Asset Management Plan

Municipality of Middlesex Centre

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List of Acronyms and Abbreviations

CL	Centreline
BCI	Bridge Condition Index
G/S	Gravel
HCB	High-Class Bituminous
HVAC	Heating, Ventilation, and Air Conditioning
IJPA	Infrastructure for Jobs and Prosperity Act
LCB	Low-Class Bituminous
MMS	Minimum Maintenance Standards
OCIF	Ontario Community Infrastructure Fund
OSIM	Ontario Structure Inspection Manual
PCI	Pavement Condition Index
UL%	Useful Life Percentage

Report

Chapter 1
Introduction

1. Introduction

1.1 Overview

The main objective of an asset management plan is to use the 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 Municipality of Middlesex Centre (Municipality) retained Watson & Associates Economists Ltd. (Watson) to update the Municipality's 2013 Asset Management Plan (dated December 5, 2013). Watson provided a working draft update in May 2019 that moved the Municipality's asset management practices towards compliance with Ontario Regulation 588/17. Watson has continued to work with the Municipality to refine the asset management plan since that draft was produced. This plan is the culmination of the work completed to date. It will serve as a road map for sustainable infrastructure planning going forward.

This is a comprehensive asset management plan covering all the Municipality's capital assets. These assets and their replacement costs are shown in Table 1-1.

Table 1-1
Asset Classes and Replacement Cost

Asset Class	Replacement Value
Roads	$135,130,374
Sidewalks and Street Lights	$18,685,035
Bridges and Structural Culverts	$117,864,041
Facilities	$101,038,760
Water	$77,067,633
Wastewater	$125,629,211
Stormwater	$110,653,607
Fleet	$18,361,061
Equipment	$1,860,048
Total	**$706,289,770**

The Municipality's goals and objectives with respect to asset management are identified in the Municipality's Strategic Asset Management Policy. A major theme within that policy is for the Municipality's physical assets to be managed in a manner that will support the sustainable provision of municipal services to residents. Through the implementation of the asset management plan, the Municipality'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 the Municipality's residents. Therefore, the asset management plan and the progress with respect to its implementation will be evaluated based on the Municipality's ability to meet these goals and objectives.

1.2 Legislative Context for the Asset Management Plan

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 its 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 fit 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 help define 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 standard content 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 Municipality at this time.

1.3 Asset Management Plan Development

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

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

1. Compile available information pertaining to the Municipality's capital assets to be incorporated in the plan, including attributes such as size/material type, useful life, age, accounting valuation and current valuation. Update the current valuation, where required, using benchmark costing data or applicable inflationary indices.

2. Define and assess current asset conditions, based on a combination of Municipality staff input, existing asset reports, and an asset age-based condition analysis.

3. Define and document current levels of service based on discussions with the Municipality's Council and staff, and consideration of various background reports.

4. Develop an asset management strategy that identifies the lifecycle 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.

5. Develop a financing strategy to support the lifecycle management strategy. The financing plan informs how the capital and operating expenses arising from the asset management strategy will be funded over the forecast period.

6. Document the asset management plan in a formal report to inform future decision-making and to communicate planning to municipal stakeholders.

1.4 Maintaining and Integrating the Asset Management Plan

It should be noted that, while this report covers a forecast period of 10 years, the full lifecycles of the Municipality'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 Municipality change. This can be accomplished in conjunction with specific legislative requirements (i.e., 5-year review of the asset management plan under the IJPA), as well as the Municipality's annual budget process. Further integration into other municipal 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 several strategic documents, as identified in the Municipality's Strategic Asset Management Policy.

This report is based on the data currently available to the Municipality. In several areas, future improvements have been identified in "Next Steps" boxes. The next steps identify work that can be done to either enhance reporting on the current performance of assets or to improve the accuracy of estimated funding requirements. The next steps are compiled in Appendix C. The next steps are grouped into three priority categories:

- Short term – Started within a year: These next steps either provide a near-term benefit or may take time to implement.

- Medium term – Start in next two to three years: These next steps will provide data that will be incorporated in a future major update to the asset management plan.

- Long-term – Complete when guidance and data becomes available: These next steps cannot be completed now due to lack of information or clarity on requirements.

When updating the asset management plan, it should be noted that the state of local infrastructure, 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.

Chapter 2
State of Local Infrastructure and Levels of Service

2. State of Local Infrastructure and Levels of Service

2.1 Introduction

This chapter provides an analysis of the Municipality's assets and the current service levels provided by those 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).

Asset management plans must identify the current levels of service being provided for each asset category. For core municipal infrastructure assets, 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. For all other infrastructure assets, each municipality will need to establish its own measures for levels of service.

Asset management plans must also include a 10-year forecast identifying the proposed levels of service for each asset category. The proposed levels of service will be defined using the qualitative descriptions and technical metrics that the municipality uses to define current levels of service.

The rest of this chapter addresses the requirements identified above, with each section focusing on an individual asset category.

2.2 Roads and Related

2.2.1 State of Local Infrastructure

The Municipality currently owns and manages 567 centreline-kilometres of roads with a 2020 replacement cost totalling approximately $135.1 million. The replacement cost has been estimated based on the unit costs identified in the Lifecycle Management Strategy section of this report (Chapter 3). 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 provides a breakdown of the road network by surface type and roadside environment. Figure 2-1 illustrates this breakdown as a proportion of the total.

Next steps: The Municipality should review and update the roads asset inventory. A process for accounting for shared responsibility for boundary roads should be developed. To be able to identify boundary roads, a field should be added to the GIS file for roads to identify which roads are boundary roads. The GIS file should be reviewed to ensure that it includes all roads owned by the Municipality and only roads owned by the Municipality. For example, there is a concern that some roads currently in the GIS file may be owned by the County.

The overall average age of the road network is 30.9 years. Almost half the road network length (48%) is gravel. The next most common surface type is LCB – 35% of the total road network length. Roads with an HCB surface account for 17% of the total road network length. In the context of roadside environment, most of the network is rural – 88% of the total road network length.

Figure 2-2 and Figure 2-3 provide a spatial illustration of the Municipality's road network, showing surface type.

Table 2-1
Road Network – Surface Type

Surface Type	Roadside Environment	Centreline Kilometres	Replacement Cost (2020$)
HCB	Urban	43.2	$34,855,304
HCB	Semi-Urban	21.0	$11,395,321
HCB	Rural	32.7	$17,687,822
HCB Total		96.9	$63,938,447
LCB	Semi-Urban	2.9	$410,135
LCB	Rural	194.2	$34,236,482
LCB Total		197.0	$34,646,617
Gravel	Semi-Urban	0.2	$21,835
Gravel	Rural	273.1	$36,523,475
Gravel Total		273.3	$36,545,310
TOTAL		**567.2**	**$135,130,374**

Figure 2-1
Road Network Distribution – Surface Type
Based on Centreline-kilometres

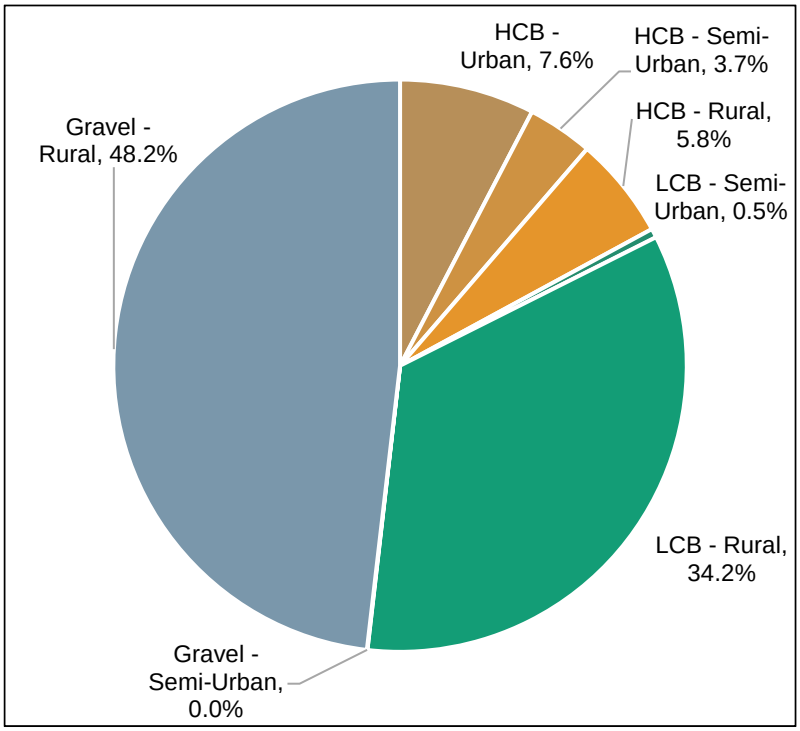


Figure 2-2
Roads by Surface Type – Municipality

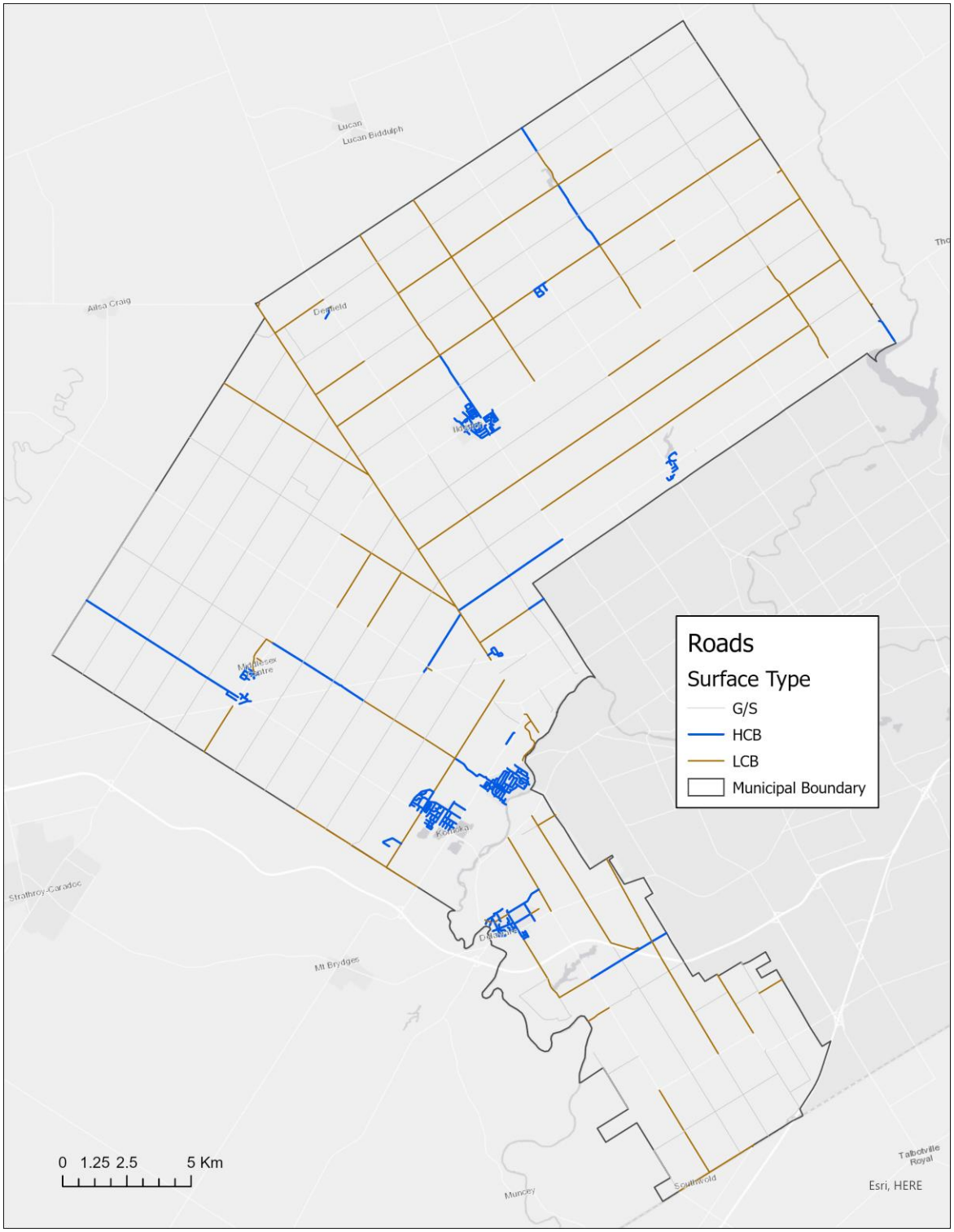


Figure 2-3
Roads by Surface Type - Communities

In addition to the roads themselves, the Municipality manages sidewalks and streetlights that support travel on the roads. Data on the age of these assets are not complete and data on their condition are currently not available. Table 2-2 summarizes the available information on sidewalks and streetlights.

Table 2-2
Sidewalks and Streetlights – Inventory

Asset	Quantity	Units	Replacement Cost per Unit[1]	Total Replacement Cost (2020$)
Sidewalks	53,937	sq.m	$55	$2,966,535
Streetlights on Municipal Poles	1,021	Number	$11,250	$14,692,500
Streetlights on Hydro Poles	855	Number	$4,950	$1,026,000
Total	-	-	-	**$18,685,035**

2.2.2 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 condition of gravel roads will not be covered in this section because it has not been assessed. Further, the condition of gravel roads can deteriorate rapidly and is also less costly to improve through lifecycle activities such as routine grading and re-gravelling ever two years. Because of this, lifecycle activities for gravel roads are currently funded through the operating budget.

The condition of paved roads (both HCB and LCB) was assessed in a 2019 Road Needs Study. The study used a Pavement Condition Index (PCI) as the measure of condition. PCI is measured on a scale of 0-100, with 100 being a perfect condition and 0 indicating an asset that has failed.

[1] The replacement costs for streetlights include the cost of a 50% increase in the number of streetlights needed to meet current lighting standards. It is assumed that additional lights will be on municipal poles at a cost of $7,500 per light.

To better communicate the condition of the road network, these numeric condition ratings have been segmented into qualitative condition states. Moreover, photographic illustrations of these condition states are provided to better communicate the condition to the reader. Table 2-3 summarizes the various physical condition ratings and the condition state they represent for road assets.

Table 2-3
Road Condition States Defined with Respect to Pavement Condition Index

Pavement Condition Index (PCI) Range	Condition State	Example Photo
85 < PCI ≤ 100	**Brand New**	
70 < PCI ≤ 85	**Very Good**	
55 < PCI ≤ 70	**Good**	
40 < PCI ≤ 55	**Fair**	
25 < PCI ≤ 40	**Poor**	
10 < PCI ≤ 25	**Very Poor**	
0 ≤ PCI ≤ 10	**End of Life**	

Table 2-4 examines the average condition of the road network by surface type. The average condition is weighted based on centreline-kilometres. The PCI ratings used in this plan are from 2019. The Municipality should develop a strategy to update the road

condition values annually to reflect expected deterioration and any improvements that have been made that year. Every three to five years, a road needs study should be completed where the condition of roads is assessed directly and evaluated to identify short- and medium-term needs.

As illustrated in Table 2-4, HCB roads are in Very Good condition and LCB roads are in a Good condition state on average. The overall average PCI for the entire road network is currently 69.8, or a Good condition state.

Table 2-4
Road Condition Analysis

Road Surface	Centreline Kilometres	PCI (Weighted Average)	Average Condition State
HCB	96.9	73.1	**Very Good**
LCB	197.0	68.1	**Good**
TOTAL		**69.8**	**Good**

The condition of streetlights and sidewalks is not presented because their condition has not been evaluated. An age-based condition measure could not be used because age data is currently incomplete.

Next steps: The Municipality should assess condition of streetlights and sidewalks either directly or based on age and include the information in a future update of the asset management plan.

2.2.3 Current Levels of Service

The levels of service currently provided by the Municipality's road network are, 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 Municipality to periodically evaluate these service level objectives.

Road assets have prescribed levels of service reporting requirements under O. Reg. 588/17. These requirements include levels of service reporting at 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 customers understand and

reflect customers' expectations with respect to the scope and quality of the road network. Technical levels of service describe the scope and quality of the Municipality's roads through performance measures that can be quantified and evaluated. These performance measures can be used to assess how effectively a municipality is achieving its established targets.

Road users are often particularly concerned with roads that are in Poor and Very Poor condition. To address these concerns, the information on condition conveyed through the average PCI performance measure required by O. Reg. 588/17 will be supplemented by reporting the total centreline-kilometre length of roads in Poor condition or worse.

Table 2-5 and Table 2-6 present the current and proposed levels of service for roads. They include the requirements mandated by O. Reg. 588/17 and one additional performance measure. The additional performance measure is the centreline-kilometres of roads with a PCI < 40. This measure highlights roads in Poor condition. Figure 2-4 and Figure 2-5 provide a spatial illustration of the condition of the Municipality's road network.

Table 2-5
Community Levels of Service – Roads and Related

Service Attribute	Community Levels of Service
Scope	Figure 2-2 depicts the Municipality's road network, by surface type
Quality	Table 2-3 details how road PCI is separated into qualitative condition states

Table 2-6
Technical Levels of Service – Roads and Related

Service Attribute	Performance Measure	Current Performance [1]	Proposed Levels of Service
Scope	Lane-kilometres of road type[2] per square kilometre of land	Arterial: 0 Collector: 1.64 Local: 0.339	No Change
Quality	Average PCI, weighted by centreline-kilometres	69.8	> 70
	Centreline-kilometres of HCB and LCB roads with PCI < 40	30.5	Minimize

[1] Data is for the 2020 calendar year.
[2] Arterial, collector, and local are defined in terms of the Minimum Maintenance Standard classifications in O. Reg. 239/02. Arterial: Classes 1 and 2; Collector: Classes 3 and 4; Local: Classes 5 and 6.

Figure 2-4
Roads by Condition - Municipality

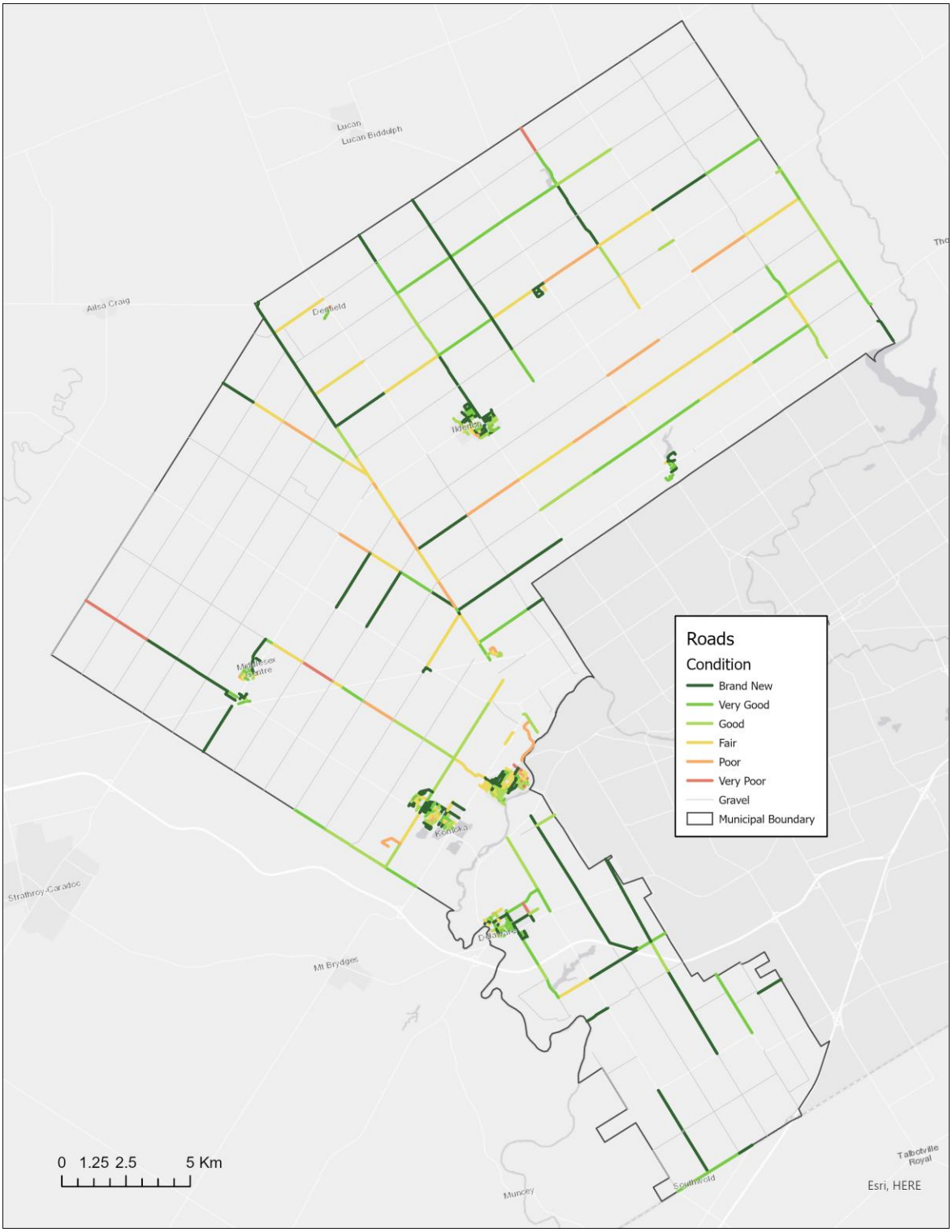


Figure 2-5
Roads by Condition - Communities

2.3 Bridges and Structural Culverts

2.3.1 State of Local Infrastructure

The Municipality currently owns and manages 50 bridges and 56 major culverts[1], with a 2020 replacement cost totalling approximately $117.9 million. Table 2-7 provides a summary of the number, age, and replacement cost for the current bridge and culvert inventory. The average age of the Municipality's bridges and culverts is almost 46 years, with bridges averaging 48.9 years, compared to culverts averaging 38.2 years.

Table 2-7
Bridge and Culvert Infrastructure Summary

Type	Quantity	Average Age	Replacement Cost (2020$)
Bridges	50	48.9	$84,859,386
Culverts	56	38.2	$33,004,655
TOTAL	**106**	**45.9**	**$117,864,041**

Next steps: The Municipality should consider adding smaller culverts to the asset management plan either as a stand-alone asset or as part of roads. These are culverts with a diameter less than three metres not covered by the biennial OSIM inspections.

2.3.2 Condition

The Municipality's 2019 Ontario Structure Inspection Manual (OSIM) report assessed the condition of the bridge and culvert inventory, assigning a bridge condition index (BCI) to each asset. 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.

[1]A bridge is a structure which provides a roadway or walkway for the passage of vehicles, pedestrians or cyclists across an obstruction, gap or facility. A culvert is a structure that forms an opening through soil. This asset management plan includes structures covered by the biennial OSIM inspections. These include bridges with a span of three metres or more and culverts with a diameter of three meters or more.

Similar to road assets, to better communicate the condition of the bridge and culvert inventory, the numeric condition ratings have been segmented into qualitative condition states, as summarized in Table 2-8.

Table 2-8
Bridge and Culvert Condition States Defined with Respect to the
Bridge Construction Index

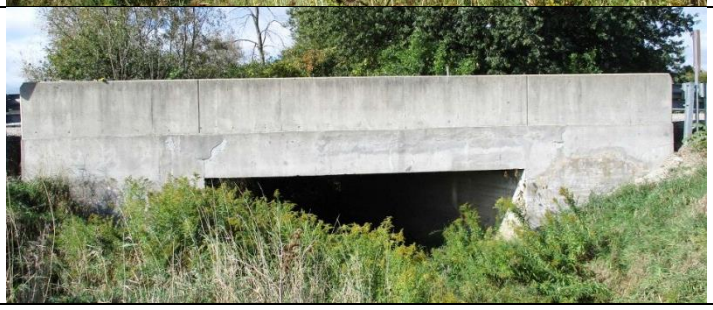
Bridge Condition Index (BCI)	Condition State	Example Photo
100 ≥ BCI ≥ 90	**Excellent**	
90 > BCI ≥ 75	**Good**	
75 > BCI ≥ 40	**Fair**	
40 > BCI	**Poor**	

Table 2-9 examines the average condition rating of the bridge and culvert inventory. The condition of the structures comes from the Municipality's 2019 OSIM report.

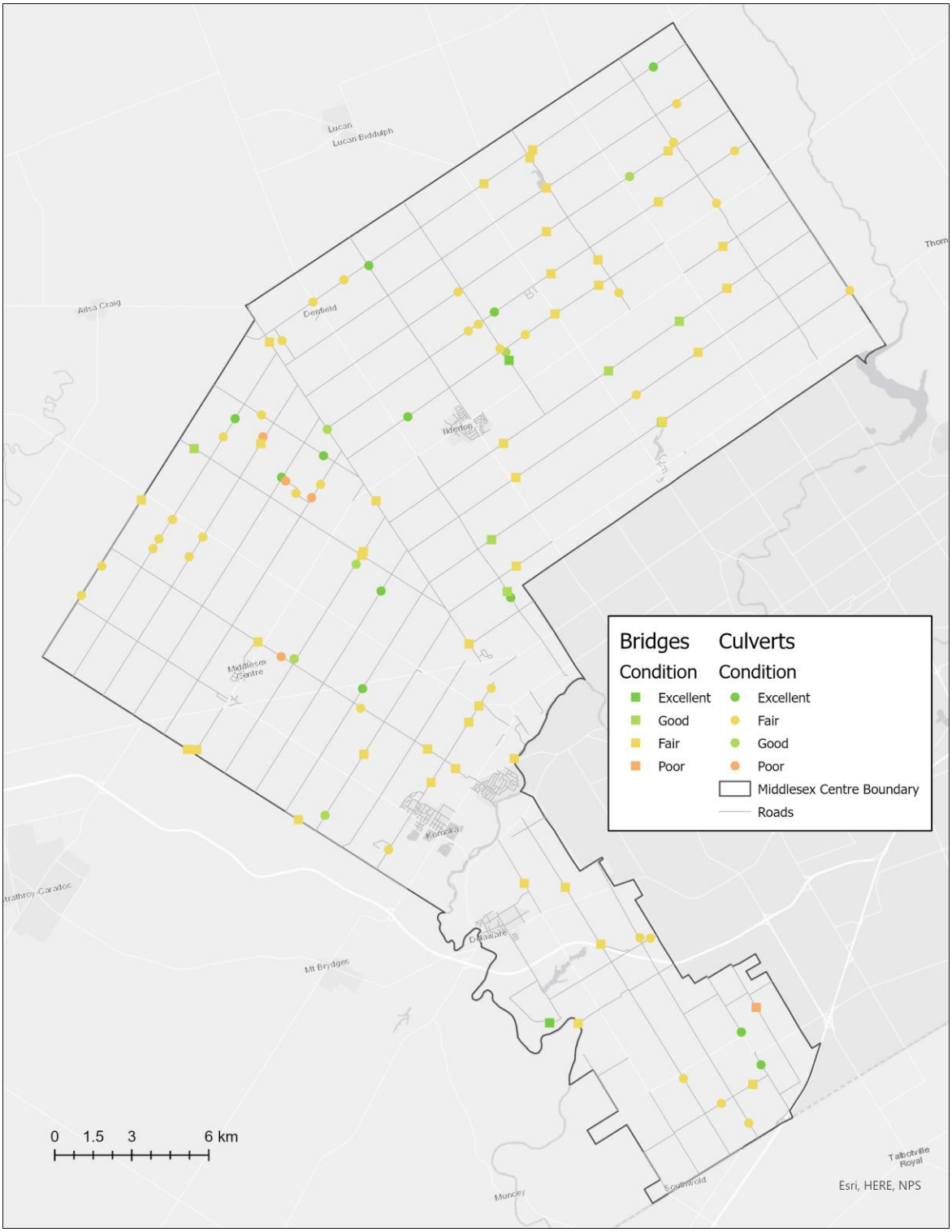
As summarized in Table 2-9, bridges and culverts are both, on average, in a Fair condition state. The overall average BCI for the entire bridge and culvert inventory is 67.7, representing a Fair condition state. One bridge and six culverts are in Poor condition, meaning their BCI are less than 40. The OSIM report has recommendations for rehabilitation or replacement projects for most of these structures.

Table 2-9
Bridge and Culvert Condition Analysis

Type	Quantity	Average BCI	Number in Poor Condition	Average Condition State
Bridge	50	67.7	1	**Fair**
Culvert	56	66.2	4	**Fair**
TOTAL	**106**	**67.3**	**5**	**Fair**

Figure 2-6 provides a spatial illustration of the condition and extent of the Municipality's bridge and culvert infrastructure.

Figure 2-6
Map – Bridges and Culverts



2.3.3 Current and Proposed Levels of Service

The level of service currently provided by the Municipality's bridge and culvert inventory 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 Municipality to periodically evaluate these service level objectives.

Bridge and culvert assets have prescribed levels of service reporting requirements under O. Reg. 588/17. These requirements include levels of service reporting at two 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 customers' expectations with respect to the scope and quality of the bridge and culvert inventory. Technical levels of service describe the scope and quality of the Municipality's bridges and culverts through performance measures that can be quantified and evaluated. These performance measures can be used to assess how effectively a municipality is achieving its established targets. Table 2-10 and Table 2-11 present the current and proposed levels of service for bridges. They include the requirements mandated by O. Reg. 588/17 and one additional performance measure. The additional performance measure is the number of structures with a BCI < 40. This measure highlights structures in Poor condition. This parallels the approach taken with roads.

The Municipality is delaying setting proposed levels of service for bridges and culverts until the cost of achieving different targets can be estimated more accurately. To better estimate costs, the rate at which bridges and culverts deteriorate over time needs to be better understood. To improve cost estimates, more data on how condition changes over time and the costs of lifecycle activities is needed. This data will be accumulated over time.

Table 2-10
Community Levels of Service – Bridges and Culverts

Service Attribute	Community Levels of Service
Scope	Bridges and culverts are utilized by passenger vehicles, emergency vehicles, pedestrians, cyclists, and heavy transport vehicles
Quality	Table 2-8 details how BCI is segregated into qualitative condition states

Table 2-11
Technical Levels of Service – Bridges and Culverts

Service Attribute	Performance Measure	Current Performance [1]	Proposed Levels of Service
Scope	Number of the Municipality's bridges and culverts currently have load or dimensional restrictions[2]	0	0
Quality	For bridges in the Municipality, the average bridge condition index value	68.8	To be determined[3]
	For structural culverts in the Municipality, the average bridge condition index value	65.3	To be determined
	Number of bridges and culverts with a BCI < 40	7	Minimize

[1] Data is for the 2019 calendar year.
[2] "Dimensional restrictions" in the O. Reg. 588/17 requirements have been interpreted as vehicle height restrictions.
[3] Targets for average BCI for bridges and culverts to be set when degradation curves have been refined based on more years of condition assessment data.

2.4 Facilities

2.4.1 State of Local Infrastructure

The Municipality currently manages 53 facilities, comprising 35 individual buildings and assets at 18 parks. The combined replacement cost of all facilities is $101.0 million. Facility assets range in cost from over $28 million for the Komoka Wellness Centre to assets with replacement costs of a few thousand dollars such as bleachers and baseball dugouts. A breakdown of facility asset numbers and replacement costs by category is provided in Table 2-12. A detailed listing is provided in Appendix B.

Table 2-12
Number of Facilities and Replacement Costs by Category

Category	Number of Facilities	Replacement Cost
Administration	1	$4,401,913
Fire	5	$10,519,153
Leased to Others	2	$12,463,675
Library	3[1]	$1,951,911
Parks and Recreation	38[2]	$60,080,533
Public Works	4	$11,621,575
Total	**53**	**$101,038,760**

Next steps: The Municipality should evaluate the capital needs of the three gravel pits and include in the next update of the asset management plan.

2.4.2 Condition

In May of 2019, the Municipality retained Dillon Consulting Limited (Dillon) to perform detailed condition assessments for 31 of the 35 buildings. Dillon completed the

[1] The Municipality has four libraries. One is located in the Wellness Centre and is not counted as a separate facility.
[2] The number of facilities for parks includes each park and significant building. For example, a park with a washroom building would count as two facilities. The Municipality's parks are: Weldon, Deerhaven Optimist, Denfield, Heritage, Komoka-Kilworth Optimist, Komoka, Komoka Caverhill, Lions, Meadowcreak, Municipal, Poplar Hill, Prince Andrew School, Junction, Kilworth Flats, Kilworth Rivers Edge, Pleasant, Tiffany, and Westbrook.

condition assessment in April 2020. Condition assessments of the remaining four buildings and 18 park facilities were completed by the Municipality's staff.

Condition has been assessed using the 5-point rating scales shown in Table 2-13. The different component types have different descriptors and in the case of park assets, the condition labels were different. Despite these differences, the overall flavour of the condition rating scales is comparable. This allows averages to be meaningfully calculated and presented. For reporting, the condition labels from Dillon's scales will be used.

Table 2-13
Facilities Condition Assessment Rating Scale

Buildings (Dillon)					Parks (Middlesex Centre)	
Grade	**Condition**	**Architectural / Site works**	**Mechanical**	**Electrical**	**Condition**	**Description**
1	Very Good	Asset is physically sound and performing as intended. Secure weatherproof structure or building, which is well maintained. Good access and secure safe site.	Equipment is physically sound and performing as intended.	No abnormalities and resembles as new.	Excellent	New or like-new condition, no issues to report.
2	Good	Asset is physically sound and performing as intended. Minor deterioration of surfaces/cladding. Some spalling but no corrosion staining. Some maintenance needed to prevent initial stages of decay or dereliction commencing. Needs to be re-inspected in the medium term.	Minor signs of equipment deterioration such as increased vibration, looseness, misalignment, slight leaks. Protective coating still evident. Efficiency undiminished. Minor oil leaks and gland wear becoming more evident.	Minor signs of equipment deterioration. Requires little if any repairs, but these are generally not affecting safety and/or its ability to perform its intended function.	Good	Good condition, no reported issues/ concerns.
3	Fair	Showing deterioration, with some components physically deficient. Structure/building functionally sound, but appearance affected by minor cracking, staining, peeling paintwork, minor leakage or overgrown vegetation. Early stages of decay or dereliction are becoming evident.	Showing signs of equipment deterioration. All components functioning acceptably but showing significant wear and tear. Efficiency diminished. Minor failures with increasing corrosion of metal components, bearings and or gland wear (vibration) becoming more evident.	Showing signs of equipment deterioration. Functionally sound, but showing some wear, tear and deterioration. Deterioration beginning to affect the safety, efficiency and operation of the system.	Fair	Average wear for item age, no major issues to report.

Facilities Condition Assessment Rating Scale (Cont'd)

Buildings (Dillon)					Parks (Middlesex Centre)	
Grade	**Condition**	**Architectural / Site works**	**Mechanical**	**Electrical**	**Condition**	**Description**
4	Poor	Major portion of asset is physically deficient. Structure is functioning but with problems due to significant leakage, cracking, spalling, loss of stability or deformation, corrosion substantially reducing size of structural member. Building not functioning properly due to leakage; rising damp; rotting woodwork; decayed brickwork; inadequate security.	Significant leaks, vibration, looseness, misalignment or out of balance. Parts and components function but require significant maintenance to remain operational.	The condition of the equipment is impacting on performance, serviceability and affecting the process. System is functioning, but with problems due to serious defects that require significant maintenance to remain operational.	Poor	Worn from use, replace soon.
5	Very Poor	Physically unsound. High probability of failure. Serious structural problems having a detrimental effect on the performance of the structure/ building. Access extremely poor or hazardous. Site safety at risk.	Unreliable with frequent breakdowns and adverse impact on performance. Effective life exceeded and equipment now incurring excessive maintenance costs compared to replacement costs.	A high risk of breakdown with a serious impact on the system's safety, efficiency and operation. System's effective life exceeded and excessive maintenance required.	Extremely Poor	Extremely worn and/or damaged, replace as soon as possible.

The overall average condition rating for all assessed facilities, weighted by replacement cost, is 2.47. This is categorized as Good. Table 2-14 shows the average facility condition for each category. For all categories, except leased to others, the average condition of facility assets is Good. For leased to others, the condition is Fair.

Table 2-14
Average Facility Condition by Category

Category	Average Condition	Rating
Administration	2.41	**Good**
Fire	2.12	**Good**
Leased to Others	3.02	**Fair**
Library	2.23	**Good**
Parks and Recreation	2.47	**Fair**
Public Works	2.29	**Good**
All	**2.47**	**Good**

While facility assets in each category are on average in Good or Fair condition, some individual components are in Poor and Very Poor condition. The total replacement cost of components in Poor or Very Poor condition is $1,728,750. Table 2-15 identifies components that are in Poor or Very Poor condition by facility and identifies their replacement costs.

Table 2-15
List of Components in Poor and Very Poor Condition in 5-year Capital Plan[1]

Facility	Poor	Very Poor	Replacement Cost
Ilderton Arena & Curling Club	Exterior doors, main breaker and disconnects	Window glazing	$95,000
Ilderton Community Centre	Exhaust fan, roof top unit	-	$60,000
Denfield Operation Centre	Ceiling acoustic tiles	-	$18,000
Prince Andrew School	Hot water tanks, fire sprinkler system	Kitchen exhaust fan	$85,000
Bryanston Firehall/Community Centre	Pre-finished metal roof, vinyl composite tile flooring, hot water tanks	-	$107,000
Arva Firehall	Sheet vinyl flooring	-	$10,000
Delaware Community Centre	Roof top units	-	$60,000
Delaware Lions Park Library/Washroom	Furnace/condenser, pressed board siding, vinyl composite tile flooring	-	$35,000
Komoka Community Centre/Library	Carpet	-	$10,000
Komoka Wellness Centre	Carpet, dehumidifier	-	$60,000
Poplar Hill Grand Stand	Concrete masonry units, plywood service opening	-	$26,250
Dear Haven Optimist Park	Playground equipment, tennis court	-	$170,000
Delaware Municipal Park	Parking	-	$150,000
Denfield Park	Junior and senior playground, benches, tennis/basketball court surface	-	$107,500
Kilworth Optimist Park	Playground	-	$140,000
MeadowCreek Park	Playground	-	$140,000
Prince Andrew Park	Tennis court, bleachers	-	$105,000
Weldon Park	Tennis court	-	$105,000
Westbrook Park	Playground, tennis court	-	$245,000
Total			**$1,728,750**

2.4.3 Current Levels of Service

In terms of levels of service, facilities require more detailed analysis than other asset classes because they are more complex, having many components. Furthermore, there is no single dimension over which to evaluate performance. Some problems, such as failure of a furnace in winter, can cause a facility to be closed until the issue is resolved.

[1] The condition assessment identified thirteen additional items as being in Poor condition that will be addressed through operating and four items in Poor condition that are not currently in use and will not be replaced.

Other issues, such as loose carpeting that could be a tripping hazard, need to be addressed immediately to avoid injuries. If a roof leaks, it may not cause immediate problems, but could result in other facility components being damaged by water. Finally, some issues are merely cosmetic, such as stained ceiling tiles.

Making the link between asset condition and the impact of the condition on users is challenging. As a first step, the Municipality should leverage the condition assessment completed by Dillon to address the most pressing issues with facilities. To do this, the Municipality could focus on addressing assets with condition ratings of Poor and Very Poor because they are the issues that are most likely to cause problems identified in the previous paragraph. The Municipality could use the number of facility components in Poor and Very Poor condition as a performance measure to track the performance of its facilities. The Municipality's current performance based on these measures are:

- Number of facility components in Poor condition: 34
- Number of facility components in Very Poor condition: 2

2.4.4 Proposed Levels of Service

Since it may take some time to address facility components that have been identified as being in Poor or Very Poor condition, the Municipality should take a measured approach to setting targets. As a first step, the Municipality could plan to address all items with a condition rating of Very Poor and begin to reduce the number of facility components in Poor condition.

2.5 Water

2.5.1 State of Local Infrastructure

The Municipality currently owns and manages a water treatment and distribution system comprised of 11 facilities, 81.8 km of mains, 909 valves, and 432 hydrants. The 2020 replacement cost of the system is approximately $77.1 million. Table 2-16 provides the Useful Life Percentage (UL%) and replacement cost of the various types of assets.

Table 2-16
Water System Infrastructure Summary

Type	Quantity	Average Useful Life %	Replacement Cost (2020$)
Facilities	11 Facilities	24%	$23,690,000
Mains	81.8 km	31%	$49,432,368
Valves	909 Valves	54%	$1,585,835
Hydrants	432 Hydrants	51%	$2,359,431
Total		**30%**	**$77,067,633**

Figure 2-7 and Figure 2-8 provides a spatial illustration of the Municipality's water mains, showing the extent of the area that is serviced.

Figure 2-7
Water Mains - Municipality

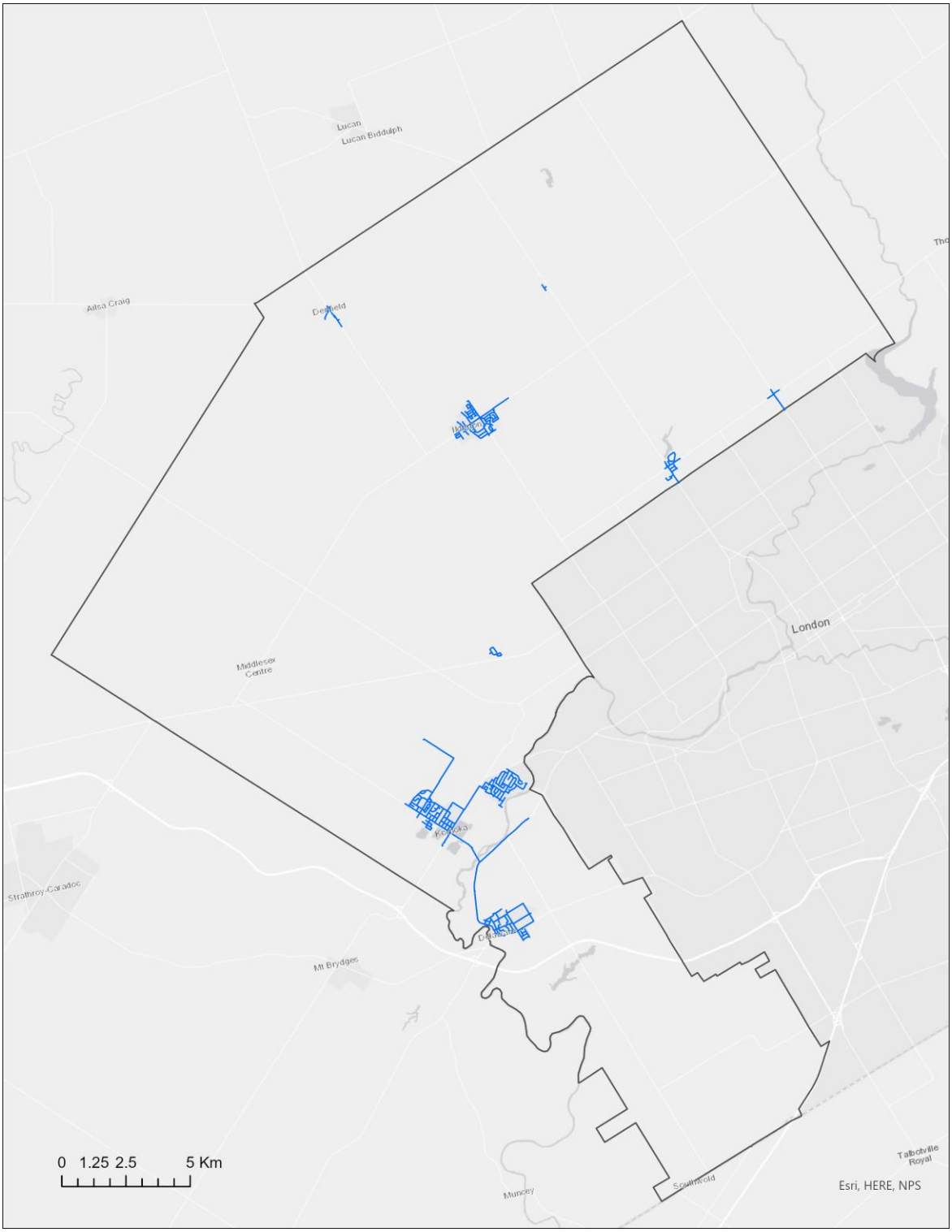


Figure 2-8
Water Mains - Communities

2.5.2 Condition

The condition of the Municipality's water infrastructure has not been formally evaluated through an expert condition assessment. The Municipality may undertake a formal condition assessment in the future as part of an ongoing effort to continually improve the asset management plan. For the purposes of this asset management plan, asset age has been used as a proxy for the condition state of the Municipality's water infrastructure. The measure used is the percentage of useful life consumed (UL%), based on each asset's age and the average life expectancy for the asset based on industry best practices and discussions with the Municipality's staff. A brand-new asset would have a UL% of 0, indicating that zero percent of the asset's life expectancy has been utilized. On the other hand, an asset that has reached its life expectancy would have a UL% of 100. It is possible for assets to have a UL% greater than 100, which occurs if an asset has exceeded its typical life expectancy but continues to be in service. This isn't necessarily a cause for concern; however, it must be recognized that assets that are near or beyond their typical life expectancy are expected to require replacement or rehabilitation in the near term.

To better communicate the condition of the network, the UL% ratings have been segmented into qualitative condition states, as summarized in Table 2-17. The scale is set to show that if assets are replaced around the expected useful life, they would have a rating of Fair. The rating of Fair extends to 140% of expected useful life. Beyond 140% of useful life, the probability of failure is assumed to have increased to a point where performance would be characterized as Poor. The implicit assumption being made is that the Municipality's goal is to avoid ratings of Poor and Very Poor. This is a level of service assumption.

Table 2-17
Water Asset Condition States Defined with Respect to UL%

UL%	Condition State
0% ≤ UL% ≤ 45%	**Very Good**
45% < UL% ≤ 90%	**Good**
90% < UL% ≤ 140%	**Fair**
140% < UL% ≤ 200%	**Poor**
200% < UL%	**Very Poor**

As summarized in Table 2-18, water facilities and mains are, on average, in a Very Good condition state, while valves and hydrants are in a Good condition state.

Table 2-18
Water Asset Condition Analysis

Type	Quantity	Average UL%	Average Condition State
Facilities	11 Facilities	24%	**Very Good**
Mains	59.5 km	31%	**Very Good**
Valves	909 Valves	54%	**Good**
Hydrants	432 Hydrants	51%	**Good**
System		**30%**	**Very Good**

2.5.3 Current and Proposed Levels of Service

The levels of service currently provided by the Municipality's water system are, 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 Municipality to periodically evaluate these service level objectives.

Water assets have prescribed levels of service reporting requirements under O. Reg. 588/17. These requirements include levels of service reporting at two 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 customers' expectations with respect to the scope and quality of the water system. Technical levels of service describe the scope and quality of the Municipality's water system through performance measures that can used to assess how effectively a municipality is achieving its established targets.

In addition to the prescribed levels of service reporting, the Municipality proposes to report one additional performance measure. Given that the Municipality intends to deliver reliable water services, water assets should be replaced near their expected useful lives. This means that it is reasonable to expect that only a relatively small percentage of assets will have a UL% greater than 140%. As a preliminary level of service target, the Municipality will seek to minimize the replacement cost of water assets with an age-based condition rating of Poor or Very Poor.

Table 2-19 and Table 2-20 present the current and proposed levels of service for water. They include the requirements mandated by O. Reg. 588/17 and one additional performance measure. The additional performance measure is the replacement cost of assets with an age-based condition of Poor or Very Poor.

Table 2-19
Community Levels of Service – Water

Service Attribute	Community Levels of Service
Scope	Figure 2-7 shows the areas that have water service. Fire flow is available for all areas with service.
Reliability	No boil water advisories in the past three years.

Table 2-20
Technical Levels of Service – Water

Service Attribute	Performance Measure	Current Performance [1]	Proposed Levels of Service
Scope	Percentage of properties connected to the municipal water system.	56%	Increasing[2]
	Percentage of properties where fire flow is available.	56%	Increasing
Reliability	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system.	0 connection-days/ Connection/year	0
	The number of connection-days lost per year due to water main breaks compared to the total number of properties connected to the municipal water system.	0.029 connection-days/ connection/year	Minimize
	Replacement cost of water assets with an age-based condition rating of Poor or Very Poor.	0	Minimize

2.6 Wastewater

2.6.1 State of Local Infrastructure

The Municipality currently owns and manages a wastewater collection and treatment system comprised of 10 facilities and 51.4 km of mains. The 2020 replacement cost of

[1] Data is for the 2020 calendar year.
[2] As new serviced subdivisions are built, the percentage of properties with water service will increase.

the system is approximately $125.6 million. Table 2-21 provides a summary of the UL% and replacement cost of the system.

Table 2-21
Wastewater System Infrastructure Summary

Type	Quantity	Average Useful Life %	Replacement Cost (2020$)
Facilities	10 Facilities	36%	$51,860,000
Mains	51.4 km	30%	$73,769,211
Total		**32%**	**$125,629,211**

Figure 2-9 and Figure 2-10 provides a spatial illustration of the Municipality's wastewater mains, showing the extent of the area that is serviced.

Figure 2-9
Wastewater Mains - Municipality

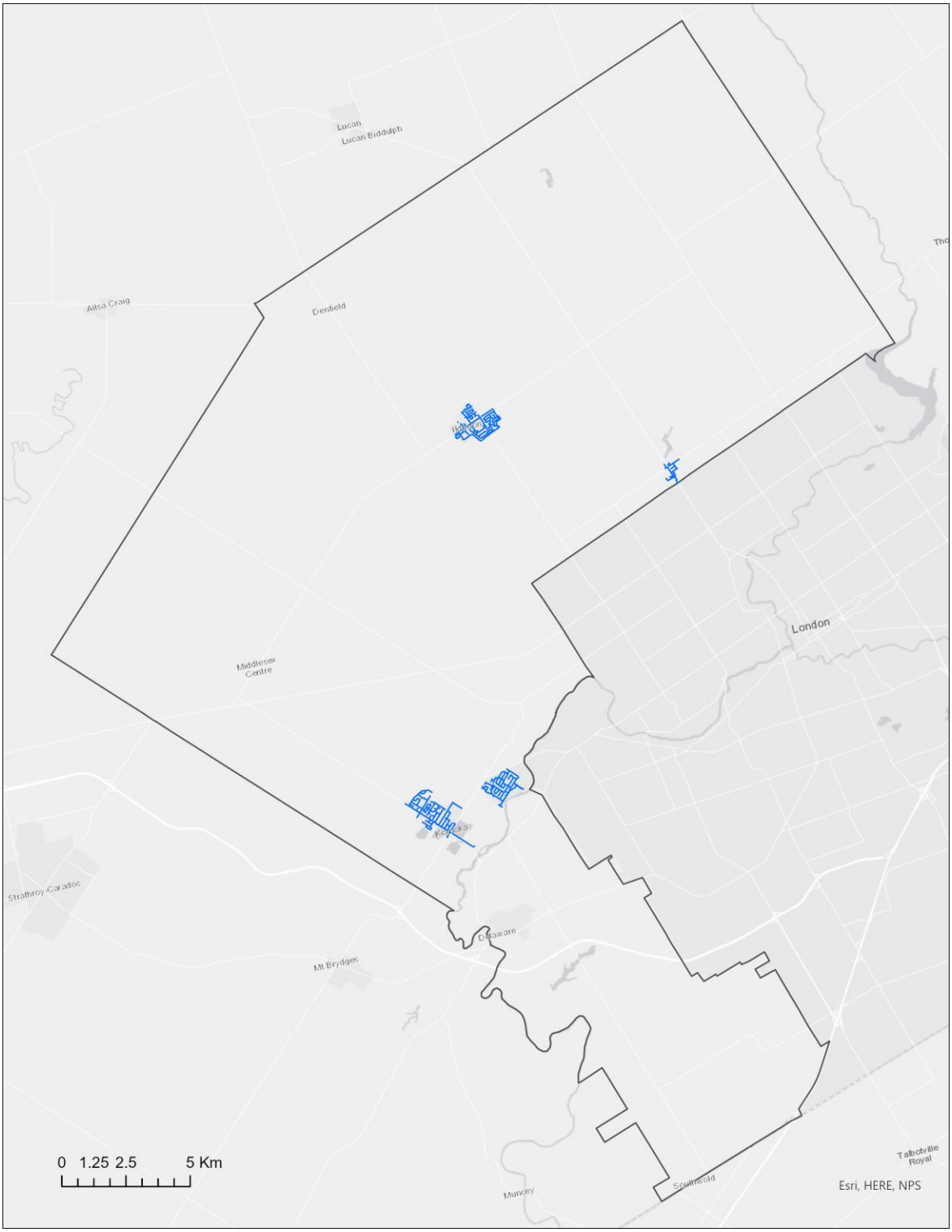


Figure 2-10
Wastewater Mains - Communities

2.6.2 Condition

The condition of wastewater infrastructure has been evaluated based on age in the same way as water infrastructure (i.e., using the UL% measure), as described in section 2.5.2. Average condition ratings for the various components of the wastewater system are presented below in Table 2-22 The table shows that, on average, wastewater facilities are in Very Good condition and wastewater mains are in Very Good condition.

Table 2-22
Wastewater Asset Condition Analysis

Type	Quantity	Average UL%	Average Condition State
Facilities	10 Facilities	36%	**Very Good**
Mains	51.4 km	30%	**Very Good**
System		**32%**	**Very Good**

2.6.3 Current Levels of Service

The levels of service currently provided by the Municipality's wastewater system are, 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 Municipality to periodically evaluate these service level objectives.

Wastewater 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 customers understand and reflect customers' expectations with respect to the scope and quality of the wastewater system. Technical levels of service describe the scope and quality of the Municipality's wastewater system through performance measures that can be quantified and evaluated. These performance measures can be used to assess how effectively a municipality is achieving its established targets. Table 2-23 presents the current levels of service as mandated by O. Reg. 588/17.

In addition to the prescribed levels of service reporting, the Municipality proposes to report one additional performance measure. As with water, it is reasonable to expect

that only a relatively small percentage of wastewater assets will have a UL% greater than 140%. As a preliminary level of service target, the Municipality will seek to minimize the replacement cost of wastewater assets with an age-based condition rating of Poor or Very Poor.

Table 2-23 and Table 2-24 present the current and proposed levels of service for wastewater. They include the requirements mandated by O. Reg. 588/17 and one additional performance measure. The additional performance measure is the replacement cost of assets with an age-based condition of Poor or Very Poor.

Table 2-23
Community Levels of Service – Wastewater

Service Attribute	Community Levels of Service
Scope	Figure 2-9 shows the areas that have wastewater service.
Reliability	The Municipality does not have combined wastewater and stormwater mains. The environmental Compliance Agreement has detailed data on discharge quality.

Table 2-24
Technical Levels of Service [1] – Wastewater

Service Attribute	Performance Measure	Current Performance [2]	Proposed Levels of Service
Scope	Percentage of properties connected to the municipal wastewater system.	44%	Increasing[3]
Quality	The number of connection-days per year with service disruptions due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.	0.00036 connection-days/ property/year	0
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.	0	0
	Replacement cost of wastewater assets with an age-based condition rating of Poor or Very Poor.	0	Minimize

2.7 Stormwater

2.7.1 State of Local Infrastructure

The Municipality currently owns and manages a stormwater system comprising 61.5 kilometres of mains and five stormwater ponds. The 2020 replacement cost of the stormwater system is approximately $110.7 million. This does not include the value of

[1] Technical levels of service pertaining to combined sewers in O. Reg. 588/17 are not reported because the Municipality does not have combined sanitary and stormwater sewers.
[2] Data is for the 2020 calendar year.
[3] As new serviced subdivisions are built, the percentage of properties with wastewater service will increase.

five stormwater ponds that have yet to be assumed by the Municipality. Table 2-25 provides a summary of the UL% and replacement cost for the system.

Table 2-25
Stormwater System Infrastructure Summary

Type	Quantity	Average Useful Life %	Replacement Cost (2020$)
Mains	61.5 km	30%	$104,403,607
Ponds	5[1]	Not applicable	$6,250,000[2]
Total		**30%**	**$110,653,607**

Figure 2-11 and Figure 2-12 provide a spatial illustration of the Municipality's stormwater mains, showing pipe diameter and the extent of the network.

[1] There is one dry stormwater pond that is not expected to have capital investment needs.
[2] A high-level cost estimate for building a stormwater pond of $1.25 million per pond was assumed.

Figure 2-11
Stormwater Mains - Municipality

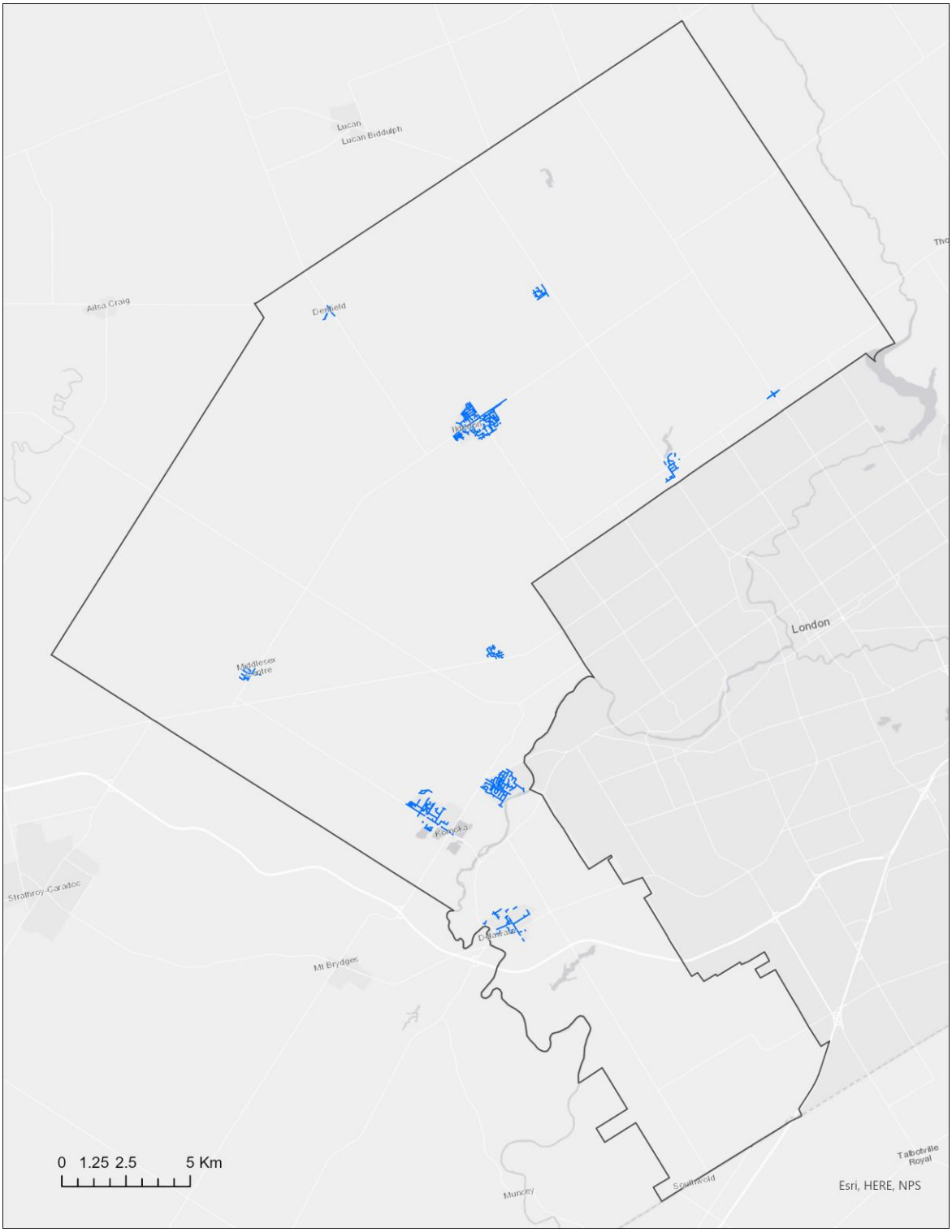


Figure 2-12
Stormwater Mains - Communities

2.7.2 Condition

The condition of stormwater mains is evaluated based on age in the same way as water and wastewater infrastructure (i.e., using the UL% measure). Stormwater ponds have not been assessed. The Municipality may want to assess them in the future. Table 2-26 examines the average condition rating of the stormwater mains. It shows that stormwater mains are, on average, in a Very Good condition state.

Table 2-26
Stormwater Asset Condition Analysis

Type	Quantity	Average UL%	Average Condition State
Mains	61.5 km	30%	**Very Good**

2.7.3 Current Levels of Service

The levels of service currently provided by the Municipality's stormwater system are, 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 Municipality to periodically evaluate these service level objectives.

Stormwater 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 customers understand and reflect the scope of the stormwater system. Technical levels of service describe the scope of the Municipality's stormwater system through performance measures that can be quantified and evaluated, and detail how effectively a municipality provides services.

In addition to the prescribed levels of service reporting, the Municipality proposes to report one additional performance measure. As with water and wastewater, it is reasonable to expect that only a relatively small percentage of wastewater assets will have a UL% greater than 140%. As a preliminary level of service target, the Municipality will seek to minimize the replacement cost of wastewater assets with an age-based condition rating of Poor or Very Poor.

Table 2-27 and Table 2-28 present the current and proposed levels of service for stormwater. They include the requirements mandated by O. Reg. 588/17 and one additional performance measure. The additional performance measure is the replacement cost of assets with an age-based condition of Poor or Very Poor.

Table 2-27
Community Levels of Service – Stormwater

Service Attribute	Community Levels of Service
Scope	Figure 2-11 shows the areas that have stormwater service.

Table 2-28
Technical Levels of Service – Stormwater

Service Attribute	Performance Measure	Current Performance [1]	Proposed Levels of Service
Scope	Percentage of properties in the Municipality resilient to a 100-year storm.	Not available[2]	TBD
	Percentage of the municipal stormwater management system resilient to a 5-year storm.	Not available[2]	TBD
	Replacement cost of stormwater assets with an age-based condition rating of Poor or Very Poor.	$0	Minimize

[1] Data is for the 2020 calendar year.
[2] The resiliency measures are a requirement of O. Reg. 588/17. The Municipality does not currently have the information or analysis required to report on the measures.

Next steps: The Municipality should develop a methodology for reporting on the percentage of properties in the Municipality resilient to a 100-year storm and the percentage of the municipal stormwater management system resilient to a 5-year storm. These measures should be included in a future update to the asset management plan.

2.8 Fleet

2.8.1 State of Local Infrastructure

The Municipality currently maintains a fleet of 127 vehicles. The vehicles range from a CAT grader with a current replacement cost of about $475,000 to a Lawnboy 149cc mower with a replacement cost of $350. The total replacement cost of the Municipality's fleet of vehicles is $18.4 million. The fleet is divided between five departments, Public Works, Emergency Services, Community Services, Environmental Services, and Building. Table 2-29 shows fleet vehicle numbers and replacement costs broken down by department. A complete listing is provided in Appendix B.

Table 2-29
Number and Replacement Costs for Fleet Assets[1]

Department	Number	Replacement Value
Public Works	63	$11,873,821
Emergency Services	21	$5,154,488
Community Services	33	$875,496
Environmental Services	8	$377,256
Building	2	$80,000
Total	**127**	**$18,361,061**

2.8.2 Condition

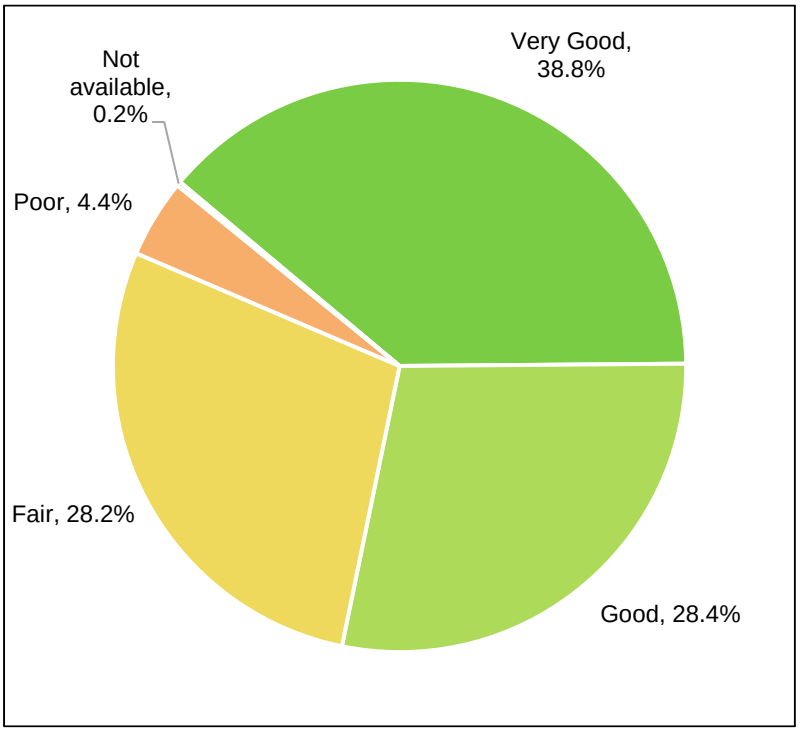
Fleet condition is estimated based on age in the same way as water assets. See section 2.5.2 for a detailed explanation.

Figure 2-13 presents the distribution of replacement cost by condition rating for fleet assets. While the majority of assets (95%) have a condition of Very Good, Good, or

[1] As of December 31, 2020

Fair, there are some older assets too. Five vehicles are in Poor condition: three in Public Works, one in Community Services and one in Environmental Services. Assets rated Poor have a combined replacement cost of $1.1 million, 6% of fleet replacement cost. There are six vehicles in Public Works without age information where an age-based condition cannot be calculated. The combined replacement value of these vehicles is $44,000, 0.2% of fleet replacement value.

Figure 2-13
Fleet Asset Condition Distribution



2.8.3 Current Levels of Service

The Municipality intends to manage its fleet to maintain functionality and minimize lifecycle costs. This is achieved primarily through regular inspection and maintenance work. By identifying and resolving issues, vehicles can be operated safely and reliably throughout their useful lives. The decision to replace a vehicle is driven mainly by rising maintenance and repair costs and falling reliability.

To track how well the Municipality is keeping up with vehicle replacement, the percentage of fleet replacement cost with an age-based condition rating of Poor or Very Poor will be reported. For this performance measure, lower is better. This is a lagging

indicator in the sense that most vehicles will need to be replaced when they are in Fair condition because this category spans from 90% of expected useful life to 140% of expected useful life. The cut-off of 140% of expected useful life was chosen instead of 100% because some variation around the expected useful life can be expected based on how vehicles are used. The Municipality's current performance on this metric is 4.4%. That is, 4.4% of the fleet replacement cost (five vehicles) has a current rating of Poor or Very Poor.

2.8.4 Proposed Levels of Service

Given that the Municipality intends to manage its fleet to maintain functionality and minimize lifecycle costs, vehicles should be replaced near their expected useful lives. This means that it is reasonable to expect that only a relatively small number of vehicles will have a UL% greater than 140%. As a preliminary level of service target, the Municipality will seek to minimize the proportion of vehicles (based on replacement cost) with an age-based condition rating of Poor or Very Poor.

2.9 Equipment

2.9.1 State of Local Infrastructure

The Municipality plans to manage equipment at a more aggregated level than other asset classes. Instead of tracking individual pieces of equipment, reporting on age and condition, the Municipality is going to take a pooled funding approach. An initial annual budget for equipment will be established based on an inventory taken in 2020. The inventory includes estimated replacement cost and replacement frequency but does not report on condition or age. The scope of the inventory is based on the capitalization threshold of $5,000 set out in the Municipality's Tangible Capital Asset Policy. This inventory will be reviewed and updated as part of the asset management plan update process carried out every five years.

Replacements of equipment that falls below the capitalization threshold are typically funded through operating budgets. Therefore, equipment with a replacement cost below the capitalization threshold is not included in this asset management plan. The total replacement cost of equipment included in this asset management plan is $1.86 million. Table 2-30 shows the replacement cost of equipment by department. A complete listing is provided in Appendix B. The Emergency Services Department

currently accounts for the majority of equipment in the Municipality. This may be because the Emergency Services Department has the most detailed inventory of its equipment. If other departments develop similarly detailed equipment inventories, the Emergency Services Department's share of equipment replacement value may decline.

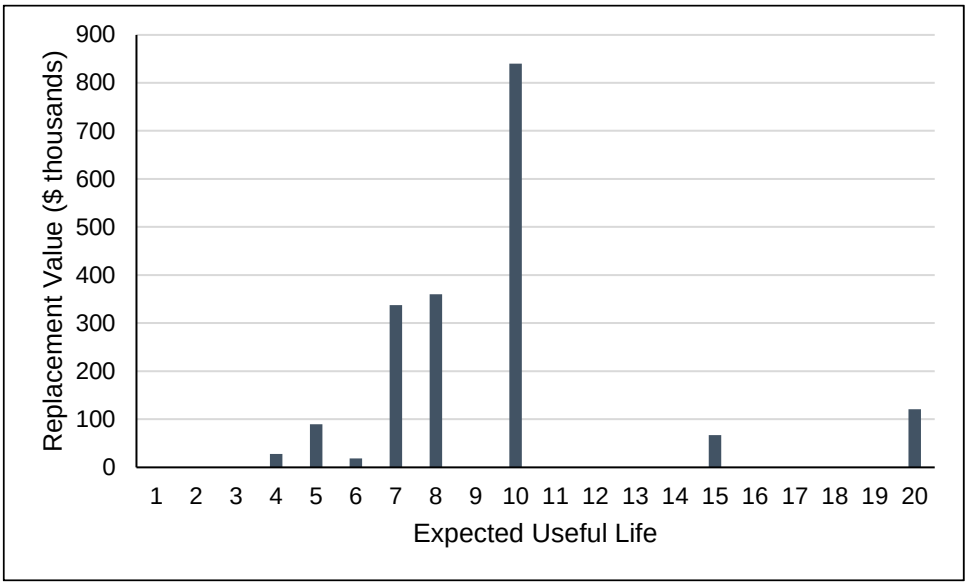
Next steps: The Municipality should review asset inventories to ensure that all equipment with a replacement value over the TCA threshold of $5,000 is included when doing the next asset management plan update. As an example, equipment in facilities such as large refrigerators may need to be captured.

Table 2-30
Equipment Replacement Cost by Department

Department	Replacement Cost	Percentage
Administration	$137,565	7%
IT Hardware	$35,170	2%
Community Services	$138,264	7%
Emergency Services	$1,436,500	77%
Environmental Services	$95,550	5%
Public Works	$17,000	1%
Total	**$1,860,048**	**100%**

Annual funding for replacing equipment covered in the asset management plan depends on the expected useful life of the equipment. Lower expected useful lives result in a higher replacement frequency and consequently higher annual funding needs. The average expected useful life for equipment, weighted by replacement value, is 9.5 years. Figure 2-14 shows the distribution of expected useful lives. Eighty-three percent of equipment have useful lives ranging from 7 to 10 years.

Figure 2-14
Distribution of Equipment Replacement Cost by Expected Useful Life (in years)



2.9.2 Condition

Staff will continue to perform informal assessments of equipment assets on an ongoing basis to identify specific replacement needs. These replacement needs will subsequently be incorporated into annual budgets and forecasts.

2.9.3 Current Levels of Service

Equipment generally plays a supporting role in delivery of services. For example, road patching equipment supports delivery of transportation services. Due to the supporting role they play and to keep reporting efforts manageable, levels of service measures for equipment have not been developed.

2.9.4 Proposed Levels of Service

The performance of equipment is evaluated by its ability to support the service levels identified in other areas of this plan. The Municipality intends to keep its equipment in a good state of repair to ensure that it adequately supports service provision in the areas using the equipment.

2.10 Population and Employment Growth

Based on the Municipality's 2019 Development Charges Background Study, in 2019 the Municipality had a population of approximately 18,170 (including Census undercount). The Municipality's population is anticipated to reach approximately 21,770 by mid-2029 and 24,150 by mid-2036. The population projections will be updated once the Municipality's Official Plan update is updated (update is currently underway).

This population growth is expected to result in incremental service demands that may impact the current level of service. To understand service pressures resulting from growth, the Municipality has undertaken a number of master planning studies which identify the need for new infrastructure and infrastructure upgrades. These growth-related needs are summarized in the Municipality's 2019 Development Charges Study and are funded through development charges imposed on new development. Utilizing development charges helps ensure that the effects of future population and employment growth do not increase the cost of maintaining levels of service for existing tax and rate payers.

Chapter 3
Lifecycle Management Strategies

3. Lifecycle Management Strategies

3.1 Introduction

This chapter details the lifecycle management strategies required to achieve the proposed levels of service presented in Chapter 2. A lifecycle management strategy identifies the recommended lifecycle activities required to achieve the levels of service discussed in the previous chapter. Within the context of this asset management plan, lifecycle activities are the specified actions that can be performed on an asset in order to ensure it is performing at an appropriate level, and/or to extend its service life.[1] These actions can be carried out on a planned schedule in a prescriptive manner, or through a dynamic approach where the lifecycle activities 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 assets contained within this asset management plan, with each section focusing on an individual asset class. 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 lifecycle management strategy for these age-based assets is presented in the last section of this chapter.

[1] The full lifecycle of an asset includes activities such as initial planning and maintenance which are typically addressed through master planning studies and maintenance management, respectively.

3.2 Roads and Related

3.2.1 Lifecycle Activities

This section will detail the lifecycle activities as identified through discussions with the Municipality's staff. The lifecycle activities that the Municipality currently employs in the management of its roads include:

- Resurfacing – SST (single surface treatment);
- Resurfacing – DST (double surface treatment);
- Resurfacing – Pad + SST (single surface treatment with hot mix padding);
- Resurfacing – Pad + DST (double surface treatment with hot mix padding);
- Resurfacing – Mill + OL (mill 50 mm and pave 50 mm);
- Resurfacing – 2 Mill + 2 OL (mill 90 mm and pave 90 mm);
- Reconstruction LCB – R-LCB (pulverize surface, base repairs, double surface treatment); and
- Reconstruction HCB – R-HCB (remove asphalt, base repairs, new asphalt surface).

Table 3-1 details the costs associated with undertaking these lifecycle activities, by surface type. The costs are presented on a $/surface area (sq.m) basis. These costs are based on unit costs provided by the Municipality's staff.

Table 3-1
Road Lifecycle Activity Costs by Surface Type and Roadside Environment (per sq.m)

Lifecycle Activity	Surface Type	Cost/sq.m
SST	LCB	$1.85
DST	LCB	$3.70
SST + Padding	LCB	$3.70
DST + Padding	LCB	$5.55
Mill & Pave 50 mm	HCB	$22.50
Mill & Pave 90 mm	HCB	$37.00
R-LCB	LCB	$25.00
R-HCB (Rural)	HCB	$70.80 – Local $82.90 – Collector $91.75 – Arterial
R-HCB (Urban)	HCB	$95.00 – Local $107.00 – Collector $116.00 – Arterial

Based on information from Stantec, the engineering firm that produced the 2019 road needs study, and discussions with the Municipality's staff, generalized lifecycle models have been produced for LCB and HCB roads. These models show a typical sequence of lifecycle activities and their timing. Even if no actual road segment follows the sequences precisely, the models are useful for estimating long-run capital costs because the expectation is that some roads will require more interventions while others will require less. Expenditures on higher cost roads will be balanced by savings on lower cost roads. Table 3-2 presents the generalized lifecycle models for HCB and LCB roads.

Table 3-2
Generalized Lifecycle Models for Roads

Surface Type	Year	Lifecycle Activity
HCB, Arterial and Collector	13	Mill & Pave 50 mm
	21	Mill & Pave 90 mm
	30	R - HCB
HCB, Local	17	Mill & Pave 50 mm
	28	Mill & Pave 90 mm
	40	R - HCB
LCB	10	SST
	17	SST
	24	DST
	31	SST + Padding
	38	DST + Padding
	45	R - LCB

Sidewalks and streetlights are assumed to have a simple lifecycle where they are replaced at the end of their useful life. For estimating lifecycle costs, the expected useful lives for sidewalks and streetlights are assumed to be 50 years and 25 years, respectively.

3.2.2 Anticipated Lifecycle Performance

Figure 3-1, Figure 3-2, and Figure 3-3 illustrate how condition evolves over time for HCB and LCB roads if the generalized lifecycle models are followed. For HCB roads, it was assumed that the resurfacing would be done at a PCI of 55 and that reconstruction would be done at a PCI of 40. For LCB roads, it was assumed that the purpose of the mid-life resurfacings is primarily to reseal the surface and would have only a modest impact on the PCI. A 10-point increase was used to help show where the lifecycle activities are happening and represent a marginal improvement to the surface.

Next steps: The Municipality should review and update the generalized lifecycle models and associated condition degradation profiles when more data on how road condition degrades over time is available.

Figure 3-1
Illustrative Condition Over Lifecycle – HCB Roads: Arterial and Collector

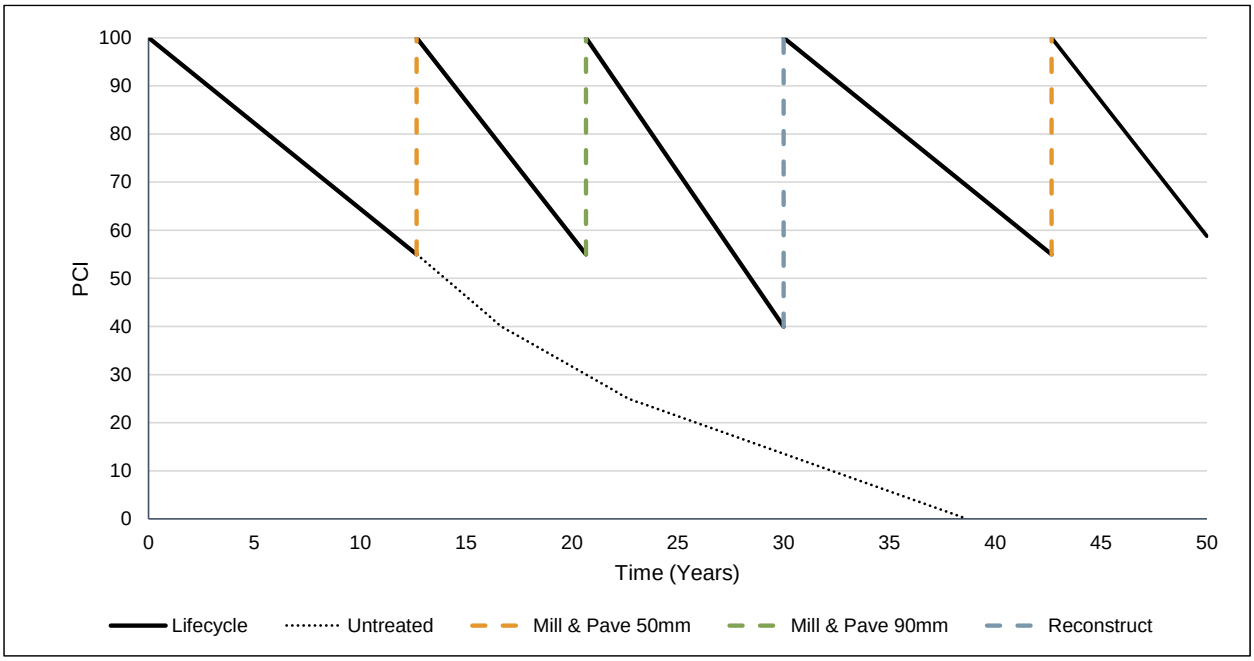


Figure 3-2
Illustrative Condition Over Lifecycle: HCB Roads, Local

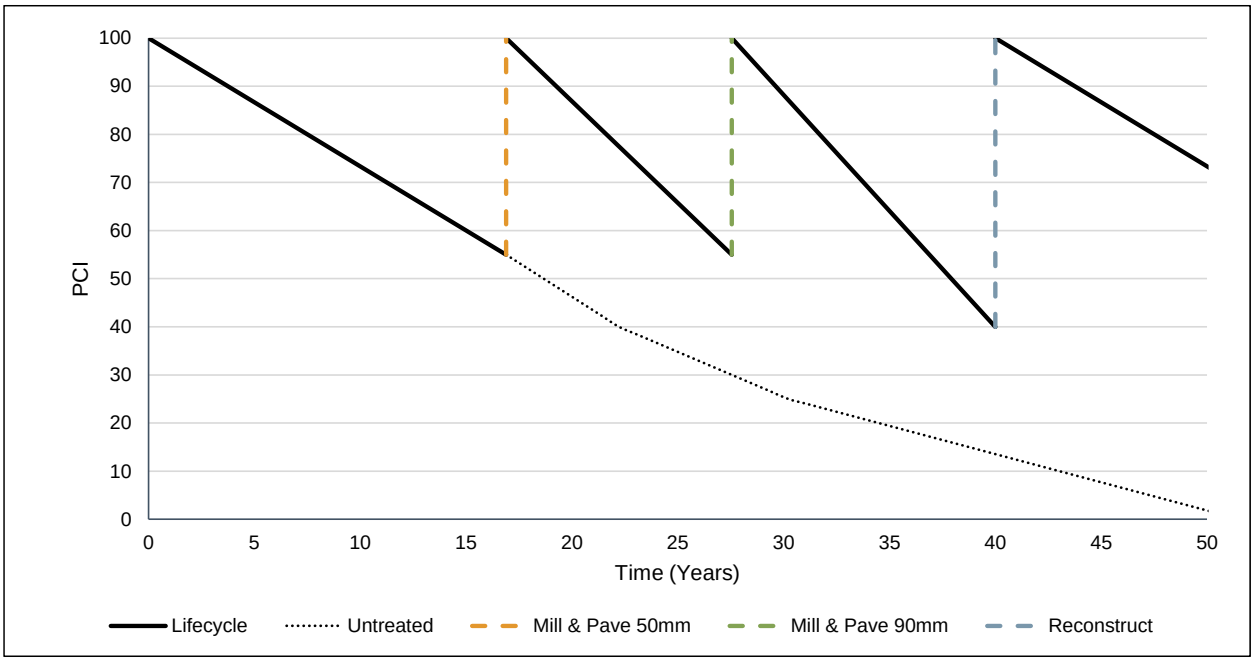
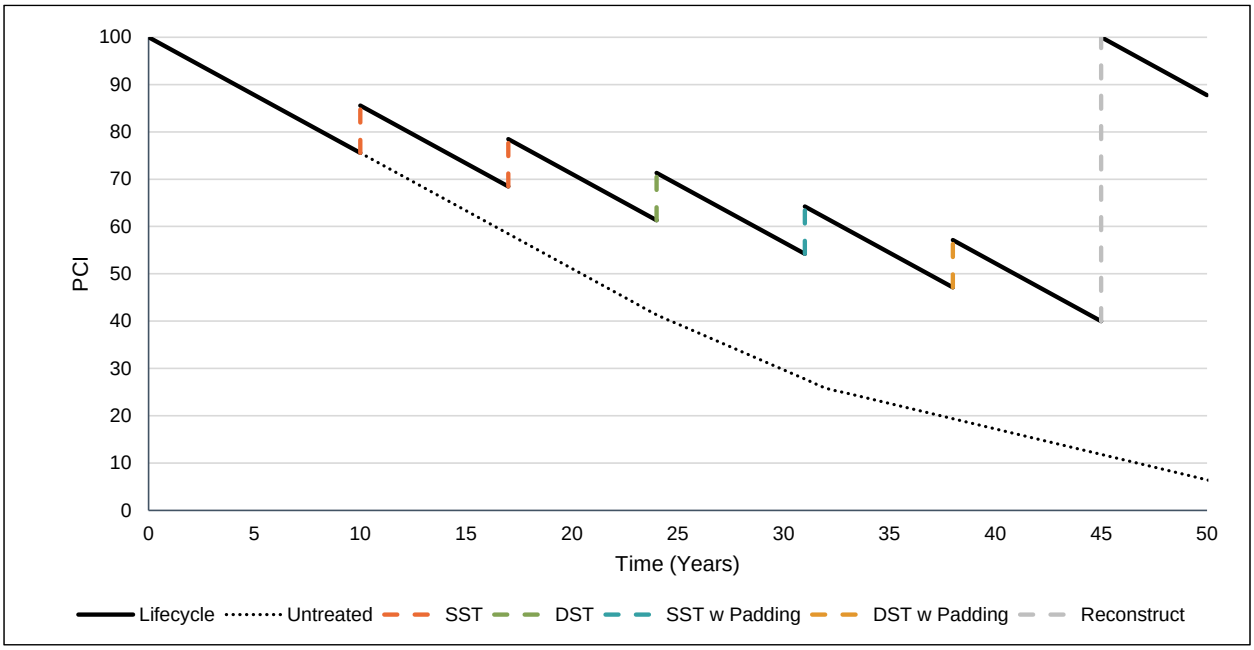


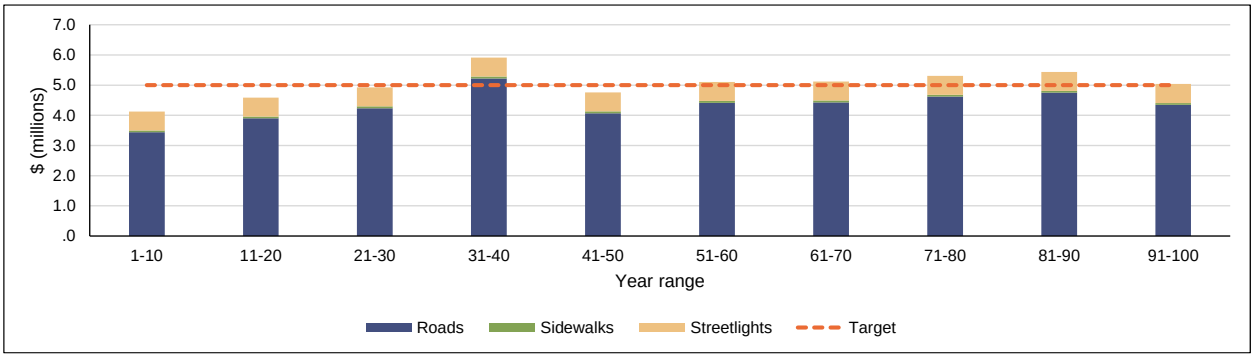
Figure 3-3
Illustrative Condition Over Lifecycle – LCB Roads



3.2.3 Average Annual Lifecycle Funding Needs

Figure 3-4 presents the long-range forecast of expenditures over the next 100 years for roads, sidewalks and streetlights, averaged for each decade. Average annual lifecycle funding needs are used for sidewalks and streetlights because condition data is not available to better estimate actual timing. The forecast illustrates the annual expenditures. The first five years are based on the 5-year 2021 capital budget. Subsequent years are based on model projections without any consideration of budgetary constraints. The sustainable long-run funding level for roads and related assets, based on the lifecycle management strategies identified earlier in this section, is estimated to be approximately $5.0 million, in 2020 dollars, as illustrated with the dotted red line.

Figure 3-4
Road (HCB & LCB) Lifecycle Management Strategy – Average Annual Lifecycle Funding Needs



3.3 Bridges and Structural Culverts

3.3.1 Lifecycle Activities

Specific lifecycle activities are identified and costed for each bridge and structural culvert in biennial OSIM reports. These reports are the best source of information on short-term needs for bridges and structural culverts. Details on bridge components, the inspection process, and lifecycle activities can be found in the Ministry of Transportation's *Ontario Structure Inspection Manual (OSIM), 2008*.

For the purposes of identifying medium- and long-term costs and to estimate asset performance, lifecycle activities are modelled at a higher level. A generalized lifecycle model has been developed based on the Municipality's 2019 OSIM report and through discussions with the Municipality's staff. The lifecycle activities used in the modelling work include:

- Bridge:
    - Minor rehabilitation;
    - Major rehabilitation;
    - Reconstruction;
- Concrete Culvert:
    - Major rehabilitation;
    - Reconstruction;
- Steel Culvert:
    - Reconstruction.

Table 3-3 details the costs for the lifecycle activities listed above. The costs are given based on deck area of the current structure. It is assumed that the deck area of a replacement structure will be 20% larger than the current deck area on average due to increases in lane widths and other factors. The costing covers the cost of the structure itself along with approach grading, traffic control, and a project contingency.

Table 3-3
Bridge and Culvert Lifecycle Activity Costs per Square Metre of Deck Area

Structure Type	Replacement Cost ($/sq.m)	Average Lifespan	Rehabilitation Timing (Years)	Rehabilitation Cost (% of Replacement Cost)
Bridge	$9,048[1]	75	25	15%
			50	35%
CSP Culvert	$5,510	50	Not applicable	Not applicable
Concrete Culvert	$5,510	75	40	35%

Next steps: The cost estimate of $9,048 per square metre for bridge replacement includes a factor of 20% to account for the deck area of a replacement bridges typically being 20% larger than the deck area of the existing bridges. The Municipality should review this assumption on a case-by-case basis to identify more precisely the deck area of future replacement bridges. This could be done as part of a future OSIM bridge inspection. Once more accurate dimensions for replacement bridges are determined, the Municipality should recalculate the estimated replacement costs for the bridges. These updated costs should be included in the next update to the asset management plan.

3.3.2 Anticipated Lifecycle Performance

Figure 3-5, Figure 3-6, and Figure 3-7 illustrate how condition evolves over time for bridges, concrete culverts and steel culverts, respectively, if the generalized lifecycle models are followed. It is assumed that reconstruction happens at a BCI of 50 and that the rehabilitations increase the BCI to a progressively lower condition.

[1] Bridge replacement cost includes an additional fixed cost of $45,000 for approach guardrails that is added to the cost estimate based on deck area.

Figure 3-5
Illustrative Condition Over Lifecycle – Bridges

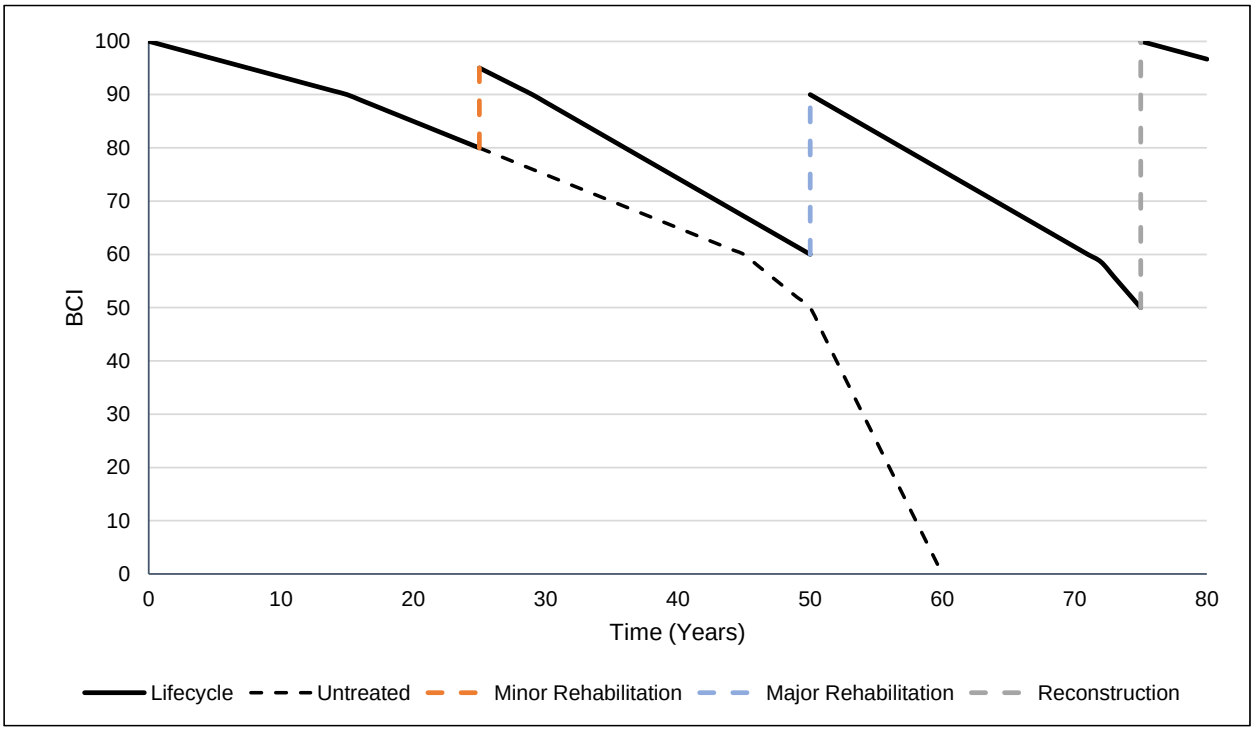


Figure 3-6
Illustrative Condition Over Lifecycle – Concrete Culverts

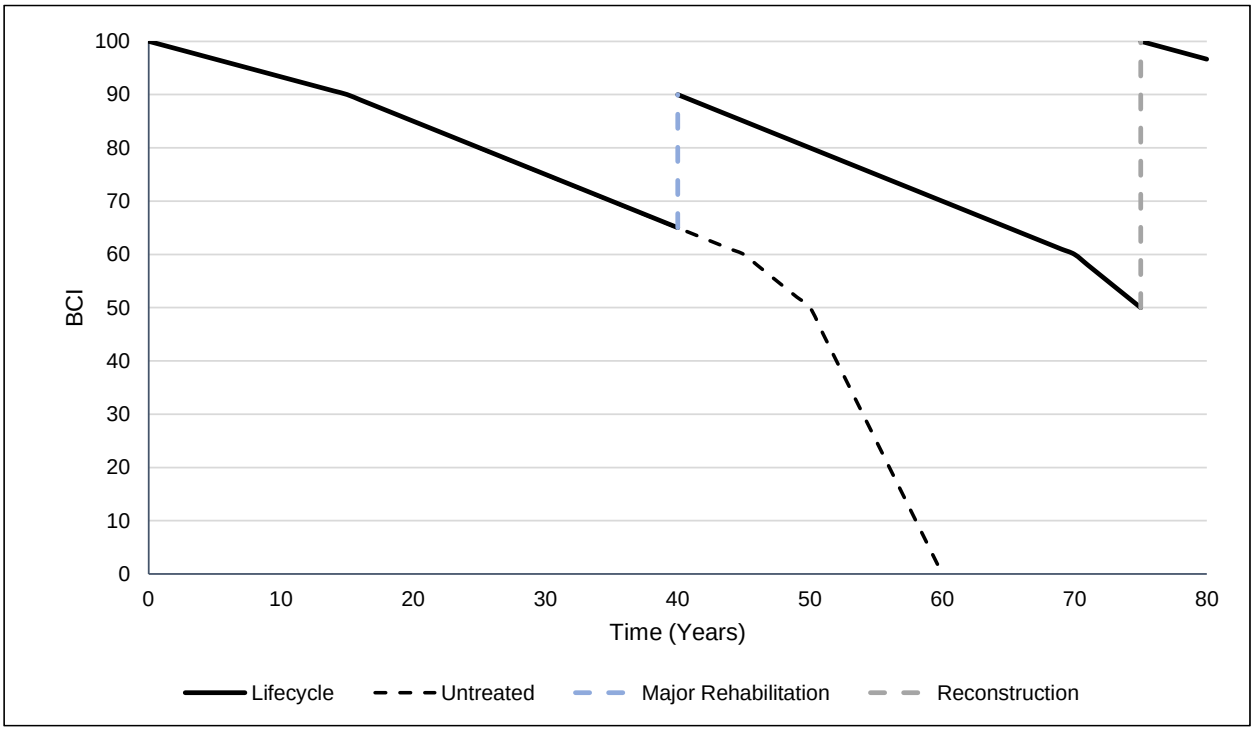
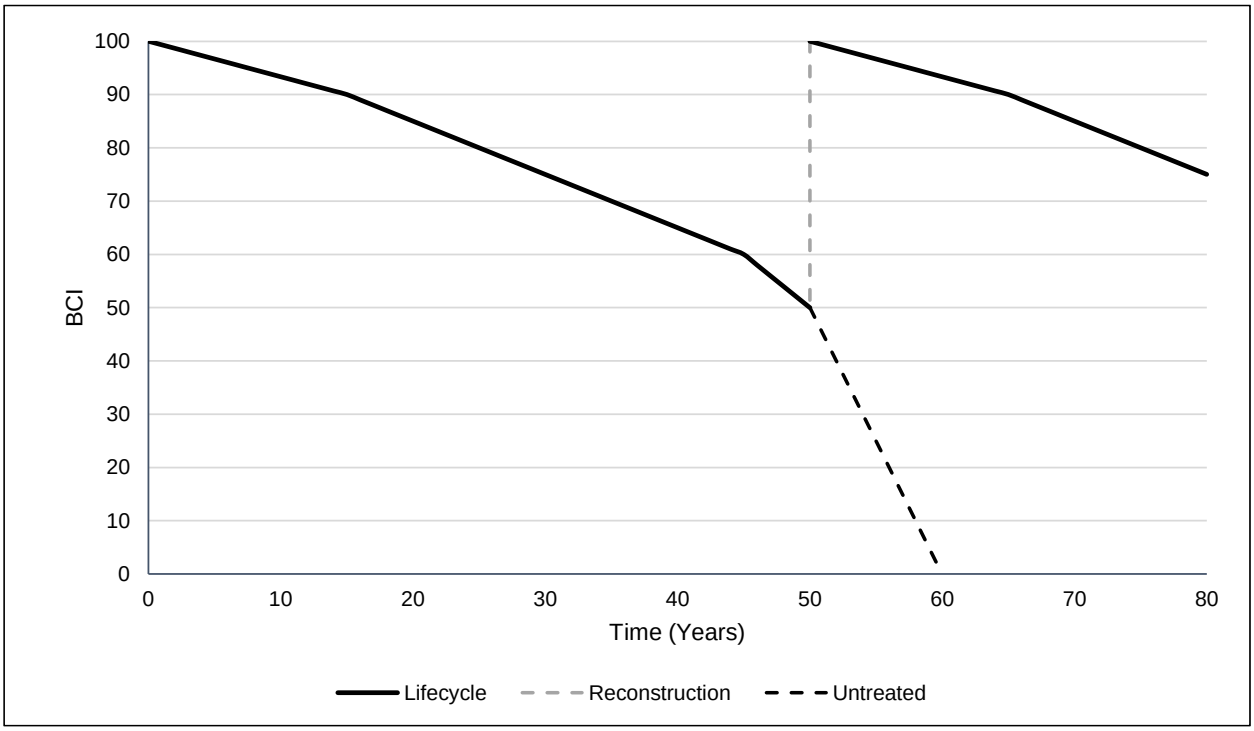


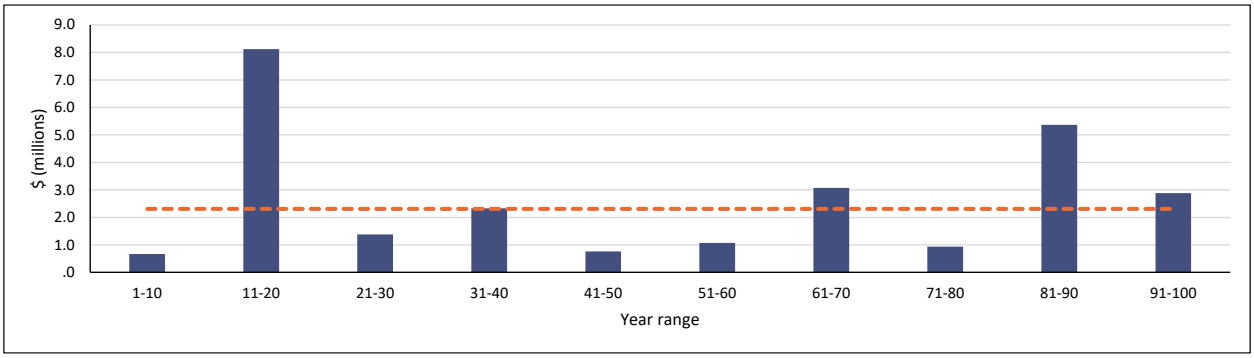
Figure 3-7
Illustrative Condition Over Lifecycle – Steel Culverts



3.3.3 Average Annual Lifecycle Funding Needs

Figure 3-8 presents the long-range forecast of expenditures over the next 100 years, averaged for each decade. This forecast illustrates the annual expenditures without any consideration of budgetary constraints beyond the first decade which is set to the 10-year average of the needs identified in the 2019 OSIM report. The sustainable long-run funding level for bridges and culverts, based on the lifecycle management strategies identified earlier in this section, is estimated to be approximately $2.3 million, in 2020 dollars, as illustrated with the dotted red line.

Figure 3-8
Bridge & Culvert Lifecycle Management Strategy – Average Annual Lifecycle Funding Needs



3.4 Facilities

3.4.1 Lifecycle Model

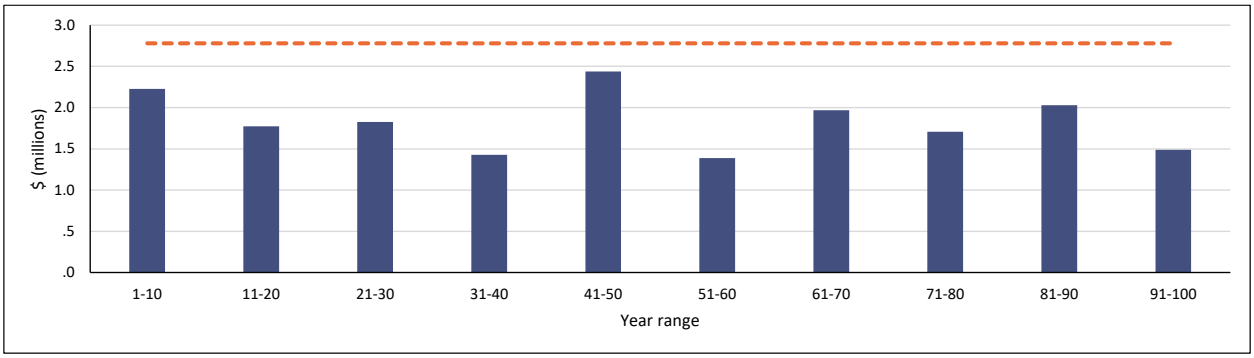
Facilities are composite assets with individual components being replaced at the end of their useful life. For example, over time the shingles on a roof deteriorate. At some point, all the shingles are removed and replaced with new ones. The timing of this replacement is independent of the state of other facility components. To identify short- and medium-term component replacements, the Municipality had Dillon perform a detailed component-level assessment of its facilities. The assessment identified all components that are likely to need replacement over the next 20 years. The replacement timing identified for each component is based on the asset condition and the assessor's estimate of remaining useful life. The reliability of the estimate of remaining useful life decreases as the remaining useful life increases because of unavoidable uncertainty in future performance of components. This means that the accuracy of the timing of forecasted replacements decreases in later years.

While the condition assessment is expected to inform short-term priorities, further testing and planning is needed to properly scope and cost projects further out in the forecast. The Municipality should plan to update facility condition assessments with a regular frequency and ensure that there are clear mechanisms in place to identify and address issues that develop between facility condition assessments.

3.4.2 Average Annual Lifecycle Funding Needs

Figure 3-9 presents the long-range forecast of expenditures over the next 100 years based on the condition assessment, averaged for each decade. This forecast illustrates the annual expenditures without any consideration of budgetary constraints. The dotted orange line shows the long-run average annual lifecycle funding needs of $2.78 million in 2020 dollars. This is calculated by dividing the replacement cost of each component by its expected useful life.

Figure 3-9
Facilities Lifecycle Management Strategy – Average Annual Lifecycle Funding Needs



3.5 Age-Based Assets

The remainder of the Municipality's assets do not have an assessed condition at present, and as such will all be subject to the same age-based lifecycle management strategy. The following subsections will apply to the following asset classes:

- Water;
- Wastewater;
- Stormwater;
- Fleet; and
- Equipment.

3.5.1 Lifecycle Activities

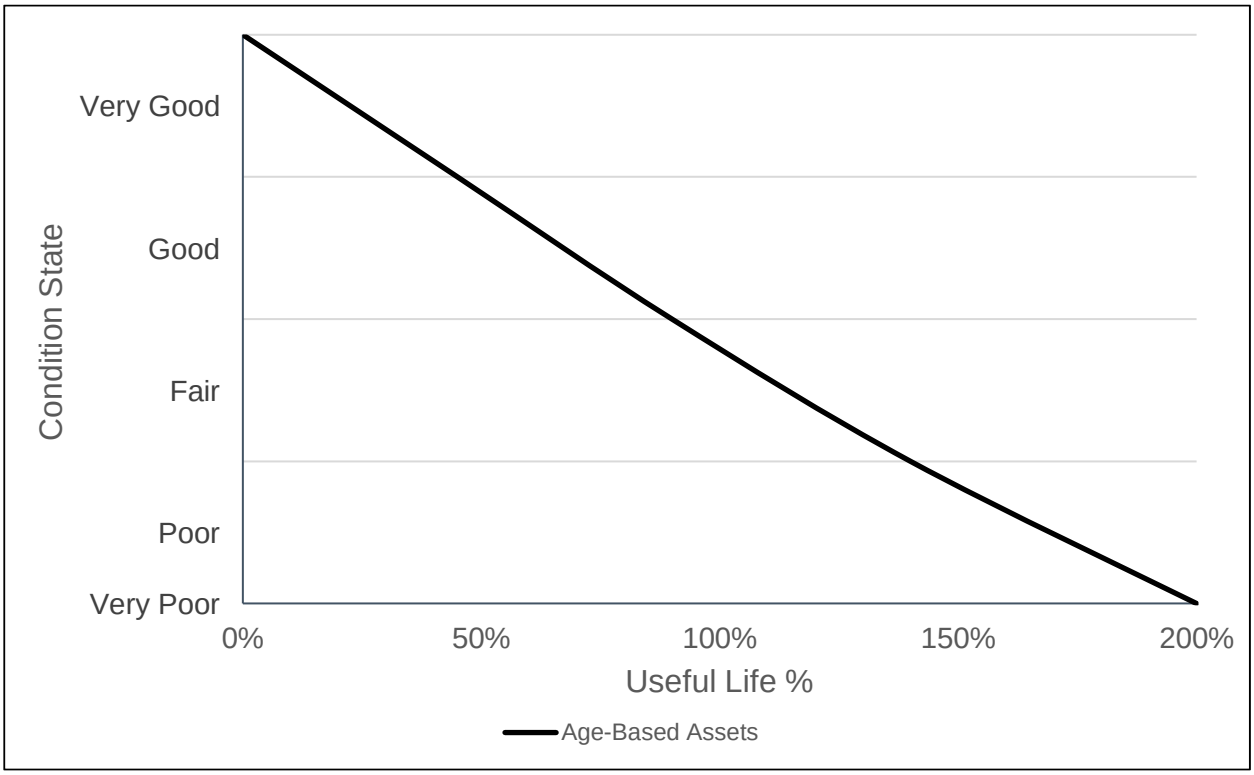
The Municipality currently only performs replacement lifecycle activities in the management of its age-based assets. The costs to perform a replacement is therefore simply the currently evaluated replacement cost, as of 2020. These costs were estimated by inflating historical costs and were reviewed by the Municipality's staff for reasonableness. Similarly, the assumptions on expected useful lives were based on accounting useful life data and reviewed by the Municipality's staff.

3.5.2 Degradation Profile

For age-based assets, a decreasing degradation profile simply details what percentage of service life is left in light of an expected useful life. Figure 3-10 depicts the

degradation profile that applies to all assets covered in this section (i.e., age-based assets).

Figure 3-10
Age-Based Asset Degradation Profile



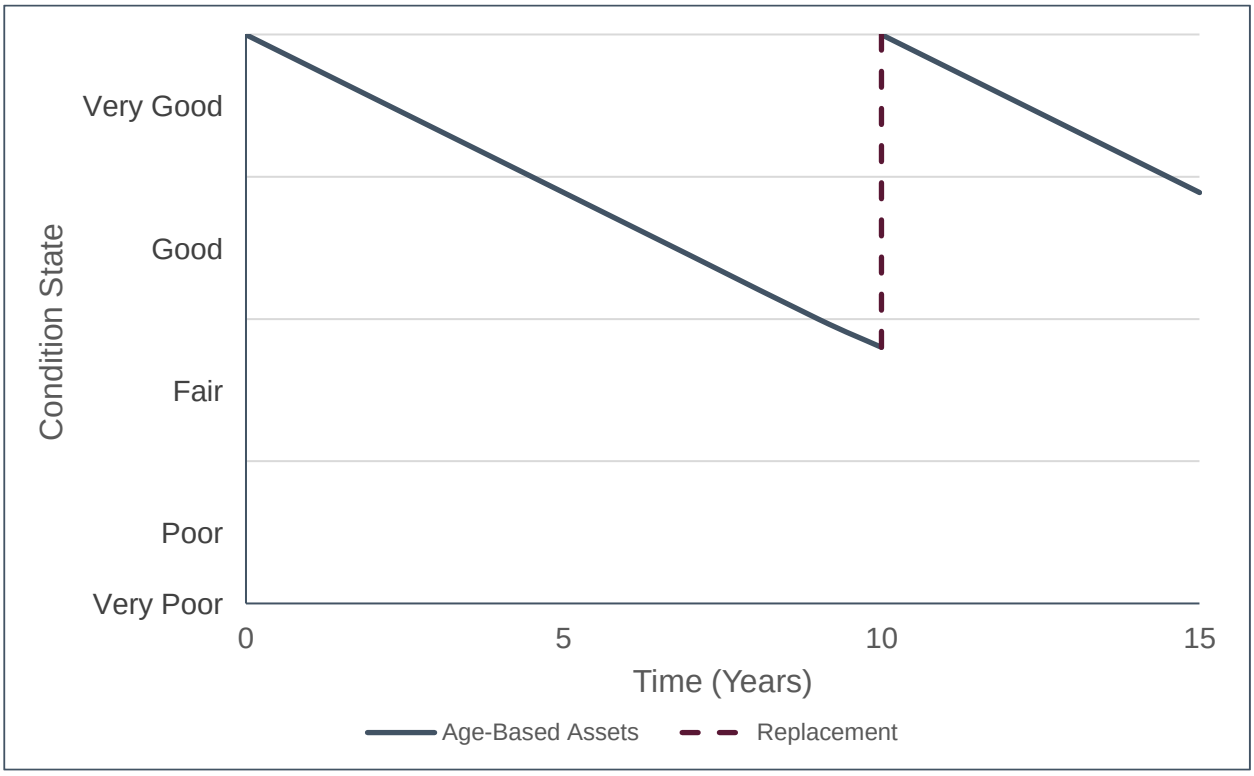
3.5.3 Decision Criteria

For age-based assets, when an asset reaches the end of its service life a replacement is triggered, resulting in the reconstruction or acquisition of a new asset.

3.5.4 Expected Lifecycle

Combining the lifecycle activities, degradation profiles, and decision criteria presented herein results in a complete lifecycle management strategy. Figure 3-11 presents an illustrative example of the expected lifecycle for age-based assets with an expected useful life of 10 years. The dashed, vertical line represents the point in the representative asset's expected life where it is replaced. The lifecycle path of the asset is represented by the solid lines, following the degradation profile presented above.

Figure 3-11
Lifecycle Strategy – Age-Based Assets (10-year Lifecycle Example)



The age-based analysis provides an estimate of the average annual funding need and an indication of whether there are expected to be near-term funding pressures. While this is useful in helping staff identify aging assets that may require replacement or renewal, it is expected that this information will be used as a starting point by staff when developing capital budgets and forecasts. Other priorities may arise as a result of growth in the Municipality or specific performance issues with individual assets.

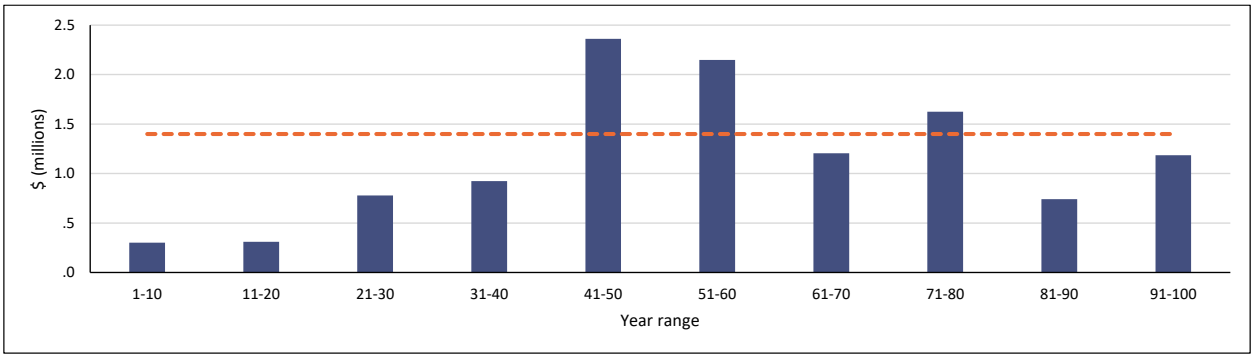
3.5.5 Average Annual Lifecycle Funding Needs

3.5.5.1 Water

Figure 3-12 presents the long-range forecast of expenditures for water infrastructure over the next 100 years, averaged for each decade. As noted earlier, the Municipality does not currently have an assessed condition for these assets. Therefore, the forecast is based on the age profile and life expectancies of individual components of the water system. This forecast illustrates the annual expenditures without any consideration of budgetary constraints. Based on an analysis of the 100-year forecast of lifecycle

activities, the average annual lifecycle funding needs are approximately $1.4 million, in 2020 dollars, as illustrated with the dotted red line.

Figure 3-12
Water Asset Management Strategy – Average Annual Lifecycle Funding Needs

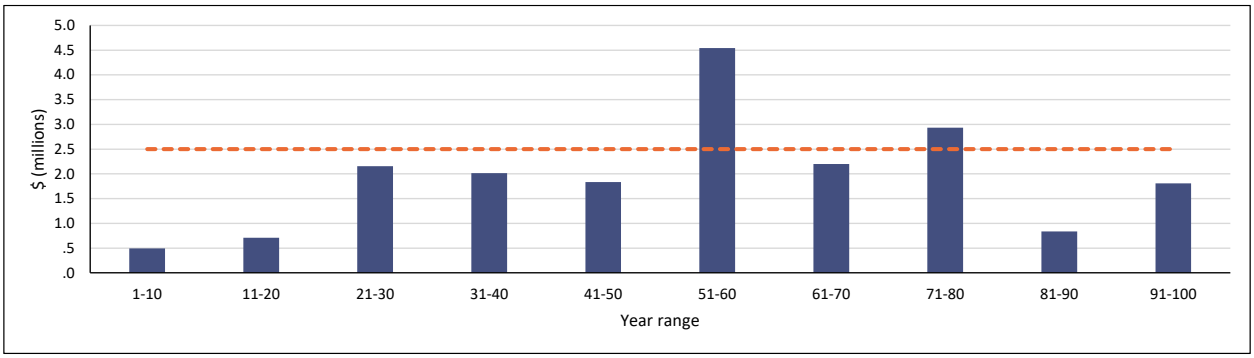


Next steps: The Municipality should develop a condition assessment methodology for watermains, perhaps based on number of breaks.

3.5.5.2 Wastewater

Figure 3-13 presents the long-range forecast of expenditures over the next 100 years, averaged for each decade. As noted earlier, the Municipality does not currently have an assessed condition for these assets; therefore, the forecast is based on the age profile and life expectancies of individual components of the wastewater system. This forecast illustrates the annual expenditures without any consideration of budgetary constraints. Over the next 100 years, the dotted red line shows that the average annual lifecycle funding needs are approximately $2.5 million, in 2020 dollars.

Figure 3-13
Wastewater Asset Management Strategy – Average Annual Lifecycle Funding Needs

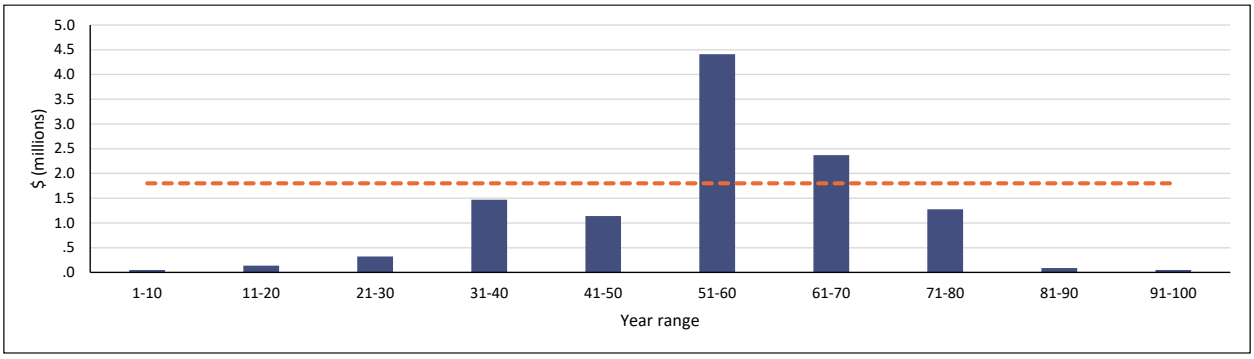


Next steps: The Municipality should develop a method for assessing the condition of wastewater mains, perhaps involving CCTV inspections.

3.5.5.3 Stormwater

Figure 3-14 presents the long-range forecast of expenditures over the next 100 years, averaged for each decade. As noted earlier, the Municipality does not currently have an assessed condition for these assets; therefore, the forecast is based on the age profile and life expectancies of individual components of the stormwater system. This forecast illustrates the annual expenditures without any consideration of budgetary constraints. Over the next 100 years, the dotted red line shows that the average annual lifecycle funding needs are approximately $1.8 million, in 2020 dollars.

Figure 3-14
Stormwater Asset Management Strategy – Average Annual Lifecycle Funding Needs

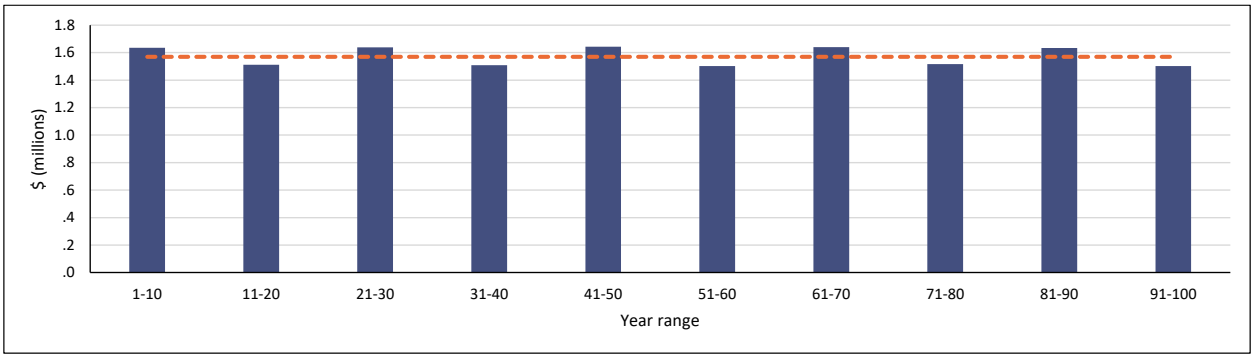


Next steps: The Municipality should develop a method for assessing the condition of stormwater mains and ponds. This could involve CCTV inspections or the performance of the system during flood events.

3.5.5.4 Fleet

Figure 3-15 presents the long-range forecast of expenditures over the next 100 years, averaged for each decade. As noted earlier, the Municipality does not currently have an assessed condition for these assets; therefore, the forecast is based on the age profile and life expectancies of individual vehicles. This forecast illustrates the annual expenditures without any consideration of budgetary constraints. Over the next 100 years, the dotted red line shows that the average annual lifecycle funding needs are approximately $1.57 million, in 2020 dollars.

Figure 3-15
Fleet Asset Management Strategy – Average Annual Lifecycle Funding Needs



3.5.5.5 Equipment

Since equipment is being managed using a funding pool approach, annual funding will be constant at the average annual lifecycle funding needs of $216,000, in 2020 dollars. Any peaks in replacement requirements will be managed by prioritizing critical equipment. Equipment replacement needs will be identified by staff during day-to-day operational work. If a department is unable to manage its equipment replacement needs from within its equipment budget, a review can be done during the budget process to see if the funding pool needs to be rebalanced between departments or perhaps expanded.

Chapter 4
Financing Strategy

4. Financing Strategy

4.1 Introduction

This chapter outlines the financing strategy that would sustainably fund the lifecycle management strategies presented in Chapter 3. This financing strategy focuses on examining how the Municipality can fund the lifecycle activities required to maintain its assets at the proposed levels of service, as identified in Chapter 2. The strategy presented is a suggested approach which should be examined and re-evaluated during the annual budgeting processes to ensure the sustainability of the Municipality'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.

Various financing options, including reserve funds, debt, and grants were considered during the process of developing the financing strategy and are described in more detail in Section 4.4 below.

4.2 Annual Contribution and Lifecycle Funding Target

An annual lifecycle funding target describes the amount of funding that would be required annually to fully finance a lifecycle management strategy over the long-term. By planning to achieve this annual funding level, the Municipality would theoretically be able to fully fund capital works as they arise. In practice, capital expenditures often fluctuate year-to-year based on the asset replacement and renewal/rehabilitation projects being undertaken in a particular year. However, by planning to achieve the lifecycle funding target over the long term, the periods of relatively low capital needs would allow for the building up of lifecycle reserve funds that could be drawn upon in times of relatively high capital needs.

Table 4-1 presents the Municipality's current annual contributions towards capital-related needs—as detailed in the Municipality's 2021 Operating Budget—as well as the annual lifecycle funding target based on the lifecycle management strategies presented in Chapter 3.

Table 4-1
Contribution Towards Capital-related Needs and Lifecycle Target (2021$)

Asset Class	Current Annual Contribution (2021)	Annual Lifecycle Funding Target
Tax Supported		
Facilities	$ 2,102,740	$ 2,780,000
Transportation	$ 4,735,537	$ 7,310,000
Vehicles & Equipment	$ 1,275,000	$ 1,790,000
Stormwater	$ 865,644	$ 1,800,000
Wastewater	$ 1,280,393	$ 2,500,000
Water	$ 1,547,268	$ 1,400,000
Total	**$ 11,806,582**	**$ 17,580,000**

The annual lifecycle funding target has been estimated to total $17.58 million.

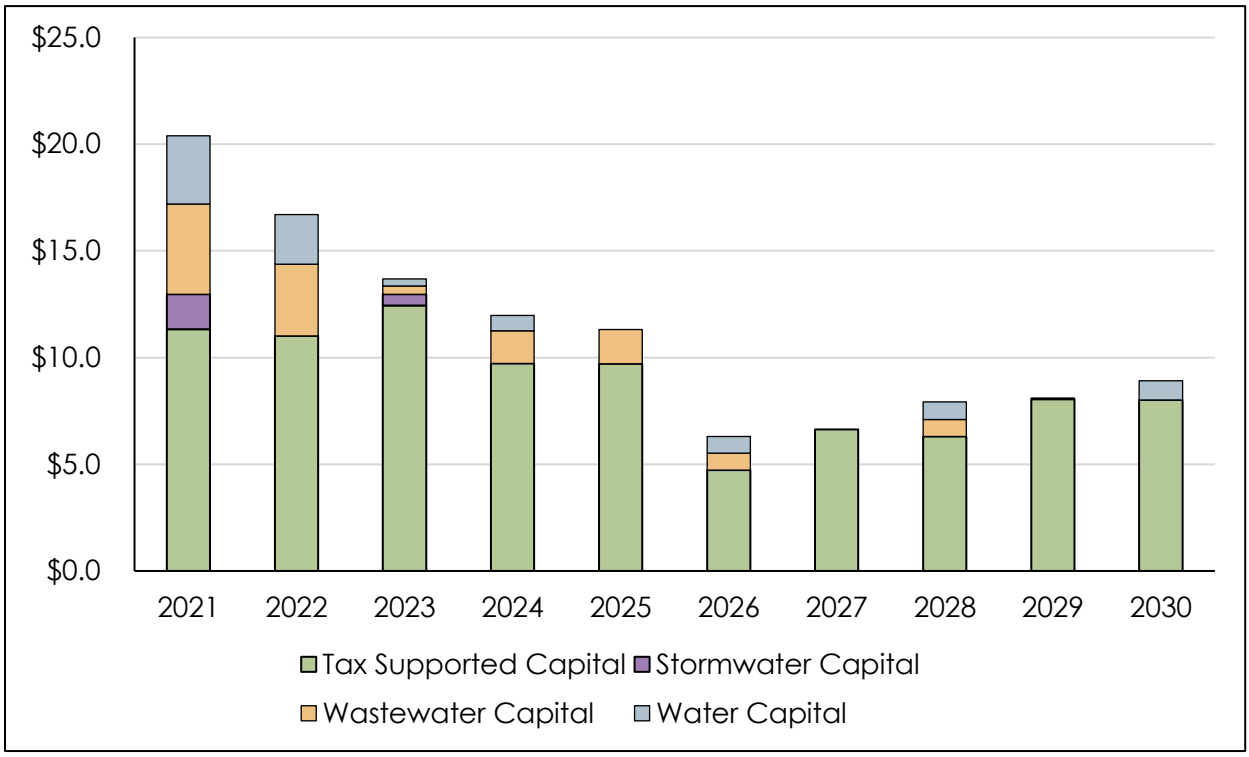
In comparison, the Municipality budgeted to contribute approximately $11.81 million towards capital-related needs in 2021. Included in this are budgeted contributions to capital-related reserve funds, reliable and long-term Federal and Provincial grants, and the repayment of non-growth-related debentures. The sum of these components is the amount of funding the Municipality contributed in 2021 to the provision of capital-related needs.

The difference between the annual lifecycle funding target and current annual contribution is referred to as the lifecycle funding gap and indicates that the Municipality is currently underfunding its infrastructure by approximately $5.77 million annually.

4.3 Annual Costs

Table A-1 presents the capital expenditure forecast for each asset class over the 2021-2030 forecast period. This expenditure forecast is based on the Municipality's 2021 capital budget for tax supported, stormwater, and wastewater assets and the Municipality's Water Financial Plan for water assets. Additionally, the expenditure forecast follows the lifecycle activities identified in preceding sections of this plan for 2022 and onwards. Figure 4-1 presents the annual capital expenditures for tax supported, stormwater, wastewater, and water assets over the entire forecast period.

Figure 4-1
Annual Capital Expenditures
Inflated $, in millions



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.

4.4 Funding

Table A-6 summarizes the recommended strategy to finance the asset lifecycle costs identified in Table A-1. This funding forecast was based on the funding sources identified in the Municipality's 2021 budget.

The lifecycle costs required to sustain established level of service targets 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 (2021). The 2021 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 the Municipality's 2021 funding level.
- The Municipality 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 Municipality to proactively increase amounts being transferred to these capital reserves during the annual budget process.
- Development Charge funding has been shown in years where growth-related capital needs have been identified by the Municipality. It has been assumed that the development charge reserve funds will have sufficient balances to fully fund all growth-related capital expenditures in the years in which they arise.
- Debt financing is shown as required in years where significant capital needs are identified. Specifically, the forecast includes no debenture issuance over the forecast period.

This financing 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. In such an event, the difference could be made up through increases to the tax levy/user rates over-and-above those presented hereafter.

It is noted that this fully funded financing strategy phases-in annual contributions towards capital such that the Municipality reaches full lifecycle funding levels by 2030.

4.5 Tax Levy Impact

As discussed in section 4.2, while the annual funding requirement may fluctuate, it is important for the Municipality to implement a consistent, yet increasing, annual investment in capital so that the excess annual funds can accrue in capital reserve funds. Table A-10 presents a summary of the impacts on the tax levy as a result of this financing strategy.

In order to fund the recommended asset lifecycle activities over the forecast period using the Municipality's own available funding sources (i.e., using taxation, Gas Tax

funding, OCIF funding, development charges, and debentures), increases in the Municipality's taxation levy of 4.9% annually would be required.

Consideration for cash-flow and positive reserve fund balances has been included in setting the capital reserve transfer amounts. A detailed continuity schedule of all tax supported capital-related reserves can be viewed in Table A-6.

Layering on assessment increases resulting from new assessment growth, assumed to be 1.45% annually, the impacts on individual property tax bills resultant from the financial strategy would be 3.4% annually.

The taxation impacts identified above include inflationary adjustments to the Municipality's operating costs and revenues as identified in its 2021 budget (i.e., general operating inflation of 2% 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 Municipality's taxation levy would potentially decrease.

Further detail on the Financing Strategy is presented in Appendix A.

4.6 Stormwater User Rates Impact

It is important for the Municipality to implement a consistent, yet increasing, annual investment in stormwater capital so that the excess annual funds can accrue in capital reserve funds. Table A-10 presents a summary of the estimated impacts on stormwater billing revenues that would result from implementing this financing strategy.

In order to fund the recommended asset lifecycle activities over the forecast period using the Municipality's own available funding sources (i.e., using user rates, grant funding, and debentures), increases to the Municipality's annual stormwater billing revenues of 11.5% annually would be required.

The figures presented above represent the annual stormwater billing revenue increases required to fully fund the lifecycle strategies presented in Chapter 3. It is noted that these increased revenue needs will be partially offset by additional revenue generated from new customers connecting to the stormwater system. Therefore, the net impact on customers' stormwater bills may be lower than percentage increases identified above. It is recommended that the Municipality conduct a Stormwater rate review to determine

the impacts to user rates that would result from adopting the lifecycle strategies and associated funding needs identified in this asset management plan.

Consideration for cash-flow and positive reserve fund balances has been included in setting the capital reserve transfer amounts. A detailed continuity schedule of all capital-related stormwater reserves can be viewed in Table A-7.

The revenue increases identified above include inflationary adjustments to the operating costs and revenues identified in the Municipality's 2021 budget (i.e., general operating inflation of 2% 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 Municipality's stormwater billing revenue requirements would potentially decrease.

Further detail on the Financing Strategy is presented in Appendix A.

4.7 Wastewater User Rates Impact

It is important for the Municipality to implement a consistent, yet increasing, annual investment in wastewater capital so that the excess annual funds can accrue in capital reserve funds. Table A-10 presents a summary of the estimated impacts on wastewater billing revenues that would result from implementing this financing strategy.

In order to fund the recommended asset lifecycle activities over the forecast period using the Municipality's own available funding sources (i.e., using user rates, grant funding, development charges, and debentures), an increase in the Municipality's annual wastewater billing revenues of 7.3% annually would be required.

The figures presented above represent the annual wastewater billing revenue increases required to fully fund the lifecycle strategies presented in Chapter 3. It is noted that these increased revenue needs will be partially offset by additional revenue generated from new customers connecting to the wastewater system. Therefore, the net impact on customers' wastewater bills may be lower than percentage increases identified above. It is recommended that the Municipality conduct a Wastewater rate review to determine the impacts to user rates that would result from adopting the lifecycle strategies and associated funding needs identified in this asset management plan.

Consideration for cash-flow and positive reserve fund balances has been included in setting the capital reserve transfer amounts. A detailed continuity schedule of all capital-related wastewater reserves can be viewed in Table A-8.

The revenue increases identified above include inflationary adjustments to the operating costs and revenues identified in the Municipality's 2021 budget (i.e., general operating inflation of 2% 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 Municipality's wastewater billing revenue requirements would potentially decrease.

Further detail on the Financing Strategy is presented in Appendix A.

4.8 Water User Rates Impact

It is important for the Municipality to implement a consistent, yet increasing, annual investment in water capital so that the excess annual funds can accrue in capital reserve funds. Table A-10 presents a summary of the estimated impacts on water billing revenues that would result from implementing this financing strategy.

In order to fund the recommended asset lifecycle activities over the forecast period using the Municipality's own available funding sources (i.e., using user rates, grant funding, development charges, and debentures), an increase in the Municipality's annual water billing revenues of 2.2% annually would be required.

The figures presented above represent the annual water billing revenue increases required to fully fund the lifecycle strategies presented in Chapter 3. It is noted that these increased revenue needs will be partially offset by additional revenue generated from new customers connecting to the water system. Therefore, the net impact on customers' water bills may be lower than percentage increases identified above. As the Municipality is currently undertaking a Water Rate Study, it is recommended that this study determine the impacts to user rates that would result from adopting the lifecycle strategies and associated funding needs identified in this asset management plan.

Consideration for cash-flow and positive reserve fund balances has been included in setting the capital reserve transfer amounts. A detailed continuity schedule of all capital-related water reserves can be viewed in Table A-9.

The revenue increases identified above include inflationary adjustments to the operating costs and revenues identified in the Municipality's 2021 budget (i.e., general operating inflation of 2% 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 Municipality's water billing revenue requirements would potentially decrease.

Further detail on the Financing Strategy is presented in Appendix A.

Appendix A
Financing Strategy Tables

Table A-1 Capital Budget Forecast (Inflated $)

Description	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital Expenditures										
Tax Supported										
Bridges	1,310,000	1,355,900	1,606,800	1,336,000	424,600	391,900	433,900	438,900	458,200	441,600
Facilities	1,744,800	1,178,200	1,443,600	943,000	720,600	896,700	1,171,500	679,400	1,051,500	343,500
Roads	4,340,662	5,447,200	6,686,300	4,801,600	4,788,700	379,800	1,984,100	1,902,900	3,272,700	3,722,500
Sidewalks	300,000	155,300	160,700	166,300	172,100	70,500	72,900	75,500	78,100	80,900
Streetlights	225,000	155,300	160,700	166,300	172,100	746,700	772,900	799,900	827,900	856,900
Vehicles & Equipment	1,789,391	1,852,000	1,916,800	1,983,900	2,053,400	2,125,200	2,199,600	2,276,600	2,356,300	2,438,800
Miscellaneous	-	24,300	-	26,100	-	27,900	-	29,900	-	32,000
Growth-Related	1,626,000	846,100	462,800	306,600	1,377,000	90,900	-	97,300	-	104,300
Total Tax Supported	**11,335,852**	**11,014,300**	**12,437,700**	**9,729,800**	**9,708,500**	**4,729,600**	**6,634,900**	**6,300,400**	**8,044,700**	**8,020,500**
Stormwater										
All Assets	1,625,000	-	521,200	-	-	-	-	-	-	-
Growth-Related	-	-	-	-	-	-	-	-	-	-
Total Stormwater	**1,625,000**	**-**	**521,200**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Wastewater										
All Assets	3,026,893	1,253,900	-	-	21,600	799,400	-	797,900	60,700	-
Growth-Related	1,215,700	2,108,200	401,700	1,524,500	1,577,800	-	-	-	-	-
Total Wastewater	**4,242,593**	**3,362,100**	**401,700**	**1,524,500**	**1,599,400**	**799,400**	**-**	**797,900**	**60,700**	**-**
Water										
All Assets	2,988,500	2,332,600	326,700	720,700	-	772,000	-	827,000	-	885,900
Growth-Related	204,000	-	-	-	-	-	-	-	-	-
Total Water	**3,192,500**	**2,332,600**	**326,700**	**720,700**	**-**	**772,000**	**-**	**827,000**	**-**	**885,900**
Total Expenditures	**20,395,945**	**16,709,000**	**13,687,300**	**11,975,000**	**11,307,900**	**6,301,000**	**6,634,900**	**7,925,300**	**8,105,400**	**8,906,400**

Table A-1 Capital Budget Forecast (Inflated $)

Description	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Capital Funding										
Tax Supported										
Debenture Issuance	-	-	-	-	-	-	-	-	-	-
Transfers from Capital Reserve Funds	9,535,352	10,168,200	11,974,900	9,423,200	8,331,500	4,638,700	6,634,900	6,203,100	8,044,700	7,916,200
Transfers from DC Reserve Funds	1,626,000	846,100	462,800	306,600	1,377,000	90,900	-	97,300	-	104,300
Transfers from Operating Reserve Funds	174,500	-	-	-	-	-	-	-	-	-
Total Tax Supported	**11,335,852**	**11,014,300**	**12,437,700**	**9,729,800**	**9,708,500**	**4,729,600**	**6,634,900**	**6,300,400**	**8,044,700**	**8,020,500**
Stormwater										
Debenture Issuance	-	-	-	-	-	-	-	-	-	-
Transfer from Capital Reserve Fund	1,625,000	-	521,200	-	-	-	-	-	-	-
Total Stormwater	**1,625,000**	**-**	**521,200**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Wastewater										
Debenture Issuance	-	-	-	-	-	-	-	-	-	-
Transfer from Capital Reserve Fund	3,026,893	1,253,900	-	-	21,600	799,400	-	797,900	60,700	-
Transfer from DC Reserve Fund	1,215,700	2,108,200	401,700	1,524,500	1,577,800	-	-	-	-	-
Total Wastewater	**4,242,593**	**3,362,100**	**401,700**	**1,524,500**	**1,599,400**	**799,400**	**-**	**797,900**	**60,700**	**-**
Water										
Debenture Issuance	-	-	-	-	-	-	-	-	-	-
Transfer from Capital Reserve Fund	2,988,500	2,332,600	326,700	720,700	-	772,000	-	827,000	-	885,900
Transfer from DC Reserve Fund	204,000	-	-	-	-	-	-	-	-	-
Total Water	**3,192,500**	**2,332,600**	**326,700**	**720,700**	**-**	**772,000**	**-**	**827,000**	**-**	**885,900**
Total Funding	**20,395,945**	**16,709,000**	**13,687,300**	**11,975,000**	**11,307,900**	**6,301,000**	**6,634,900**	**7,925,300**	**8,105,400**	**8,906,400**

Table A-2 Tax Supported Debenture Issuance

Year of Issuance	Principal	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	-	-	-	-	-	-	-	-	-	-	-
2022	-	-	-	-	-	-	-	-	-	-	-
2023	-	-	-	-	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-	-	-	-	-
2026	-	-	-	-	-	-	-	-	-	-	-
2027	-	-	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-	-	-
2029	-	-	-	-	-	-	-	-	-	-	-
2030	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Table A-3 Stormwater Debenture Issuance

Year of Issuance	Principal	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	-	-	-	-	-	-	-	-	-	-	-
2022	-	-	-	-	-	-	-	-	-	-	-
2023	-	-	-	-	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-	-	-	-	-
2026	-	-	-	-	-	-	-	-	-	-	-
2027	-	-	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-	-	-
2029	-	-	-	-	-	-	-	-	-	-	-
2030	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Table A-4 Wastewater Debenture Issuance

Year of Issuance	Principal	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	-	-	-	-	-	-	-	-	-	-	-
2022	-	-	-	-	-	-	-	-	-	-	-
2023	-	-	-	-	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-	-	-	-	-
2026	-	-	-	-	-	-	-	-	-	-	-
2027	-	-	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-	-	-
2029	-	-	-	-	-	-	-	-	-	-	-
2030	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Table A-5 Water Debenture Issuance

Year of Issuance	Principal	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	-	-	-	-	-	-	-	-	-	-	-
2022	-	-	-	-	-	-	-	-	-	-	-
2023	-	-	-	-	-	-	-	-	-	-	-
2024	-	-	-	-	-	-	-	-	-	-	-
2025	-	-	-	-	-	-	-	-	-	-	-
2026	-	-	-	-	-	-	-	-	-	-	-
2027	-	-	-	-	-	-	-	-	-	-	-
2028	-	-	-	-	-	-	-	-	-	-	-
2029	-	-	-	-	-	-	-	-	-	-	-
2030	-	-	-	-	-	-	-	-	-	-	-
Total	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**

Table A-6 Tax Supported Capital Reserve Funds[1]

Description	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	11,643,103	9,521,321	7,405,711	4,284,343	4,512,399	6,715,018	13,588,648	19,487,102	26,908,158	33,630,309
Transfer from Gas Tax	547,466	547,466	547,466	547,466	547,466	547,466	547,466	547,466	547,466	547,466
Transfer from OCIF	992,950	992,950	992,950	992,950	992,950	992,950	992,950	992,950	992,950	992,950
Transfer from Operating	5,811,475	6,454,007	7,222,141	8,066,163	8,927,218	9,837,373	10,799,995	11,817,324	12,893,462	14,030,021
Transfer from WW Capital RF (Internal Loan Repayment)	-	-	48,556	-	-	-	-	-	-	-
Transfer to Capital	9,535,352	10,168,200	11,974,900	9,423,200	8,331,500	4,638,700	6,634,900	6,203,100	8,044,700	7,916,200
Transfer to WW Capital RF (Internal Loan)	32,592	15,157	-	-	-	-	-	-	-	-
Closing Balance	9,427,050	7,332,387	4,241,924	4,467,722	6,648,533	13,454,107	19,294,160	26,641,741	33,297,336	41,284,546
Interest	94,271	73,324	42,419	44,677	66,485	134,541	192,942	266,417	332,973	412,845

[1] Includes Gas Tax and OCIF Reserve Funds

Table A-7 Stormwater Capital Reserve Funds

Description	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	2,162,003	893,998	1,887,509	2,487,702	3,757,738	5,193,926	6,815,688	8,644,789	10,705,496	13,024,765
Transfer from Operating	348,144	974,824	1,096,762	1,232,831	1,384,763	1,554,280	1,743,509	1,954,712	2,190,311	2,453,215
Transfer to Capital	1,625,000	-	521,200	-	-	-	-	-	-	-
Closing Balance	885,147	1,868,821	2,463,071	3,720,533	5,142,501	6,748,206	8,559,197	10,599,501	12,895,807	15,477,980
Interest	8,851	18,688	24,631	37,205	51,425	67,482	85,592	105,995	128,958	154,780

Table A-8 Wastewater Capital Reserve Funds

Description	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	1,929,477	-	-	1,392,844	3,054,722	4,934,181	6,287,276	8,720,750	10,652,615	13,651,469
Transfer from Operating	1,064,825	1,238,743	1,427,609	1,631,632	1,852,207	2,090,245	2,347,130	2,624,294	2,924,392	3,247,897
Transfer from Tax Capital RFs (Internal Loan)	32,592	15,157	-	-	-	-	-	-	-	-
Transfer to Capital	3,026,893	1,253,900	-	-	21,600	799,400	-	797,900	60,700	-
Transfer to Tax Capital RFs (Internal Loan Repayment)	-	-	48,556	-	-	-	-	-	-	-
Closing Balance	-	-	1,379,053	3,024,477	4,885,328	6,225,026	8,634,406	10,547,144	13,516,306	16,899,366
Interest	-	-	13,791	30,245	48,853	62,250	86,344	105,471	135,163	168,994

Table A-9 Water Capital Reserve Funds

Description	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	2,768,536	1,181,916	277,482	1,432,454	2,244,395	3,836,797	4,710,675	6,419,347	7,357,026	9,187,670
Transfer from Operating	1,390,178	1,425,419	1,467,490	1,510,419	1,554,415	1,599,237	1,645,115	1,691,836	1,739,677	1,788,538
Transfer to Capital	2,988,500	2,332,600	326,700	720,700	-	772,000	-	827,000	-	885,900
Closing Balance	1,170,214	274,735	1,418,271	2,222,173	3,798,809	4,664,035	6,355,789	7,284,184	9,096,703	10,090,308
Interest	11,702	2,747	14,183	22,222	37,988	46,640	63,558	72,842	90,967	100,903

Table A-10 Operating Budget Forecast (Inflated $)

Description	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Expenditures										
Operating Expenditures										
Tax Supported										
Community Services	1,372,967	1,400,400	1,428,400	1,457,000	1,486,100	1,515,900	1,546,200	1,577,100	1,608,600	1,640,800
Facility Services	3,175,593	3,239,100	3,303,900	3,370,000	3,437,400	3,506,100	3,576,200	3,647,800	3,720,700	3,795,100
General Government	2,385,750	2,359,200	2,406,400	2,454,500	2,503,600	2,553,700	2,604,800	2,656,900	2,710,000	2,764,200
Health Services	18,243	18,600	19,000	19,400	19,700	20,100	20,500	21,000	21,400	21,800
Planning & Development	580,497	481,900	491,600	501,400	511,400	521,700	532,100	542,800	553,600	564,700
Protection to Persons & Property	5,288,985	5,394,800	5,502,700	5,612,700	5,725,000	5,839,500	5,956,300	6,075,400	6,196,900	6,320,800
Public Works & Engineering	6,372,924	6,436,600	6,565,400	6,696,700	6,830,600	6,967,200	7,106,600	7,248,700	7,393,700	7,541,500
Vehicles & Equipment	1,452,460	1,481,500	1,511,100	1,541,400	1,572,200	1,603,600	1,635,700	1,668,400	1,701,800	1,735,800
Stormwater	141,708	106,300	108,400	110,600	112,800	115,100	117,400	119,700	122,100	124,500
Wastewater	1,531,627	1,498,500	1,528,500	1,559,000	1,590,200	1,622,000	1,654,500	1,687,600	1,721,300	1,755,700
Water	1,659,190	1,628,600	1,661,200	1,694,400	1,728,300	1,762,900	1,798,100	1,834,100	1,870,800	1,908,200
Capital-related Expenditures										
Tax Supported										
Transfers to Capital Reserve Funds	5,811,475	6,454,007	7,222,141	8,066,163	8,927,218	9,837,373	10,799,995	11,817,324	12,893,462	14,030,021
Transfer to Gas Tax Reserve Fund	547,466	547,466	547,466	547,466	547,466	547,466	547,466	547,466	547,466	547,466
Transfer to OCIF Reserve Fund	992,950	992,950	992,950	992,950	992,950	992,950	992,950	992,950	992,950	992,950
Existing Non-Growth-Related Debenture Repayments	773,386	759,890	746,395	702,211	688,261	674,766	661,270	648,081	634,279	620,783
New Non-Growth-Related Debenture Repayments	-	-	-	-	-	-	-	-	-	-
Existing Growth-Related Debenture Repayments	208,373	203,779	199,185	194,784	189,998	185,404	180,810	176,359	171,623	167,029
Municipal & Tile Drain Loan Repayments	25,254	20,516	20,519	20,516	14,022	11,060	7,052	7,052	-	-
Stormwater										
Transfer to Capital Reserve Fund	348,144	974,824	1,096,762	1,232,831	1,384,763	1,554,280	1,743,509	1,954,712	2,190,311	2,453,215
Stormwater Pond Cleanout	517,500	-	-	-	-	-	-	-	-	-
Existing Non-Growth-Related Debenture Repayments	-	-	-	-	-	-	-	-	-	-
New Non-Growth-Related Debenture Repayments	-	-	-	-	-	-	-	-	-	-
Existing Growth-Related Debenture Repayments	-	-	-	-	-	-	-	-	-	-
Wastewater										
Transfer to Capital Reserve Fund	1,064,825	1,238,743	1,427,609	1,631,632	1,852,207	2,090,245	2,347,130	2,624,294	2,924,392	3,247,897
Existing Non-Growth-Related Debenture Repayments	215,568	191,045	187,288	183,675	179,774	176,017	172,260	168,606	163,941	159,347
New Non-Growth-Related Debenture Repayments	-	-	-	-	-	-	-	-	-	-
Existing Growth-Related Debenture Repayments	447,000	438,234	429,468	421,038	411,935	403,169	394,403	385,877	375,221	364,739
Water										
Transfers to Capital Reserve Fund	1,390,178	1,425,419	1,467,490	1,510,419	1,554,415	1,599,237	1,645,115	1,691,836	1,739,677	1,788,538
Existing Non-Growth-Related Debenture Repayments	157,090	152,915	148,741	144,657	140,391	136,217	132,042	127,913	123,693	119,518
New Non-Growth-Related Debenture Repayments	-	-	-	-	-	-	-	-	-	-
Existing Growth-Related Debenture Repayments	157,090	152,915	148,741	144,657	140,391	136,217	132,042	127,913	123,693	119,518
Total Expenditures	**36,636,243**	**37,598,203**	**39,161,353**	**40,810,100**	**42,541,092**	**44,372,201**	**46,304,444**	**48,349,882**	**50,501,607**	**52,784,122**

Table A-10 Operating Budget Forecast (Inflated $)

Description	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenues										
Tax Supported										
Community Services	1,783,191	1,816,300	1,852,600	1,889,700	1,927,500	1,966,000	2,005,300	2,045,500	2,086,400	2,128,100
Facility Services	284,460	290,100	296,000	301,900	307,900	314,100	320,300	326,800	333,300	340,000
General Government	2,118,807	2,110,200	2,152,400	2,195,400	2,239,300	2,284,100	2,329,800	2,376,400	2,423,900	2,472,400
Health Services	6,650	6,800	6,900	7,100	7,200	7,300	7,500	7,600	7,800	7,900
Planning & Development	342,900	349,800	356,800	363,900	371,200	378,600	386,200	393,900	401,800	409,800
Protection to Persons & Property	1,197,480	1,220,600	1,245,000	1,269,900	1,295,300	1,321,200	1,347,700	1,374,600	1,402,100	1,430,100
Public Works & Engineering	1,038,683	1,059,500	1,080,600	1,102,300	1,124,300	1,146,800	1,169,700	1,193,100	1,217,000	1,241,300
Vehicles & Equipment	30,000	-	-	-	-	-	-	-	-	-
Taxation	20,186,809									
Grant - Gas Tax	547,466	547,466	547,466	547,466	547,466	547,466	547,466	547,466	547,466	547,466
Grant - OCIF	992,950	992,950	992,950	992,950	992,950	992,950	992,950	992,950	992,950	992,950
Transfers from DC Reserve Funds	451,673	203,779	199,185	194,784	189,998	185,404	180,810	176,359	171,623	167,029
Municipal & Tile Drain Loan Repayments from Tax Roll	25,254	20,516	20,519	20,516	14,022	11,060	7,052	7,052	-	-
Stormwater										
Revenues	969,852									
Transfer from DC Reserve Fund	37,500	-	-	-	-	-	-	-	-	-
Wastewater										
Revenues	2,727,899									
Transfer from DC Reserve Fund	509,500	438,234	429,468	421,038	411,935	403,169	394,403	385,877	375,221	364,739
Transfer from Tax Roll	21,621	-	-	-	-	-	-	-	-	-
Water										
Revenues	3,137,954									
Transfer from DC Reserve Fund	219,590	152,915	148,741	144,657	140,391	136,217	132,042	127,913	123,693	119,518
Transfer from Tax Roll	6,004	-	-	-	-	-	-	-	-	-
Total Revenues	**36,636,243**	**9,209,160**	**9,328,628**	**9,451,611**	**9,569,462**	**9,694,365**	**9,821,223**	**9,955,516**	**10,083,253**	**10,221,302**

Table A-10 Operating Budget Forecast (Inflated $)

Description	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Tax Supported										
Tax Revenues Required		21,172,698	22,206,736	23,291,274	24,428,780	25,621,839	26,873,165	28,185,604	29,562,141	31,005,905
Prior Year Tax Levy		20,186,809	21,172,698	22,206,736	23,291,274	24,428,780	25,621,839	26,873,165	28,185,604	29,562,141
Add: Tax Revenues from Incremental Assessment		292,709	307,004	321,998	337,723	354,217	371,517	389,661	408,691	428,651
Tax Revenues at 0% Tax Rate Increase		20,479,517	21,479,702	22,528,733	23,628,998	24,782,997	25,993,356	27,262,826	28,594,296	29,990,792
Additional Increase in Tax Levy		693,180	727,034	762,541	799,782	838,842	879,810	922,778	967,845	1,015,113
Total Tax Revenues		21,172,698	22,206,736	23,291,274	24,428,780	25,621,839	26,873,165	28,185,604	29,562,141	31,005,905
Estimated Impact on Tax Bills		3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%
Stormwater										
Required Revenues		1,081,124	1,205,162	1,343,431	1,497,563	1,669,380	1,860,909	2,074,412	2,312,411	2,577,715
Annual % Increase Required		11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%	11.5%
Wastewater										
Required Revenues		2,928,288	3,143,397	3,374,307	3,622,181	3,888,262	4,173,890	4,480,500	4,809,633	5,162,943
Annual % Increase Required		7.3%	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%	7.3%
Water										
Required Revenues		3,206,934	3,277,430	3,349,476	3,423,106	3,498,354	3,575,257	3,653,849	3,734,170	3,816,256
Annual % Increase Required		2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%

Appendix B
Asset Listings

Facilities

Category	BuildingName	Address/Location	Replacement Value
Administration	Coldstream Office/Community Centre	10227 Ilderton Road, Ilderton	$4,401,913
Fire	Coldstream Firehall	10227 Ilderton Road	$3,650,132
Fire	Ilderton Firehall	22531 Hyde Park Road, Ilderton	$1,887,187
Fire	Bryanston Firehall/Community Centre	15321 Plover Mills Road	$1,962,674
Fire	Arva Firehall	14352 Medway Road, Arva	$1,292,363
Fire	Delaware Firehall	11563 Longwoods Road, Delaware	$1,726,797
Leased to others	Prince Andrew School	13 Mile Road, Bryanston	$6,463,675
Leased to others	Medical Centre	36 Heritage Drive, Ilderton	$6,000,000
Library	Coldstream Library	10227 Ilderton Road, Ilderton	$104,000
Library	Ilderton Library	40 Heritage Drive, Ilderton	$1,505,711
Library	Library/Washroom	Delaware Lions Park	$342,200
Parks and Recreation	Washrooms	Deer Haven Optimist Park	$200,000
Parks and Recreation	Parks Other	Deer Haven Optimist Park	$299,458
Parks and Recreation	Washrooms	Denfield Park	$300,000
Parks and Recreation	Parks Other	Denfield Park	$373,891
Parks and Recreation	Washrooms	Heritage Park	$528,000
Parks and Recreation	Parks Other	Heritage Park	$826,861
Parks and Recreation	Parks Other	Junction Park	$9,000

Parks and Recreation	Parks Other	Kilworth Flats	$0
Parks and Recreation	Parks Other	Kilworth Rivers Edge	$0
Parks and Recreation	Parks Other	Komoka Caverhill	$235,000
Parks and Recreation	Washrooms	Komoka Park	$200,000
Parks and Recreation	Pavilion	Komoka Park	$66,000
Parks and Recreation	Parks Other	Komoka Park	$542,166
Parks and Recreation	Parks Other	Komoka-Kilworth Optimist Park	$391,500
Parks and Recreation	Parks Other	Lions Park	$227,291
Parks and Recreation	Washrooms	Meadowcreek Park	$200,000
Parks and Recreation	Parks Other	Meadowcreek Park	$282,269
Parks and Recreation	Washrooms	Municipal Park	$350,000
Parks and Recreation	Parks Other	Municipal Park	$528,887
Parks and Recreation	Parks Other	Pleasant Park	$0
Parks and Recreation	Washrooms	Poplar Hill Park	$200,000
Parks and Recreation	Pavilion	Poplar Hill Park	$243,800
Parks and Recreation	Grand Stand	Poplar Hill Park	$306,600
Parks and Recreation	Parks Other	Poplar Hill Park	$670,657
Parks and Recreation	Parks Other	Prince Andrew School	$325,567
Parks and Recreation	Parks Other	Tiffany Park	$0
Parks and Recreation	Washrooms	Weldon Park	$300,000

Parks and Recreation	Backstop/Storage Building	Weldon Park	$36,900
Parks and Recreation	Pavilion	Weldon Park	$66,000
Parks and Recreation	Parks Other	Weldon Park	$732,954
Parks and Recreation	Washrooms	Westbrook Park	$200,000
Parks and Recreation	Parks Other	Westbrook Park	$522,425
Parks and Recreation	Ilderton Arena & Curling Club	13168 Ilderton Road, Ilderton	$13,981,248
Parks and Recreation	Ilderton Community Centre	13168 Ilderton Road, Ilderton	$1,343,252
Parks and Recreation	Delaware Community Centre	2652 Gideon Drive, Delaware	$3,283,161
Parks and Recreation	Komoka Community Centre/Library	133 Queen Street, Komoka	$3,036,834
Parks and Recreation	Komoka Wellness Centre	1 Tunks Lane, Komoka	$28,952,611
Parks and Recreation	Coldstream Salt Shed	10227 Ilderton Road, Ilderton	$318,200
Public Works	Denfield Operation Centre	23053 Denfield Road, Ilderton	$4,967,700
Public Works	Delaware Operation Centre	805 Gideon Drive, London	$3,725,775
Public Works	Delaware Sand Storage	805 Gideon Drive, London	$1,254,900
Public Works	Denfield Sand Storage	23053 Denfield Road Salt Shed	$1,673,200
Total			**$101,038,760**

Fleet

Department	Manufacturer / Model	Year	Replacement Value
Building Services	Chevrolet Volt LT	2018	$40,000

Department	Manufacturer / Model	Year	Replacement Value
Building Services	Chevrolet Volt LT	2018	$40,000
Community Services	20' Load Trail - Float Trailer	2010	$10,125
Community Services	Frontier Equipment Tow Behind Core Aerator	2010	$2,527
Community Services	Lawnboy 149cc mower	2011	$350
Community Services	Kubota F3080 front mount mower	2011	$32,624
Community Services	Zamboni 525 Ice Resurfacer (Komoka)	2011	$74,029
Community Services	Zamboni 525 Ice Resurfacer (Ilderton)	2011	$74,029
Community Services	John Deere 5083 E	2011	$39,500
Community Services	Drum Roller BIG JIM	2012	$7,407
Community Services	QSAP tandem lb Axles Dump Trailer	2013	$8,199
Community Services	John Deere Ztrack Z997 zero turn mower	2013	$11,130
Community Services	Dodge Ram 2500 Crew Cab SXT - North	2014	$48,577
Community Services	Dodge Ram 2500 Crew Cab SXT - South	2014	$48,577
Community Services	John Deere 1435 front mount mower	2014	$14,210
Community Services	20' Float Trailer	2015	$10,125
Community Services	Allied 16 ft Triplex mower YT65	2015	$11,150
Community Services	Kubota Zero Turn - model #??	2016	$15,750
Community Services	Ford F150 XL Supper Cab	2017	$39,309
Community Services	Ford F150 XLSupper Cab	2017	$39,309
Community Services	Ford F150 XL Supper Cab	2017	$39,309
Community Services	Ford F250 XL Reg Cab	2017	$42,510
Community Services	18' Float Trailer	2017	$4,617
Community Services	15' Float Trailer	2017	$5,119
Community Services	Kubota Zero Turn ZD1211R-60R	2017	$15,750
Community Services	Ford F150 XL Super Cab	2018	$42,636
Community Services	QSAP single 2,500 lb Axle 8' Landscape Trailer	2018	$2,882
Community Services	Komoka Ice Edger	2018	$5,500
Community Services	Ilderton Ice Edger	2018	$5,500
Community Services	Kubota L4701HSTRC Tractor / LA765 Loader 47 Hp	2018	$31,500
Community Services	Bannerman Diamond Groomer	2018	$4,790

Department	Manufacturer / Model	Year	Replacement Value
Community Services	Kubota Tractor L3301D	2019	$16,369
Community Services	Ford F250 XL SRW Crew Cab	2020	$60,407
Community Services	Toro Model # 72505 stand on mower	2020	$15,229
Community Services	Zamboni 526 Ice Resurfacer (Ilderton)	2020	$96,450
Emergency Services	GMC C8500	1997	$186,802
Emergency Services	FREIGHTLINER	2000	$450,000
Emergency Services	INTERNATIONAL	2004	$470,000
Emergency Services	INTERNATIONAL	2005	$470,000
Emergency Services	REHAB TRAILER	2006	$20,000
Emergency Services	FREIGHTLINER	2007	$450,000
Emergency Services	GMC C5500	2008	$325,000
Emergency Services	FREIGHTLINER	2009	$320,000
Emergency Services	MELT (BOAT)	2009	$20,000
Emergency Services	INTERNATIONAL	2010	$450,000
Emergency Services	INTERNATIONAL	2011	$470,000
Emergency Services	DODGE 1500	2015	$45,000
Emergency Services	FORD/F-150	2016	$47,000
Emergency Services	FORD/F-150	2016	$47,000
Emergency Services	FREIGHTLINER	2017	$470,000
Emergency Services	FORD/F-250	2018	$64,000
Emergency Services	FREIGHTLINER	2019	$325,000
Emergency Services	FREIGHTLINER	2019	$450,000
Emergency Services	GATOR	2019	$31,000
Emergency Services	TRAILER	2019	$3,200
Emergency Services	FORD ESCAPE SUV	2020	$40,486
Transportation	Vermeer Wood Chipper 1800XL	2002	$80,000
Transportation	CAT Grader 140H	2004	$475,000
Transportation	CAT Backhoe 420D	2004	$175,000
Transportation	International Tandem	2006	$380,000
Transportation	McCloskey Aggregate Stacker 30x60D	2006	$150,000
Transportation	International Tandem WorkStar	2008	$380,000
Transportation	International Tandem WorkStar	2008	$380,000

Department	Manufacturer / Model	Year	Replacement Value
Transportation	International Tandem WorkStar	2008	$380,000
Transportation	John Deere Grader 870D	2008	$475,000
Transportation	Case Loader 721E	2009	$300,000
Transportation	Volvo Grader G946	2009	$475,000
Transportation	Volvo Grader G946	2009	$475,000
Transportation	Case Tractor 95U	2009	$100,000
Transportation	International Tandem MaxForce 9 Oil Distributor	2010	$380,000
Transportation	Dodge Ram 1500 SLT	2010	$28,086
Transportation	Canada Trailer SD28-20KD	2010	$10,000
Transportation	CAT Backhoe 430	2010	$175,000
Transportation	Entyre Chipspreader	2010	$250,000
Transportation	Bomag Roller	2011	$90,000
Transportation	International Tandem WorkStar	2012	$380,000
Transportation	CAT Grader 140M2 AWD	2013	$475,000
Transportation	International Tandem WorkStar	2014	$380,000
Transportation	Dodge Crew Cab 4500 1-Ton	2014	$70,000
Transportation	Turkstra Trailers - 16'x8' Construction Site Trailer	2014	$20,000
Transportation	John Deere Loader 624K	2014	$300,000
Transportation	Ditch Witch FX60 1,200gal "Vac Trailer"	2014	$150,000
Transportation	International Single Axle 7500	2015	$300,000
Transportation	GMC Sierra 1500 SLE Double Cab	2015	$50,000
Transportation	FINN T30 HydroSeeder	2015	$50,000
Transportation	Safe Pace 650 EYR Cruiser LT	2015	$15,000
Transportation	International Tandem 7600 6X4	2016	$380,000
Transportation	International 7400 4x2 Single Axle	2016	$300,000
Transportation	International 7400 4x2 Single Axle	2016	$300,000
Transportation	Ford F450 - 10,000 kg	2016	$70,000
Transportation	Ford F150 XLT Reg Cab	2016	$50,000
Transportation	Ford F150 XLT Reg Cab	2016	$50,000
Transportation	Ford F150 XLT Reg Cab	2016	$50,000

Department	Manufacturer / Model	Year	Replacement Value
Transportation	QSAP 83"x16' tandem 5200lb Axles Equipment Trailer	2016	$10,000
Transportation	QSAP 82"x16' tandem 3500lb Axles Utility Trailer	2016	$10,000
Transportation	International 7600 SBA 6x4 2010 Tri-Axle	2017	$420,000
Transportation	Ford F450 - 10,000 kg	2017	$70,000
Transportation	Tridem Dump Trailer	2017	$75,000
Transportation	N&N Gal. Equipment Tandem Hauler 20' 14,000 GVWR	2017	$15,000
Transportation	CAT CS54B Steel Drum Roller	2017	$160,000
Transportation	Trackless MT7 Series	2017	$200,000
Transportation	International Tandem - Roll Off	2018	$450,000
Transportation	International Tandem - 5th Wheel	2018	$380,000
Transportation	Freightliner 108SD Single Axle	2018	$300,000
Transportation	Chevrolet Bolt LT	2018	$46,918
Transportation	Trout River 48' Livebottom Trailer	2018	$130,000
Transportation	CAT Backhoe 420F2IT	2018	$175,000
Transportation	Road Widener Attachment	2018	$60,000
Transportation	Ford F 150 XLT	2019	$50,000
Transportation	Ford F-150 XLT Super Crew	2019	$48,391
Transportation	Maclean Sidewalk Plow	2019	$200,000
Transportation	Western Star 4700SB Tri-Axle	2020	$466,426
Transportation	Safe Pace 650 EYR Cruiser LT	2020	$15,000
Transportation	Emergency Road Closed Trailer (Denfield)		$5,000
Transportation	Emergency Road Closed Trailer (Denfield)		$5,000
Transportation	Emergency Road Closed Trailer (Delaware)		$5,000
Transportation	Emergency Road Closed Trailer (Delaware)		$5,000
Transportation	Lely Splendimo 3pt Hitch Roadside mower		$12,000
Transportation	New Holland 3pt Hitch Road Side Mower		$12,000

Department	Manufacturer / Model	Year	Replacement Value
Water-Wastewater	Continental Cargo Trail	2004	$8,968
Water-Wastewater	Ford Ranger 1.5 Cab	2007	$50,000
Water-Wastewater	Ford Econoline Van	2010	$23,620
Water-Wastewater	Chevrolet Cruise	2013	$18,500
Water-Wastewater	Ford F550 Service Truck	2016	$185,500
Water-Wastewater	Ford F150 XL Reg Cab	2017	$37,700
Water-Wastewater	QSAP 82"x16' tandem 3500lb Axles Equipment Trailer	2017	$6,050
Water-Wastewater	Chevrolet Bolt LT	2018	$46,918
Total			**$18,361,061**

Equipment

Department	Description	Replacement Value
Administration	Electronic Sign	$30,250
Administration	Ricoh MP CW2201SP Large Format Plotter	$12,460
Administration	Ricoh IM 550F Copier	$3,837
Administration	Ricoh IM550F Copier	$10,084
Administration	HP DL320 GEN8 Server	$5,935
Administration	Cisco phone system	$75,000
Community Services	AS5160T 20" Traction Drive Autoscrubber	$7,650
Community Services	AS5160T 20" Traction Drive Autoscrubber	$7,650
Community Services	Olympia Propane Ice Edger (Wellness Centre)	$5,122
Community Services	Olympia Propane Ice Edger (Ilderton Arena)	$5,122
Community Services	Ilderton Ice Leveller	$20,000
Community Services	Wellness Ice Leveller	$20,000
Community Services	Float Trailer	$7,850
Community Services	Wellness Centre Vending Machines	$20,547
Community Services	Wellness Centre Canteen Equipment	$10,308
Community Services	Parks Tractors Snow Blades	$14,500
Community Services	Ilderton CC - Industrial Fridge/Freezer (Zanduco)	$6,715

Department	Description	Replacement Value
Community Services	Pressure Washer: KV17GL	$7,200
Community Services	Pressure Washer:Kaivac KV 12 Gal	$5,600
Emergency Services	Wilburt Lights – Mast Lighting	$75,000
Emergency Services	Gas Detection	$45,000
Emergency Services	Thermal Imaging Cameras	$40,000
Emergency Services	Cutters, spreaders, ram, pedal cutters, e-tools, air bags	$250,000
Emergency Services	SCBA packs, bottles, compressor, etc.	$500,000
Emergency Services	Bunker gear suits, helmets, boots	$360,000
Emergency Services	Water/Ice Rescue Equipment	$25,000
Emergency Services	High/Low Angle	$4,500
Emergency Services	Hoses	$100,000
Emergency Services	Positive Pressure Fans	$30,000
Emergency Services	Ladders	$7,000
Environmental Services	Wachs Automated Valve Turing Trailer	$45,850
Environmental Services	6x Heavy Duty Roll Off Bins (2x 38yd & 4x 19yd)	$49,700
IT Hardware	SAN (Storage Area Network)	$6,145
IT Hardware	CheckPoint SG 2200	$5,857
IT Hardware	Cisco Catalyst 9200L 48 PoE+	$5,349
IT Hardware	Cisco Catalyst 9200L 24 PoE+	$1,780
IT Hardware	APC Smart-UPS SMT1500C	$780
IT Hardware	HP LTO-6 ULTR 6250 Tape Drive	$3,388
IT Hardware	Lenovo Thinksystem SR530	$5,935
IT Hardware	Lenovo Thinksystem SR530	$5,935
Public Works	Aluminum Trench Shield (Trench Box) System	$17,000
Total		**$1,860,048**

Appendix C
Next Steps

Next Steps

Short term – Started within a year.

- The Municipality should develop a methodology for reporting on the percentage of properties in the Municipality resilient to a 100-year storm and the percentage of the municipal stormwater management system resilient to a 5-year storm. These measures should be included in a future update to the asset management plan.

- The Municipality should review and update the roads asset inventory. A process for accounting for shared responsibility for boundary roads should be developed. To be able to identify boundary roads, a field should be added to the GIS file for roads to identify which roads are boundary roads.

- The Municipality should review asset inventories to ensure that all equipment with a replacement value over the TCA threshold of $5,000 is included when doing the next asset management plan update. As an example, equipment in facilities such as large refrigerators may need to be captured.

- The Municipality should consider adding smaller culverts to the asset management plan either as stand-alone assets or as part of roads. These are culverts with a diameter less than three metres not covered by the biennial OSIM inspections.

- The Municipality should develop a condition assessment methodology for watermains, perhaps based on number of breaks.

- The Municipality should develop a method for assessing the condition of wastewater mains, perhaps involving CCTV inspections.

- The Municipality should develop a method for assessing the condition of stormwater mains and ponds. This could involve CCTV inspections or the performance of the system during flood events.

Medium term – Start in next two to three years.

- The Municipality should assess condition of streetlights and sidewalks either directly or based on age and include the information in a future update of the asset management plan.

- The Municipality should evaluate the capital needs of the three gravel pits and include in the next update of the asset management plan.

- The cost estimate of $9,048 per square metre for bridge replacement includes a factor of 20% to account for the deck area of a replacement bridges typically being 20% larger than the deck area of the existing bridges. The Municipality should review this assumption on a case-by-case basis to identify more precisely the deck area of future replacement bridges. This could be done as part of a future OSIM bridge inspection. Once more accurate dimensions for replacement bridges are determined, the Municipality should recalculate the estimated replacement costs for the bridges. These updated costs should be included in the next update to the asset management plan.

Long-term – Complete when guidance and data becomes available.

- The Municipality should review and update the generalized lifecycle models and associated condition degradation profiles when more data on how road condition degrades over time is available.