a summary of the impacts on the tax levy as a result of this funding strategy. These impacts layer on assessment increases resulting from new assessment growth, assumed to be approximately 1% annually.

In order to fund the recommended asset lifecycle activities over the forecast period using the Township's own available funding sources (i.e. using taxation, Gas Tax funding, OCIF funding, and grants), an increase in the Township's taxation levy would be required. The average annual taxation levy increase for capital assets is 2% for the forecast period.

The taxation impacts identified above include inflationary adjustments to the Township's operating costs and revenues as identified in its 2024 budget (e.g. general operating inflation of 3% annually). However, if other funding sources become available (as mentioned above) or if maintenance practices allow for the deferral of capital works, then the impact on the Township's taxation levy would potentially decrease or smooth out over the forecast period.

FUNDING STRATEGY

Figure 9-1 presents the 20-year funding strategy for all forecasted, tax levy-based, capital expenditures. The lifecycle rehabilitation and renewal activities planned for road assets are projected to cost, on average, approximately $9.6 million per year over the forecast period. The funding strategy for these costs is to primarily finance from reserves with contributions from additional funding streams, when available. There will be an annual increase to the transfer to reserves from operating for the forecast period.

Reserve investments are projected to earn an additional 7% in investment interest annually, increasing the overall reserve balance and contributing to future infrastructure projects.

Table 9-1 presents the funding strategy for capital assets over the 2024-2043 forecast period. This funding forecast is based on the current lifecycle activities identified this plan.

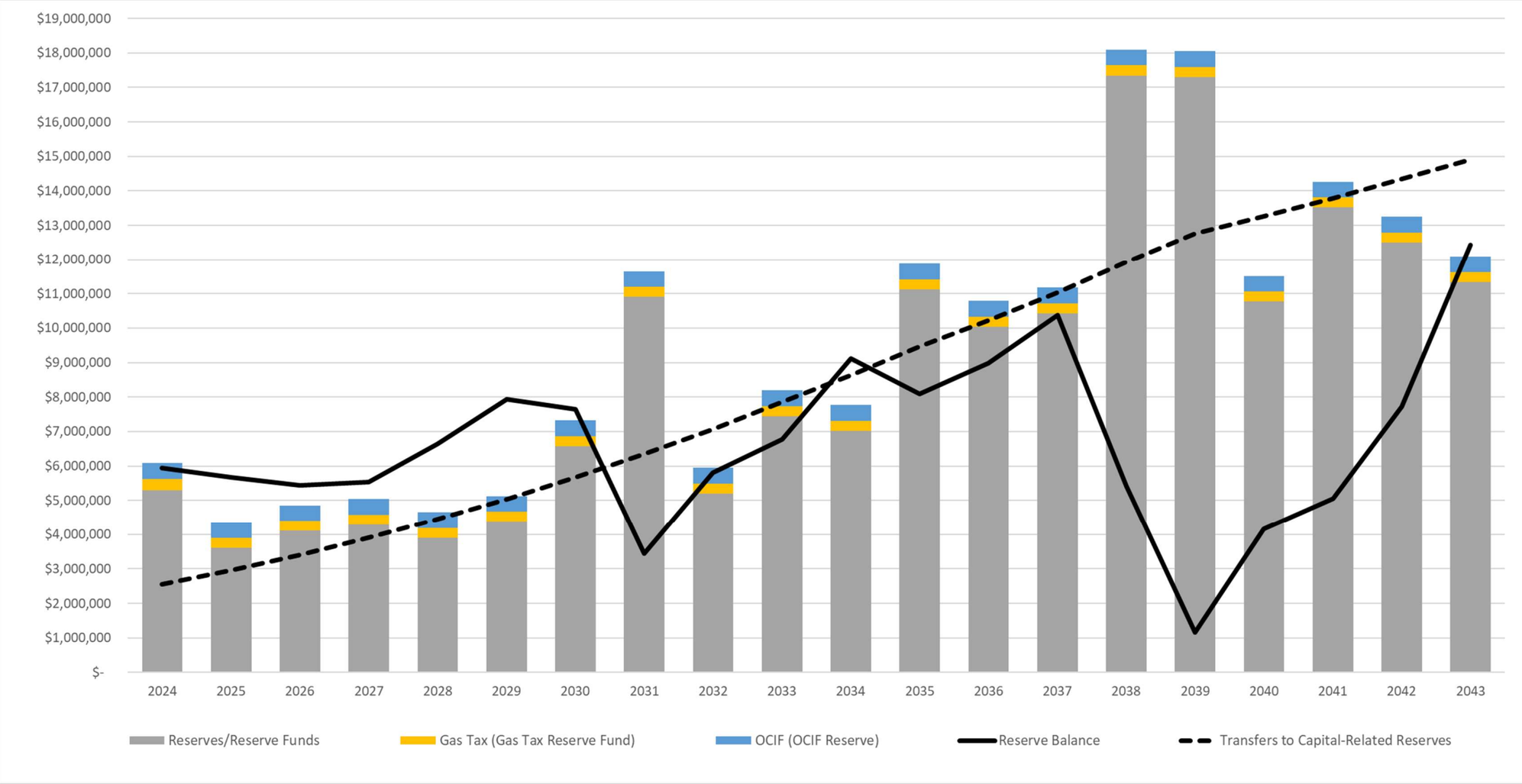
Table 9-1

Capital Budget Funding Strategy – Tax Levy ($Millions)

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Capital Costs	$6.1M	$4.3M	$4.9M	$5.0M	$4.6M	$5.1M	$7.3M	$11.7M	$5.9M	$8.2M	$7.8M	$11.9M	$10.8M	$11.2M	$18.1M	$18.0M	$11.5M	$14.3M	$13.2M	$12.1M
% Gas Tax Funding	5%	7%	6%	6%	6%	6%	4%	3%	5%	4%	4%	2%	3%	3%	2%	2%	3%	2%	2%	2%
% OCIF Funding	7%	10%	9%	9%	10%	9%	6%	4%	8%	6%	6%	4%	4%	4%	3%	3%	4%	3%	3%	4%
% Grant Funding	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
% Debt Funding	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
% Reserve Funding	87%	83%	85%	85%	84%	85%	90%	93%	87%	90%	90%	94%	93%	93%	95%	95%	93%	95%	95%	94%
Operating Costs	$6.3M	$6.5M	$6.7M	$6.9M	$7.1M	$7.3M	$7.5M	$7.7M	$7.9M	$8.1M	$8.4M	$8.6M	$8.9M	$9.1M	$9.4M	$9.7M	$9.9M	$10.2M	$10.5M	$10.8M
Revenue	$8.9M	$9.5M	$10.1M	$10.8M	$11.5M	$12.3M	$13.2M	$14.0M	$15.0M	$16.0M	$17.0M	$18.1M	$19.1M	$20.2M	$21.3M	$22.4M	$23.2M	$24.0M	$24.9M	$25.8M
Transfer to Reserves	$2.5M	$3.0M	$3.4M	$3.9M	$4.5M	$5.0M	$5.7M	$6.3M	$7.1M	$7.9M	$8.6M	$9.5M	$10.2M	$11.0M	$11.9M	$12.8M	$13.3M	$13.8M	$14.3M	$14.9M
Reserve Balance	$5.9M	$5.7M	$5.4M	$5.5M	$6.6M	$7.9M	$7.7M	$3.4M	$5.8M	$6.8M	$9.1M	$8.1M	$9.0M	$10.4M	$5.4M	$1.2M	$4.2M	$5.0M	$7.7M	$12.4M
Tax Levy Impact	1.8%	1.7%	1.9%	2.1%	2.3%	2.3%	2.5%	2.6%	2.7%	2.8%	2.7%	2.7%	2.4%	2.5%	2.6%	2.4%	1.4%	1.4%	1.4%	1.5%

Figure 9-1

Capital Budget Funding Strategy – Tax Levy



10. RECOMMENDATIONS

CURRENT CONSIDERATIONS

The following recommendations have been provided for consideration:

- That the Township of Malahide Asset Management Plan be received and endorsed by Council;
- That consideration of this Asset Management Plan be made as part of the annual budgeting process to ensure sufficient capital funds are available to fund the Asset Management Plan; and
- That this Asset Management plan be updated as needed to reflect the current priorities of the Township.

Substantial investment in capital will be required over the forecast period, and through the recommendations provided in the funding strategy, proactive steps would be taken to sustainably fund the Township's network of assets.

Funding has been recommended to meet the annual lifecycle funding target, which identifies the long-term annual investment level necessary to meet the current levels of service. This funding takes the form of transfers to capital reserves, and is reflected in the sizeable positive balances reached in the final years of the forecast period.

FUTURE IMPROVEMENTS

Areas of future enhancement to the Township's asset management plan have been noted, and a summary of these improvements has been listed below:

- Levels of Service – Images that illustrate the different condition states of assets can be helpful in communicating levels of service to stakeholders. A number of representative condition sample images could be provided for each Asset Class. The Township should seek to provide additional images in future iterations of this asset management plan.

- Proposed Levels of Service – This plan only includes an analysis of the current levels of service being provided by municipal assets. In future versions of this plan, proposed level of service options should be included along with an explanation of why they would be appropriate for the municipality, and an examination of the funding levels that would be required to implement them.

- Age-Based Assets – Modified Remaining Useful Life: The lifecycle needs for a number of the Township's asset categories and are currently assessed based on asset age. In the future, it would be beneficial for the Township to assign a remaining useful life to these various assets, based on observed condition and performance. This would enable the Township to more accurately plan for required interventions, such as replacements, based on observed asset characteristics.

- Lifecycle Activities – The lifecycle activities included in this plan are a like-for-like rehabilitation or replacement. In light of evolving best practices, and the introduction of new technology, contingencies should be included for enhancements to assets at the time of rehabilitation or replacement. This would not include growth-related capital, only enhancements that maintain current service levels.

- Growth-Related Capital – This plan does not currently include the costs associated with the lifecycle activities and maintenance of expansionary capital. Future updates to this plan should incorporate the expected costs of the acquisition, rehabilitation, and replacement of these assets to more fully explore the sustainability of the Township's network of assets. Examining these growth-related capital needs and their impacts on the financing strategy will provide for a comprehensive assessment of the sustainability of the Township's overall asset management system.

- Port Bruce Harbour – This plan includes lifecycle activities associated with the Port Bruce Harbour and associated assets based on what is included in the Township's 4-year budget. Future updates to this plan should endeavour to incorporate these assets more comprehensively into this plan, including an analysis of levels of service and required lifecycle activities over a long-term horizon.

- Facility Condition Assessments – In 2023 the Township engaged a consultant to inspect and make recommendations regarding 4 facilities; MCP, SDCH, SCH, and the administrative office. The recommendations have been reviewed by staff and appropriate inclusions have been made in this plan. The consultant was also engaged in 2024 to compete inspections on the remaining Township facilities; north works yard, south works yard, and the south firehall. Once these 2024 inspections have been completed and reviewed, the appropriate inclusions should be made to future revisions of this plan. The Township Staff should evaluate available options for staff-conducted inspections in a manner consistent with consultant inspections, on an ongoing basis. This is especially important to ensure

that facility recommendations align with desired service levels, and that facility usage is optimized per the Township's identified strategic priorities.

- Bridges and Culverts: The analysis presented in this report with respect to the Township's bridges and culverts has been based on information contained in the Township's 2022 OSIM report. The next update to this plan should incorporate the findings of the Township's latest biennial 2024 OSIM report. Included in the next biennial 2026 OSIM RFP, should be a review non-structural culverts that don't qualify for the legislated inspection (less than 3m span) but which still represent a significant financial risk to the Township. There are large diameter culverts or culverts with a significant amount of overburden which should be inspected and shown on a replacement schedule. The replacement of these culverts (which, for the most part, are located at the bottom of ravines) may be financially challenging for the Township in the near future. A full inventory and inspection of all non-structural culverts should be completed so that a determination can be made to include specific culverts that represent a high financial risk and/or to include all non-structural culverts as a pooled asset in future plan revisions.

- Guiderail Assets - A roads safety audit is an integral component of the Township's Road Design and Planning Program. A comprehensive road safety audit reviews the as-is condition of the Township road network safety and signage program and advises on required enhancements to safety elements on specific road segments. A road safety audit was initiated in 2017 to be conducted in three phases by a consulting engineer. The first and second phases of the audit have been completed and plans have been made to integrate the guiderail recommendations into the asset management plan. Phase 2 of the road safety audit was received by Council in 2022, identified several locations requiring installation of new steel beam guiderail. Staff proposed a phased approach to address the locations requiring guiderail, to be completed over an eight-year period, which was endorsed by Council (Resolution No. 22-203). The steel beam guiderail requirements identified in Phase 2 of the road safety audit have an estimated cost of $850,000. The phased approach to address the locations requiring guiderail proposes a $100,000 annual capital budget until the requirements have been met. As of 2023, only 30% of the phase 2 recommended new guiderail assets have been installed and included in this plan. As the remaining assets are installed, they should be incorporated into future versions of the Asset Management Plan.

APPENDIX A: NETWORK COST FORECASTS

Table A- 1

Road Segment Asset Network – Detailed Cost Forecast ($)

Assets	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
HCB - Reconstruction	428,000	0	0	0	0	0	0	2,317,234	0	0	0	5,017,412	3,004,709	5,672,918	7,350,351	7,950,862	3,280,002	2,000,000	591,275	0
HCB - Microsurfacing	0	0	0	60,273	0	0	0	0	0	0	0	27,927	0	0	0	0	0	0	91,427	0
HCB - Crack Sealing	0	13,104	0	3,459	0	0	0	0	0	0	11,324	0	0	0	17,403	24,191	9,271	32,433	37,984	11,377
LCB - Double Surface Treatment Rehabilitation	1,016,112	743,643	804,700	674,070	690,872	704,419	1,549,334	2,194,271	1,045,936	1,940,686	0	815,553	0	2,188,385	4,927,818	2,137,560	0	417,285	0	2,823,897
LCB - Single Surface Treatment Every 7 Years	662,612	1,540,198	1,870,351	1,905,385	1,958,547	1,915,091	1,112,350	941,447	1,918,167	2,403,328	2,993,437	2,698,474	2,877,583	1,444,301	490,186	2,177,997	3,605,874	4,780,298	3,881,953	3,409,502
G/S - Reconstruction	0	0	0	0	0	0	841,070	0	0	0	0	0	1,068,331	0	0	0	0	2,069,663	0	0
G/S - Gravel Resurfacing Every 5 years	405,944	416,747	428,119	310,054	321,692	493,893	507,037	520,872	377,228	391,387	600,896	621,915	565,747	458,956	476,183	731,082	756,655	639,334	558,390	579,349
Roads Needs Study	0	30,000	0	10,000	0	20,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Roads Safety Study	0	30,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**2,512,667**	**2,773,692**	**3,103,170**	**2,963,240**	**2,971,111**	**3,133,403**	**4,009,791**	**5,973,824**	**3,341,331**	**4,735,402**	**3,605,657**	**9,181,281**	**7,516,370**	**9,764,559**	**13,261,941**	**13,021,692**	**7,651,802**	**9,939,012**	**5,161,029**	**6,824,124**

Table A- 2

Bridge & Structural Culvert Asset Network – Detailed Cost Forecast ($)

Assets	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
B-1 Dorchester	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-10 Dingle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-11 Hacienda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	178,207	1,960,273	0	0
B-12 Rogers South	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-13 Pressey Line	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-14 Broadway	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-2 Helder	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21,731	239,039
B-3 Crossley Hunter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-4 Mapleton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	97,472	1,072,189
B-5 Pressey West	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-6 Pressey East	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
B-7 Carter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23,529	258,822	0	0	0
B-8 College	0	0	0	0	0	0	0	0	0	0	0	0	0	98,325	1,081,570	0	0	0	0	0
B-9 Walker	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-1 Whittaker Con. 7 N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	125,036	1,375,398	0
C-10 College Middle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294,120	3,235,316	0	0	0	0
C-11 College East	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	76,472
C-12 Glencolin	0	0	0	0	0	0	0	0	51,099	562,088	0	0	0	0	0	0	0	0	0	0
C-13 Rogers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

C-14 Conservation	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-15 Hacienda	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-16 Calton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-17 Vienna	0	0	0	0	0	0	305,725	3,362,976	0	0	0	0	0	0	0	0	0	0	0	0
C-19 Finney	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-2 Whittaker Con. 7 S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-20 Ashton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-21 Springwater	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-3 Whittaker Con. 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-4 Dorchester	0	0	0	0	0	0	0	0	0	118,351	1,301,856	0	0	0	0	0	0	0	0	0
C-5 Whittaker Con. 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C-6 Mapleton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	351,283	3,864,112	0
C-7 Pigram	0	0	0	0	0	0	45,433	499,758	0	0	0	0	0	0	0	0	0	0	0	0
C-9 College West	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OSIM Report	10,000	0	10,000	0	10,000	0	10,000	0	10,000	0	10,000	0	10,000	0	10,000	0	10,000	0	10,000	0
Total	**10,000**	**0**	**10,000**	**0**	**10,000**	**0**	**361,158**	**3,862,735**	**61,099**	**680,439**	**1,311,856**	**0**	**10,000**	**98,325**	**1,385,690**	**3,258,845**	**447,028**	**2,436,592**	**5,368,712**	**1,387,700**

Table A- 3
Streetlight & Sidewalk Asset Network – Detailed Cost Forecast ($)

Assets	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Streetlights - Avon	0	0	0	0	0	0	0	0	0	0	8,164	0	0	0	0	0	0	0	0	0
Streetlights - Pt. Bruce	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6,464	0	0	0	0
Streetlights - Springfield	0	0	0	0	0	0	0	0	0	0	182,326	0	0	0	0	0	0	0	0	0
Sidewalks - Avon	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16,149	0	0	0
Sidewalks - Aylmer East	0	0	0	0	0	0	0	0	0	0	0	0	35,936	0	0	0	0	0	0	0
Sidewalks - Lyons	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sidewalks - Springfield	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**190,490**	**0**	**35,936**	**0**	**0**	**6,464**	**16,149**	**0**	**0**	**0**

Table A- 4
Facility & Public Space Asset – Detailed Cost Forecast ($)

Assets	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Admin Office	45,018	10,696	17,972	0	7,273	0	157,332	0	21,498	0	30,773	84,220	23,944	0	0	0	107,103	30,110	0	0
Firehall #3/ Council	40,986	97,365	0	14,725	19,825	0	0	25,138	68,244	30,054	30,336	30,233	0	126,959	0	28,160	49,398	2,915	106,191	0
Firehall #4/ SDCH	6,568	71,589	0	0	0	0	280,245	0	78,287	0	9,265	46,311	0	0	0	0	464,382	19,738	0	0
MCP	6,568	162,124	0	11,246	0	0	263,255	73,381	215,890	20,303	9,265	100,681	0	51,578	37,528	0	824,164	24,073	96,125	22,883
North Works Yard	0	75,000	0	0	0	0	0	0	0	0	283,000	0	0	0	0	36,000	140,000	0	0	0
South Works Yard	0	0	0	0	0	0	0	0	0	60,000	0	0	0	0	0	0	0	0	0	2,400,000
Firehall #5	0	289,000	75,000	0	0	0	277,000	0	0	0	499,000	447,000	0	253,000	0	0	56,000	0	0	0
Pier Parking Lot	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	270,502	0	0	0	0
Parks	21,632	0	0	0	0	0	0	10,008	0	0	50,077	6,256	0	81,744	0	0	26,193	14,117	0	115,905
Cemeteries	12,023	0	0	0	0	0	23,155	0	0	0	0	0	0	0	0	0	114,411	0	0	0
Port Bruce Waterfront Master Plan	40,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**172,795**	**705,775**	**92,972**	**25,971**	**27,098**	**0**	**1,000,987**	**108,526**	**383,919**	**110,357**	**911,716**	**714,702**	**23,944**	**513,282**	**37,528**	**334,662**	**1,781,651**	**90,952**	**202,316**	**2,538,788**

Table A- 5

Equipment Asset – Detailed Cost Forecast ($)

Assets	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Roads	89,929	9,590	104,597	1,366	124,339	11,005	1,514	1,567	50,288	41,098	135,921	13,528	27,761	18,680	1,994	74,748	2,136	175,236	2,288	212,430
Fire Services	103,124	187,839	109,726	199,182	104,880	111,711	109,848	89,842	119,788	727,094	97,356	201,303	210,521	184,489	196,742	183,234	104,800	167,296	251,549	175,711
Facilities & Public Spaces	16,181	25,356	5,330	6,259	6,325	6,705	17,652	7,182	26,385	35,725	7,623	211,556	9,623	8,829	27,752	26,687	13,197	10,132	27,151	10,853
Admin	4,207	4,355	4,507	4,665	62,603	4,997	5,172	5,353	5,540	74,353	5,935	6,142	6,357	6,580	88,308	7,049	7,295	7,551	7,815	104,882
Total	**213,442**	**227,140**	**224,160**	**211,472**	**298,147**	**134,418**	**134,186**	**103,945**	**202,001**	**878,270**	**246,835**	**432,530**	**254,262**	**218,579**	**314,796**	**291,718**	**127,428**	**360,214**	**288,803**	**503,876**

Table A- 6
Fleet Asset – Detailed Cost Forecast ($)

Assets	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
Pickup 1 (2016) 10Yr Fire	0	0	74,618	0	0	0	0	0	0	0	0	0	74,411	0	0	0	0	0	0	0
Pumper 3 (2007) 20Yr	0	0	0	724,546	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pumper 4 (2015) 20Yr	0	0	0	0	0	0	0	0	0	0	0	917,834	0	0	0	0	0	0	0	0
Pumper 5 (2010) 20Yr	0	0	0	0	0	768,671	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rescue 3 (2013) 20Yr	0	0	0	0	0	0	0	0	0	588,299	0	0	0	0	0	0	0	0	0	0
Rescue 4 (2013) 20Yr	0	0	0	0	0	0	0	0	0	588,299	0	0	0	0	0	0	0	0	0	0
Rescue 5 (2013) 20Yr	0	0	0	0	0	0	0	554,529	0	0	0	0	0	0	0	0	0	0	0	0
Squad 5 (2000) Not Replacing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tanker 3 (2004) 20Yr	721,000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tanker 4 (2018) 20Yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1,090,577	0	0	0	0	0
Tanker 5 (2017) 20Yr	0	0	0	0	0	0	0	0	0	0	0	0	1,027,974	0	0	0	0	0	0	0
Grader 34 (2011) 20Yr	0	0	0	0	0	0	0	521,909	0	0	0	0	0	0	0	0	0	0	0	0
Grader 35 (2012) 20Yr	0	0	0	0	0	0	0	0	537,567	0	0	0	0	0	0	0	0	0	0	0
Tractor Backhoe 40 (2011) 15Yr	0	0	273,182	0	0	0	0	0	0	0	0	0	0	0	0	0	0	425,608	0	0

Tractor Backhoe 42 (2011) 15Yr	0	0	0	281,377	0	0	0	0	0	0	0	0	0	0	0	401,177	0	0	0	0
Loader 45 (2023) 15Yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	514,129	0	0	0	0	0
Tractor 52 (2021) 20Yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	201,653	0	0
Single 10 (2011) 12Yr	390,370	0	0	0	0	0	0	0	0	0	0	0	556,574	0	0	0	0	0	0	0
1T Single 11 (2023) 12Yr	0	0	0	0	0	0	0	0	0	0	114,061	0	0	0	0	0	0	0	0	0
Tandem 17 (2003) Not Replacing	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tandem 22 (2012) 12Yr	463,500	0	0	0	0	0	0	0	0	0	0	0	660,840	0	0	0	0	0	0	0
Tandem 23 (2014) 12Yr	0	0	491,727	0	0	0	0	0	0	0	0	0	0	0	701,085	0	0	0	0	0
Tandem 24 (2016) 12Yr	0	0	0	0	521,673	0	0	0	0	0	0	0	0	0	0	0	743,781	0	0	0
Tandem 25 (2018) 12Yr	0	0	0	0	0	0	553,443	0	0	0	0	0	0	0	0	0	0	0	789,078	0
Tandem 26 (2018) 12Yr	0	0	0	0	0	0	553,443	0	0	0	0	0	0	0	0	0	0	0	789,078	0
Tandem 27 (2020) 12Yr	0	0	0	0	0	0	0	0	587,148	0	0	0	0	0	0	0	0	0	0	0
Tandem 28 (2022) 12Yr	0	0	0	0	0	0	0	0	0	0	622,905	0	0	0	0	0	0	0	0	0
3T Sign 88 (2015) 12 Yr	0	0	0	144,909	0	0	0	0	0	0	0	0	0	0	0	206,606	0	0	0	0
Pickup 71 (2009) 9Yr Parks	0	53,756	0	0	0	0	0	0	0	0	70,140	0	0	0	0	0	0	0	0	91,516
Pickup 73 (2016) 9Yr Patrol	0	53,756	0	0	0	0	0	0	0	0	70,140	0	0	0	0	0	0	0	0	91,516

Pickup 74 (2016) 8Yr Patrol	55,000	0	0	0	0	0	0	0	89,098	0	0	0	0	0	0	0	112,866	0	0	0
Pickup 75 (2018) 8Yr Patrol	0	0	74,618	0	0	0	0	0	0	0	94,524	0	0	0	0	0	0	0	119,740	0
Pickup 76 (2018) 8Yr Foreman	0	0	0	76,857	0	0	0	0	0	0	0	97,360	0	0	0	0	0	0	0	123,332
Pickup 77 (2020) 8Yr Manager	0	0	0	0	79,162	0	0	0	0	0	0	0	100,280	0	0	0	0	0	0	0
Pickup 78 (2020) 9Yr Water	0	0	0	0	0	60,503	0	0	0	0	0	0	0	0	78,943	0	0	0	0	0
Pickup 79 (2020) 9Yr Facilities	0	0	0	0	0	60,503	0	0	0	0	0	0	0	0	78,943	0	0	0	0	0
Pickup 80 (2022) 8Yr Foreman	0	0	0	0	0	0	83,983	0	0	0	0	0	0	0	106,387	0	0	0	0	0
Pickup 81 (2023) 9Yr Building	0	0	0	0	0	0	0	0	66,113	0	0	0	0	0	0	0	0	86,263	0	0
Pickup 82 (2023) 9Yr Drains	0	0	0	0	0	0	0	0	66,113	0	0	0	0	0	0	0	0	86,263	0	0
Pickup 85 (2023) 8Yr Foreman	70,335	0	0	0	0	0	0	0	89,098	0	0	0	0	0	0	0	112,866	0	0	0
Pickup 87 (2013) 8Yr Patching	0	72,445	0	0	0	0	0	0	0	91,771	0	0	0	0	0	0	0	116,252	0	0
Total	1,700,205	179,957	914,145	1,227,689	600,836	889,677	1,190,870	1,076,438	1,435,137	1,268,370	971,769	1,015,193	2,420,080	0	2,570,065	607,783	969,514	916,040	1,697,895	306,365

Table A- 7

Guiderail Asset Network – Detailed Cost Forecast ($)

Assets	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043
CALTON LINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CARTER RD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CATT LINE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
COLLEGE LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CONSERVATION LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CROSSLEY-HUNTER LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DINGLE LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DORCHESTER RD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GLENCOLIN LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HACIENDA RD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HELDER RD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
JAMESTOWN LN	0	0	0	0	0	0	0	0	0	0	0	0	0	53,872	0	0	0	0	0	0
JOHN WISE LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MAPLETON LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PRESSEY LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ROGERS RD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
RUSH CREEK LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SPARTA LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VIENNA LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WALKER RD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WHITTAKER RD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
YORKE LN	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**53,872**	**0**	**0**	**0**	**0**	**0**	**0**