

GHD
Advisory



Town of Whitchurch-Stouffville

2017 Corporate Asset Management Plan

September 17, 2018

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1. Executive Summary

The Asset Management Plan (AM Plan) is a medium to long range planning document that supports the two priorities of the Town’s Strategic Plan: **Fiscal & Asset Management and Service Excellence.**

What does the Town own?

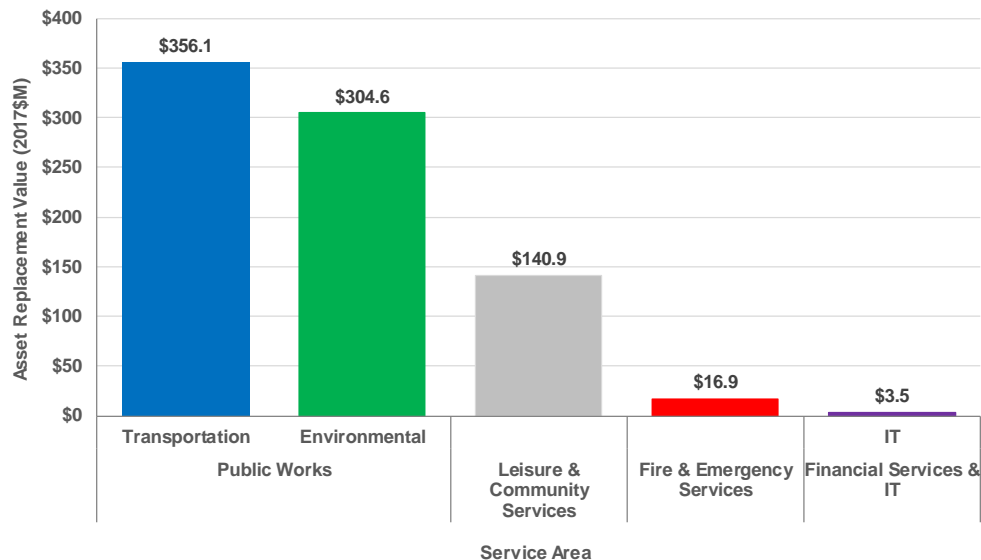
The Town owns a wide variety of infrastructure assets to enable it to deliver services. This AM Plan covers the five service areas for which the Town owns and maintains physical infrastructure assets (Public Works, Leisure & Community Services, Fire & Emergency Services, and Financial Services & IT).

What are the Town’s assets worth?

Service Area		Asset Class
Public Works	Transportation	Roads
		Structures
		Street lights & Signals
		Sidewalks
		Fleet & Equipment
	Environmental Services	Water
		Waste Water
		Storm
		Fleet & Equipment
Leisure & Community Services	Facilities	
	Land Improvements	
	Playgrounds & Pergolas	
	Fleet & Equipment	
Fire & Emergency Services	Fire Stations	
	Fleet & Equipment	
Financial Services & IT	IT	Hardware
		Software

The estimated replacement value of assets owned by the Town is \$821.9 million, expressed in 2017 dollars. Public Works assets comprise over 80% of the asset portfolio. The value and proportion by service area are shown in Figure 1.

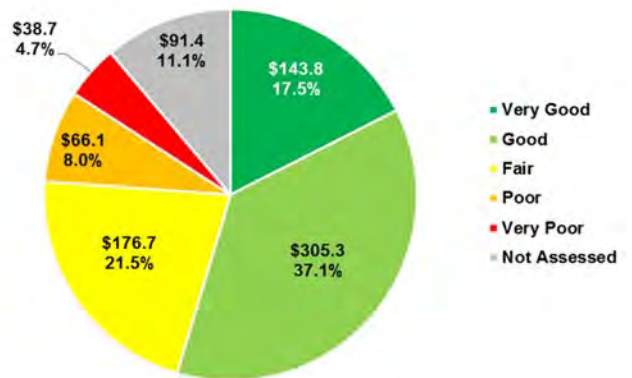
Figure 1 – Town Asset Portfolio (2017\$M)



What condition are the assets in?

The majority of the Town's assets are in fair to very good physical condition, as shown in Figure 2. 11.1% of assets were not assessed for condition due to limited data. Condition for roads, bridges, and ten facilities were determined based on actual condition assessment information; other asset condition profiles were based on age. \$22.1 million of watermains and sewers are estimated to be in very poor condition due to age (mainly cast iron/ductile iron watermains and vitrified clay sewers).

Figure 2 – Asset Condition (2017\$M)



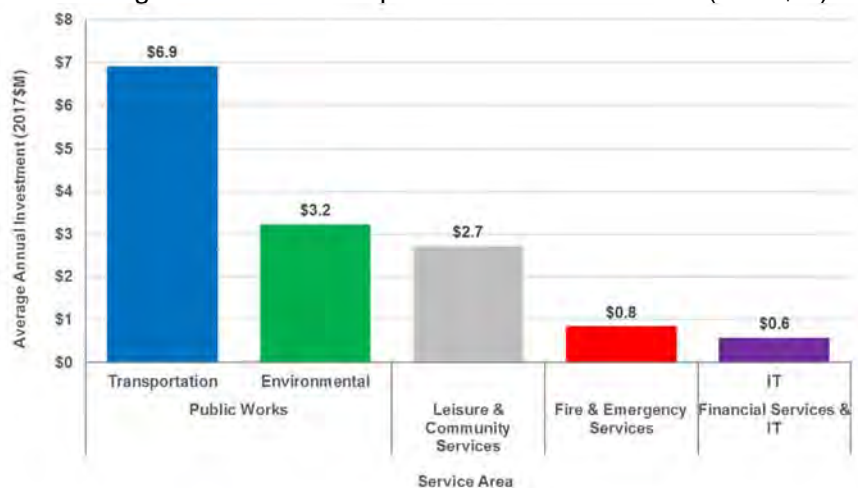
What strategies does the Town use to manage the assets over time?

For each asset portfolio, the Town has developed AM strategies: the capital renewal activities over the lifecycle of the assets that the Town will undertake to continue to deliver expected levels of service. These lifecycle activities include maintenance, rehabilitation, and replacement, and are based on industry-typical guidelines; strategies should be reviewed and improved as the Town tracks and collects more data to truly understand the lowest lifecycle for each asset type. Over the next 10 to 13 years, the Town will be adding another \$158.3 million in new assets based on currently assumed assets and the new assets identified in the Town's 2018 Development Charges Background Study (DC Study).

What are the required renewal investments?

Based on the lifecycle strategies defined in this AM Plan, Figure 3 shows the average capital renewal investment amounts required annually for each service area. For renewal of existing assets, the average annual requirement is estimated to be \$14.2 million over the next 10 years.

Figure 3 – Annual Capital Renewal Investment (2017\$M)



In addition to existing assets, it is estimated that \$118 million in new assets will be constructed over the next 10 to 13 years (average \$10.1 million annually). This results in a total average annual capital investment of \$24.4 million over the next 10 years.

How will the Town fund the required renewal investments?

The Capital Plan identifies the various sources for funding the capital expenditures, including development charges, capital reserves, donations, and subsidies. A portion of the Operating Budget provides transfers to reserves for funding the capital budget. In 2018, the Operating Budget is expected to fund \$8 million of the capital budget (net transfer to reserves) for the asset classes covered in this AM Plan. During the Capital Planning process, the Town will need to continue to make efficient use of available funding, while balancing the priorities between expanding, upgrading, and renewing existing asset portfolios.

How does the Town improve AM Plan development in the future?

Under the Infrastructure for Jobs and Prosperity Act, 2015, O.Reg 588/17 'Asset Management Planning for Municipal Infrastructure' requires each municipality to develop an AM Plan, and review and update it at least every five years.

This AM Plan is compliant to O.Reg. 588/17 for the July 1st, 2021 core asset (water, wastewater, storm, roads, and structures) requirements, but improvements in specific areas have been identified to improve the level of accuracy and completeness of analyses. For core assets, the main area of improvement is required for stormwater assets. It is recommended that the current inventory of stormwater ponds be further developed into a more detailed hierarchy of assets, with defined asset attributes such as construction year, pond volume, and costs.

For non-core assets, most asset classes in this AM Plan are compliant to the July 1st, 2023 requirements. Specific areas have been noted for improved data collection and analysis, such as completing building condition assessments for the full portfolio. This AM Plan is a living document that will be updated regularly to reflect the improvement of asset management maturity within the Town over time. As the Town better understands the costs and benefits of various renewal and maintenance treatments and timings, the lifecycle strategies should be reviewed and updated to reflect observed asset deterioration rates and benefits.

2. Introduction

2.1 Overview

The Town of Whitchurch-Stouffville Strategic Plan describes two priorities supported by this Asset Management Plan (AM Plan): Fiscal & Asset Management and Service Excellence. This AM Plan is a medium to long range planning document that supports this priority by understanding key items such as:

- The size, replacement value, and condition of the Town's asset portfolio
- The Town's levels of service
- Lifecycle management to prolong asset life and reduce lifecycle costs
- Funding forecasts to sustain the Town's asset portfolio and support decision making
- Key asset management practice improvement actions.

The AM Plan will assist the Town in developing appropriate annual capital and operating programs and financially sustainable budget forecasts.

Key stakeholders of this AM Plan include:

- External Stakeholders
 - The Town of Whitchurch-Stouffville community
 - Regulatory agencies (Federal and Province of Ontario)
- Internal Stakeholders
 - Town Council
 - Chief Administrative Officer and departmental senior management
 - Departmental staff.

In January 2018 the Province of Ontario enacted O.Reg 588/17 'Asset Management Planning for Municipal Infrastructure' under the Infrastructure for Jobs and Prosperity Act, 2015. This AM Plan is intended to meet the regulation's July 1st, 2021 requirements for core assets (water, wastewater, storm, roads, and structures) and July 1st, 2023 requirements for other municipal infrastructure assets. Specific improvements for full compliance is outlined in Section 7.

The regulation also requires that every municipality prepare a strategic asset management policy by July 1, 2019 and review and, if necessary, update it at least every five years. As discussed in the International Infrastructure Management Manual (IIMM), the AM policy is developed at the highest levels of the organisation to provide clear direction on the appropriate focus and level of AM practice expected, and the principles and requirements for undertaking asset management in a structured and coordinated way. The AM Policy is to be developed and adopted by the Town by July 1st, 2019.

The AM Strategy outlines key strategies and programmes to deliver asset management objectives, and the AM Plans define the activities and resources required so that the

assets can continue to provide the required services. The hierarchy of AM documents is summarized in Figure 2-1.

Figure 2-1 Hierarchical relationship between key AM Elements and Plans



2.2 AM Plan Methodology

The AM Plan was developed by GHD Limited in collaboration with Town staff through:

- Review of background materials available on the Town’s web site and provided by the Town’s project team
- Meetings and conference calls with internal stakeholders held from November 2017 to March 2018; numerous data and information transfers
- Review of interim outputs by the Town’s project team and other stakeholders, and incorporation of comments into the AM Plan.

2.2.1 State of Infrastructure

Financial accounting valuation uses historical costs and depreciation assumptions to determine the book value of capital assets in accordance with the Public Sector Accounting Board (PSAB). Policies and procedures relating to the development of net book values for accounting purposes have been developed by the Finance Department to comply with PSAB 3150 Tangible Capital Assets (TCA) reporting. In this AM Plan, departmental inventories and reports were compared to TCA data to determine the most up-to-date inventory to use. Overall, final inventory sources used included GIS, studies and reports, and modified versions of the TCA data, and department excel files.

The state of infrastructure summarizes the condition of Town assets. In this AM Plan, the term “condition” refers to the physical state of a group of assets, an asset or an asset element. An ongoing condition assessment program evaluates current physical condition, determines rate of deterioration over time, enables forecasts of future condition, and informs the most beneficial type and timing of treatment. Condition

assessment methods and rating systems have become relatively standard for many assets but vary depending on the type of asset. For those assets with no condition data, age-based “condition” is estimated as:

$$\% \text{ Life Remaining} = (\text{Expected Useful Life} - \text{Age}) / \text{Expected Useful Life}$$

Using age data as a surrogate for condition data is widely used in municipal organizations, but it can be misleading as age does not directly reflect condition.

2.2.2 Levels of Service

Ontario Regulation 588/17 outlines the required levels of service for core assets. Town staff, in collaboration with GHD, developed the Town’s performance metrics to meet regulation requirements. For non-core assets, GHD summarized levels of service that are currently being used based on workshop discussions and review of Town documents.

2.2.3 AM Strategy

Renewal strategies are generally based on typical rehabilitation and replacement treatments, applied at the appropriate time in an asset’s lifecycle, given its current condition. Renewal lifecycle treatments were discussed with Town staff to help refine estimates to reflect Town knowledge and experience. The impact of population growth on infrastructure is also discussed.

2.2.4 Financing Strategy

The Town’s Capital Plan is a list of projects (2018 to 2027) to support development, upgrade and renewal of the Town’s asset portfolios. This AM Plan estimates an average annual renewal investment (shorter term 10-year and longer term 50-year) that can be compared to the Town’s Capital Plan to help assess the financial sustainability of the Town’s asset portfolio. The financing strategy also discusses the amount of planned spending by the Town to address growth and expansion needs.

3. State of the Local Infrastructure

This section of the AM Plan is organized around answering the following questions:

- What do we own?
- What is it worth?
- What condition is it in?
- What is the remaining service life?

The state of infrastructure information has been structured at a high level by program area: Public Works (Transportation and Environmental Services), Leisure & Community Services, Fire & Emergency Services, and Financial Services & IT. Within each of these areas, the infrastructure is broken down into the asset hierarchy summarized in Table 3-1. The total estimated replacement value for corporate assets included in this AM Plan is \$821.9 million.

The AM Plan does not include Corporate Services, Development Services, or the Library, as these service areas do not manage significant infrastructure assets. The associated facilities for these services are managed and reported through Leisure & Community Services.

Table 3-1 Corporate Asset Inventory and Valuation (2017\$M)

Service Area		Asset Class		Replacement Value (2017\$M)	Average Age* (Years)
Public Works	Transportation	Roads		\$289.9	21.3
		Structures		\$21.0	14.5
		Street lights		\$27.2	-
		Traffic Signals		\$2.9	8.5
		Sidewalks		\$12.5	13.9
		Fleet		\$2.3	7.7
		Equipment		\$0.3	14.8
	Environmental Services	Water	Watermains	\$128.6	20.5
			Water Meters	\$3.6	12.1
		Waste Water	Sanitary Mains	\$51.4	21.8
			Storm	Storm Sewers	\$78.5
		Stormwater Management Ponds		\$42.3	-
		Fleet		\$0.2	3.0
		Equipment		\$0.1	5.1
Leisure & Community Services		Facilities		\$115.6	15.6
		Land Improvements		\$17.6	10.1
		Playgrounds & Pergolas		\$2.6	7.9
		Fleet		\$2.1	8.7
		Equipment		\$3.1	7.6
Fire & Emergency Services		Fire Stations		\$8.6	10.2
		Fleet		\$6.8	6.5
		Equipment		\$1.4	-
Financial Services & IT	IT	Hardware		\$1.2	-
		Software		\$2.3	-
Total				\$821.9	

*Average age is weighted by asset replacement value. Age is not available for asset classes missing construction/purchase dates.

To enable comparison of condition and condition trends over time between different asset types, a generic condition grading scale is often used to translate detailed engineering data about assets into information that the public and council can compare across asset groups. For this purpose, an industry standard general condition grading system was used based on the International Infrastructure Management Manual (IIMM), summarized in the table below.

Table 3-2 General Condition Grading System (from IIMM)

Grade	Description	Condition Criteria
VG	Very Good	Asset is physically sound and is performing its function as originally intended. Required maintenance costs are well within standards and norms. Typically, asset is new or recently rehabilitated.
G	Good	Asset is physically sound and is performing its function as originally intended. Required maintenance costs are within acceptable standards and norms but are increasing. Typically, asset has been used for some time but is still within early to mid-stage of its expected life.
F	Fair	Asset is showing signs of deterioration and is performing at a lower level than originally intended. Some components of the asset are becoming physically deficient and component replacement may be necessary. Maintenance requirements and costs are continuing to increase. Typically, asset has been used for a long time and is within the mid- to later stage of its expected life.
P	Poor	Asset is showing significant signs of deterioration and is performing to a much lower level than originally intended. A major portion of the asset is physically deficient. Required maintenance costs exceed acceptable standards and norms. Typically, asset is approaching the end of its expected life.
VP	Very Poor	Asset is physically unsound and/or not performing as originally intended. Asset has higher probability of failure or failure is imminent. Maintenance costs are unacceptable and rehabilitation is not cost effective. Replacement / major refurbishment are required.

Details relating to the condition of each asset are currently maintained in various databases and spreadsheets. The conversion of Town asset condition ratings, or asset age, to the above IIMM standard is provided in the table below for each asset class.

Table 3-3 Conversion of Industry Standard Condition to IIMM 5-Point Scale

	Roads		Bridges	Culverts	Traffic Signals, Sidewalks, Land Improvements, Playgrounds	Watermains, Water Meters, Sanitary Sewers, storm sewers	Facilities and Fire Stations		Fleet (excluding Fire*), Equipment
Condition Data	Pavement Condition Index (PCI)	% Life Remaining (Age-Based if PCI not available)	Bridge Condition Index (BCI)	Culvert Condition Index (CCI)	% Life Remaining (Age-Based)	% Life Remaining (Age-Based)	Facility Condition Index	Age (if FCI not available)	% Life Remaining (Age-Based)
Very Good	>85 to 100	>90 to 100	>85 to 100	>80 to 100	>90 to 100	>90 to 100	0 - 1.9%	0 to 9 years	>90 to 100
Good	>70 to 85	>50 to 90	>70 to 85	>60 to 80	>50 to 90	>50 to 90	2 - 4.9%	10 to 19 years	>50 to 90
Fair	>50 to 70	>25 to 50	>60 to 70	>40 to 60	>25 to 50	>25 to 50	5 - 9.9%	20 to 39 years	>0 to 50
Poor	>30 to 50	>10 to 25	>40 to 60	>20 to 40	>10 to 25	>10 to 25	10-19.9%	40 to 49 years	Up to 30% past service life
Very Poor	0 to 30	10% or less	0 to 40	0 to 20	10% or less	10% or less	20% and higher	50 or more years	30% or more past service life

Table 3-4 provides the replacement value for the Town’s assets and indicates how the condition estimate was developed for each asset group. “Not assessed” indicates that a condition estimate was not developed due to lack of condition information and/or installation date information.

Table 3-4 Summary of Basis of Condition Estimates

Service Area		Asset Class	Inventory	Inventory Source	Valuation Basis	Condition Basis	
Public Works	Transportation	Roads	215.5 km	Stantec Road Needs Inventory	Unit Construction Costs	Adjusted 2014 PCI	
		Structures	7 bridges 8 culverts	2016 Bridge and Culvert Inspection OSIM Report	Unit Construction Costs	2016 OSIM Report	
		Street lights	3401 lights	GIS	Unit Construction Costs	Not assessed	
		Traffic Signals	15 intersections 3 sets of beacons	Updated TCA inventory	TCA Costs supplemented with unit costs	Age (% Remaining Life)	
		Sidewalks	605 segments	TCA inventory	TCA Costs	Age (% Remaining Life)	
		Fleet	23 vehicles	Updated TCA inventory	TCA Costs	Age (% Remaining Life)	
		Equipment	40 assets	Updated TCA inventory	TCA Costs	Age (% Remaining Life)	
	Environmental Services	Water	Watermains	164.8 km	GIS	Unit Construction Costs	Age (% Remaining Life)
			Water Meters	12150 meters	GP- Water Meter Inventory (Town Excel file)	Unit Construction Costs	Age (% Remaining Life)
		Waste Water	Sanitary Mains	80.9 km	GIS	Unit Construction Costs	Age (% Remaining Life)
		Storm	Storm Sewers	96.5 km	GIS	Unit Construction Costs	Age (% Remaining Life)
			Stormwater Management Ponds	47 ponds, 0.45 sq.km.	GIS	Unit Construction Costs	Not assessed
		Fleet	5 vehicles	Updated TCA inventory	TCA Costs	Age (% Remaining Life)	
		Equipment	12 assets	Updated TCA inventory	TCA Costs	Age (% Remaining Life)	

Service Area		Asset Class	Inventory	Inventory Source	Valuation Basis	Condition Basis
Leisure & Community Services	Facilities	25 facilities	Updated Town facilities list	TCA Costs	BCAs (Age where BCA not available)	
	Land Improvements	158 assets	Updated TCA inventory	TCA Costs	Age (% Remaining Life)	
	Playgrounds & Pergolas	32 assets	Town inventory list (Excel File)	Unit Construction Costs	Age (% Remaining Life)	
	Fleet	52 vehicles	TCA inventory	TCA Costs	Age (% Remaining Life)	
	Equipment	275 assets	TCA inventory	TCA Costs	Age (% Remaining Life)	
Fire & Emergency Services	Fire Stations	2 fire stations	Updated Town facilities list	TCA Costs	BCAs	
	Fleet	17 vehicles	Town inventory list (Excel File)	Unit Purchase Costs	Age (% Remaining Life)	
	Equipment	773 assets	Town inventory list (Excel File)	Unit Purchase Costs	Not Assessed	
Financial Services & IT	IT	Hardware	1046 assets	Town inventory list (Excel File)	Unit Purchase Costs	Not assessed
		Software	11 enterprise applications and various licenses	Town inventory list (Excel File)	Unit Purchase Costs	Not assessed

The following figure shows the overall summary of the proportion of Town assets within each condition grade. The majority of the Town's assets are in at least fair condition (76.1%). The condition grade for \$91.4 million of assets is not assessed, as the condition could not be estimated with the available data. Street lights and stormwater ponds comprise \$69.5 million of the assets not assessed. The accuracy of the condition profile will improve as the Town improves its data and uses information from condition assessments to replace the age-based estimates.

Figure 3-1 Overall Asset Condition (2017\$M)

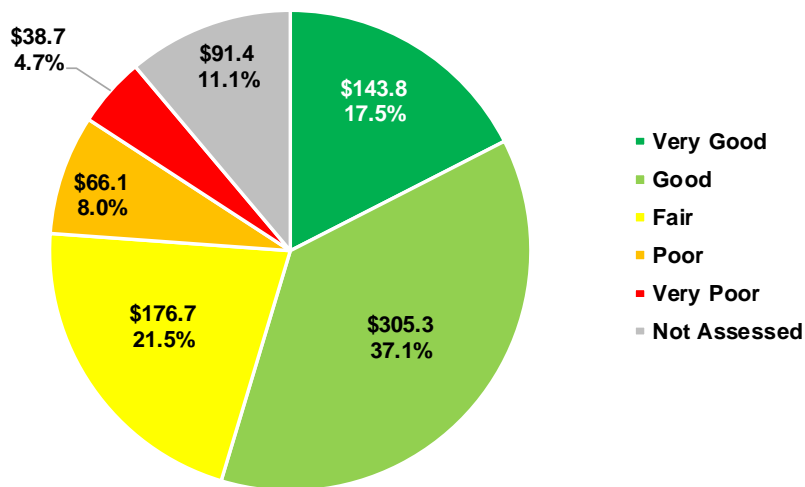
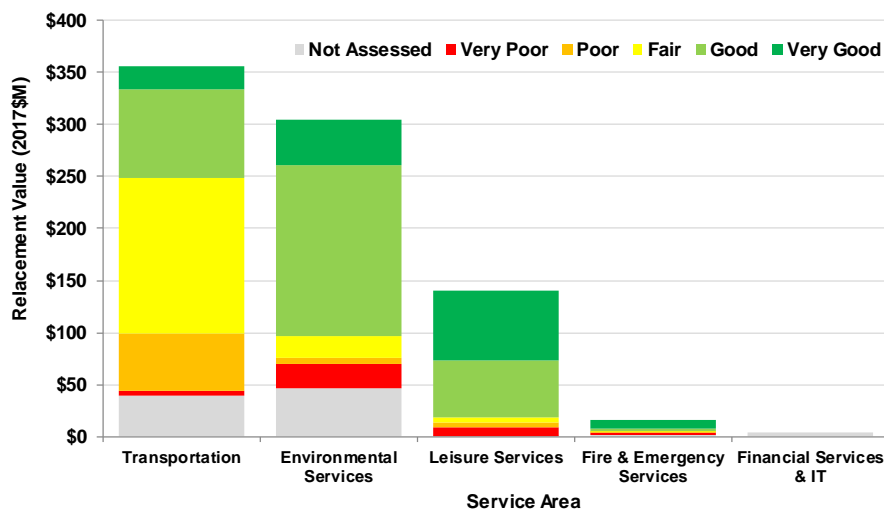


Figure 3-2 summarizes the asset condition profile for each service area (Public Works – Transportation, Public Works – Environmental Services, Leisure Services, Fire and Emergency Services, and Financial Services & IT). Details on the inventory and condition profiles within each service area is provided in Sections 3.1 to 3.5.

Figure 3-2 Overall Asset Condition (2017\$M), by Service Area



3.1 Public Works - Transportation

3.1.1 Overview

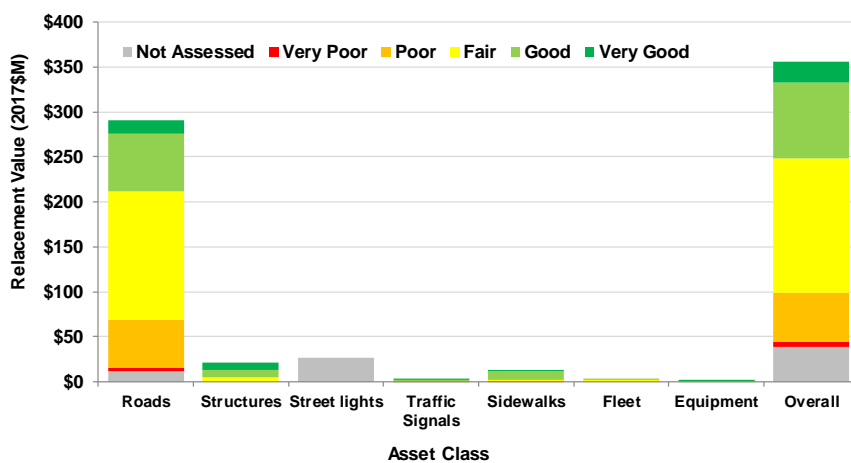
The Town’s Transportation infrastructure consists of roads, bridges, culverts, sidewalks traffic signals, street lights, fleet, and equipment. Public Works manages all of these assets and is responsible for maintaining, rehabilitating, and replacing the assets as required. The estimated overall transportation portfolio replacement value is **\$356.1 million**, broken down by asset class in the following figure.

Figure 3-3 Transportation Assets – Replacement Value (2017\$M)



Overall, 72.3% of transportation assets are in fair or better condition. The following figures summarizes the condition profile across the transportation portfolio. 11.0% of assets are not assessed for condition; this is mainly due to missing install date information for street lights in the GIS dataset.

Figure 3-4 Transportation Asset Condition (2017\$M)



3.1.2 Pavement

The Town maintains a 215.5 km roadway network consisting of arterial, urban, and rural roads, as summarized in Table 3-5. Urban roads comprise 153.5 km of the network. Replacement values were calculated based on unit construction costs by area (sq.m.).

Table 3-5 Pavement Inventory (2017\$M)

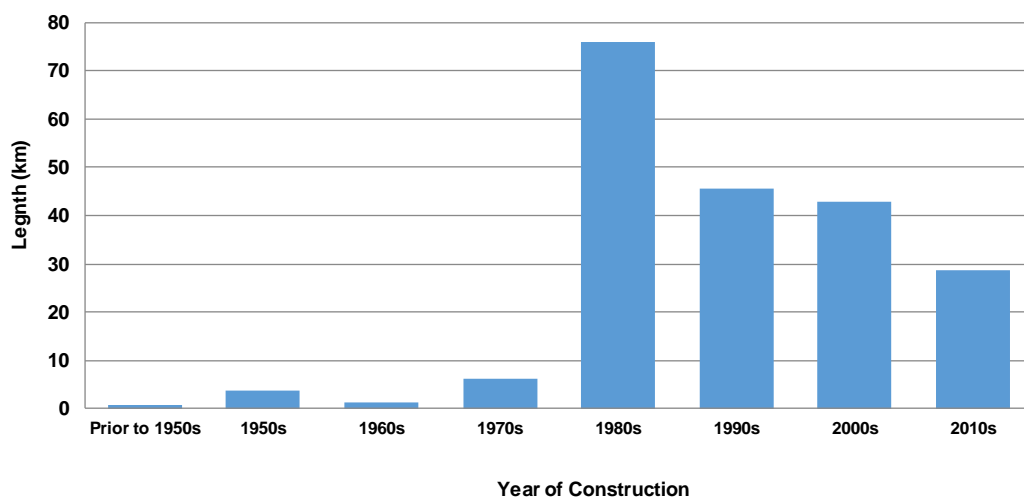
Functional Class	Pavement Type	Length (m)	Area (sq.m.)	Unit Cost (\$/sq.m.)	Replacement Value (2017\$M)
Arterial Road	HCB*	10,696	96,002	\$213.0	\$20.5
	LCB**	483	3,474	\$213.0	\$0.7
Arterial Road Total		11,179	99,477		\$21.2
Urban Road	HCB*	143,701	1,141,559	\$175.0	\$199.8
	LCB**	9,814	66,969	\$175.0	\$11.7
Urban Road Total		153,515	1,208,528		\$211.5
Rural Road	HCB*	19,727	128,403	\$175.0	\$22.5
	LCB**	31,089	198,670	\$175.0	\$34.8
Rural Road Total		50,816	327,073		\$57.2
Total		215,509	1,635,077		\$289.9

*HCB - High Class Bituminous

**LCB – Low Class Bituminous

A significant portion of the roadway network has been built since the 1980s, aligning with overall Town growth (refer to Figure 3-5).

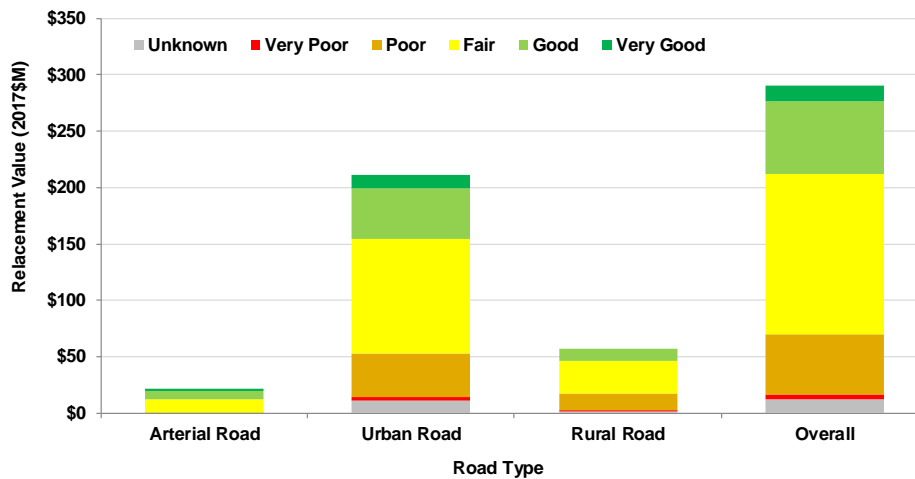
Figure 3-5 Pavement Installation Profile (by length)



In 2016, the Town retained Stantec Consulting Ltd. (Stantec) to collect pavement condition data; however, the Pavement Condition Index (PCI) scores were not available

during development of this AM Plan. PCI scores from the previous assessment (2013) were used, adjusted to reflect 4 years of deterioration and any capital treatments applied since 2014, to determine an adjusted PCI score for 2017. For purposes of aligning with the corporate 5-point condition scale, the PCI was converted based on the scale in Table 3-3. The following figure summarizes the condition profile of Town pavement based on the 5-point scale. 20% of roads are in poor or very poor condition.

Figure 3-6 Overall Pavement Condition (2017\$M)



3.1.3 Structures

Town structures consist of 15 major bridges and culverts with a replacement value of \$21.0 million (refer to Table 3-6). The inventory is based on the 2016 condition assessments.

Table 3-6 Structure Inventory (2017\$M)

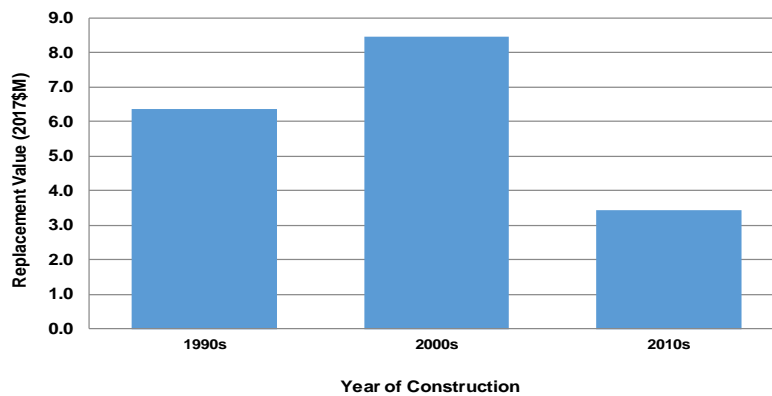
Structure Type	Material	# of Structures	Replacement Value (2017\$M)
Bridge	CIP	3	\$1.7
	Precast	4	\$10.2
		7	\$11.9
Culvert	CSP	4	\$2.2
	Precast	4	\$6.9
		8	\$9.1
Total		15	\$21.0

Unit construction costs, summarized in Table 3-7 were developed to determine the replacement value of each structure based on deck area.

Table 3-7 Structure Unit Costs

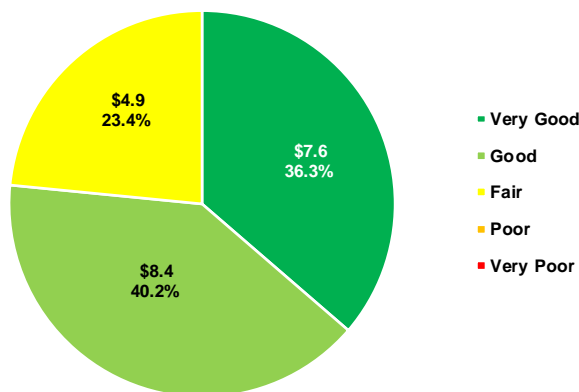
Structure Type	Area, Material	Unit Cost (\$/sq.m.)
Bridges	<=100m ² : Concrete	\$7,500
	>100m ² : Concrete	\$6,000
Culverts	<=100m ² : Steel	\$4,500
	<=100m ² : Concrete	\$6,500
	>100m ² : Steel	\$3,500
	>100m ² : Concrete	\$5,000

Figure 3-7 Structures Installation Profile (2017\$M)



The historical installation profile (Figure 3-7) indicates that all structures in the portfolio were built within the last 30 years.

Figure 3-8 Structure Condition Profile (2017\$M)



In 2016, inspections on each structure were performed to develop a Bridge Condition Index (BCI) and Culvert Condition Index (CCI). To align with the corporate scale, the BCI and CCI were mapped to the 5-point scale (refer to Table 3-3), resulting in the condition profile in Figure 3-8. In 2016, all structures were in at least fair condition.

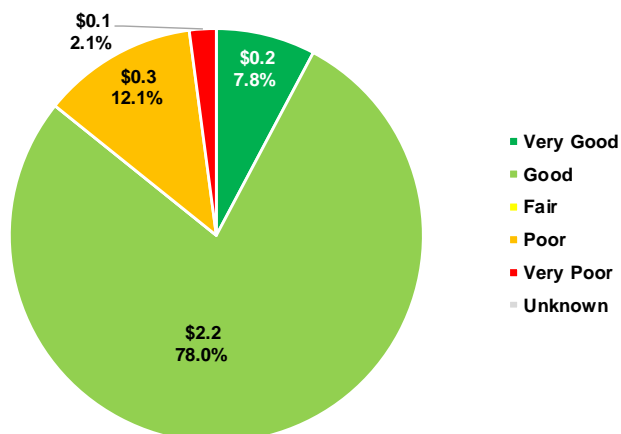
3.1.4 Signals

The Town maintains an inventory of traffic signals through its maintenance agreement with York Region. Valuations of the signals are based on TCA costs supplemented with Town staff input. The signals inventory and replacement value is summarized in Table 3-9.

Table 3-8 Signals Inventory (2017\$M)

Signal	# of Intersections	Replacement Value (2017\$M)
Road	14	\$2.6
Pedestrian	1	\$0.1
Beacons	3 (2 beacons at each)	\$0.2
Total	18	\$2.9

Figure 3-9 Signals Condition Profile (2017\$M)



As part of the maintenance agreement, the Region inspections assist in identifying repairs and replacements, but do not identify specific condition scores. The condition profile is based on age converted to the 5-point scale based on Table 3-3.

3.1.5 Street Lights

The street light inventory is maintained in GIS and valuations are based on unit costs, summarized in Table 3-9 .

Table 3-9 Street Light Inventory (2017\$M)

Asset	# of Assets	Unit Cost	Current Replacement Value (2017\$M)
Luminaires	3,401	\$2,000	\$6.8
Poles	3,401	\$6,000	\$20.4
Total			\$27.2

Construction date information is not available in the GIS dataset, and therefore, the condition profile for street lights has not been assessed.

3.1.6 Sidewalks

The Town is currently developing its sidewalk inventory in GIS. For this AM Plan, the sidewalk inventory is based on TCA data and does not include asphalt sidewalks (bike paths). The overall sidewalk inventory's replacement value is estimated to be \$12.5 million based on TCA costs. Significant growth in the inventory has occurred in the last 10 years, as shown in Figure 3-10.

Figure 3-10 Sidewalks Installation Profile (2017\$M)

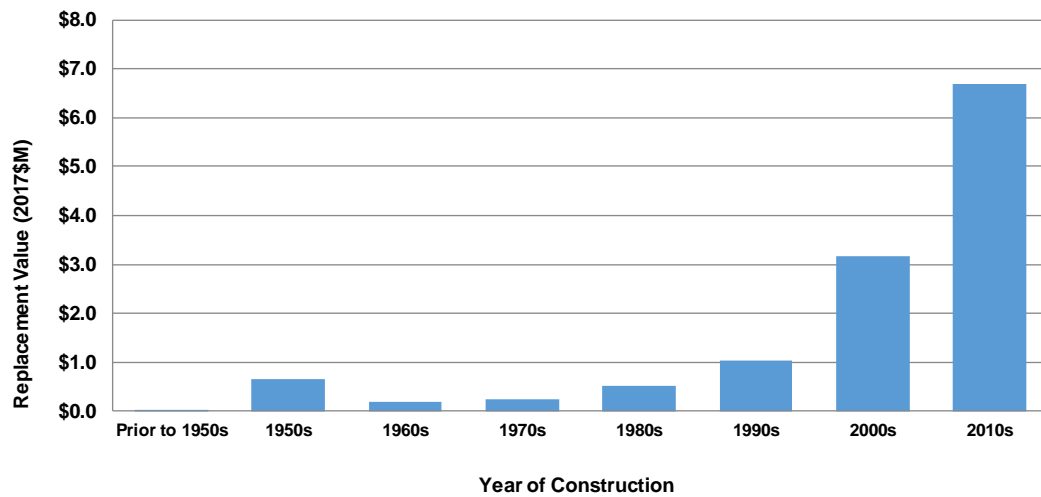
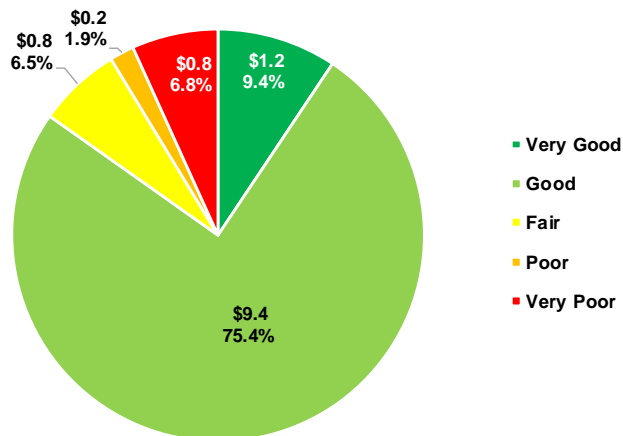


Figure 3-11 Sidewalks Condition Profile (2017\$M)



Based on age, 91.3% of sidewalks are in at least fair condition, as shown in Figure 3-11.

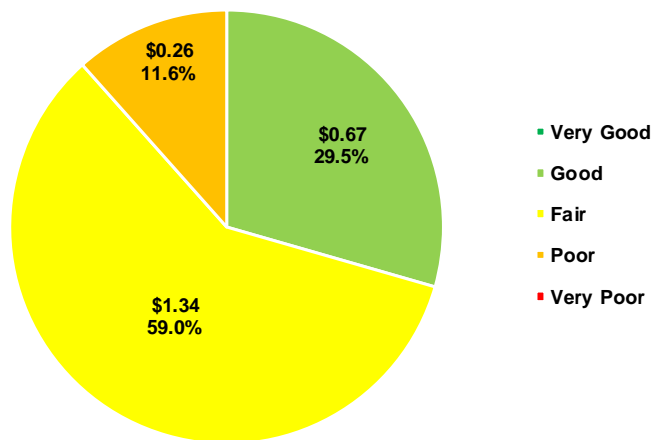
3.1.7 Fleet

The Transportation Services department maintains 28 fleet assets, with a total value of \$2.5 million based on TCA costs (refer to Table 3-10).

Table 3-10 Transportation Services Fleet Inventory (2017\$M)

Fleet Type	# of Vehicles	Replacement Value (2017\$M)	Service life
Dump Truck	8	\$1.5	12
Light Duty Vehicle	8	\$0.2	7
Tractor/Loader	3	\$0.4	15
Trailers	4	\$0.1	15
Total	28	\$2.5	

Figure 3-12 Transportation Services Fleet Condition (2017\$M)



Based on a service life of 7 to 15 years and the conversion of percent remaining life to the 5-point scale in Table 3-3, two assets (\$670k) are past service life and therefore in poor condition.

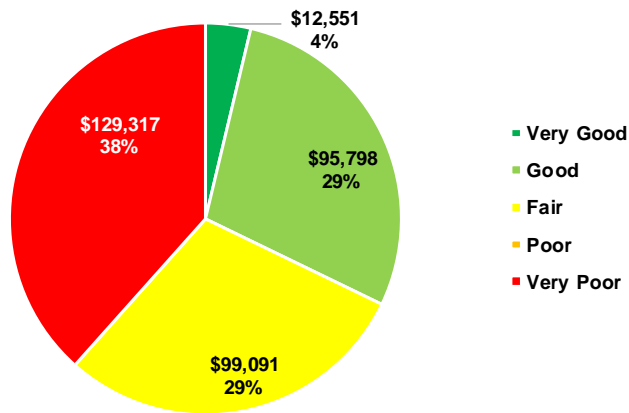
3.1.1 Equipment

The Town has 40 equipment assets in Transportation Services totalling a value of \$336k based on TCA costs. The inventory is summarized in the following table.

Table 3-11 Transportation Service Equipment Inventory (2017\$)

Equipment	# of Assets	Replacement Value (2017\$)	Service Life
Equipment-Equipment	37	\$271,527	
Large Tools	6	\$22,641	10
Plowing Equipment	1	\$27,003	10
Power Tools	26	\$131,461	10 to 15
Trailers	4	\$90,422	10 to 15
Equipment-Standby Power	2	\$51,349	
Diesel Generator	2	\$51,349	15
Other-Support	1	\$13,881	
Hand-Held GPS	1	\$13,881	10
Total	40	\$336,757	

Figure 3-13 Transportation Services Equipment Condition (2017\$)



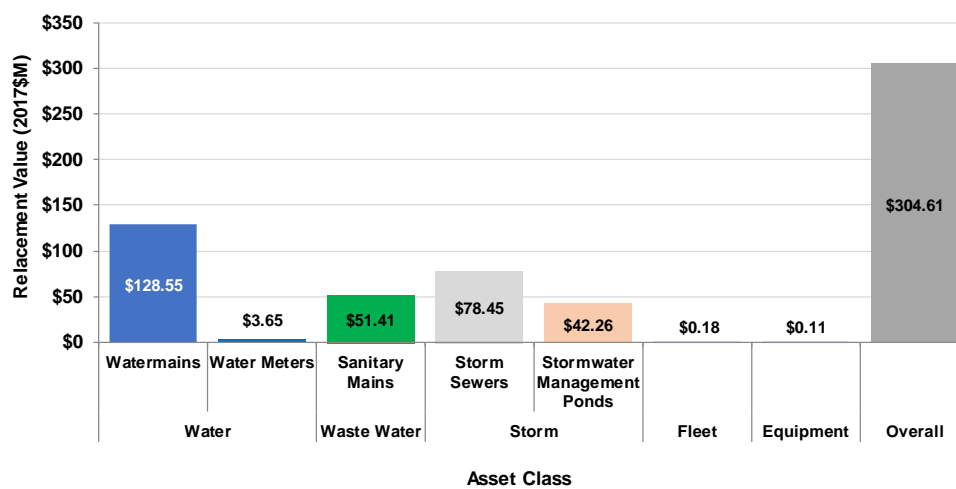
Based on a service life of 10 to 15 years and the conversion of percent remaining life to the 5-point scale in Table 3-3, 38% of equipment assets are past service life and in very poor condition.

3.2 Public Works – Environmental Services

3.2.1 Overview

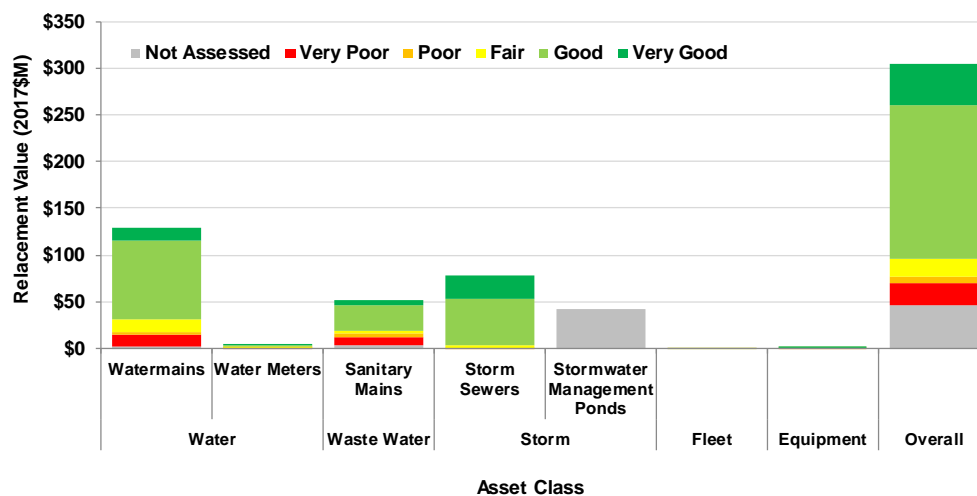
The Town’s Environmental Services infrastructure consists of water, wastewater, storm, fleet, and equipment. Public Works manages all of these assets and is responsible for maintaining, rehabilitating, and replacing the assets as required. The estimated overall environmental portfolio replacement value is **\$304.6 million**, broken down by asset class in the following figure.

Figure 3-14 Environmental Assets – Replacement Value (2017\$M)



Overall, 75.0% of environmental assets are in fair or better condition (see following figure). 15.4% of assets are not assessed for condition, mainly due to the lack of install date and condition information on stormwater ponds.

Figure 3-15 Environmental Asset Condition (2017\$M)



3.2.2 Water Services

3.2.2.1 Watermains

The Town maintains 164.8 km of watermains based on the GIS dataset, valued at \$128.6 million, including appurtenances (valves and hydrants) as shown in Table 3-12. Unit costs by pipe diameter are summarized in Table 3-13.

Table 3-12 Watermains Inventory (2017\$M)

Material	Length (m)	Replacement Value (2017\$M)	Service Life
Cast Iron	5,899	\$4.4	50
Copper	536	\$0.2	50
Ductile Iron	32,409	\$23.7	50
High Density Polyethylene	1,044	\$0.7	80
Polyethylene	43	\$0.0	80
Polyvinyl Chloride	124,685	\$99.4	80
Not specified	213	\$0.1	80
Total	164,830	\$128.6	

Table 3-13 Unit Costs

Size (mm)	Unit (\$/m)
25	\$300
50	\$376
100	\$685
150	\$710
200	\$750
250	\$760
300	\$770
350	\$1,128
400	\$1,943
450	\$2,500

Similar to roads, a significant portion of the watermain network was built since the 1980s, aligning with overall Town growth (refer to Figure 3-16).

Figure 3-16 Watermain Installation Profile (2017\$M)

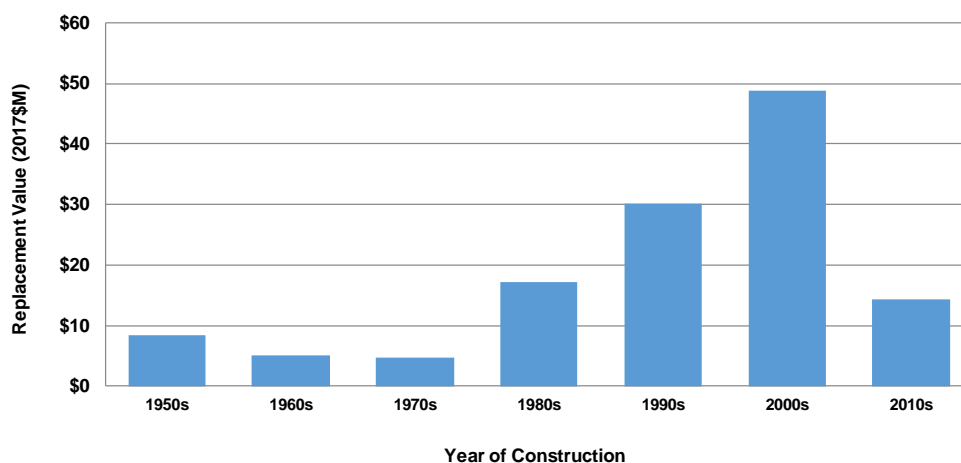
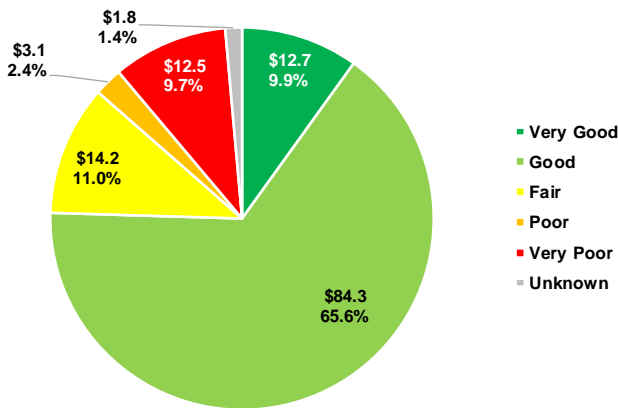


Figure 3-17 Watermain Condition (2017\$M)

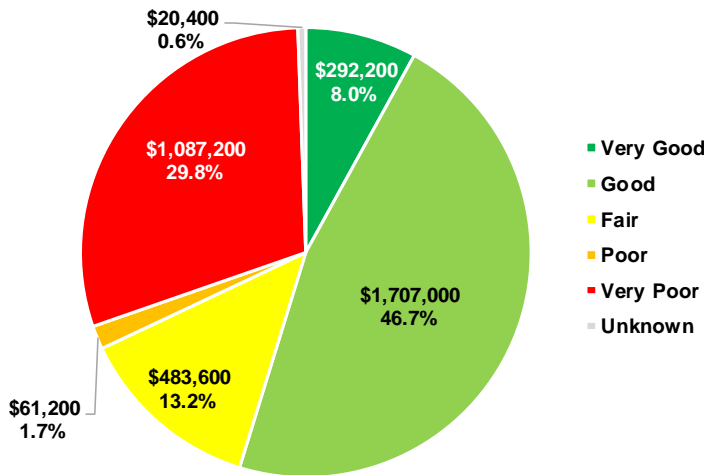


The \$12.5 million of mains in very poor condition shown in Figure 3-17 is comprised mainly of cast iron and ductile iron pipe installed in the 1950s and 1960s. The condition is based on remaining useful life (asset age compared to service lives in Table 3-12). The percent remaining useful life is converted to the 5-point condition scale as summarized in Table 3-3.

3.2.2.2 Water Meters

The Town has an excel inventory summarizing the accounts for 12,172 meters. At a unit cost of \$300 per water meter, the estimated replacement value is \$3.65 million.

Figure 3-18 Water Meters Condition (2017\$)



Using age and a 20-year asset life, 29.8% of meters are due for replacement, as shown in the following condition profile.

3.2.3 Wastewater Services

The Town has 80.9 km of sanitary sewers based on GIS dataset, valued at \$51.4 million, including appurtenances (manholes and valves) as shown in Table 3-14. Unit costs by pipe diameter are summarized in Table 3-15.

Table 3-14 Sanitary Sewers Inventory (2017\$M)

Material	Length (m)	Replacement Value (2017\$M)	Service Life
Asbestos Concrete	4,076	\$2.7	80
Concrete Pipe	7,804	\$8.5	80
Polyvinyl Chloride	49,551	\$28.9	80
Ribbed Polyvinyl Chloride	1,685	\$0.9	80
Vitrified Clay	17,793	\$10.3	50
Not identified	26	\$0.0	80
Total	80,935	\$51.4	

Table 3-15 Unit Costs

Diameter (mm)	Unit Cost (\$ per m)
200	\$530
300	\$655
450	\$1,015
600	\$1,293
900	\$1,859
1050	\$2,148
1350	\$2,740
1500	\$3,041
1800	\$3,655
2100	\$4,295

Over \$10 million of the sanitary sewer network was installed over 60 years ago, as shown in Figure 3-19.

Figure 3-19 Sanitary Sewer Installation Profile (2017\$M)

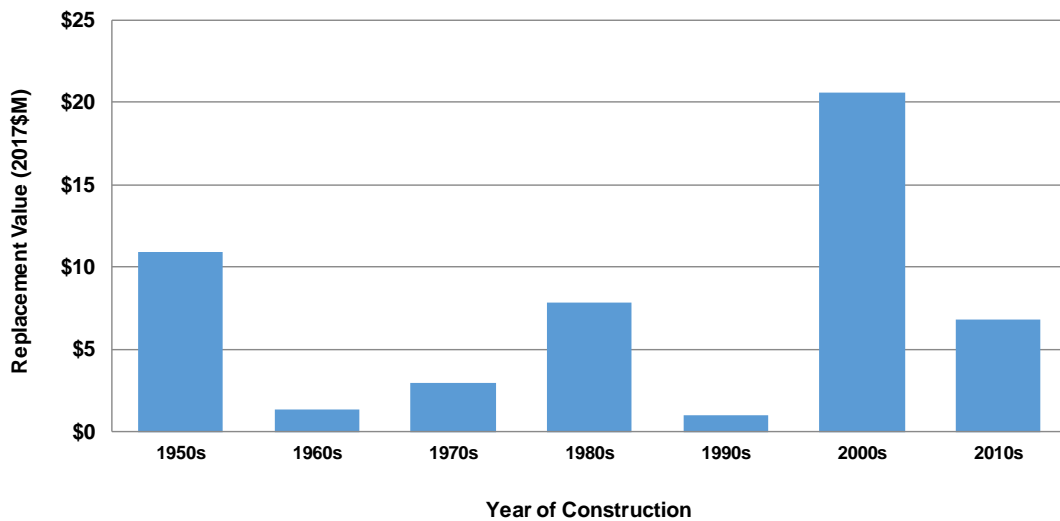
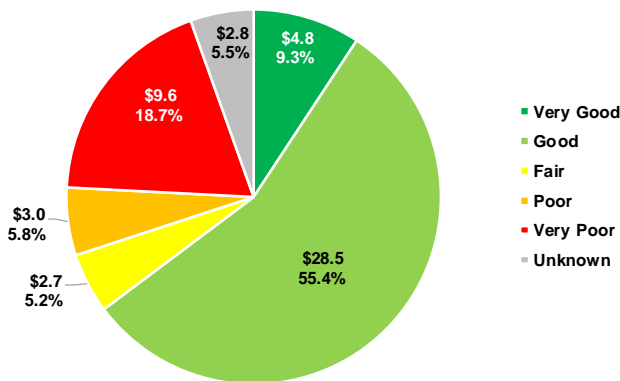


Figure 3-20 Sanitary Sewer Condition (2017\$M)



The condition of sanitary sewers is based on remaining useful life (asset age compared to service lives in Table 3-12), and the percent remaining useful life is converted to the 5-point condition scale as summarized in Table 3-3. 18.7% of sanitary sewers are in very poor condition (vitrified clay pipes installed in the 1950s and 1960s).

3.2.1 Stormwater Services

3.2.1.1 Storm Sewers

The Town’s network of stormwater pipes is valued at \$78.5 million, including appurtenances (catchbasins and valves) as shown in Table 3-16. Unit costs by pipe diameter are summarized in Table 3-17.

Table 3-16 Storm Sewers Inventory (2017\$M)

Material	Length (m)	Replacement Value (2017\$M)	Service Life
Concrete Pipe	69,437	\$61.4	80
Corrugated Steel Pipe	720	\$0.4	80
Polyethylene	95	\$0.1	80
Polyvinyl Chloride	16,913	\$9.6	80
Ribbed Polyvinyl Chloride	2,184	\$1.2	80
Unknown	7,125	\$5.8	80
Total	96,474	\$78.5	

Table 3-17 Unit Costs

Diameter (mm)	Unit Cost (\$ per m)
150	\$296
375	\$630
450	\$675
525	\$710
675	\$810
1050	\$1,342
1350	\$1,711
1500	\$1,899
1800	\$2,282
2100	\$2,682

Figure 3-21 shows the installation profile over the last 60 years. Similar to the road and water network, the majority of storm sewers were installed since the 1980s.

Figure 3-21 Storm Sewer Installation Profile (2017\$M)

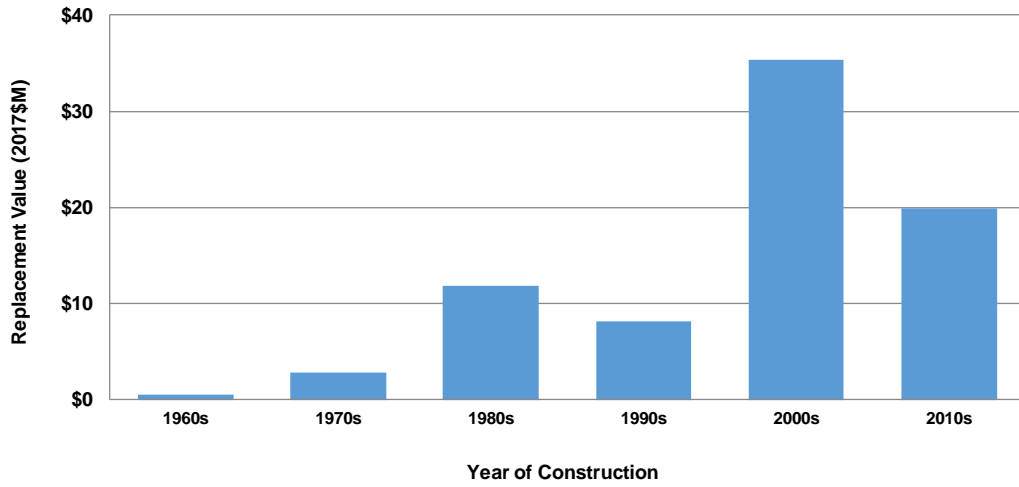
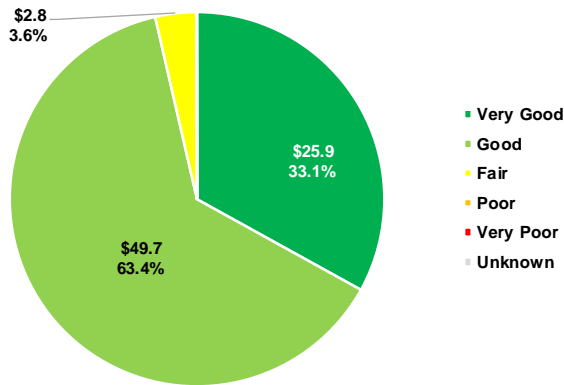


Figure 3-22 Storm Sewer Condition (2017\$M)



The condition of storm sewers is based on remaining useful life (asset age compared to service lives in Table 3-12), and the percent remaining useful life is converted to the 5-point condition scale as summarized in Table 3-3. All storm sewers are in at least fair condition based on age.

3.2.1.2 Stormwater Ponds

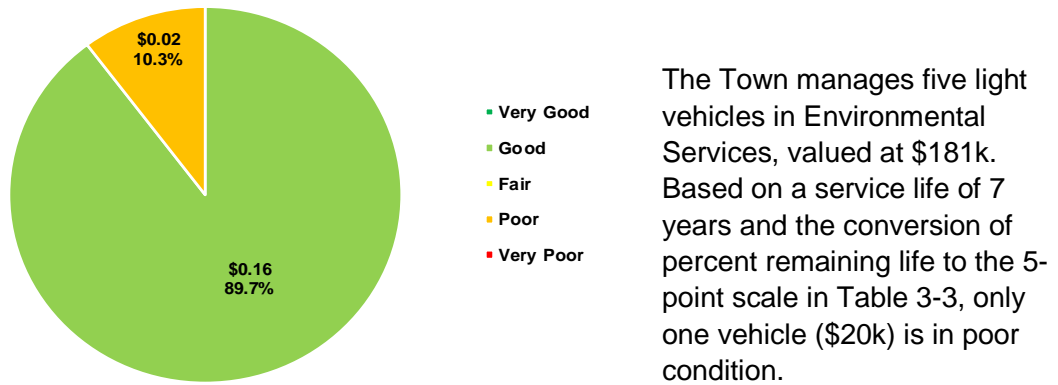
There are 47 stormwater ponds owned by the Town (identified as ‘assumed’ in the GIS dataset). The valuation of the 47 ponds is calculated using an average unit cost of \$93 per square meter. This unit cost was based on the construction value of the 29,939 sq.m. Beltline Pond (Hoover Park Drive), which cost \$2.79 million. Condition was not assessed for stormwater ponds due to lack of condition information and construction year data in the GIS dataset.

Table 3-18 Stormwater Pond Inventory (2017\$M)

Pond Type	# of Ponds	Area (sq.m.)	Unit Cost (\$/sq.m.)	Replacement Value (2017\$M)
Dry	17	43,993	\$93	\$4.1
Wet	30	410,461	\$93	\$38.2
Total	47	454,454		\$42.3

3.2.2 Fleet

Figure 3-23 Environmental Services Vehicles Condition (2017\$M)



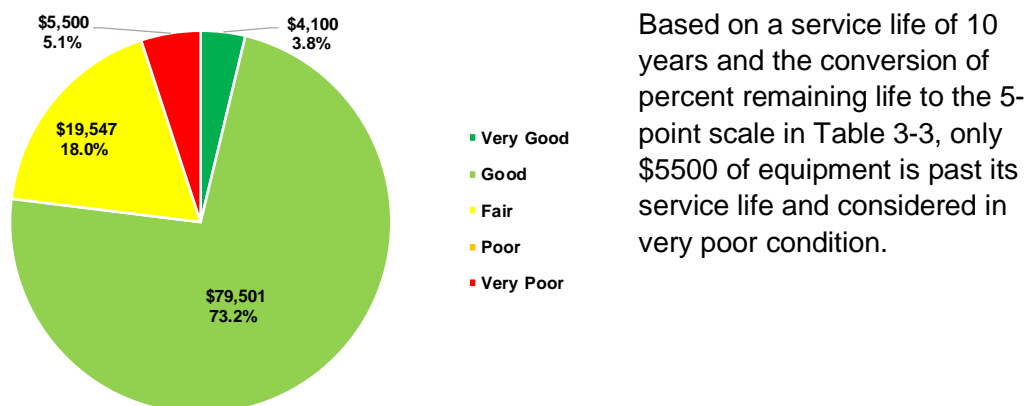
3.2.3 Equipment

The Town has 12 equipment assets in Environmental Services with a total value of \$108k based on TCA costs. The inventory is summarized in the following table.

Table 3-19 Environmental Service Equipment Inventory (2017\$)

Equipment	# of Assets	Replacement Value (2017\$)	Service Life
Equipment-Equipment	11	\$32,147	
Power Tools	10	\$17,600	10 to 15
Other Equipment	1	\$14,547	10
Water-Water Structure	1	\$76,501	
Bulk Water Station	1	\$76,501	10
Total	12	\$108,649	

Figure 3-24 Environmental Services Equipment Condition (2017\$)

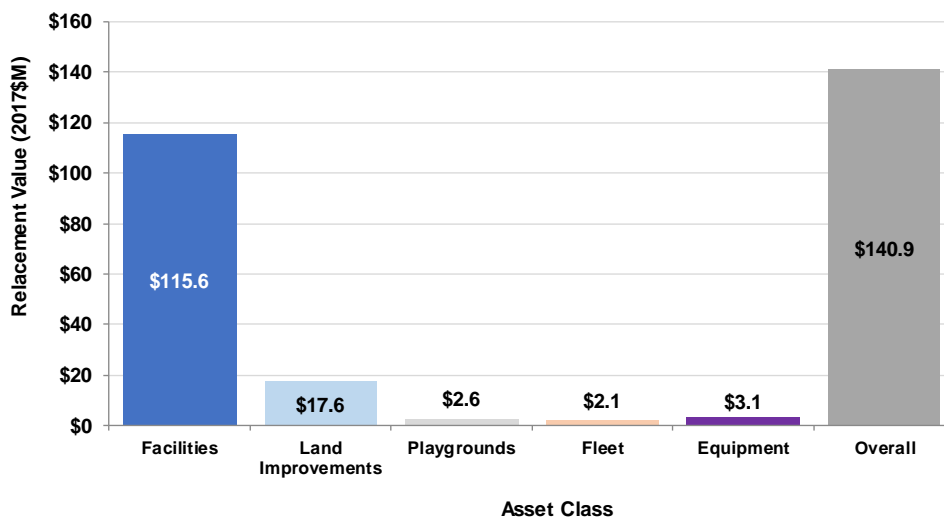


3.3 Leisure Services

3.3.1 Overview

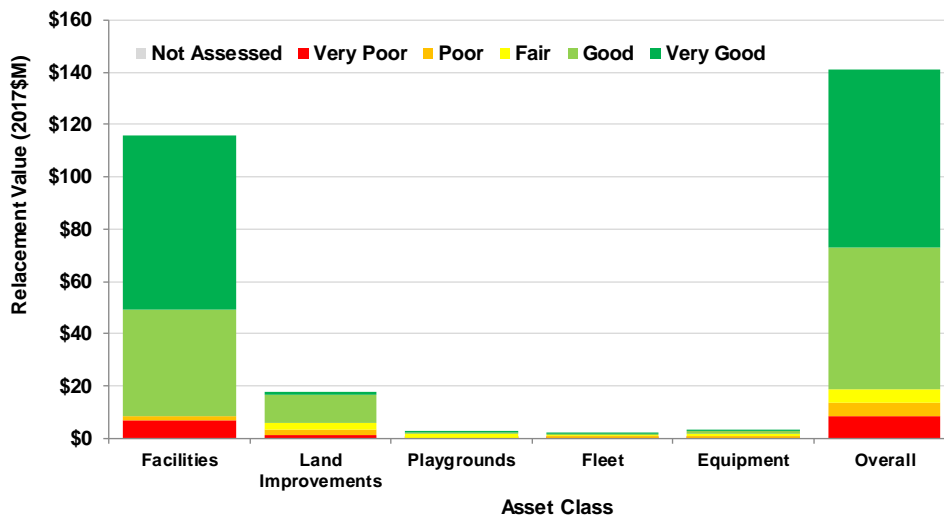
The Town’s Leisure Services portfolio consists of facilities, land improvements (ball diamond tennis courts, etc.), playgrounds, fleet, and equipment. Leisure Services is responsible for maintaining, rehabilitating, and replacing the assets as required. The estimated overall Leisure Services portfolio replacement value is **\$140.9 million**, broken down by asset class in the following figure.

Figure 3-25 Leisure Services Assets – Replacement Value (2017\$M)



Overall, 90.4% of Leisure Services assets are in fair or better condition. The following figures summarize the condition profile across the portfolio.

Figure 3-26 Leisure Services Asset Condition (2017\$M)



3.3.2 Facilities

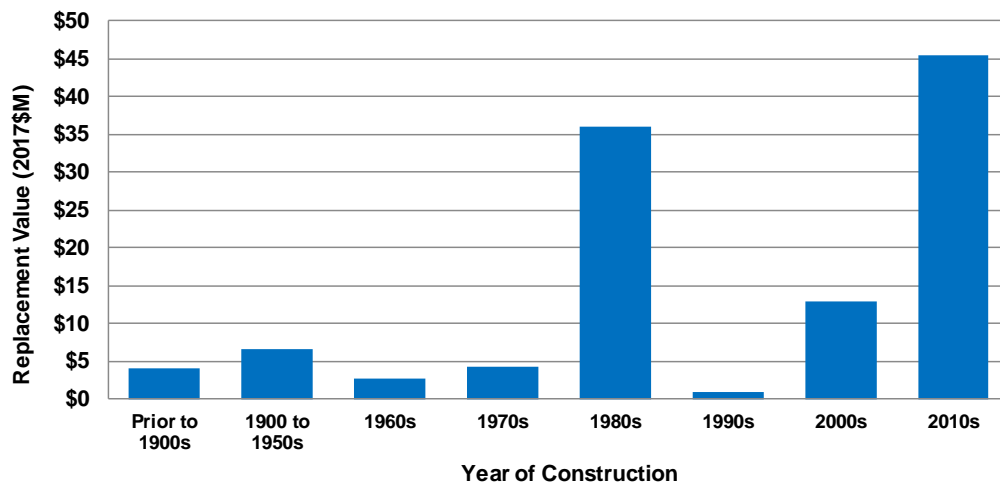
The Town owns and manages 25 facilities under Leisure Services, covering municipal offices, recreation, culture, museums, and park facilities. The two fire stations are funded through the Fire budget, and are included in the Fire & Emergency Services section. The facility valuations are based on TCA data and supplemented by Town staff estimates where valuations were not available. During development of this AM Plan, the Town was completing insurance valuations on their facilities. A preliminary comparison of some of the insurance values indicated that most were in line with the valuations used in this AM Plan, but for the Museum (Visitor's Centre), Stouffville Arena, and Operations centre, the preliminary insurance valuations were significantly less than that reported in the AM Plan. Future updates to the AM Plan should incorporate the final facility insurance valuations as they provide a more accurate valuation of current construction costs compared to the inflated TCA values.

Table 3-20 Facility Inventory

Facility Type	Facility	Replacement Value (2017\$M)
General	Whitchurch-Stouffville Municipal Office	\$11.8
		\$11.8
Cultural Services	19 on the Park	\$4.6
Museums	Whitchurch-Stouffville Museum (Visitors & Community Centre)	\$9.1
	Whitchurch-Stouffville Museum (Boggarttown)	\$1.0
	Whitchurch-Stouffville Museum (Vandorf Schoolhouse)	\$0.8
	Whitchurch-Stouffville Museum (Log Cabin)	\$0.3
	Whitchurch-Stouffville Museum (Barn)	\$0.8
	Whitchurch-Stouffville Museum (Brown House)	\$0.9
	Whitchurch-Stouffville Museum (Shed)	\$0.2
Parks	Bethesda Park Sports Fieldhouse	\$0.9
	Ballantrae Field House	\$0.6
	Bethesda Parks Shop /Storage Building	\$0.4
Recreation	6240 Main	\$1.9
	Ballantrae Community Centre	\$2.7
	Latcham Hall	\$1.5
	Lawnbowling Club House	\$0.7
	Lemonville Community Centre	\$1.3
	Stouffville Arena	\$24.2
	Stouffville Clippers Sports Complex	\$24.7
	Parks Depot	\$0.9
	Stouffville Train Station	\$0.9
	Whitchurch-Stouffville Leisure Centre	\$12.9
		\$91.3
Operations	Operations Centre	\$11.2
	Operations Centre Storage Building	\$0.2
	Operations Sand & Salt Building	\$1.1
		\$12.5
		\$115.6

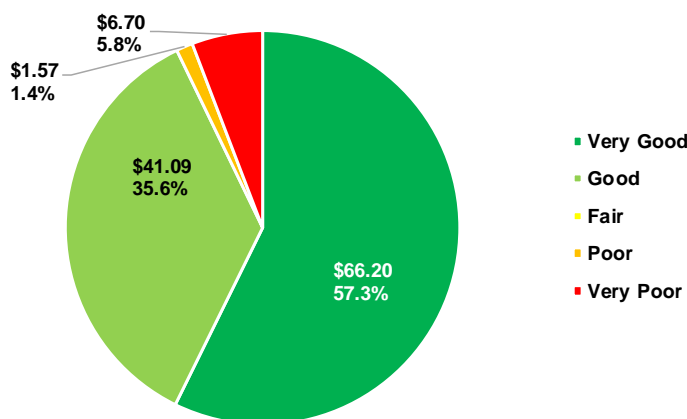
A steady investment in new facilities within the Town occurred through the 1980s, followed by higher growth in the last 10 years (refer to the facility installation profile in Figure 3-27). The installation profile is based on the original construction date, and does not reflect major additions/refurbishments since original facility construction.

Figure 3-27 Facility Installation Profile (2017\$M)



The Town completed ten building condition assessments (BCAs) during development of this AM Plan (March 2018). For each of these ten facilities, a Facility Condition Index (FCI) was calculated ($FCI = \text{deferred maintenance} / \text{value of facility}$), and then mapped to the 5-point condition scale in Table 3-3 to determine an overall facility condition rating. Deferred Maintenance was identified in the BCAs as the work required in 2018 and 2019 for each facility. The age of the facility was used for the remaining facilities for which BCAs were not completed. The only facilities classified as poor or very poor were those analysed based on age-based condition estimates (buildings 40 years or older). Actual BCA data will improve the accuracy of this condition profile in future updates of this AM Plan.

Figure 3-28 Facility Condition Profile (2017\$M)



3.3.3 Parks

The Town's park infrastructure consists of parks and open spaces that contribute to the environmental and social health of the Town. In this AM Plan, assets considered are playgrounds and land improvements. Tree inventory data (both urban and rural) is currently being updated by the Town and only a qualitative discussion is included in this AM Plan.

3.3.3.1 Land Improvements

The land improvements inventory is based on TCA data and refinements through workshop sessions with Town staff. Table 3-21 summarizes a land improvement inventory of \$17.6 million, comprised of 159 assets.

Table 3-21 Land Improvements Inventory (2017\$M)

Land Improvement	# of Assets	Replacement Value (2017\$M)	Service life
Ball Field	10	\$3.72	25
Bleachers / Benches	1	\$0.06	15
Cemetery	1	\$0.08	20
Fence	5	\$0.08	15
Fitness equipment	2	\$0.11	10
Garden	2	\$0.08	25
Irrigation Building	1	\$0.02	25
Jumping Pit	1	\$0.02	15
Lawn Bowling	1	\$0.22	15
Multi-purpose Play Courts	9	\$0.89	25
Parking Lot*	14	\$2.37	25
Picnic Shelter	1	\$0.15	15
Running Track	1	\$0.38	25
Skateboard Park	1	\$0.53	25
Skateboard Park Kit	1	\$0.07	25
Soccer Pitch - Mini/Micro Field	24	\$1.24	25
Soccer Pitches - Lit	3	\$0.63	25
Soccer Pitches - Unlit	3	\$0.31	25
Splash Pad	7	\$0.99	15
Storage Building	4	\$0.43	25
Tennis Courts	12	\$1.10	25
Trail	53	\$3.74	25
Water Supply & Distribution Systems	2	\$0.38	20
Total	159	\$17.59	

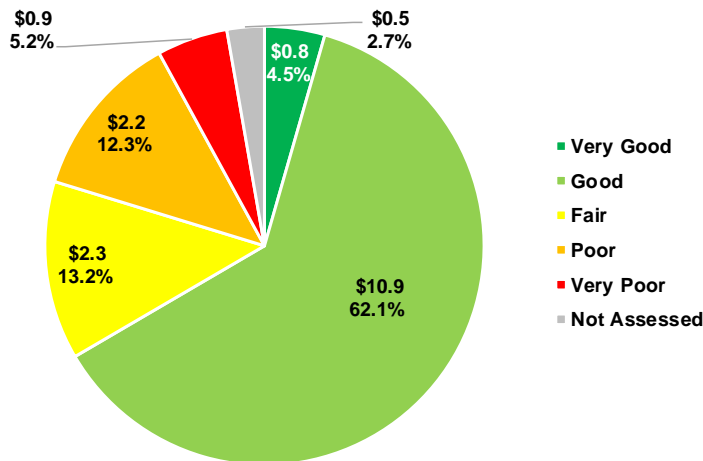
*Parking lots associated with parks, etc. (facility parking lots are included in Section 3.3.2)

Table 3-21 includes trails based on TCA data. The Town also maintains a separate inventory of trails in GIS, summarized in Table 3-22. As the Town improves this inventory to include trail widths, unit costs may be used to determine a more accurate replacement value.

Table 3-22 Trails Inventory (2017)

Trail Type	Material	# of Segments	Length (m)
Bicycle Path/Sidewalk in Boulevard	Asphalt	23	4,879
	Total	23	4,879
Naturalized Trail	Packed Dirt	2	1,743
	Screening	23	3,370
	Total	25	5,114
Off-Road Multi Use Trail	Asphalt	183	12,220
	Packed Dirt	2	52
	Pavement	29	1,636
	Screening	40	3,126
	Unknown	3	149
	Total	257	17,183
Total		305	27,176

Figure 3-29 Land Improvements Condition Profile (2017\$M)



The outdoor structures included in this AM Plan have a range of service life from 15 to 25 years. Asset condition was estimated based on age and percent remaining life, according to the conversion in Table 3-3. Almost all assets have been built in the last 30 years, with 5.2% reaching the last 10% of its life (very poor condition).

3.3.3.2 Playgrounds

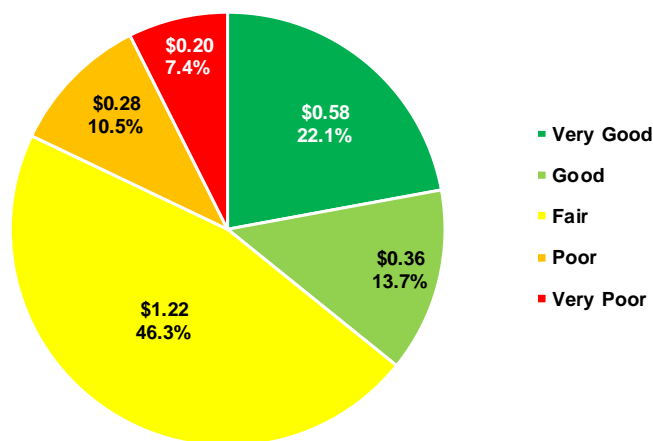
The Town has an inventory of 28 playgrounds, two shade structures, and two exercise equipment assets with an estimated replacement value of \$2.4 million. Replacement

value was based on unit costs. Shade structures associated with playgrounds are included in the playground costs.

Table 3-23 Playgrounds and Shade Structure Inventory

Playground Type	# of Playgrounds	Replacement Value (2017\$M)	Service life	Unit Cost (\$/asset)
1 Multi Use Structure	21	\$1.37	15	
With curbs & shade structure	11	\$0.72	15	\$65,000
No curbs/shade structure	10	\$0.65	15	\$65,000
1 Toddler & 1 Junior	13	\$1.04	15	
With curbs & shade structure	12	\$0.96	15	\$80,000
No curbs/shade structure	1	\$0.08	15	\$80,000
Shade Structure Only	4	\$0.20	15	
Shade Structure	4	\$0.20	15	\$50,000
Exercise Equipment Only	2	\$0.02	15	
No curbs/shade structure	2	\$0.02	15	\$10,000
Total	40	\$2.63		

Figure 3-30 Playgrounds Condition Profile (2017\$M)



The Town regularly inspects playgrounds to identify defects and repairs to meet CSA compliance. Condition ratings are not captured in these inspections and therefore the condition profile is calculated based on age and an expected service life of 15 years (refer to Figure 3-30).

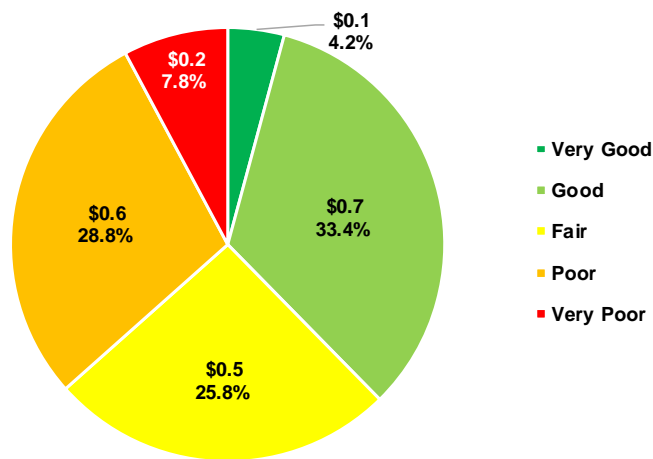
3.3.4 Fleet

Leisure Services manages the inventory of 52 vehicles with a replacement value of \$2.07 million, based on TCA data. The inventory is summarized in Table 3-24 including the number of vehicles by type and expected service life.

Table 3-24 Leisure Services Fleet Inventory (2017\$)

Vehicle	# of Vehicles	Replacement Value (2017\$M)	Service life (years)
Dump Truck	2	\$0.16	12
Light Duty Vehicle	16	\$0.60	7
Recreation Vehicle (Zamboni)	3	\$0.30	7
Tractor/Loader	15	\$0.74	15
Trailers	11	\$0.19	15
Other Equipment	5	\$0.08	10
Total	52	\$2.07	

Figure 3-31 Leisure Services Fleet Condition Profile (2017\$M)



The expected service life is used to determine the percent remaining life based on age, and vehicle condition is determined based on the conversion to the 5-point scale in Table 3-3. The resulting condition profile for vehicles is shown in the figure on the left.

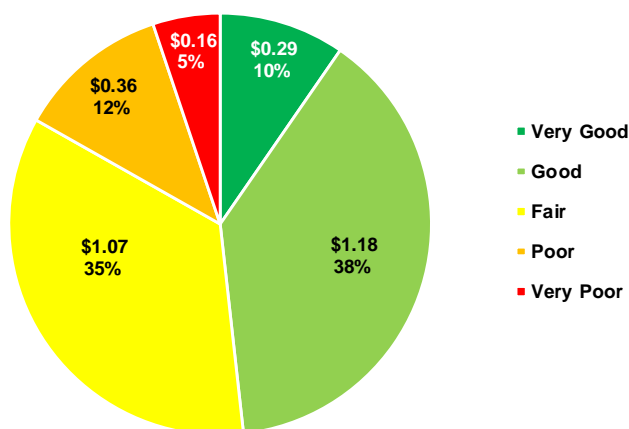
3.3.5 Equipment

Leisure Services also manages an inventory of 275 equipment assets, including plowing equipment, power tools, scissor/boom lifts, and fixed furnishings. The equipment inventory is summarized in Table 3-25, including the number of assets by type and expected service life.

Table 3-25 Leisure Services Equipment Inventory (2017\$M)

Equipment	# of Assets	Replacement Value (2017\$M)	Service Life
Equipment-Equipment	171	\$1.11	
Plowing Equipment	7	\$0.01	10
Power Tools	43	\$0.28	10
Other Equipment	120	\$0.81	10
Other Personal Safety Equipment	1	\$0.00	10
Equipment-Rolling Stock	5	\$0.08	
Recreation Vehicle (Scissor/Boom Lifts)	4	\$0.03	7
Tractor/Loader	1	\$0.05	15
Facilities-Non-Spatial	99	\$1.87	
Commercial Equipment	2	\$0.01	10
Communication & Security Systems	3	\$0.03	10
Domestic Water Distribution	3	\$0.00	10
Exterior Lighting	1	\$0.02	10
Fixed Furnishings	25	\$0.25	10
Lighting & Branch Wiring	1	\$0.00	10
Movable Furnishings	53	\$1.33	15
Specialties	9	\$0.15	10
Other Equipment	1	\$0.02	10
Other Site Systems & Equipment	1	\$0.06	10
Total	275	\$3.06	

Figure 3-32 Leisure Services Equipment Condition Profile (2017\$M)



Similar to vehicles, the expected service life is used to determine the percent remaining life based on age to estimate asset condition on the 5-point scale per Table 3-3. The resulting condition profile is summarized in Figure 3-32.

3.3.1 Trees

In 2016, York Region developed a Forest Management Plan to maximize the benefits of all trees in the Region with the understanding that tree canopy cover has major environmental, economic, social and public health value, especially in urban areas. The Region developed the Forest Management Plan with input from key stakeholders including all nine local area municipalities. One of the Plan objectives is to increase canopy cover in the Town from 37% to 40 to 45% by 2051.

The Town is currently building its inventory of trees, including tracking information on each tree's condition. Unlike other municipal assets, trees appreciate in value over time as their environmental and social benefits continue to increase as the tree grows. In 2017, the Town conducted an analysis of the trees within Stouffville cemetery to demonstrate the true value of these assets. There are 139 trees at the cemetery, with a majority of the trees being over 75 years old. The appraisal determined the total value of the trees to be \$1.4 million. The appraisal considered tree health, location and contribution within the community, the health of the associated habitat, and the species type. Comparatively, using the historical methods of assessing the replacement cost at \$500/tree (planting and first year care and maintenance costs), the total valuation for the cemetery trees would have been \$69,500. This disparity in value demonstrates the unique aspects of tree assets, and that inclusion of trees into future revisions of the AM Plan should also consider the true appraisal value of the trees.

3.4 Fire & Emergency Services

3.4.1 Overview

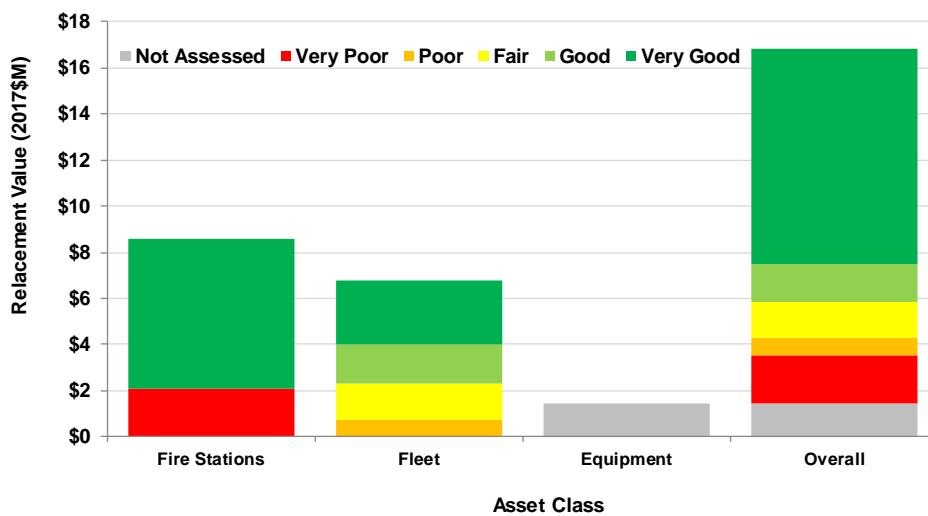
Fire & Emergency Services maintains infrastructure including the two fire facilities, fleet, and equipment to provide responses to structure fires, vehicle fires, brush/grass fires, motor vehicle collisions, medical emergencies, ice and water rescue, and assisting other agencies. The estimated portfolio replacement value for Fire & Emergency Services is **\$16.9 million**, broken down by asset class in the following figure.

Figure 3-33 Fire & Emergency Services Assets – Replacement Value (2017\$M)



Overall, 74.7% of Fire & Emergency Services assets are in fair or better condition. The following figures summarize the condition profile across the portfolio.

Figure 3-34 Fire & Emergency Services Asset Condition (2017\$M)



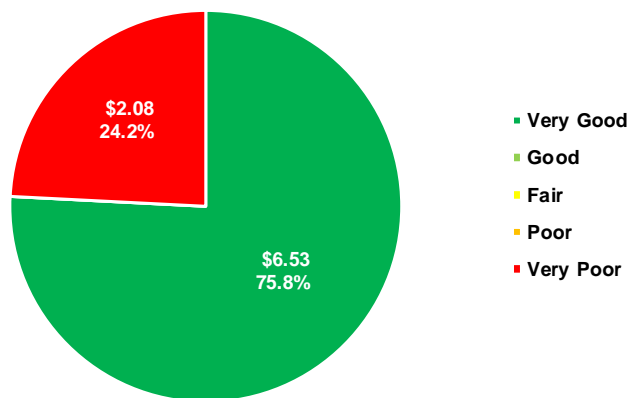
3.4.1 Fire Stations

The Town has two fire stations with an estimated replacement value of \$8.6 million, based on TCA data.

Table 3-26 Fire Stations Inventory (2017\$M)

Facility	Replacement Value (2017\$M)
Ballantrae Fire Station	\$2.1
Stouffville Fire Station	\$6.5
Total	\$8.6

Figure 3-35 Fire Stations Condition Profile (2017\$M)



The BCA for each station was used to determine the FCI. With an FCI of 21.8%, the Ballantrae Fire Station is in very poor condition using the conversion scale in Table 3-3. The resulting condition profile for the facilities is shown Figure 3-35.

3.4.1 Fire Fleet

Fire & Emergency Services manages a fire fleet of 17 vehicles with a replacement value of \$6.8 million, based on unit costs. The inventory is summarized in Table 3-27.

Table 3-27 Fire Fleet Inventory (2017\$M)

Fire Asset	# of Vehicles	Replacement Value (2017\$M)	Service Life
Vehicles	17	\$6.8	5 to 14 years

The condition of fire fleet was determined based on age according to the following table developed by Town staff to more accurately develop condition estimates that accounted for the different fleet types.

Table 3-28 Fire Fleet Age to 5-Point Condition Scale

Condition Rating	Fleet Type			
	Primary	Secondary	Utility	Chief
Very Good	0-3 yrs	0-6 yrs	0-3 yrs	0-1 yrs
Good	4-6 yrs	7-9 yrs	4-5 yrs	2 yrs
Fair	7-8 yrs	10-12 yrs	6-7 yrs	3 yrs
Poor	9-11 yrs	13-14 yrs	8-9 yrs	4 yrs
Very Poor	12 yrs or older	15 yrs or older	10 yrs or older	5 yrs or older

Figure 3-36 Fire Fleet Condition Profile (2017\$M)

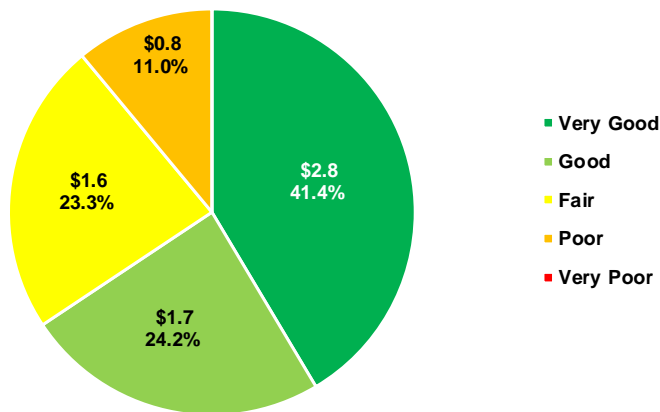


Figure 3-36 shows the condition profile of the 17 fire fleet assets according to age. 11% of assets are considered poor using the age versus condition scale in Table 3-28.

3.4.1 Fire Equipment

Fire & Emergency has 773 assets with a replacement value of \$1.4 million, based on unit costs. This equipment includes but is not limited to hoses, SCBA packs, radios, bunker gear, and automobile extraction equipment. Town staff has developed a detailed inventory of equipment; however, condition was not assessed as purchase dates are not tracked for each asset.

Table 3-29 Fire Equipment Inventory (2017\$M)

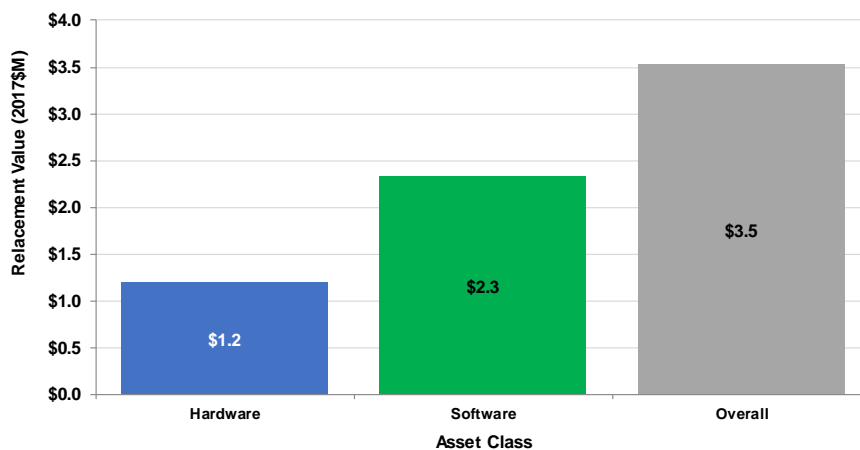
Fire Asset	# of Assets	Replacement Value (2017\$M)	Service Life
Equipment	773	\$1.4	7 to 20 years

3.5 Financial Services & IT

3.5.1 Overview

Financial Services & IT is responsible for corporate IT assets, including hardware and software totalling \$3.5 million. IT hardware and software assets were not evaluated for condition due to lack of purchase date information in the dataset.

Figure 3-37 IT Assets – Replacement Value (2017\$M)



3.5.2 Hardware

IT hardware assets have a replacement value of **\$1.2 million**, as summarized in Table 3-30. The number of assets were estimated through workshops with Town staff.

Table 3-30 IT Hardware Asset Inventory (2017\$)

IT Asset	# Purchased 2017	Total # of Assets (Estimate)	Unit Cost	Replacement Value (2017\$)
Desktop PCs	102	250	\$1,000	\$250,000
Desktop Phones	12	225	\$200	\$45,000
Mobiles Phones	11	130	\$200	\$26,000
Monitors	49	250	\$250	\$62,500
Notebook Docking Stations	21	60	\$200	\$12,000
Notebook PCs	42	60	\$1,500	\$90,000
Printers	7	7	\$500	\$3,500
Tablets	14	15	\$700	\$10,500
Firewall	1	1	\$30,000	\$30,000
Switch (Managed)	17	34	Varies	\$568,000
Wireless Access Point	3	6	\$300	\$1,800
Production Servers (Virtual)	-	7	\$5,000	\$35,000
Physical Server	-	1	\$60,000	\$60,000
Total		1046		\$1,194,300

3.5.3 Software

IT software assets have a replacement value of \$2.3 million. A summary valuation of Town software is provided in Table 3-31.

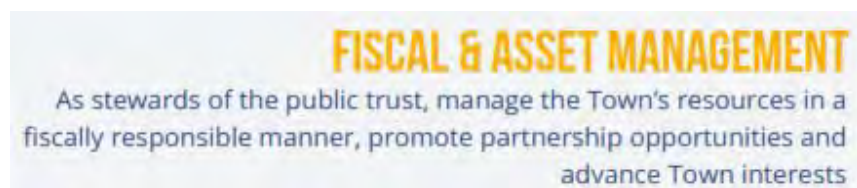
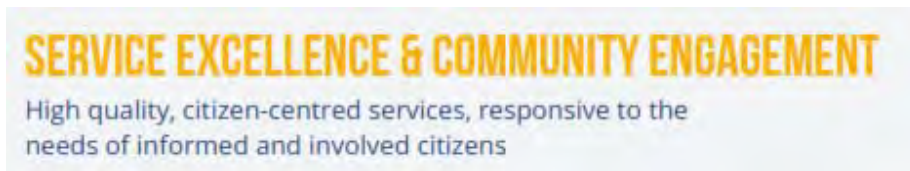
Table 3-31 IT Software Asset Inventory (2017\$)

Software (PC Desktops)	# Licenses	Unit Cost	Replacement Value (2017\$)
Adobe	54		\$16,800
Acrobat DC Pro 2015	42	\$400	\$16,800
ESRI	8		\$20,000
ArcGIS for Desktop Basic	7	\$2,500	\$17,500
ArcGIS for Desktop Standard	1	\$2,500	\$2,500
Filemaker	10		\$4,000
Filemaker Pro	10	\$400	\$4,000
Enterprise Software			\$2,290,000
AIMS Automated Parking Ticket Software	-	-	\$150,000
AQUA Loader Bulk Water Truckfill System	-	-	\$15,000
Burnside Asset Management	-	-	\$500,000
Burnside Mobile Road Inspection	-	-	\$20,000
Direct IT Software	-	-	\$500,000
Direct IT Work Manager/Land Manager	-	-	\$500,000
Financial Software Upgrade – Dynamics Great Plains	-	-	\$500,000
Questica Budget	-	-	\$50,000
RPM Route Patrol Manager	-	-	\$25,000
VM Ware Site Recovery	-	-	\$25,000
VM Ware	-	-	\$5,000
Total			\$2,330,800

4. Levels of Service

4.1 Overview

The Town's Strategic Plan describes two priorities related to levels of service and asset management: Fiscal & Asset Management and Service Excellence.



Levels of Service (LOS) are key business drivers that influence decisions about managing assets. LOS statements are used to describe, quantify and communicate the services that customers and other stakeholders expect to receive and to demonstrate how the Town is delivering on its Strategic Plan priorities.

This AM Plan discusses community and technical LOS:

- **Community LOS:** Qualitative descriptions that demonstrate the Town's customer and other stakeholder expectations of Town services.
- **Technical LOS:** Technical metrics that translate customer expectations into technical objectives and performance measures

Effective asset management requires that levels of service be formalized and supported through a framework of performance measures, targets, and timeframes to achieve targets, and that the costs to deliver the documented levels of service be understood. The Town is currently working towards formalizing levels of service, tracking performance, and setting targets. Establishing proposed performance levels is a longer-term goal per O.Reg. 588/17 (July 1st, 2024), and requires further analysis of the balance between performance, cost, and risk. The recommendations for establishing proposed levels of service is discussed in Section 7.2.3.

For short-term assets such as fleet, equipment and IT assets, the Town has established typical service lives for asset renewal as a form of level of service. These service lives were discussed in Section 3.

4.2 Public Works – Transportation Services

4.2.1 Roads

Community LOS: Road Network Description and its Connectivity

In 2017, the Town developed the Transportation Master Plan (TMP), which:

- assessed current travel conditions and the impacts of growth to identify issues
- identified and evaluated alternative solutions to address the above issues
- selected a preferred alternative for a sustainable, multimodal transportation network that decreases auto dependency and is truly accessible to all

As described in the TMP, the Town is serviced by a grid-based road network comprised of provincial highways, regional arterial roads, and the Town's system of arterial, collector, and local roadways. Arterial Road concessions are approximately 2.0km apart for east-west roads and 4.1km apart for north-south roads.

Highway 404 forms the westerly boundary of the Town and provides a high-speed and high-capacity north-south route through York Region. Highway 404 terminates in Georgina to the north, and transitions into the Don Valley Parkway which enters downtown Toronto to the south. Highway 48 is a rural provincial highway which also runs north south through the middle of the Town and just west of the Town Centre. Highway 48 continues to the north until hitting the south side of Lake Simcoe; to the south, Highway 48 passes through the City of Markham and the City of Toronto and terminates near Lake Ontario. Highway 48 and Highway 404 both connect to Highway 7, Highway 407 and Highway 401.

York Region maintains several arterial roadways in the Town. North-south regional roads include Woodbine Avenue, Warden Avenue, Kennedy Road, McCowan Road, Ninth Line, and York/Durham Line. East-west regional roads include Davis Drive, Vivian Road, Aurora Road, Bloomington Road, and Stouffville Road.


The Town's transportation facilities for cyclists and pedestrians include sidewalks, trails, walkways, bicycle paths, on-road signed bicycle routes, and multi-use trails. The majority of active transportation facilities in the Town serve the Community of Stouffville. The TMP identified the lack of connectivity of sidewalks and other active transportation facilities, making it difficult for pedestrians and cyclists to travel throughout the Town and between communities. Some of the opportunities to provide active transportation connections throughout the Town are identified in the Community of Stouffville Trails and Parks Plan and the Ballantrae-Musselman Lake Secondary Plan.

Community LOS: The different levels of road class pavement condition

Pavement condition data is collected on the entire road network every two years. Data collected includes the type, extent and severity of distresses (cracks and rutting) and smoothness or ride comfort of the road. An overall PCI is calculated from all collected data and is used as input into the annual road resurfacing and reconstruction program.

The index is scaled from zero to 100 and has been divided into ranges to assess condition. Examples of roads in each of the PCI rating categories are provided in Table 4-1.

Table 4-1 Pavement Condition Grade Examples

Condition Grade	Urban Road Example
<p style="text-align: center;">Very Good (PCI = 85 to 100) Burkholder Street</p>	
<p style="text-align: center;">Good (PCI = 70 to 84) Ballantrae Road</p>	
<p style="text-align: center;">Fair (PCI = 50 to 69) Abbotsford Road</p>	
<p style="text-align: center;">Poor (PCI = 30 to 49) Aintree Drive</p>	
<p style="text-align: center;">Very Poor (PCI = 0 to 29) Commercial Street</p>	

Technical LOS for Roads:

Service Attribute	Technical levels of service	Road Type	Lane-km	Town Area (sq.km.)	2017 Performance
Scope / Capacity	Number of lane-kilometres of each of arterial roads, collector roads and local roads as a proportion of square kilometres of land area of the municipality.	Arterial Road	11.2	206.4	5.4%
		Urban Road	153.5	206.4	74.4%
Quality	For paved roads in the municipality, the average pavement condition index value.	All Paved	n/a	n/a	55.7
	For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor).	n/a			

4.2.2 Structures

Community LOS: The traffic that is supported by municipal bridges

The Ontario Ministry of Transportation (MTO) defines:

- A bridge as “a structure which provides a roadway or walkway for the passage of vehicles, pedestrians or cyclists across an obstruction, gap or facility and is greater than or equal to 3.0 m in span”.
- A structural culvert as “a structure that forms an opening through soil and has a span of 3 meters or more, or has the sum of the individual spans of 3 meters or more, for adjacent multiple cell culverts”.

The Town’s bridges have been designed in accordance with the Bridge Design Code current at the time of construction to carry heavy transport vehicles, motor vehicles, emergency vehicles, cyclists and pedestrians.

Community LOS: The levels of bridge and structural culvert condition and the impact on use

The need for mobility requires that the Town’s roadway system be kept in a state of good repair. Structures are a vital part of this system. The efficiency of the system is impaired and the public inconvenienced if a structure fails or its load-carrying capacity is reduced for any reason. To avoid such failings, an effective structure management system is required. An essential component of the structure management system involves the systematic inspection of the structures on the roadway network. In accordance with O. Reg. 104/97 Standards for Bridges, the Town conducts detailed inspections of all of its bridges every two years. All inspections are supervised by a trained, professional engineer following the guidelines in Ontario’s Structure Inspection Manual (OSIM) which sets standards for the visual inspection and condition rating of bridges and their elements. The inspector assesses each bridge element and records the amount of the element in each of four condition states: Excellent, Good, Fair, and Poor. The inspector also records suspected performance deficiencies and recommends





maintenance and renewal activities, with costs. The typical follow-up action for a suspected load carrying capacity deficiency would be to carry out a strength evaluation of the structure (or element) to determine the load carrying capacity in accordance with the requirements of the Canadian Highway Bridge Design Code.

An overall Bridge Condition Index (BCI) or Culvert Condition Index (CCI) is calculated from all collected data and informs the annual bridge and structural culvert rehabilitation and reconstruction program. The index is scaled from zero to 100 and has been divided into ranges to assess condition. The BCI is not used to rate or indicate the safety of a bridge or structural culvert. Any safety issues are immediately reported by the inspector to supervising engineers and maintenance crews. Condition grade examples are provided in Table 4-2 (“not available” indicates that there are no Town structures currently in that condition grade).

Technical LOS for Structures:

Service Attribute	Technical levels of service	2017 Performance
Scope	Percentage of bridges in the municipality with loading or dimensional restrictions.	None
Quality	For bridges in the municipality, the average bridge condition index value.	68.9
	For structural culverts in the municipality, the average culvert condition index value.	60.6

Table 4-2 Bridge and Culvert Condition Grade Examples

Condition Grade	Bridge Examples	Culvert Examples
<p>Very Good BCI = >85 to 100 CCI = >80 to 100</p>		
<p>Good BCI = >70 to 85 CCI = >60 to 80</p>		
<p>Fair BCI = >60 to 70 CCI = >40 to 60</p>		<p>Not available</p>
<p>Poor BCI = >40 to 60 CCI = >20 to 40</p>	<p>Not available</p>	<p>Not available</p>
<p>Very Poor BCI = 0 to 40 CCI = 0 to 20</p>	<p>Not available</p>	<p>Not available</p>

4.2.1 Sidewalks, Signals, Street Lights

Community LOS: A safe, accessible and equitable transportation network

Sidewalks, traffic signals, and street lights are integral components in enabling the Town to ensure that the transportation network is safe, accessible and equitable for all members of the community. As part of the Transportation Master Plan, new sidewalks and street light improvements have been identified to meet safety and accessibility objectives.

Technical LOS

Sidewalks are regularly inspected for trip ledges, cracks, and other sidewalk damage, and are repaired on a priority basis. Repairs to damaged sidewalks are undertaken by the Town, as required.

Street lights outages are typically reported by the public, and are generally repaired within ten business days.

Routine maintenance of traffic signals, including cleaning, re-lamping, controls, cabinet inspection and conflict monitor checks are performed annually or as needed. Emergency repairs are performed as soon as possible after the Town is notified.

4.3 Public Works – Environmental Services

4.3.1 Water Services

Community LOS: Areas connected to the municipal water system

The Town provides potable water to the communities of Stouffville, Ballantrae and Musselman's Lake. The Town of Whitchurch-Stouffville purchases its water from the Regional Municipality of York. For the residents of the community of Stouffville (including Highway 48), the Region operates and maintains six groundwater wells and treatment systems and supplements the supply by purchasing treated lake water from the City of Toronto. For Ballantrae and Musselman's Lake, the Region operates and maintains three groundwater wells and treatment systems.

The Town of Whitchurch-Stouffville is responsible for the operation and maintenance of the following water distribution systems:

- Stouffville Water Distribution System (including Highway 48)
- Ballantrae/Musselman's Lake Water Distribution system

These systems consist of water mains, valves, hydrants, service connections and meters which service the residents and businesses within Stouffville, Ballantrae and Musselman's Lake. Residents who live outside the serviced areas obtain their water from private wells.

Community LOS: Areas with Fire Flow

The Town of Stouffville, Ballantrae and Musselman’s Lake are connected to fire flow through the two water distribution systems.

Community LOS: Description of boil water advisories and service interruptions

Boil water advisories are issued when conditions or concerns may adversely affect the quality or safety of the potable water supply. A boil water advisory is put in place to protect the community from potentially harmful organisms that may be in the water that may be detrimental to the health of the community.

Most boil water advisories are issued because the equipment and processes used to treat, store or distribute drinking water break down, require maintenance, or have been affected by environmental conditions. This broad array of reasons includes issues such as broken water mains, planned system maintenance, power failures or equipment problems. In some cases, extreme weather or heavy rains may cause the quality of surface or ground water sources to temporarily worsen, challenging the drinking water treatment system. Boil water advisories issued for equipment and process related reasons are generally issued before any actual decline in drinking water quality and are in place until conditions return to normal. During a boil water advisory, all water used for consumption must be either boiled or be commercially bottled water. Home filtration devices (filters) do not kill bacteria. To boil, water must be heated to a rolling boil for at least one (1) minute to kill all disease-causing microorganisms prior to use. The water should then be cooled and stored in a clean, covered container and refrigerated until used. In addition to using boiled water for people and pets to drink, it must be boiled prior to use for making ice cubes, preparing foods and beverages, washing fruits and vegetables, and brushing teeth.

Technical LOS: Water Services

Service Attribute	Technical Levels of Services	2017 Performance
Scope	Percentage of properties connected to the municipal water system. # of Addresses w/ Service 13,031 Total # of Addresses 16,343	% of properties: 79.7%
	Percentage of properties where fire flow is available. # of Addresses w/ Service 13,064 Total # of Addresses 16,343	% of properties: 79.9%
Reliability	The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system. (7 breaks in 2017) Days per break: 1 (assumption) # of Properties Affected: 102	# of Connection-Days: 102
	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.	Zero

4.3.1 Wastewater Services

Community LOS: Areas connected to the municipal wastewater system

Sanitary sewage for Town residences and business is discharged into the Stouffville sanitary collection system, operated and maintained by the Town. The sewage outfalls to the York-Durham Sewage System (YDSS) operated and maintained by York Region. Residents in some rural areas discharge their sewage to a private septic system and are not connected to the Town's sanitary system.

Technical LOS: Wastewater Services

Service Attribute	Technical Levels of Service	2017 Performance
Scope	Percentage of properties connected to the municipal wastewater system.	65.8%
Reliability	The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.* Days per Break: 1 (assumption) # of properties affected: 8	# of Connection-Days: 8

*Only considering backups that constituted a problem from Town infrastructure. Private property failures not included.

The number of effluent violations per year is considered not applicable for the Town, as York Region is responsible for wastewater treatment.

4.3.2 Stormwater Services

Community LOS: Areas protected from flooding

The Town generally lies within two distinct watersheds. Duffins watershed and Rouge watershed. Stormwater from the east areas of the Town contribute to Stouffville Creek and Reesor Creek within Duffins watershed. The west areas of the Town contribute to Little Rouge Creek within the Rouge watershed. The Town maintains a network of storm sewers, catchbasins, and stormwater management ponds that protect areas from flooding and control water quality and quantity. The TRCA has identified the Rouge River watershed as requiring Level 1 protection; therefore, TSS removal is required to be 80% or greater in wet ponds.

Technical LOS: Stormwater Services

Service Attribute	Technical Levels of Service	2017 Performance
Scope	Percentage of properties in municipality resilient to a 100-year storm.	Historical Flooded Areas: Vandorf Sideroad between Kennedy and Warden Bethesda Sideroad between Warden and Tenth Line (Hydraulic modeling is required to determine property resiliency)
	Percentage of the municipal stormwater management system resilient to a 5-year storm.	100% (Storm sewers and ponds are designed for 5-year storm; however, hydraulic modeling would be required to demonstrate 100% resiliency)

4.4 Leisure & Community Services

4.4.1 Facilities

Community LOS: Availability and Suitability of Leisure Services to Residents

The Leisure & Community Services (L&CS) Department has three divisions: Culture & Community Services, Parks and Facilities, and Recreation. The Culture & Community Services Division is responsible for the development of culture and museum services, and manages two facilities: the Whitchurch-Stouffville Museum and 19 on the Park (event centre). The Parks & Facilities Division is accountable for ensuring that the parks, fields, trails, and greenspaces are well-maintained for public use, and managing facilities in a state of good repair and operating them in an efficient and sustainable manner. Under Provincial Regulation 397/11, the Town reports energy consumption and greenhouse gas emissions on an annual basis. The Recreation Services Division develops the recreation programs to meet the needs of residents of all ages and abilities, and develops new programs to meet the changing needs of the community. The Town is currently developing the Leisure & Community Services Master Plan, which outlines community satisfaction with all aspects of facilities and parks, as well as benchmarking the ratio of facilities to residents against other municipalities across Ontario.

Technical LOS: Leisure & Community Services

Service Attribute	Technical Levels of Service	2017 Performance
Reliability	Number of Facilities with FCI > 10% (Poor)	No facilities

4.4.2 Land Improvements and Playgrounds

In the interim Leisure & Community Services Master Plan, public satisfaction is documented for land improvement assets such as basketball courts, ball diamonds, tennis courts, outdoor rinks, splash pads, and trails. Playgrounds are inspected regularly as per Canadian Safety Association (CSA) legislation.

To assess the availability of the services provided by these assets, the number of residents per asset is determined in the Master Plan and benchmarked against typical ratios at other municipalities in Ontario.

4.5 Fire & Emergency Services

Community LOS: Availability of Emergency Response Services to Residents

Fire & Emergency Services protects 48,740 residents within the 206 sq.km's of the Town. Coverage is provided to both urban and rural areas, with the predominant coverage area being rural. Due to the large geographic area of The Town Of Whitchurch-Stouffville, fire protection service is purchased from Central York Fire Services for an area on the Town's western boundary. The Town operates through two fire stations to provide responses to structure fires, vehicle fires, brush/grass fires, motor vehicle collisions, medical emergencies, ice and water rescue, and assisting other agencies.

Within York Region, four municipal fire departments from the six most northerly local area municipalities, including the Town of Whitchurch-Stouffville, agreed to develop Master Plans in a coordinated effort. The Master Plans would eventually identify opportunities for new operational strategies, shared services, and innovative approaches to enhance and improve service delivery across the municipalities. The Town completed its Fire Master Plan in December 2017.

As part of the Fire Marshall Report, the Town tracks the number of fires and extent of monetary damages to properties on an annual basis. In 2017, there were 20 fires and \$2.15 million in damages.

Technical LOS: Fire & Emergency Services

Service Attribute	Technical Levels of Service	2017 Performance
Reliability	Number of Fire Stations with FCI > 10% (Poor or Very Poor Condition)	One Station with FCI >10% (Ballantrae)

4.6 Financial Services & IT

Community LOS: Availability and Continuity of day-to-day Town Services

The Information Technology Services Division ensures that the enterprise infrastructure, systems, applications, networks, end user devices, and communications systems, which support the operations of the Town, are continuously available and operating effectively. Other services include assisting departments in integrating and streamlining business processes, technology continuity planning, maintaining and supporting corporate website and intranet, providing technical guidance and recommendations, and providing support and end-user training to Members of Council, employees and other authorized users of municipal technical resources.

Technical LOS: Information Technology Services

Service requests from Town staff are tracked by the IT Services Division through the ticketing system. Reports can be generated that summarize the number of tickets, issue category, status, and priority.

4.7 External Trends Affecting Levels of Service and Performance

External trends and issues that may affect LOS or the Town's ability to meet the desired LOS in the future include the following:

- Population and employment changes (e.g., growth, demographics), which will impact infrastructure use.
- Changes in expectations for programs or patterns of use from the public, which will impact infrastructure use and revenue for services.
- Potential changes in technology or methods, which may replace obsolete equipment, provide longer asset life, and/or achieve higher quality and greater efficiencies.
- Potential changes to the cost of input variables (e.g., cost of power, fuel), which will impact costs to deliver the services.
- Infrastructure failing prematurely due to environmental factors and/or construction practices requiring repair or replacement much earlier than the expected life of the asset.
- Availability of external funding (e.g., federal and provincial infrastructure programs) which may affect the infrastructure improvement activities that can be undertaken.
- Unexpected downloading of services by more senior levels of government.
- Popularity of sustainability initiatives and "greening" trends (e.g., LEEDs).
- Climate change, including changing storm events and patterns (e.g., higher frequency storms occurring more regularly), which will impact the infrastructure.
- Potential changes in Federal or Provincial legislation.

5. Asset Management Strategy

Asset lifecycle management strategies are planned actions that enable assets to provide the desired LOS in a sustainable way, while managing risk, at the lowest lifecycle cost. Asset lifecycle management strategies are typically organized into the following categories:

- **Expansion** of the asset portfolio is typically developed through the master planning process conducted by each service area.
- **Non-Asset solutions** are developed through the master planning process and other studies conducted by each service area.
- **Renewal** of the asset portfolio is based on maintaining assets in condition state “fair” or better and sustaining the asset portfolio through reinvestment. Renewal activities are prioritized for higher criticality assets based on legislated and corporate requirements.
- **Operations and maintenance** of the asset portfolio is based on previous years’ expenditures with allowances for forecast growth.

5.1 Expansion Strategies

The Growth Plan for the Greater Golden Horseshoe (2017) has forecasted the population for York Region to grow from 680,000 to 1,790,000 by 2041. The Region’s 2041 Preferred Growth Scenario summarizes how this growth is distributed between its nine local area municipalities. The Town of Whitchurch-Stouffville’s population is expected to grow from 45,837 (2016 Census) to 64,500 in 2041, with the growth focused more in the community of Stouffville rather than the rural communities. This growth forecast translates into a 1.38% annual compounded growth rate over the next 25 years.

The expected growth in Town population will place additional pressure on existing assets and create demand for new assets. The Town has updated and is currently developing various master plans that outline current service levels and identify the actions required to move from the current to future state including requirements for new, expanded and enhanced assets. The master planning processes and other studies provide the focus for non-asset solutions and expansion of the asset portfolio. Current master planning documents include the following.

- **Transportation Master Plan (TMP), 2017 (HDR):** The TMP assesses current travel conditions, the impacts of growth and defines the associated issues. The Plan evaluates alternative solutions to address the problems and selects a preferred alternative for a sustainable, multimodal transportation network.
- **Water and Wastewater Master Plan, currently in development (GM BluePlan):** The Master Plan is being developed to provide recommended strategies for water and wastewater capital projects over the next 25 years (to 2041).

- Leisure and Community Services Plan, currently in development (Sierra Planning and Management, with Land Inc. and MNP): The Master Plan provides decision-making guidance for the next ten years (2018 to 2027). It identifies the gaps and opportunities for services in recreation, culture, parks, trails, and open space with a corresponding Action Plan.
- Fire Master Plan, 2017 (Emergency Management & Training Inc.): The Town has developed the Fire Master Plan in consultation with the Town of East Gwillimbury, Township of King, and Town of Georgina fire departments to identify opportunities for new operational strategies and innovate approaches to service delivery.

The expected growth assets for Development Charge (DC) eligible projects, and the associated impact of this growth is detailed in the Town's 2018 Development Charges Background Study. The DC Study is discussed further in Section 6.2.

5.2 Non-Asset Solutions Strategies

Non-asset solutions are also typically developed through Master Planning or other studies. The Town invests in the following non-asset solutions:

- Continuing to manage demand through public education and demand reduction and other demand management programs.
- Balancing use (e.g., kilometres, hours) by shifting assets from higher use to lower use.
- Energy conservation and demand management initiatives such as process optimization and public education.
- Integrating the planning of infrastructure renewal across asset classes (e.g., scheduling road and buried infrastructure replacements at the same time).
- Continuously improving an integrated set of asset management best practices.

5.3 Renewal Strategies

The focus in this AM Plan is the renewal of the assets once in place. The Town preserves assets through maintenance and renewal (i.e., rehabilitation and replacement) activities and investments. Maintenance and renewal activities are timed to reduce the risk of service failure from deterioration in asset condition, and to minimize the total cost of ownership. Sufficient investment, doing the right thing to the right asset at the right time for the right reason, is crucial.

All assets physically deteriorate at different rates to eventual failure and loss of ability to deliver the required LOS. Asset condition is a measured assessment of an asset's current position or place on the asset "decay" or deterioration curve. Many assets deteriorate slowly at first to a fair condition and, after that, there is more rapid degradation. The Town currently invests in condition assessments for asset classes such as pavement and structures to gain the critical knowledge needed to understand where the asset is on the deterioration curve and determine the lowest lifecycle strategies.

For each asset portfolio, AM strategy information was reviewed with Town staff and is summarized in Table 5-1 through to Table 5-5. The strategies should be regularly reviewed and improved as the Town tracks and collects more data to truly understand the lowest lifecycle for each asset areas. Road and bridge assets have intermediate lifecycle rehabilitations specified. For most other assets, capital work is mainly expected to be the replacement of the asset. For facilities, the timing of capital work is based on replacement of the assets specified in the building condition assessments (BCAs). The timing of replacement is provided in Table 5-1 to Table 5-5, and more detail is available in Section 3 on service lives for fleet and equipment. An example for interpreting the information in Table 5-1 to Table 5-5 table is described for High Class Bituminous (HCB) arterial roads:

- HCB arterial roads are rehabilitated with mill and pave treatments at year 20 and year 40 (for \$64/m²). At 70 years, the road segment is fully replaced for \$213/m². This lifecycle strategy translates to an annual average reinvestment rate of 2.3% (i.e., on average, each year, 2.3% of the asset replacement value should be set aside in a reserve fund to enable the lifecycle strategy capital renewal work and sustain the asset over its lifecycle). The annual average reinvestment rate is calculated as:

$$\text{Annual Average Reinvestment Rate} = (\$64 + \$64 + \$213) / 70 \text{ years} / \$213 = \sim 2.3\%$$

The lifecycle strategies in Table 5-1 to Table 5-5 can be translated into deterioration curves for each asset class. For HCB arterial roads, the deterioration curve is graphically represented in Figure 5-1. The intermediate rehabilitations at 20 and 40 years extend the overall life of the pavement to 70 years and result in a lower overall lifecycle cost. Without rehabilitations, the pavement follows the black curve and reaches very poor condition at 30 to 40 years (beyond condition state 5).

Figure 5-1 Deterioration Curve (HCB Arterial Road)

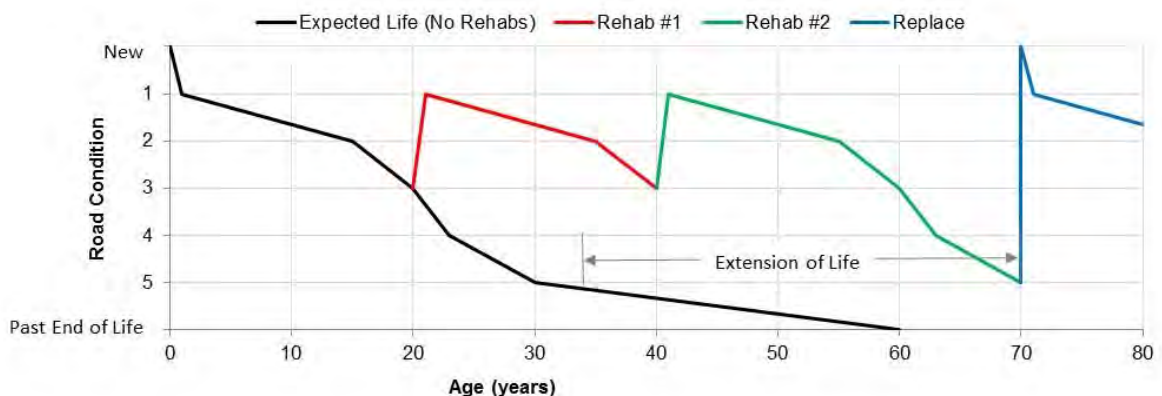


Table 5-1 AM Strategy Analysis Inputs – Public Works – Transportation Services

Asset Class	Asset Subclass		Rehab 1			Rehab 2			Replace		Reinvestment Rate
			Description	Timing (Years)	Cost (\$/sq.m.)	Description	Timing (Years)	Cost (\$/sq.m.)	Timing (Years)	Cost	
Roads	Arterial Road	HCB	Mill and Pave	20	\$64	Mill and Pave	40	\$64	70	\$213 per sq.m.	2.3%
		LCB	Mill and Pave	15	\$64	Mill and Pave	30	\$64	55	\$213 per sq.m.	2.9%
	Urban Road	HCB	Mill and Pave	20	\$53	Mill and Pave	40	\$53	70	\$175 per sq.m.	2.3%
		LCB	Mill and Pave	15	\$53	Mill and Pave	30	\$53	55	\$175 per sq.m.	2.9%
	Rural Road	HCB	Pulverize and Pave	20	\$26	Pulverize and Pave	40	\$26	70	\$175 per sq.m.	1.9%
		LCB	Pulverize and Pave	15	\$26	Pulverize and Pave	30	\$26	55	\$175 per sq.m.	2.4%
Structures	Bridges	<=100m2: Concrete	Repairs	30	\$750	Rehab	60	\$2,625	120	\$7500 per sq.m.	1.2%
		>100m2: Concrete	Repairs	30	\$600	Rehab	60	\$2,100	120	\$6000 per sq.m.	1.2%
	Culverts	<=100m2: Steel	Repairs	25	\$450	-	-	-	50	\$4500 per sq.m.	2.2%
		<=100m2: Concrete	Repairs	35	\$650	-	-	-	75	\$6500 per sq.m.	1.5%
		>100m2: Steel	Repairs	25	\$350	-	-	-	50	\$3500 per sq.m.	2.2%
		>100m2: Concrete	Repairs	35	\$500	-	-	-	75	\$5000 per sq.m.	1.5%
Street lights	Luminaires		-	-	-	-	-	-	18	\$2000 per asset	5.6%
	Poles		-	-	-	-	-	-	40	\$6000 per asset	2.5%
Traffic Signals			-	-	-	-	-	-	25	Varies by asset	4.0%
Sidewalks			-	-	-	-	-	-	50	Varies by segment	2.0%
Fleet	Dump Truck		-	-	-	-	-	-	12	Varies by asset	8.3%
	Light Duty Vehicle		-	-	-	-	-	-	7	Varies by asset	14.3%
	Tractor/Loader		-	-	-	-	-	-	15	Varies by asset	6.7%
	Trailers		-	-	-	-	-	-	15	Varies by asset	6.7%
Equipment	Various		-	-	-	-	-	-	10 to 15	Varies by asset	8.3%

Table 5-2 AM Strategy Analysis Inputs – Public Works – Environmental Services

Asset Class		Asset Subclass	Description	Frequency (Years)	Cost	Reinvestment Rate
Water	Watermains	Cast Iron, Ductile Iron, Copper	Replace	50	Varies by segment	2.0%
		HDPE, PE, PVC	Replace	80	Varies by segment	1.3%
	Water Meters		Replace	20	\$300 per meter	5.0%
Waste Water	Sanitary Mains	Asbestos Concrete, Concrete pipe, PVC	Replace	80	Varies by segment	1.3%
		Vitrified Clay	Replace	50	Varies by segment	2.0%
Storm	Storm Sewers	All materials	Replace	80	Varies by segment	1.3%
	Stormwater Management Ponds		Dredging	15	\$170,000 per pond	
Fleet		Light Duty Vehicle	Replace	7	Varies by asset	14.3%
Equipment		Various	Replace	10 to 15	Varies by asset	9.8%

Table 5-3 AM Strategy Analysis Inputs – Leisure & Community Services

Asset Class	Asset Subclass	Description	Frequency (Years)	Cost	Reinvestment Rate
Facilities	A-Substructure	Replace	100	Varies by asset	2.1%
	B-Shell	Replace	12 to 100	Varies by asset	
	C-Interior	Replace	10 to 99	Varies by asset	
	D-Service	Replace	10 to 50	Varies by asset	
	E-Equipment & Furnishing	Replace	10 to 35	Varies by asset	
	F-Special Construction & Demolition	Replace	10 to 35	Varies by asset	
	G-Building Sitework	Replace	15 to 99	Varies by asset	
Land Improvements		Replace	10 to 25	Varies by asset	4.3%
Playgrounds & Pergolas		Replace	15	Varies by asset	6.7%
Fleet	Dump Truck	Replace	12	Varies by asset	8.3%
	Light Duty Vehicle	Replace	7	Varies by asset	14.3%
	Recreation Vehicle (Zamboni)	Replace	7	Varies by asset	14.3%
	Tractor/Loader	Replace	15	Varies by asset	6.7%
	Trailers	Replace	15	Varies by asset	6.7%
	Other Equipment	Replace	10	Varies by asset	10.0%
Equipment		Replace	7 to 15	Varies by asset	8.5%

Table 5-4 AM Strategy Analysis Inputs – Fire & Emergency Services

Asset Class	Asset Subclass	Description	Frequency (Years)	Cost	Reinvestment Rate
Fire Stations	A-Substructure	Replace	100	Varies by asset	2.4%
	B-Shell	Replace	12 to 100	Varies by asset	
	C-Interior	Replace	10 to 40	Varies by asset	
	D-Service	Replace	10 to 40	Varies by asset	
	G-Building Sitework	Replace	15 to 99	Varies by asset	
Fleet		Replace	5 to 14	Varies by asset	7.9%
Equipment		Replace	7 to 20	Varies by asset	9.8%

Table 5-5 AM Strategy Analysis Inputs – IT Services

Asset Class	Description	Frequency (Years)	Cost	Reinvestment Rate
Hardware	Replace	3 to 10	Varies by asset	14.4%
Software	Replace	3 to 6	Varies by asset	17.0%

An “optimised” asset lifecycle strategy is the lowest cost strategy for the specified Levels of Service. Although not economically analysed as optimal, the asset lifecycle strategies outlined in the above table are those generally applied and adjusted by Town staff based on knowledge of asset construction variations and operating environments. Risk is considered by planning for interventions at the specified frequencies to enable sustained service delivery at an acceptable performance level. The lifecycle strategies are to be improved over time as the Town gains more data and knowledge on the benefits of treatments and the true lifecycle costs of its assets.

Table 5-1 to Table 5-5 provide a succinct list of the AM strategies for every asset portfolio: the set of capital renewal treatments that need to be undertaken to maintain service levels (i.e., condition) over time. Associated with these future renewal treatments is a forecast of costs to implement them. This cost for the asset renewal strategies is provided in Section 6, Financing Strategy.

5.4 Operations & Maintenance

Renewals and operations/maintenance are strongly linked; maintenance strategies can hasten or delay the need for renewals, and if renewals are deferred, this can increase maintenance needs. The distinction between renewals (which are capital works) and maintenance (which is an operational expense) is set by accounting policies and standard operating procedures.

Asset operations and maintenance requirements and associated resources are assessed and prioritized based on:

- Carrying out legislated operations and maintenance activities to ensure safety and environmental sustainability in accordance with the appropriate regulations.

- Conducting routine and preventative maintenance activities to ensure preservation of existing assets.
- Analysis of current operations and maintenance (O&M) contracts and known historical costs of delivering agreed LOS to forecast future O&M costs. For example, in some cases O&M costs increase at the rate of inflation, and in other cases such as energy and oil for pavement, costs have increased significantly more over time than the overall rate of inflation.
- Assessing consequential operational and maintenance requirements of significant new infrastructure planned to be added to the asset portfolio.

The level of expected population and asset portfolio growth will also place significant pressure on the capacity of existing operations and maintenance. Consequential operational expenditure is the operations and maintenance cost associated with new assets. For example, for a new facility, the costs of electricity, natural gas and routine maintenance all contribute to the consequential operational expenditure associated with that new asset. These costs will be incurred by the Town into the future for as long as the facility is in use. For most assets, a good estimate of the consequential operational expenditure required to operate and maintain the new assets is simply the existing operations and maintenance cost multiplied by the growth factor.

5.5 Risks Associated with the Strategies

Risks relating to asset infrastructure failure are mitigated through condition and risk assessments, proactive maintenance programs that include predictive, preventative and corrective maintenance, and capital renewal programs to ensure that the work required to achieve the established LOS is identified and implemented. Annual maintenance and capital programs and associated budgets provide the funding to undertake the necessary works. The estimated funding requirements are discussed in Section 6.

A significant risk for the Town to consider is inadequate resources to undertake programmed maintenance and renewal works, including funding, business processes, staffing, and supporting technology. The Town is required to discuss how the risks of funding shortfalls will be managed as per the July 1st, 2024 requirements of O.Reg. 588/17. Recommendations for development of a corporate Risk Management Framework are discussed in Section 7.2.3.

6. Financing Strategy

This section presents a financial projection of renewal investment and operations needs based on the data and assumptions made to support the State of the Infrastructure in Section 3 and asset renewal strategies in Section 5.

- Section 6.1 summarizes the estimated long term renewal investment needs to sustain the Town's existing assets.
- Section 6.2 discusses the Town's planned spending on new/upgraded assets (growth)
- Section 6.3 discusses activities under the Operations Budget.

6.1 Future Renewal Investment Needs Projections

This section summarizes the estimated long term renewal investment needs to sustain the Town's existing assets. The Town's planned spending on new/upgraded assets (growth) is discussed in Section 6.2. Activities under the Operations Budget are discussed in Section 6.3.

The renewal investment needs forecast is a network level analysis based on the summarized schedule of work activities and associated costs applied to groups of assets outlined from Table 5-1 to Table 5-5. The forecasts represent the first long-term financial projections produced by the Town for renewal of its infrastructure assets. AM Plans are updated regularly and future iterations will be produced using improved data and processes to refine these financial projections.

Over the long term (50-years), it is estimated that the Town requires an average annual renewal investment (AARI) of **\$16.4 million** to sustain the existing assets included in this AM Plan (replacement and major rehabilitations). This equates to an Average Renewal Reinvestment Rate of 2.0% compared to the Town's \$821.9 million asset valuation. Over the shorter term (ten years), the AARI is **\$14.2 million**, indicating that major expenditures will be required beyond ten years as the assets deteriorate over time. The only assets for which the short-term 10-year forecast is higher than the long term 50-year forecast is for environmental assets. For sewers and storm sewers, there is a significant backlog of renewal need due to vitrified clay sewers and cast iron and ductile iron watermains identified as reaching the end of the expected 50-year life, resulting in a significant expenditure requirement for 2018. A detailed breakdown of the AARI (short-term and long-term) by service area is provided Figure 6-1. Subsequent Figure 6-2 to Figure 6-6 show the AARI for each service area in more detail.

Figure 6-1 Annual Capital Renewal Needs Forecast (2017\$M)

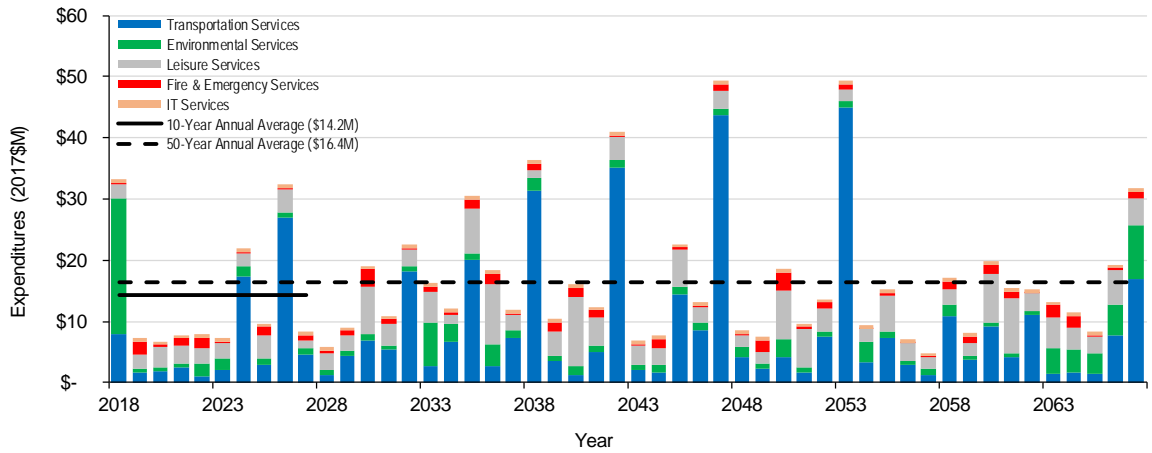


Figure 6-2 Annual Capital Renewal Needs Forecast – Transportation (2017\$M)

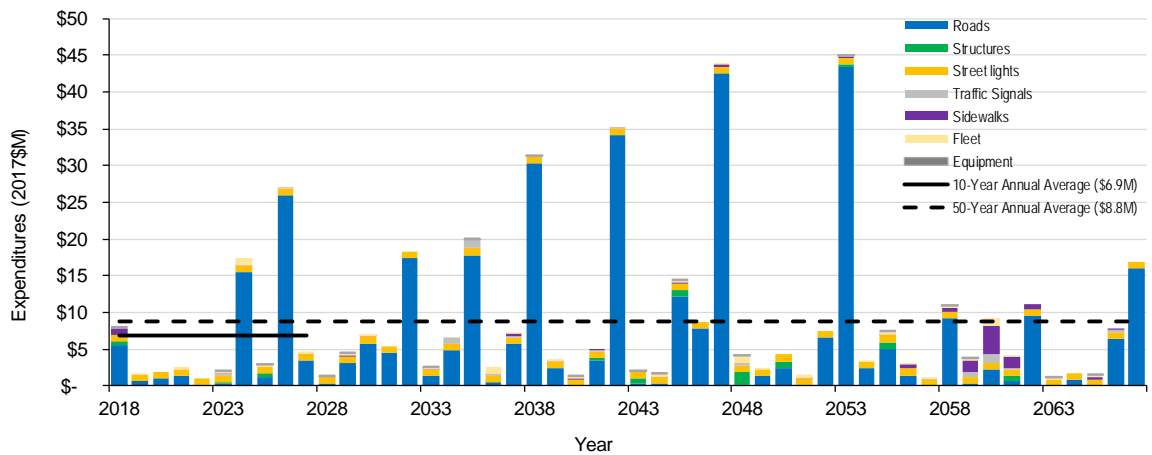


Figure 6-3 Annual Capital Renewal Needs Forecast – Environmental (2017\$M)

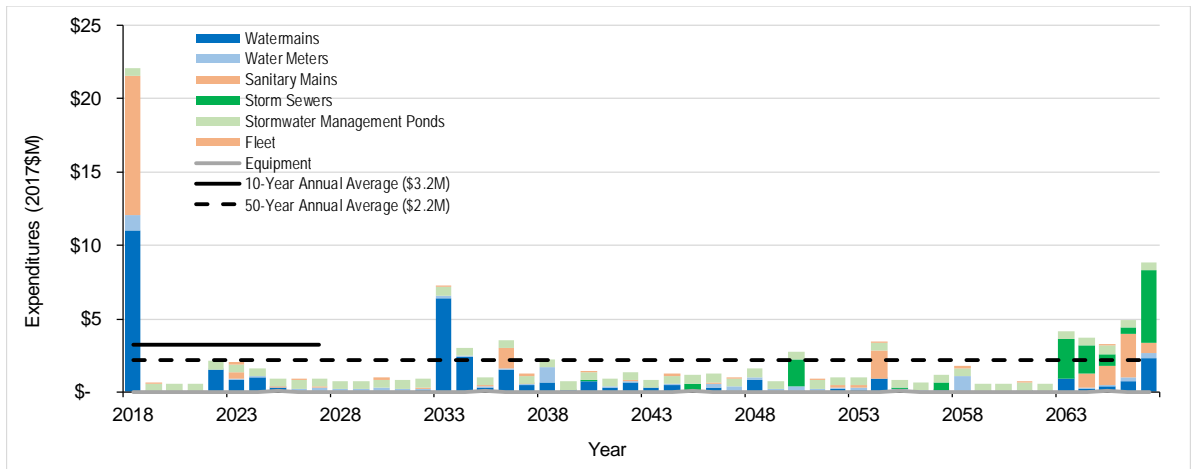


Figure 6-4 Annual Capital Renewal Needs Forecast – Leisure Services (2017\$M)

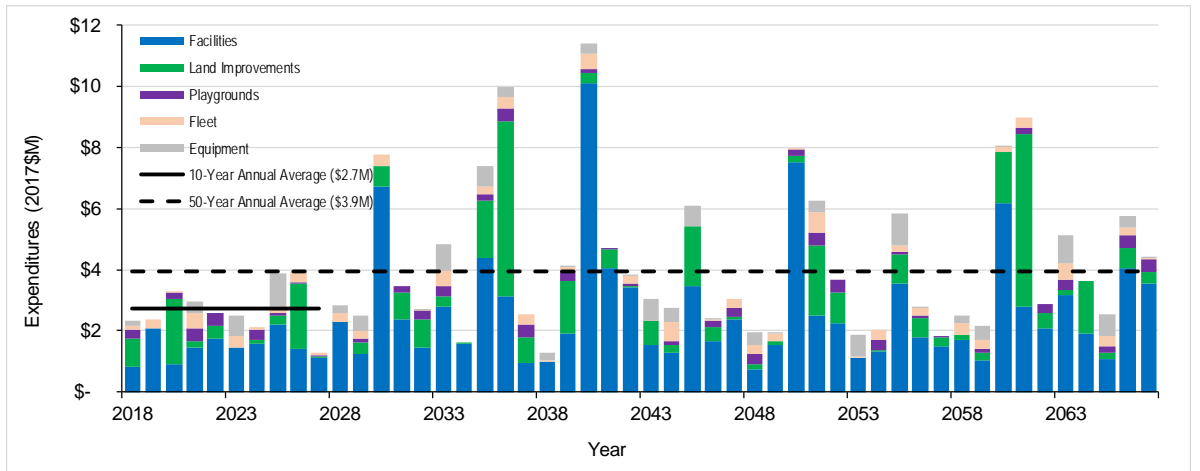


Figure 6-5 Annual Capital Renewal Needs Forecast – Fire Services (2017\$M)

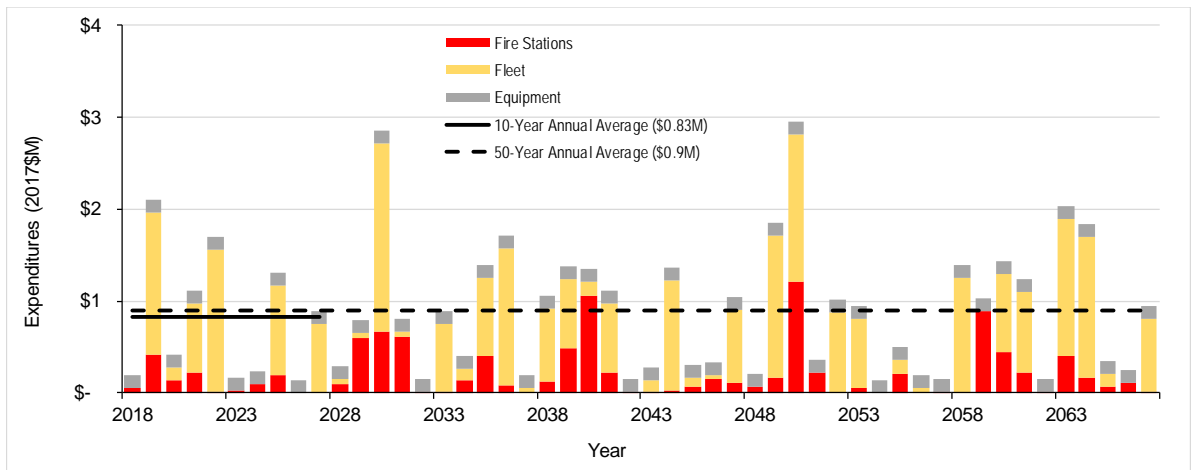
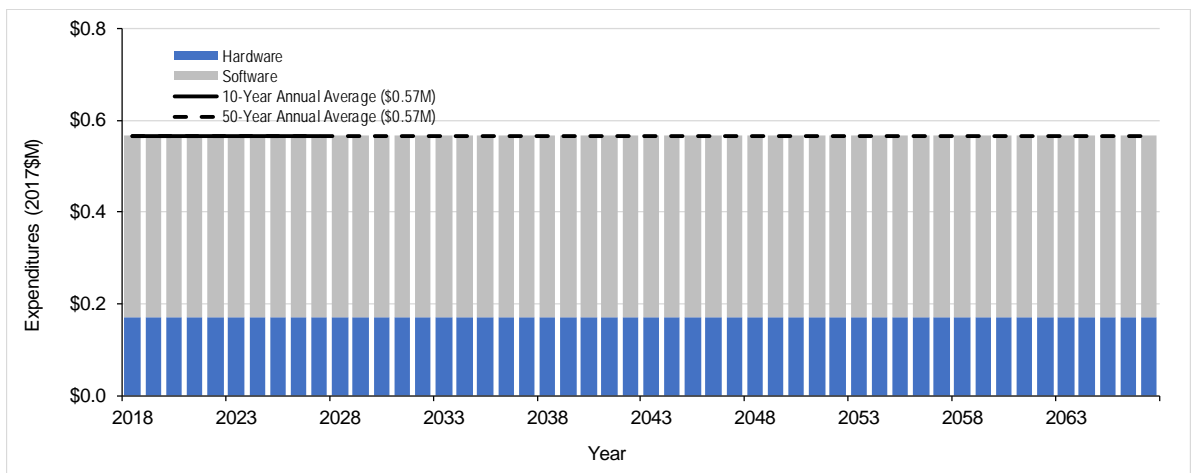


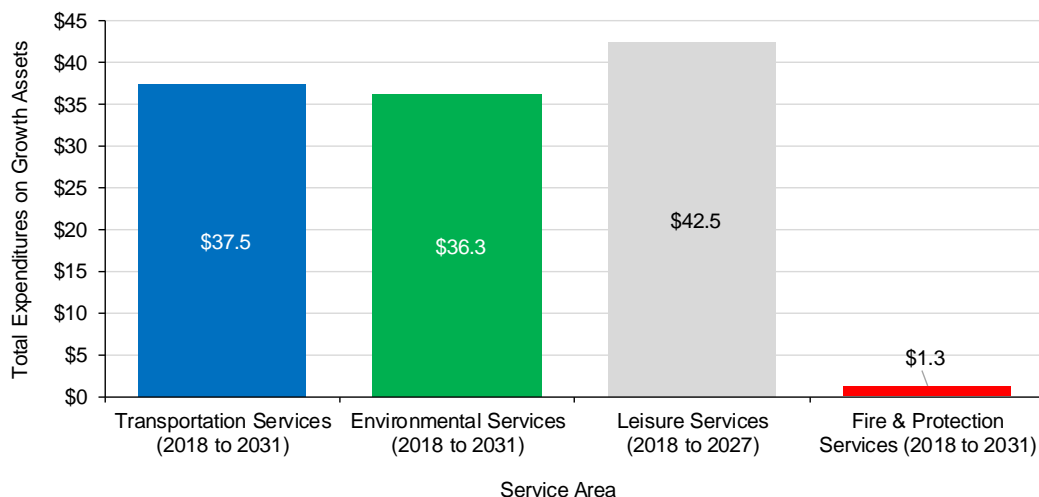
Figure 6-6 Annual Capital Renewal Needs Forecast –IT Services (2017\$M)



6.2 Capital Needs Forecast to Service Growth

To meet the demand for expanded services, the Town constructs new assets and expands the capacity of the asset portfolio. Figure 6-7 summarizes the planned capital growth for Town assets by service area based on the 2018 Development Charges Background Study (DC Study). The Town is investing \$118.5 million over the next 10 to 13 years in new assets (average **\$10.1 million** annually). This forecast is based on the DC Study's 10-year forecast for Leisure Services, and 13-year forecast for Transportation, Environmental, and Fire & Protection Services. Combined with the \$14.2 million required annually to renew existing assets, the total annual capital expenditures are estimated to be **\$24.3 million** over the next 10 years. When the new assets are constructed, it is estimated that an additional \$6.7 million will be required annually to maintain these assets over their full lifecycle. This increase in capital needs will have an impact beyond the 10 to 13 year forecast period as the assets age.

Figure 6-7 Total Capital Expenditures for Growth (2017\$M)



In addition, the Town will be assuming assets that have been funded prior to 2017 that are currently under construction or already constructed but unassumed. These assets will be assumed by the Town within the next few years. Unassumed roads, structures, and sidewalk assets are not included as the roads GIS inventory did not include an inventory of unassumed assets and the sidewalk GIS inventory is currently in progress. The Town noted that two bridges will be assumed in the next few years, but the value of these projects have not been confirmed.

Combined with the \$91.4 million in DC funded growth projects, the total growth over the next 10 to 13 years in the asset base will be at least \$158.3 million (\$118.5 million plus \$39.8 million). Table 6-1 summarizes the \$39.8 million of assets currently under construction and/or unassumed based on Town GIS inventories.

Table 6-1 Assets Under Construction / Unassumed (2017\$M)

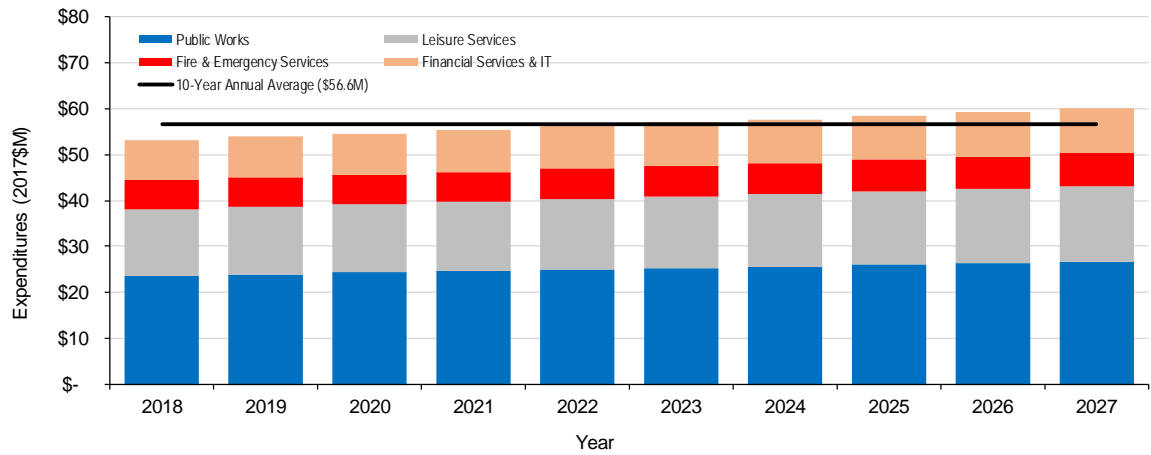
Service Area	Asset Class	Asset Value (2017\$M)
Transportation	Roads	Not determined
	Structures	Not determined
	Sidewalks	Not determined
	Street lights	\$2.8
Environmental Services	Watermains	\$1.4
	Sanitary Sewers	\$15.3
	Storm Sewers	\$13.1
	Stormwater Management Ponds	\$7.2
Total		\$39.8

6.3 Operating Needs Forecast

The Town undertakes regularly programmed activities for operating and maintaining its assets. Expected growth in population and asset portfolio growth will place pressure on the capacity of existing operations and maintenance needs. Figure 6-8 represents the operating expenditures for Public Works, Leisure & Community Services, Fire & Emergency Services, and Financial Services & IT. The 2018 Operating Expenditures of \$53.2 million is based on the Town's 2018 Operating Budget (excluding Library, Cemetery, General Administration, Council, Corporate Services, and Development Services).

Note that the Operating Budget provides transfers to reserves for funding the capital budget. In 2018, the Operating Budget is funding \$8 million to the capital budget (net transfer to reserves). The population growth rate of 1.38% was used to forecast the operating budget over the next ten years, resulting in an annual average of \$56.6 million. For comparison purposes, the DC Study projected a \$5.7 million additional impact on operating expenditures by the end of its 10 to 13 year forecast for newly constructed assets. Figure 6-8, based on the population growth rate assumption, shows a slightly more conservative forecast, as it shows an increase of \$7.0 million in annual operating expenditures by the end of the 10 year forecast.

Figure 6-8 Annual Operating Expenditures (2017\$M)



6.4 Funding Sources

The Capital Plan identifies the various sources for funding the capital expenditures, including capital reserves, donations, and subsidies. Over the next ten years, it is forecasted that \$14.2 million is required annually to renew the existing asset portfolio, and \$16.4 million annually when considering the next 50 years. Unassumed assets and those assets identified in the DC Study account for \$158.3 million in growth assets, and their maintenance needs over time will add to the long-term financial renewal investment requirements.

During the Capital Planning process, the Town will need to continue to make efficient use of available funding, while balancing the priorities among expanding, upgrading, and renewing existing asset portfolios.

7. Monitoring & Improvement

7.1 Overview

This AM Plan is a living document that will be updated regularly to reflect the improvement of asset management maturity within the Town over time. O.Reg 588/17 'Asset Management Planning for Municipal Infrastructure' under the Infrastructure for Jobs and Prosperity Act, 2015 requires review and updates to the AM Plan at least every five years. The regulation also articulates the specific content requirements for the AM Policy and AM Plans. The Regulation requires that:

- every municipality prepare a strategic asset management policy by July 1, 2019 and shall review and, if necessary, update it at least every five years
- every municipality prepare an asset management plan, current levels of service, in respect of its core municipal infrastructure assets by July 1, 2021, and in respect of all of its other municipal infrastructure assets by July 1, 2023
- every municipality prepare an asset management plan, proposed levels of service, in respect of all of its municipal infrastructure assets by July 1, 2024
- every asset management plan must indicate how all background information and reports upon which the information is based will be made available to the public
- every asset management plan be endorsed by the executive lead of the municipality, and approved by a resolution passed by the municipal council

Table 7-1 summarizes the compliance of this 2017 Asset Management Plan with the 2021 (core assets) and 2023 (non-core assets) requirements in O.Reg. 588/17 (current levels of service). Core assets are bolded and highlighted in the Asset Class column. For core assets, the AM Plan is in compliance with regulatory requirements. Asterisks indicate that basic compliance has been met, however, improvements are to be pursued to improve the level of accuracy and completeness of analyses. A discussion on compliance and improvements is provided for core and non-core assets in Section 7.2.

Table 7-1 AM Plan Compliance with O.Reg. 588/17 (Current Levels of Service)

Service Area		Asset Class		State of Infrastructure	Levels of Service	AM Strategies	Financial Strategy	
Public Works	Transportation	Roads		Compliant*	Compliant	Compliant	Compliant	
		Structures		Compliant	Compliant	Compliant	Compliant	
		Street lights		Compliant*	Compliant	Compliant	Compliant	
		Traffic Signals		Compliant	Compliant	Compliant	Compliant	
		Sidewalks		Compliant*	Compliant	Compliant	Compliant*	
		Fleet		Compliant	Compliant	Compliant	Compliant	
		Equipment		Compliant	Compliant	Compliant	Compliant	
	Environmental Services	Water	Watermains		Compliant	Compliant	Compliant	Compliant
			Water Meters		Compliant	Compliant	Compliant	Compliant
		Waste Water	Sanitary Mains		Compliant	Compliant	Compliant	Compliant
			Storm	Storm Sewers		Compliant	Compliant*	Compliant
		Stormwater Ponds		Compliant*	Compliant*	Compliant*	Compliant*	
		Storm Culverts, Headwalls		In progress	In progress	In progress	In progress	
		Fleet		Compliant	Compliant	Compliant	Compliant	
Equipment		Compliant	Compliant	Compliant	Compliant			
Leisure & Community Services	Facilities		Compliant*	Compliant*	Compliant	Compliant*		
	Land Improvements		Compliant*	Compliant	Compliant	Compliant*		
	Playgrounds & Pergolas		Compliant	Compliant	Compliant	Compliant		
	Fleet		Compliant	Compliant	Compliant	Compliant		
	Equipment		Compliant	Compliant	Compliant	Compliant		
	Trees		In progress	In progress	In progress	In progress		
Fire & Emergency Services	Fire Stations		Compliant	Compliant	Compliant	Compliant		
	Fleet		Compliant	Compliant	Compliant	Compliant		
	Equipment		Compliant*	Compliant	Compliant	Compliant		
Financial Services & IT	IT	Hardware		Compliant*	Compliant	Compliant	Compliant	
		Software		Compliant*	Compliant	Compliant	Compliant	

*Basic compliance has been met; however, improvements are required to improve the level of accuracy and completeness of analysis.

7.2 Recommended Improvements

7.2.1 Core Assets (Year 2021 Requirements)

For core assets, the main area of improvement is required for stormwater and road assets. The current inventory of stormwater ponds needs to be further developed into a

more detailed hierarchy of assets, with defined asset attributes such as construction year, pond volume, and costs. A more accurate inventory and valuation of stormwater ponds will enable development of more detailed asset management strategies and result in a more accurate financial forecast. In this AM Plan, only dredging costs (once every 15 years for each pond) have been included as a lifecycle activity in the financial forecast.

For stormwater levels of service, O.Reg. 588/17 requires that the Town track the percentage of properties resilient to a 100-year storm. In the absence of network hydraulic modeling, the Town has documented historically flooded road areas. It is recommended that instances of flooded roads/properties be documented formally going forward.

For roads, PCI scores from the previous assessment (2013) were used, adjusted to reflect 4 years of deterioration and any capital treatments applied since 2014, to determine an adjusted PCI score for 2017. It is recommended that future updates of the AM Plan incorporate the most recent PCI information available to improve the accuracy of the state of infrastructure analysis.

7.2.2 Non-Core Assets (Year 2023 Requirements)

Public Works – Transportation

Street lights: The street light inventory used in this AM Plan did not include construction dates, and therefore an estimated condition could not be assessed.

Sidewalks: TCA data was used for the sidewalk inventory, though it was noted that the accuracy of the inventory could be improved. It is recommended that the GIS inventory for sidewalks be further improved and used in future updates to this AM Plan for an improved inventory valuation and financial forecast. The inventory for bike paths (asphalt sidewalks) should also be developed and included. Some of these bike paths may already be captured in the GIS inventory for trails.

Public Works – Environmental Services

Storm culverts and headwalls: The Town is developing inventories for storm culverts and headwall, and these asset classes are to be included in a future update of this AM Plan.

Leisure & Community Services

Facilities: The Town recently completed BCAs for ten of its facilities. It is recommended that assessments for all facilities be completed such that a complete FCI analysis and more accurate forecast of expenditures across the portfolio can be developed. Work done on facilities needs to be recorded and kept up-to-date such that current facility condition can be assessed on a continuous basis. The Town is also completing insurance valuations of the facilities, and these should be used to update the TCA cost valuations used in this AM Plan.

Land Improvements: The inventory for land improvements (ball diamond, tennis courts, etc.) was based on TCA data, which was reviewed collaboratively with the Town. This inventory should be further reviewed to improve accuracy. The Town maintains a detailed inventory of trails in GIS; this inventory can be used in future updates instead of TCA data when trail widths are added to the dataset. Replacement values can then be determined for trails based on a per unit area basis using current construction costs. These inventory improvements will improve the accuracy of the financial forecast.

Trees: The Town is currently developing its inventory of trees, including condition assessment data. Natural assets are managed quite differently than civil infrastructure assets, and have different valuation considerations that will need to be considered in the updated AM Plan.

Fire & Emergency Services

Fire equipment: Town staff developed an inventory of fire equipment for this AM Plan. It is recommended that purchase dates be recorded and tracked (at a bulk purchase level) such that repurchase intervals can be better forecasted.

Financial Services & IT

IT Hardware: The overall inventory of IT hardware was developed based on the inventory of equipment purchased in 2017. The Town is planning on maintaining a yearly inventory of purchases going forward.

7.2.3 O.Reg. 588/17 Year 2024 Requirements (Proposed Levels of Service)

By July 1st 2024, the Regulation requires further analysis of the relationship between cost and levels of service, and understanding of the risks associated with not carrying out planned lifecycle activities due to a funding shortfall. To satisfy regulation requirements, the Town will need to pursue further analysis of levels of service and risk.

Proposed Levels of Service Development

Municipalities will be required to provide an explanation of why the proposed levels of service are appropriate for the municipality, based on an assessment of the following:

- i. The options for the proposed levels of service and the risks associated with those options to the long term sustainability of the municipality.
- ii. How the proposed levels of service differ from the current levels of service.
- iii. Whether the proposed levels of service are achievable.
- iv. The municipality's ability to afford the proposed levels of service.

The Town strives to provide levels of services cost effectively – at the lowest possible cost for both current and future customers. Willingness to pay and availability of

finances will ultimately control the ability of the Town to achieve its proposed levels of service.

To establish the Level of Service and Cost of Service relationship, the Town must understand the current performance being provided, and determine the full cost to deliver this performance. Determining the cost to deliver the current performance will include tracking the following:

- Direct tangible costs (i.e., those costs to the Town that can be directly traced to the specific service) such as program costs and asset lifecycle costs
- Indirect tangible costs (i.e., those costs to the Town that cannot be directly traced to the specific service) such as corporate administration and overhead
- Less tangible community costs such as road user costs and risk of environmental impacts. It is common not to consider these until direct and indirect costs are well understood.

Once the Town understands the full cost to deliver the current performance, public consultation is required for the Town to establish proposed performance levels that are appropriate, achievable and affordable as per the O.Reg. 588/17 July 1st, 2024 requirements.

Levels of Service Public Consultation

After the Town understands the full costs to deliver current performance, the Town should consult with the community and other stakeholders to set performance targets (i.e. proposed levels of service). Effective consultation can be characterized by:

- An attempt to constructively engage customers in decision making
- An inclusive process that fosters open and transparent communication
- Aligning with other strategic Town public engagement initiatives.

Communicating with customers offers the opportunity to understand broad community priorities and seek input into current and proposed levels of service. The recommended stages of customer consultation include the following:

Stage 1: Identify what customers value (representative stakeholders): To determine what customers value and how much value they place a particular level of service attribute over another (e.g. cost effectiveness versus responsiveness).

Stage 2: Seek input to levels of service and willingness to pay (focus groups): Explores proposed levels of service with customers. The consultation typically includes surveys and user group meetings where the proposed levels of service are presented. As the cost of service and the levels of service provided are linked, the Town must be able to define the associated costs of each levels of service option. This ensures that “willingness to pay” is an integral part of the consultation. The costs should be presented in terms the customer can understand, such as the average cost per consumer.

Stage 3: Seek Agreement on Levels of Service (wider group): Gives customers and the wider community an opportunity to comment on the proposed levels of service. This consultation is generally undertaken with the wider population rather than specific focus groups. Generally, levels of service increases and associated cost of service increases occur within a total budget constraint for all activities which must be affordable to the community. Therefore, increasing funding for one activity will often cause a decrease in funds elsewhere and a related decrease in service. This stage of consultation often focuses on bringing these very disparate services together and seeks feedback on the relative importance of each service in relation to other services provided by the Town.

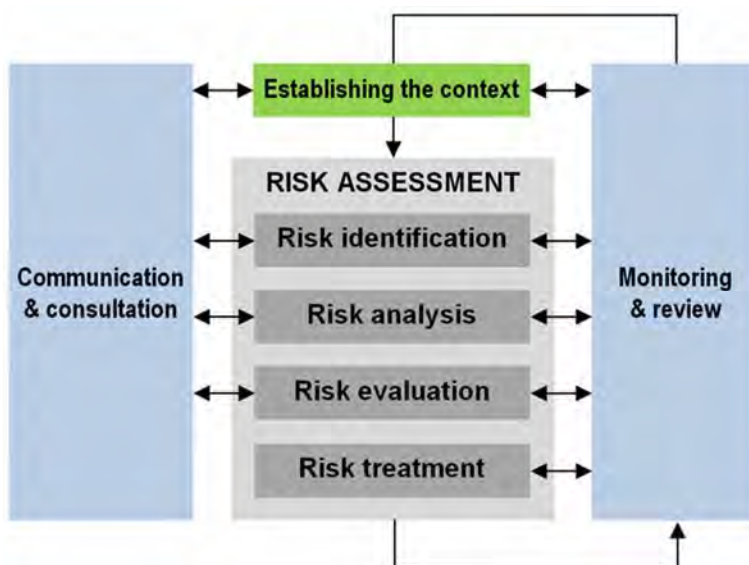
Once these stages of public consultation are complete, the Town will be well positioned to establish levels of service performance targets (or key performance indicators) as well as operational, work and program levels indicators.

Risk Management Framework Development

By July 1st, 2024, municipalities will be required to review funding options and identify which lifecycle activities can be undertaken in the event of a funding shortfall. A discussion on managing the risks of not carrying out the desired lifecycle strategies will need to be included in the AM Plan.

For example, the Town should understand the increase in risk if a mill and pave treatment is not performed on a deteriorating arterial road segment compared to the increase in risk if a local road in very poor condition is not reconstructed. This risk assessment requires development and implementation of a corporate risk framework that provides a structured approach to identifying, evaluating and managing risks. The ISO 31000 Standard for Risk Management provides globally accepted principles and guidelines for risk analysis and risk assessment. This process for risk analysis and risk assessment is shown in Figure 7-1.

Figure 7-1 ISO 31000 Risk Management Process



Development of the corporate Risk Management Framework requires constructive engagement and feedback from Town staff on the following key components:

- Likelihood Analysis Matrix – typically a 5-point scale that evaluates the likelihood of a threat event causing an asset to fail in meeting its proposed level of service objectives
- Consequence Analysis Matrix – typically a 5-point scale that evaluates the criticality of the asset by assessing the impact of the asset failure on level of service performance objectives. The consequence of failure is typically measured against triple bottom factors: social, environmental, and economic factors.
- Risk Threshold Levels – Stakeholders must establish threshold levels for likelihood and consequence of failure scores that determine if the risk event is to be categorized as high or low risk. Treatment options would be prioritized on high risk events to reduce risk to acceptable levels through a reduction in Likelihood and/or Consequence of Failure.

The components above, as part of the Risk Management Framework, provides a consistent and repeatable process for the Town to assess risks, support asset investment decision-making and the efficient allocation of resources, and meet the long-term requirements of O.Reg. 588/17.