Asset Management Plan

Township of Gauthier

Interim Report (Revision 1)

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List of Acronyms and Abbreviations

BCI	Bridge Condition Index
C.I.R.C	Canadian Infrastructure Report Card
CCBF	Canada Community-Building Fund
HCB	High-Class Bituminous
IJPA	Infrastructure for Jobs and Prosperity Act
LCB	Low-Class Bituminous
O. Reg.	Ontario Regulation
OCIF	Ontario Community Infrastructure Fund
OSIM	Ontario Structure Inspection Manual
PCI	Pavement Condition Index
PSAB	Public Sector Accounting Board
ULC%	Useful Life Consumed Percentage

1. Introduction

1.1 Overview

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

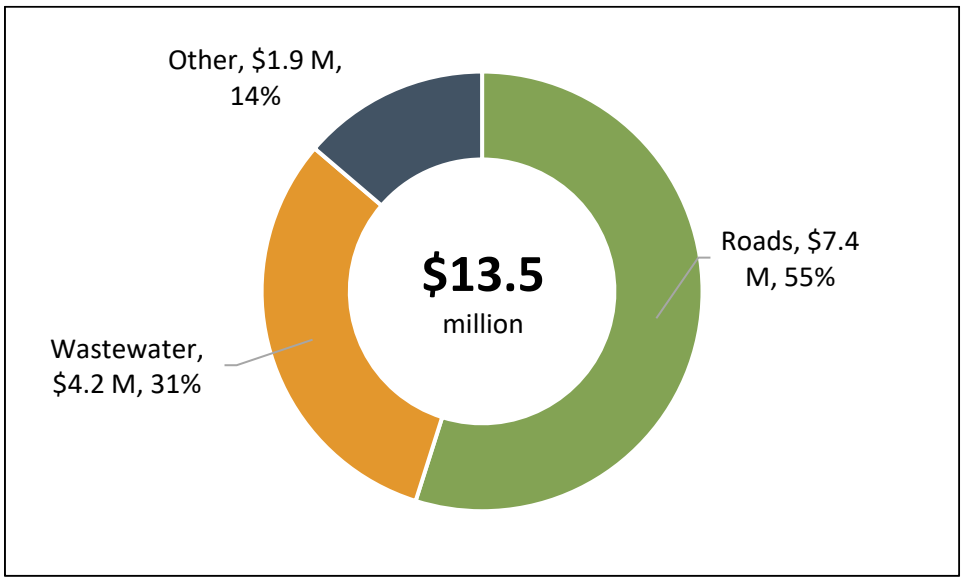
The Township of Gauthier (Township) worked with Watson & Associates Economists Ltd. (Watson) through the AMP it Up 3.0 program to prepare this interim version of an asset management plan. It has been prepared based on available information for the Township.

The Township continues to work with Watson on the next iteration of the asset management plan, which will be compliant with the July 1, 2025 requirements of O. Reg. 588/17. The work underway includes disaggregating the "Other" asset class, expanding and refining the lifecycle management strategies section, and developing a financial strategy.

Table 1-1: Replacement Cost by Asset Class

Asset Class	Description	Replacement Cost (2022$)
Roads	13.9 km of roads (asphalt, surface treated, and gravel)	$7,394,000
Wastewater	Wastewater mains, lift station, and leaching bed	$4,230,000
Other	9 buildings, 4 vehicles, and 23 pieces of equipment	$1,850,000
Total		$13,474,000

Figure 1-1: Distribution of Replacement Cost by Asset Class



1.2 Legislative Context for the Asset Management Plan

Asset management planning in Ontario has evolved significantly over the past decade.

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

In 2012, the Province launched the municipal infrastructure strategy. As part of that initiative, municipalities and local service boards seeking provincial funding were required to demonstrate how any proposed project fits within a detailed asset management plan. In addition, asset management plans encompassing all municipal assets needed to be prepared by the end of 2016 to meet Federal Gas Tax (now the Canada Community-Building Fund) agreement requirements. To help define the components of an asset management plan, the Province produced a document entitled Building Together: Guide for Municipal Asset Management Plans. This guide

documented the components, information, and analysis that were required to be included in municipal asset management plans under this initiative.

The Province's *Infrastructure for Jobs and Prosperity Act, 2015* (IJPA) was proclaimed on May 1, 2016. This legislation detailed principles for evidence-based and sustainable long-term infrastructure planning. The IJPA also gave the Province the authority to guide municipal asset management planning by way of regulation. In late 2017, the Province introduced O. Reg. 588/17 under the IJPA. The intent of O. Reg. 588/17 is to establish standard content for municipal asset management plans. Specifically, the regulations require that asset management plans be developed that define the current and proposed levels of service, identify the lifecycle activities that would be undertaken to achieve these levels of service, and provide a financial strategy to support the levels of service and lifecycle activities.

2. State of Local Infrastructure and Levels of Service

2.1 Introduction

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

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

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

Asset management plans must identify the current levels of service being provided for each asset category. For core municipal infrastructure assets, both the qualitative descriptions pertaining to community levels of service and metrics pertaining to technical levels of service are prescribed by O. Reg. 588/17. For all other infrastructure assets, each municipality needs to establish its own measures for levels of service.

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

2.2 Roads

2.2.1 State of Local Infrastructure

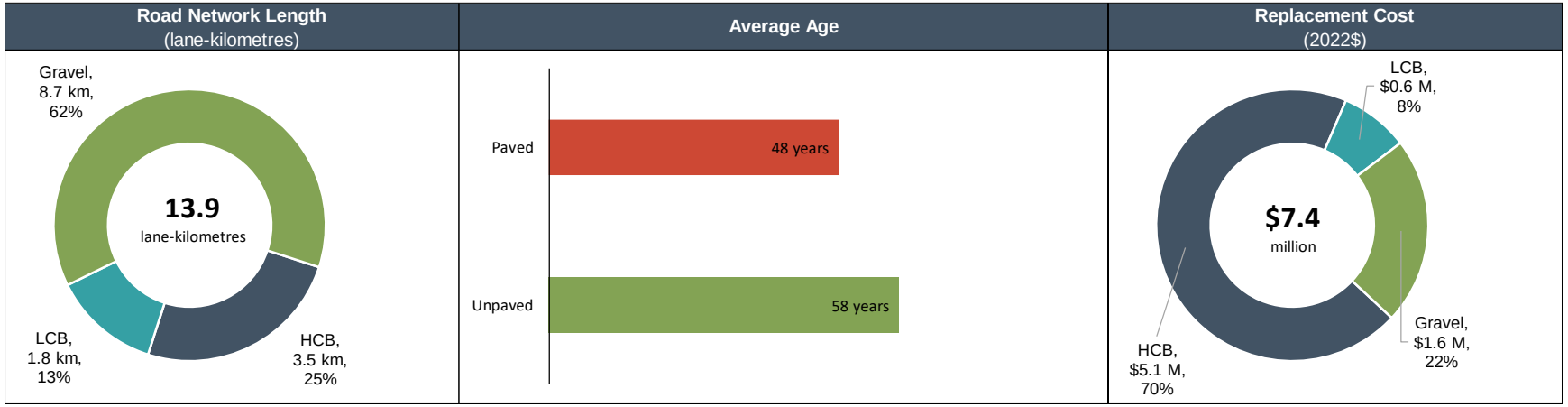
The Township's transportation services are delivered by its road network. The road network spans a total of 13.5 kilometres, comprising roads with three different surface types: high-class bituminous (HCB), low-class bituminous (LCB) and gravel. Over half of the network (62%) is gravel. The next most common surface type is HCB, 25% of the

total road network length. Roads with LCB surface represent 13% of the total road network length. The estimated replacement cost of roads is $7.4 million. Table 2-1 provides a breakdown of the road network length, age, and replacement cost by surface type. A visual rendering of the data presented in Table 2-1 is provided in Figure 2-1

Table 2-1: Road Length, Age, and Replacement Cost by Surface Type

Surface Type	Length (Centreline-kilometres)	Average Age (years)	Replacement Cost (2022$)
HCB	3.5	48.2	$5,130,000
LCB	1.8		$610,000
Gravel	8.7	58.3	$1,650,000
Total	**13.9**		**$7,390,000**

Figure 2-1: Road Length, Age, and Replacement Cost by Surface Type



2.2.2 Condition

Township staff assessed the Township's roads using a subjective three-point scale – Good (3), Fair (2), and Poor (1). Table 2-2 shows qualitative descriptions corresponding to each condition rating. This three-point scale is considered to be a pavement condition index (PCI) for the purposes of complying with the requirements of O. Reg. 588/17.

Table 2-2: Condition Ratings with Descriptions

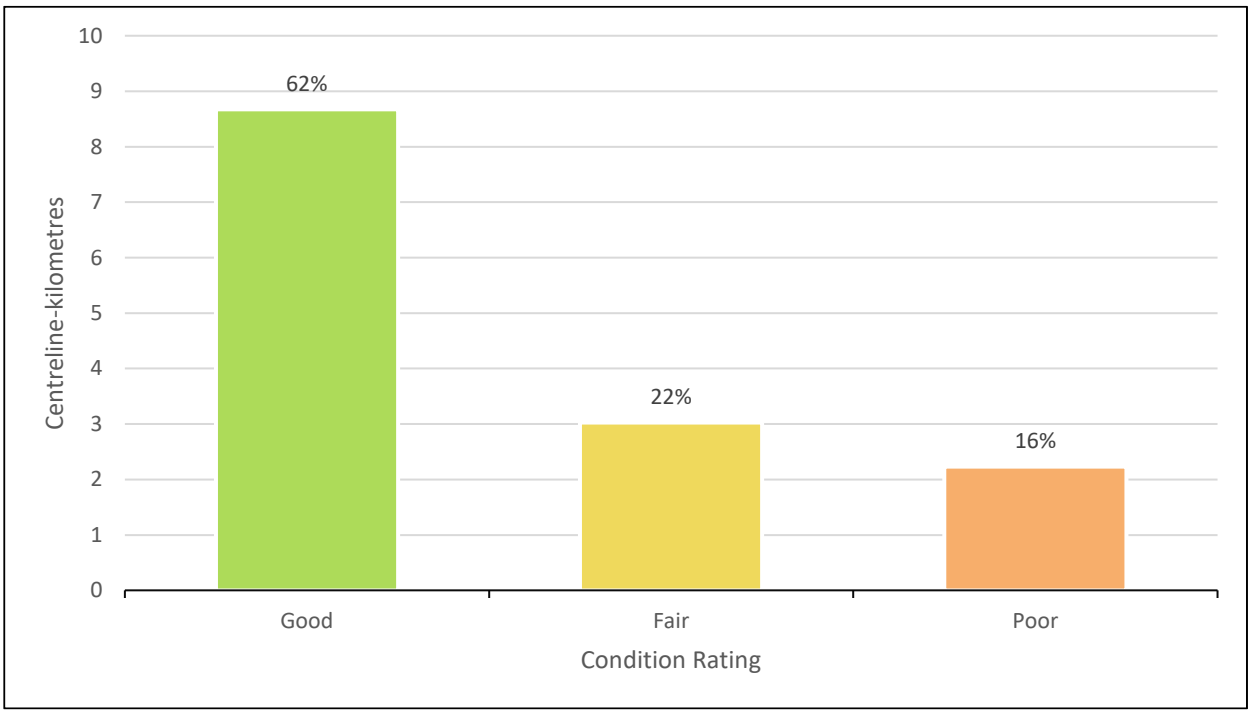
PCI	Condition Rating	Description
3	Good	A smooth ride with just a few bumps or depressions.
2	Fair	A comfortable ride with intermittent bumps or depressions.
1	Poor	An uncomfortable ride with frequent to extensive bumps or depressions. May not be able to maintain the posted speed.

Table 2-3 shows the average condition of the road network by surface type, which is weighted based on centreline-kilometres. On average, HCB roads are in Fair condition a LCB and Gravel roads are in the Good condition. Figure 2-2 shows the distribution of road length by condition.

Table 2-3: Average Road Condition by Surface Type

Asset Class	Quantity	PCI	Replacement Cost (2022$)
HCB	3.5	1.4	Poor
LCB	1.8	3.0	Good
Gravel	8.7	2.8	Good

Figure 2-2: Distribution of Road Length (centreline-km) by Condition State



2.2.3 Current Levels of Service

The levels of service currently provided by the Township's transportation system are, in part, a result of the state of local infrastructure identified above. A levels of service analysis defines the current levels of service and enables the Township to periodically evaluate these service level objectives. The prescribed levels of service reporting requirements under O. Reg. 588/17 for roads are shown in Table 2-5.

The tables are structured as follows:

- The Service Attribute headings and columns indicate the high-level attribute being addressed;
- The Community Levels of Service column in Table 2-4 explains the Township's intent in plain language; and
- The Performance Measure column in Table 2-5 describes a performance measure connected to the identified service attribute;
- The 2022 Performance column in Table 2-5 reports current performance for the performance measure.

Table 2-4: Transportation Service Community Levels of Service

Service Attribute	Community Levels of Service
Scope	The Township's transportation assets enable the movement of people and goods within the Township and provide connectivity to Provincial roads.
Quality	The Township strives to maintain road surfaces to a level that supports an adequate travel experience for road users.
	Descriptions of road condition ratings are shown in Table 2-2.

Table 2-5: Transportation Service Technical Levels of Service

Service Attribute	Performance Measure	2022 Performance
Scope	Number of lane-kilometres of arterial roads as a proportion of square kilometres of land area of the Township	Not Applicable
	Number of lane-kilometres of collector roads as a proportion of square kilometres of land area of the Township	Not Applicable
	Number of lane-kilometres of local roads as a proportion of square kilometres of land area of the Township	0.317 lane-km/km²
Quality	For paved roads in the municipality, the average pavement condition index value	Fair (1.9)
	For unpaved roads in the municipality, the average surface condition	Good (2.8)

2.3 Wastewater

2.3.1 State of Local Infrastructure

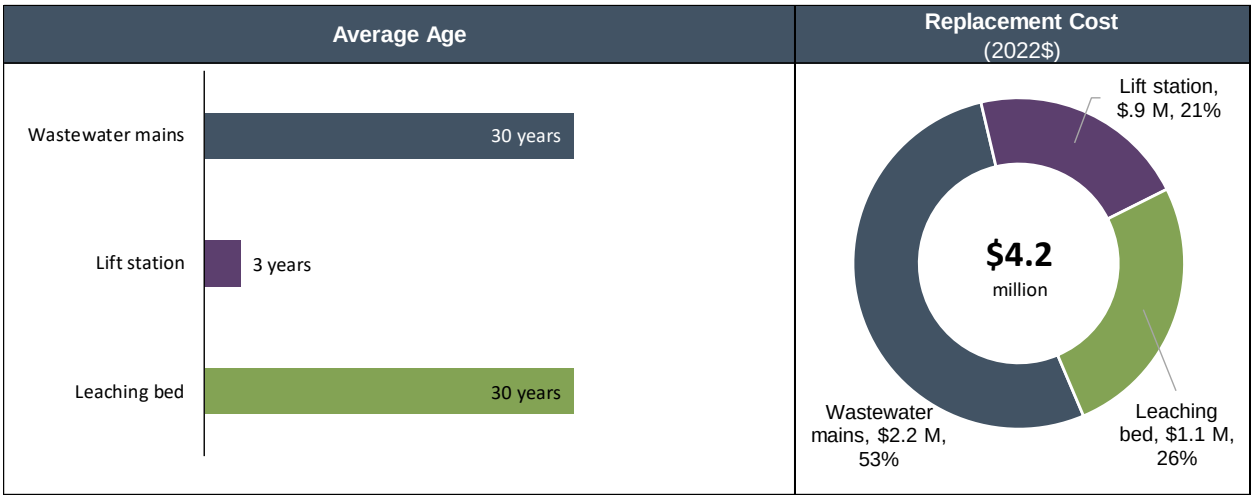
The Township provides wastewater services in the community of Dobie. The Township operates a leaching bed that handles liquid effluent from connected septic systems. Property owners are responsible for periodically removing accumulated solids from their septic tanks.

Table 2-6 provides a breakdown of wastewater assets, including quantity, age, and replacement cost by asset class. A visual rendering of the data presented in Table 2-6 is provided in Figure 2-3

Table 2-6: Wastewater Asset Quantity, Age, and Replacement Cost by Asset Class

Asset Class	Quantity	Average Age	Replacement Cost (2022$)
Wastewater mains	1.74 km[1]	30 years	$2,230,000
Lift station	1 station	3 years	$900,000
Leaching bed	1 bed	30 years	$1,100,000
Total		25 years	$4,230,000

Figure 2-3: Wastewater Age and Replacement Cost by Asset Class



2.3.2 Condition

The condition of the Township's wastewater assets has been evaluated based on age relative to the expected useful life (i.e., based on the percentage of useful life consumed (ULC%)). A brand-new asset would have a ULC% of 0%, indicating that zero percent of

[1] The Township does not have a detailed inventory of its wastewater mains. The length of wastewater mains was estimated using a web mapping service based on a description of the wastewater collection network provided by Township staff.

the asset's life expectancy has been utilized. On the other hand, an asset that has reached its life expectancy would have a ULC% of 100%. It is possible for assets to have a ULC% greater than 100%, which occurs if an asset has exceeded its typical life expectancy but continues to be in service. This is not necessarily a cause for concern; however, it must be recognized that assets that are near or beyond their typical life expectancy are likely to require replacement or rehabilitation in the near term.

To better communicate the condition of wastewater assets and other assets where ULC% will be used, the ULC% ratings have been segmented into qualitative condition states as summarized in Table 2-7. The scale is set to show that if assets are replaced around the expected useful life, they would have a rating of Fair. The rating of Fair extends to 125% of expected useful life. Beyond 125% of useful life, the probability of failure is assumed to have increased to a point where performance would be characterized as Very Poor.

Table 2-7: Condition States Defined with Respect to ULC%

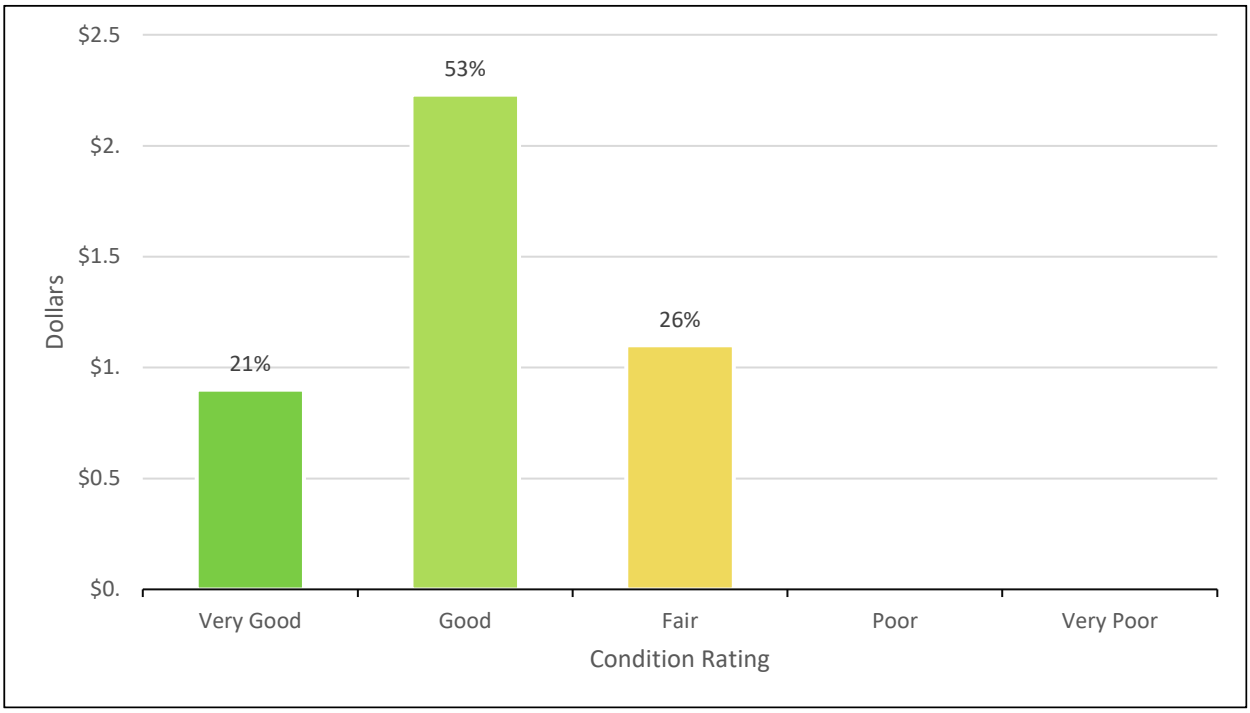
ULC% Range	Condition State
0% ≤ ULC% ≤ 45%	**Very Good**
45% < ULC% ≤ 90%	**Good**
90% < ULC% ≤ 100%	**Fair**
100% < ULC% ≤ 125%	**Poor**
125% < ULC%	**Very Poor**

Based on the age and expected useful life assumptions provided by Township staff, the wastewater mains are on average in the Good condition state, the lift station is in the Very Good condition state, and the leaching bed is in the Fair condition state. Table 2-8 presents the results of the condition analysis for wastewater assets. Figure 2-4 shows the distribution of wastewater asset replacement cost by condition state.

Table 2-8: Average Wastewater Asset Condition by Asst Class

Asset Class	Quantity	Average Condition State
Wastewater mains	1.74 km	**Good**
Lift station	1 station	**Very Good**
Leaching bed	1 bed	**Fair**

Figure 2-4: Distribution of Wastewater Asset Replacement Cost by Condition State



2.3.3 Current Levels of Service

This subsection provides an overview of the Township's level of service framework for wastewater. Table 2-9 and Table 2-10 show community levels of service and technical levels of service respectively.

Table 2-9: Wastewater Service Community Levels of Service

Service Attribute	Community Levels of Service
Scope	The Township provides wastewater service to the community of Dobie.
Reliability	The Township strives to minimize wastewater service interruptions.
	Stormwater enters sanitary sewers by two routes: inflow and infiltration. Inflow refers to stormwater flows entering into sanitary sewers via access points, such as maintenance holes, that are not fully sealed or through deliberate connection of sources of stormwater to the wastewater system (e.g., downspouts and basement sump pumps). Infiltration refers to groundwater entering sanitary mains through cracks, holes, failed joints, and incorrect or faulty connections.
	Wastewater assets are designed to be resilient to stormwater inflow and infiltration by having capacity to handle flows significantly higher than average daily flows. This enables them to keep up with higher flows that are created by stormwater inflow and infiltration.
	The Township's wastewater system does not discharge effluent.

Table 2-10: Wastewater Technical Levels of Service

Service Attribute	Performance Measure	2022 Performance
Scope	Percentage of properties connected to the municipal wastewater system.	9%[1]
Reliability	The number of connection-days per year lost due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.	0 connection days / connection
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.	Not Applicable

2.4 Other Assets

2.4.1 State of Local Infrastructure

In addition to transportation and wastewater assets, the Township also has buildings, vehicles, and equipment, which have been grouped together in this section. Examples of the Township's facilities include the Township office, hockey barn, fire hall/garage, and boat house. Examples of vehicles include the Ford F550 and pumper trucks. Examples of equipment include gym equipment at the Town office gym, generators, the lawn tractor, and garbage cans at Crystal Beach.

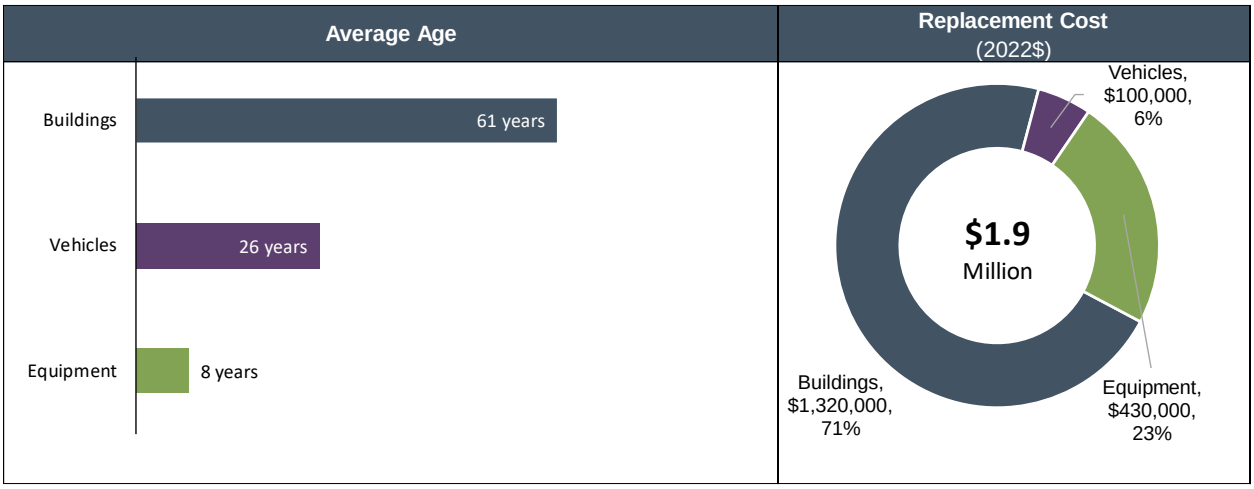
Table 2-11 provides a breakdown of these assets, including quantity, age, and replacement cost by asset class. A visual rendering of the data presented in Table 2-11 is provided in Figure 2-5

[1] Based on 50 properties being connected to the wastewater system and 544 properties in the Township (50/544 = 9%). The number of properties in the Township was estimated based on the number of Tax Roll Numbers.

Table 2-11: Other Asset Quantity, Age, and Replacement Cost by Asset Class

Asset	Quantity	Average Age (years)	Replacement Cost (2022$)
Buildings	9	61	$1,320,000
Vehicles	4	26	$100,000[1]
Equipment	22	8	$430,000
Total	**35**	**47**	**$1,850,000**

Figure 2-5: Other Asset Age and Replacement Cost by Asset Class



2.4.2 Condition

As was done with wastewater assets, the condition of the majority of Other assets is evaluated based on age relative to the expected useful life. The subjective condition states associated with ULC% ranges are summarized in Table 2-7. In some cases, the age-based condition was adjusted based on Township staff experience working with the assets. As an example, Township staff provided a subjective evaluation of the condition of facilities because the age of facilities is not a good indicator of their condition.

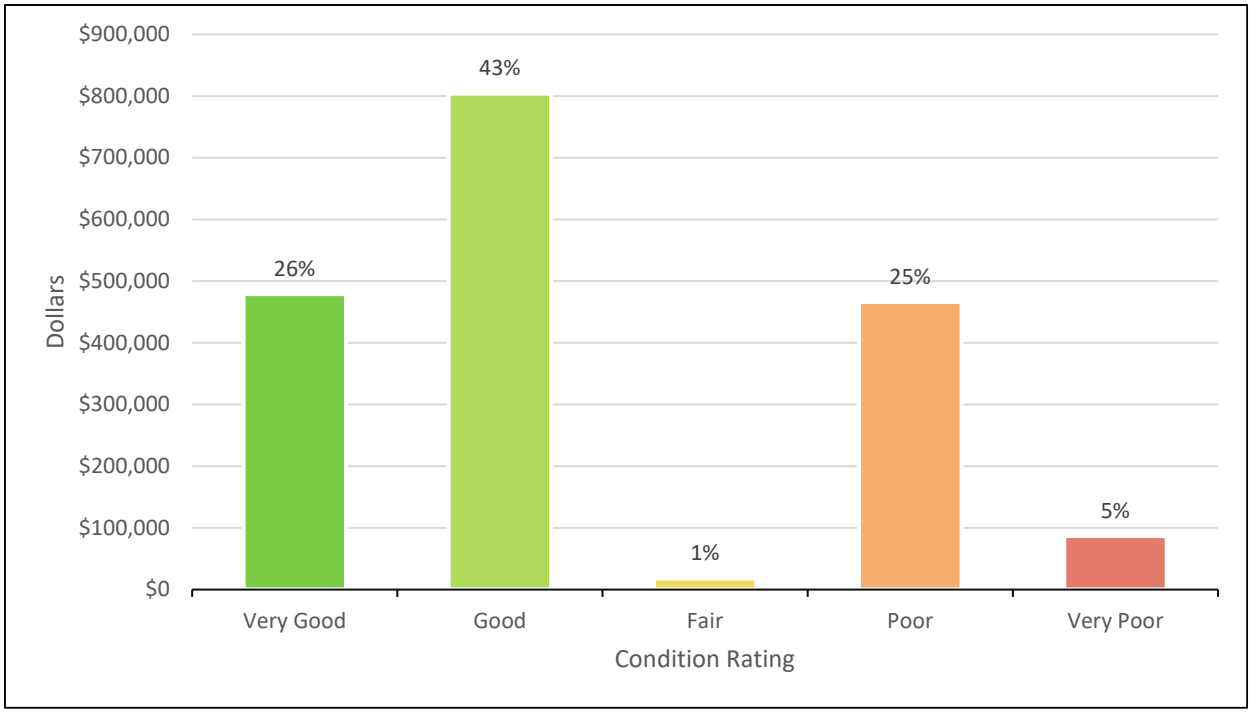
[1] The reported replacement cost for vehicles is the typical cost of purchasing a used vehicle, which is the Township's current practice.

Based on the age and expected useful life assumptions provided by Township staff, buildings are on average in the Good condition state, vehicles are in the Poor condition state, and equipment is in the Fair condition state. Table 2-12 presents the results of the condition analysis for Other assets. Figure 2-6 shows the distribution of Other asset replacement cost by condition state.

Table 2-12: Average Other Asset Condition by Asst Class

Asset Class	Quantity	Average Condition State
Buildings	9	**Good**
Vehicles	4	**Poor**
Equipment	23	**Fair**

Figure 2-6: Distribution of Other Asset Replacement Cost by Condition State



2.4.3 Current Levels of Service

This subsection provides an overview of the Township's level of service framework for Other assets. Table 2-9 and Table 2-10 show community levels of service and technical levels of service respectively.

Table 2-13: Other Assets Community Levels of Service

Service Attribute	Community Levels of Service
Scope	The Township has buildings, vehicles, and equipment in Dobie and at Crystal beach that support delivery of Township services.
Reliability	The Township ensures that buildings, vehicles, and equipment are functioning as intended.

Table 2-14: Other Asset Technical Levels of Service

Service Attribute	Performance Measure	2022 Performance
Reliability	Average condition rating of buildings	Good (3.77)
	Percentage of buildings with a condition rating of fair or better	67%
	Average condition rating of vehicles	Poor (2.00)
	Percentage of vehicles with a condition rating of fair or better	0%
	Average condition rating of equipment	Fair (3.47)
	Percentage of equipment with a condition rating of fair or better	82%

2.5 Population and Employment Growth

According to the 2021 census, the population of the Township was 151 in 2021. While the population of the Township fluctuates up and down modestly over time, sustained long-term growth is not expected.

3. Lifecycle Management Strategy

3.1 Introduction

This chapter details the lifecycle management strategies that identify the recommended lifecycle activities required to maintain current levels of service discussed in Chapter 2. Within the context of this asset management plan, lifecycle activities are the specified actions that can be performed on an asset in order to ensure it is performing at an appropriate level, and/or to extend its service life.[1] These actions can be carried out on a planned schedule in a prescriptive manner, or through a dynamic approach where the lifecycle activities are only carried out when specified conditions are met.

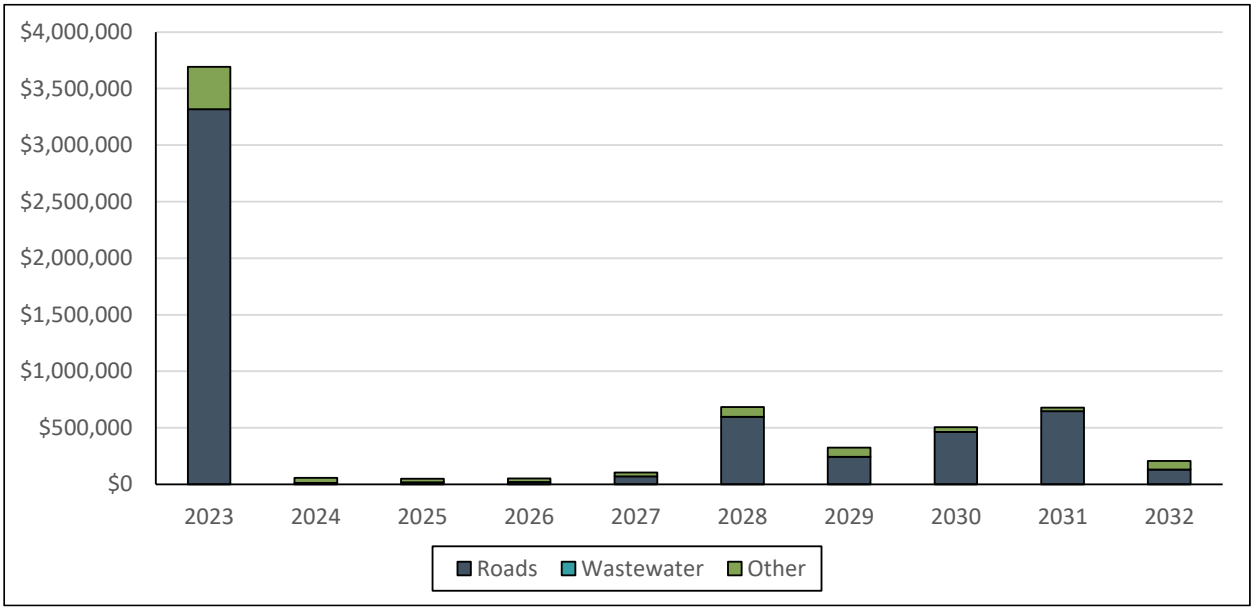
O. Reg. 588/17 requires that all potential lifecycle activity options be assessed, with the aim of identifying the set of lifecycle activities that can be undertaken at the lowest cost to meet the targeted levels of service. Asset management plans must include a 10-year capital lifecycle activities expenditure forecast that forecasts the lifecycle activities resulting from the lifecycle management strategy.

3.2 Lifecycle Expenditure Forecast

Figure 3-1 shows a preliminary 10-year forecast based on the inventory data that has been compiled and some additional assumptions about lifecycles based on work Watson has completed with other municipalities. The high expenditures for roads identified for 2023 is the result of having assessed condition on a 3-point scale and the simple lifecycle assumptions used to generate the 10-year lifecycle expenditure forecast. A more refined forecast will be included in the next iteration of the asset management plan currently under development.

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

Figure 3-1: Annual Capital Expenditures by Asset Class (2022$)



3.3 Average Annual Lifecycle Costs

While the 10-year capital plan provides an estimate of lifecycle expenditures in the short- and medium-term, it does not help set capital funding targets because it does not account for the full lifecycle of the assets. To account for needs beyond the 10-year forecast period, average annual lifecycle costs[1] need to be estimated. Lifecycle Models Approach

Based on the same assumptions made to produce the lifecycle expenditure forecast, the total average annual lifecycle cost for the Township's assets is estimated at $388,000. A breakdown of this total is provided in Table 3-1.

[1] The average annual lifecycle cost for an asset is the total cost of all lifecycle activities over its full lifespan divided by its expected useful life.

Table 3-1: Average Annual Lifecycle Cost by Asset Class

Asset Class	Average Annual Lifecycle Cost (2022$)
Roads	$187,800
Wastewater	$111,300
Other	$88,900
Total	**$388,000**