



Asset Management Plan – Core Assets

Village of Sundridge

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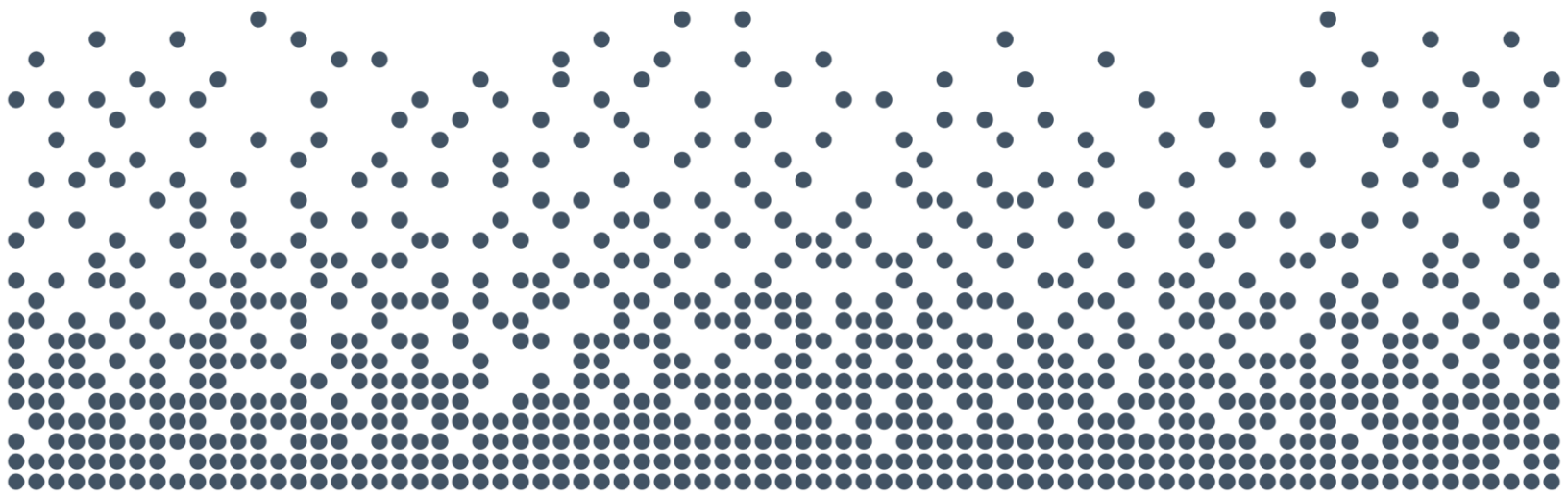
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List of Acronyms and Abbreviations

HCB	High-class Bituminous
IJPA	Infrastructure for Jobs and Prosperity Act
LCB	Low-class Bituminous
O. Reg.	Ontario Regulation
PCI	Performance Condition Index
PSAB	Public Sector Accounting Board



Report



Chapter 1

Introduction



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 Village of Sundridge (Village) retained Watson & Associates Economists Ltd. (Watson) to develop a new asset management plan to replace the Village's 2017 Asset Management Plan. This asset management plan is the result of the first phase of the project. The intent of this phase is to bring the Village's asset management plan into compliance with the July 1, 2022 requirements of Ontario Regulation (O. Reg.) 588/17. The second and third phases of the project, to be completed in coming months, will result in a comprehensive asset management plan covering all of the Village's assets. The comprehensive asset management plan will include a financial strategy that balances cost with levels of service.

The assets included in this iteration of the asset management plan are the core municipal assets which fall into the following asset classes:

- Transportation;
- Wastewater; and
- Stormwater.

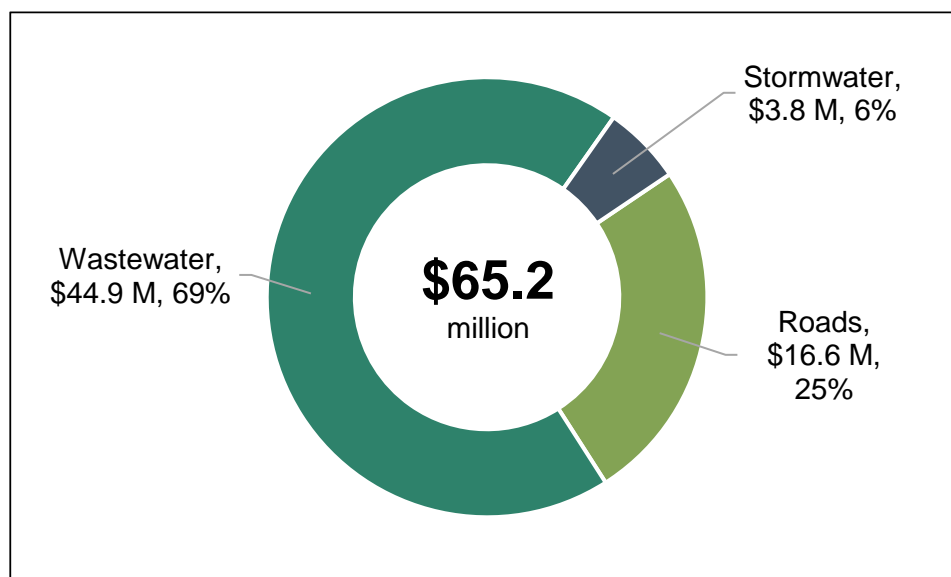
The total replacement cost of the Village's core assets has been estimated at \$65.2 million. A breakdown of the total replacement cost by asset class is provided in Table 1-1 and is illustrated in Figure 1-1. Wastewater infrastructure accounts for over two-thirds of the replacement cost (69%), followed by transportation (25%), and stormwater infrastructure (6%).



Table 1-1: Asset Classes and Replacement Cost

Asset Class	Replacement Cost (2022\$)
Transportation	\$16,600,000
Wastewater	\$44,800,000
Stormwater	\$3,800,000
Total	\$65,200,000

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 regulation requires that asset management plans be developed that define the current levels of service, identify the lifecycle activities that will be undertaken to achieve these levels of service, and provide a financial strategy to support the levels of service and lifecycle activities.

This plan has been developed to address the July 1, 2022 requirements of O. Reg. 588/17. It utilizes the best information available to the Village at this time.

1.3 Asset Management Plan Development

This asset management plan was developed using an approach that leverages the Village's asset management principles as identified within its strategic asset management policy, capital asset data, and staff input.

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

1. Compile available information pertaining to the Village's capital assets to be included in the plan, including attributes such as size, material type, useful life, age, and current replacement cost valuation. Update the current replacement



cost valuation, where required, using benchmark costing data or applicable inflationary indices.

2. Define and assess current asset conditions, based on a combination of Village staff input, existing background reports and studies (e.g., 2022 Road and Sidewalk Condition Assessment).
3. Define and document current levels of service based on analysis of available data and consideration of various background reports.
4. Develop lifecycle management strategies that identify the activities required to sustain the levels of service discussed above. The outputs of these strategies are summarized in the forecast of annual capital and operating expenditures required to achieve these levels of service outcomes.
5. Document the asset management plan in a formal report to inform future decision-making and to communicate planning to municipal stakeholders.



Chapter 2

State of Local Infrastructure and Levels of Service



2. State of Local Infrastructure and Levels of Service

2.1 Introduction

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

O. Reg. 588/17 requires that for each asset class 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 class. For core infrastructure assets, O. Reg. 588/17 prescribes several qualitative descriptions pertaining to community levels of service and metrics pertaining to technical levels of service that must be included in the asset management plan.

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

2.2 Transportation

2.2.1 *State of Local Infrastructure*

The Village owns and manages a variety of assets that support the provision of transportation services and that contribute to the overall level of service provided by the Village. The focus for the time being has been placed on the Village's roads as these are considered core assets under O. Reg. 588/17 and must be included in the Village's asset management plan by July 1, 2022. The analysis for transportation services will be



expanded in the future to include all transportation assets that contribute in various ways to the overall level of service (e.g., sidewalks and signs).

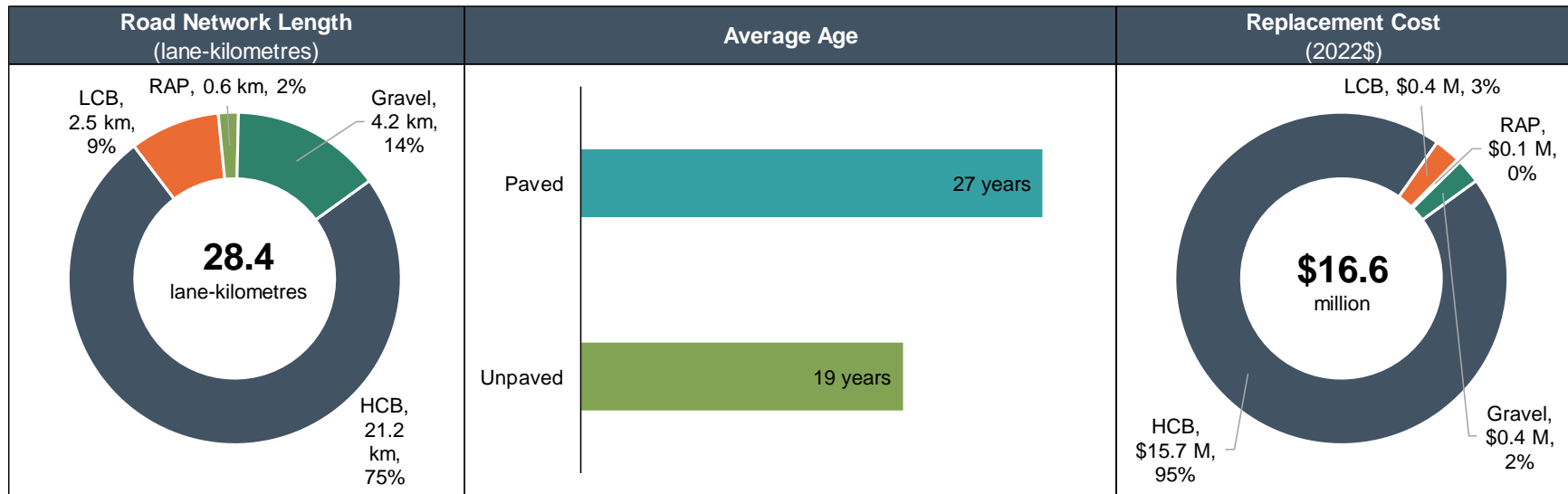
The road network consists of roads with various surface types, including high-class bituminous (HCB), low-class bituminous (LCB), reclaimed asphalt pavement (RAP), and gravel. The estimated replacement cost of roads is approximately \$16.6 million. Table 2-1 provides a breakdown of the road network by surface type, showing the number of lane-kilometres, average age, and replacement cost. A visual rendering of the data presented in Table 2-1 is provided in Figure 2-1. A spatial illustration of the Village's road network and its extent is provided in Map 2-1.

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

Surface Type	Lane-kilometres	Average Age of Surface (years)	Replacement Cost (2022\$)
HCB	21.2	27.3	\$15,700,000
LCB	2.5		\$420,000
RAP	0.6	19.0	\$50,000
Gravel	4.2		\$400,000
Total	28.4		\$16,570,000



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





Map 2-1: Roads by Surface Type



2.2.2 Condition

The Village periodically has the condition of its paved roads assessed by external consultants. The most recent condition assessment was completed in 2022 by StreetScan. The condition of paved roads is reported using the Pavement Condition Index (PCI)^[1]. The PCI is measured on a scale from 0 to 100, with 100 corresponding to an asset in as-new condition and 0 corresponding to a failed asset.

To better communicate the condition of the road network, the numeric condition ratings for roads have been segmented into qualitative condition states as shown in Table 2-2.

^[1] PCI is calculated based on the methodology in SP-024 Manual for Condition Rating of Flexible Pavements (Ontario Ministry of Transportation, 2016)



Moreover, descriptions of roads in these condition states are provided to better communicate the condition to the reader.

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

PCI Range	Condition State	Description ^[1]
$85 \leq \text{PCI} \leq 100$	Excellent	A very smooth ride. Pavement has a few cracks.
$70 \leq \text{PCI} < 85$	Good	A smooth ride with just a few bumps or depressions. The pavement has frequent very slight or slight cracking.
$55 \leq \text{PCI} < 70$	Fair	A comfortable ride with intermittent bumps or depressions. The pavement has intermittent moderate and frequent slight cracking and intermittent slight or moderate alligating and distortion.
$40 \leq \text{PCI} < 55$	Poor	An uncomfortable ride with frequent to extensive bumps or depressions. Cannot maintain the posted speed at lower end of the scale. The pavement has frequent moderate cracking and distortion and intermittent moderate alligating.
$25 \leq \text{PCI} < 40$	Very Poor	A very uncomfortable ride with constant jarring bumps and depressions. Cannot maintain the posted speed and must steer constantly to avoid bumps and depressions. The pavement has moderate alligating and extensive severe cracking and distortion.
$10 \leq \text{PCI} < 25$	Serious	The pavement has extensive severe cracking, alligating and distortion.
$0 \leq \text{PCI} < 10$	Failed	

^[1] Descriptions are adapted from SP-024 Manual for Condition Rating of Flexible Pavements (Ontario Ministry of Transportation, 2016)



RAP and gravel roads are maintained in a condition state described as Good by regravelling them on an as-needed basis and grading them annually.

Table 2-3 shows the average condition of roads by surface type. On average, HCB roads are in the Fair condition state and RAP and gravel roads are in the Good condition state. The distribution of paved roads by condition (as measured by PCI) is presented in Figure 2-2. As can be seen in Figure 2-2, while the average condition state of paved roads is Fair, about one-quarter of paved roads are in a condition state of Poor or worse.

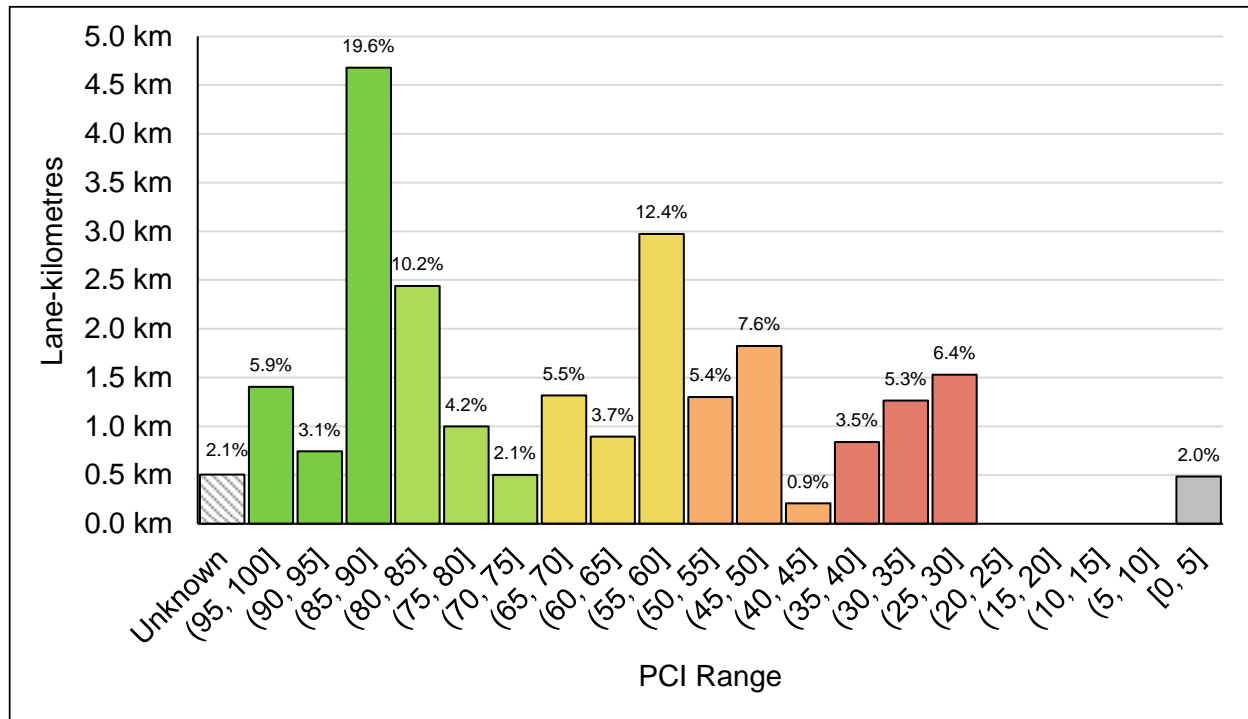
Table 2-3: Average Condition of Roads by Surface Type

Surface Type	Lane-kilometres	Average PCI	Average Condition State
HCB	21.2	65.8	Fair
LCB	2.5	67.7 ^[1]	Fair
RAP	0.6	Not Applicable	Good
Gravel	4.2	Not Applicable	Good

^[1] Condition for LCB roads was assessed by the Township of Strong in 2020.



Figure 2-2: Distribution of Paved Roads by PCI Range



2.2.3 Current Levels of Service

The levels of service currently provided by the Village’s transportation assets are, in part, a result of the state of local infrastructure identified above. The levels of service framework defines the current levels of service that will be tracked over time. There are prescribed levels of service reporting requirements under O. Reg. 588/17 for roads. Table 2-4 and Table 2-5 include the prescribed community and technical levels of service. Targets will be set for all technical levels of service in future iterations of the asset management plan.

The tables are structured as follows:

- The Service Attribute columns indicate the high-level attribute being addressed;
- The Community Levels of Service column in Table 2-4 explains the Village’s intent in plain language and provides additional information about the service being provided;
- The Performance Measure column in Table 2-5 describes the performance measure(s) connected to the identified service attribute; and



- The 2021 Performance column in Table 2-5 reports current performance for the performance measure.

Table 2-4: Transportation Community Levels of Service

Service Attribute	Community Levels of Service
Scope	The Village's transportation network enables the movement of people and goods within the Village and provide connectivity to provincial roads. The Village's transportation assets are used by pedestrians, cyclists, passenger, commercial, and emergency vehicles.
	The scope of the Village's transportation network is illustrated by Map 2-1. The map shows the geographical distribution of the Village's roads.
Quality	The Village strives to maintain road surfaces to a level that provides an adequate travel experience to road users.
	To aid in interpreting condition states, Table 2-2 provides descriptions of how each condition state may affect the use of these assets.

Table 2-5: Transportation Technical Levels of Service

Service Attribute	Performance Measure	2021 Performance
Scope	Number of lane-kilometres of arterial roads as a proportion of square kilometres of land area of the Village.	Not Applicable
	Number of lane-kilometres of collector roads as a proportion of square kilometres of land area of the Village.	Not Applicable
	Number of lane-kilometres of local roads as a proportion of square kilometres of land area of the Village.	12.4 lane-km/km ²
Quality	For paved roads in the Village, the average pavement condition index value.	66
	For unpaved roads in the Village, the average surface condition (good, fair, poor).	Good



2.3 Wastewater

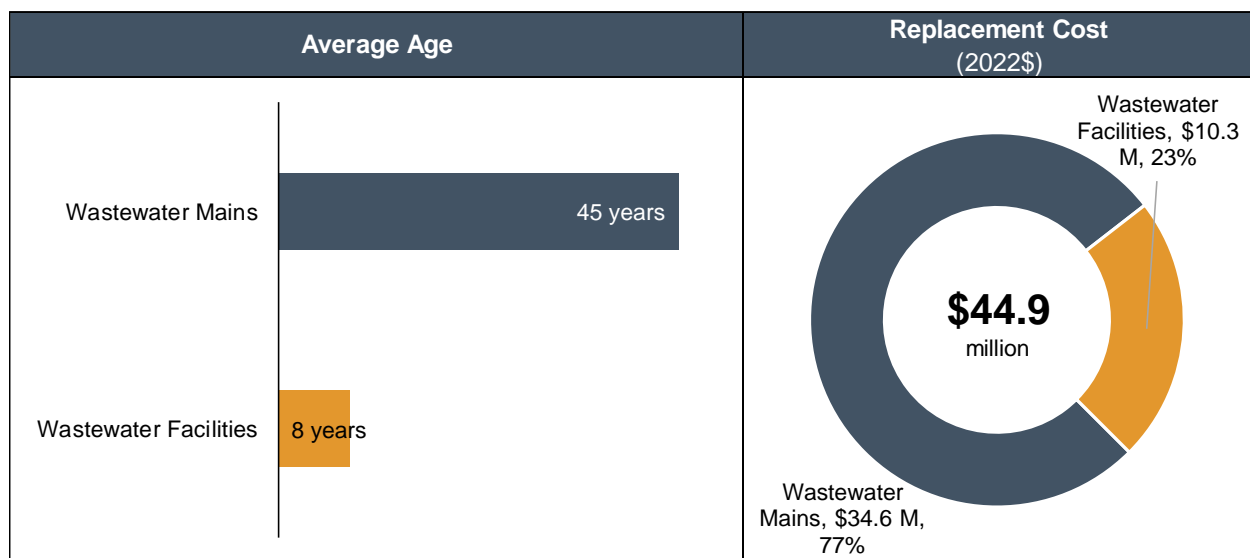
2.3.1 State of Local Infrastructure

The Village provides wastewater service to all properties except those on Commerce Court, Victoria Street (Private Road), Highway 124 from Paget to Tower Road and some waterfront properties that do not have access to Main Street. Table 2-6 shows summary information for the Village’s wastewater system, including quantities, average ages, and replacement costs by asset type. 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 Type

Asset Type	Quantity	Average Age (Years)	Replacement Cost (2022\$)
Wastewater Mains	31 kilometres	45	\$34,560,000
Wastewater Facilities	2 Pumping Stations 1 Treatment Facility 1 Treatment Lagoon	8	\$10,330,000
Total			\$44,890,000

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





2.3.2 Condition

The condition of the Village’s wastewater assets was assessed by staff qualitatively on a five-point scale – Very Good, Good, Fair, Poor, and Very Poor. All wastewater mains were assessed as being in Fair condition. 49% of treatment facilities were assessed as being in Good condition and 51% were assessed as being in Fair condition.^[1]

Table 2-7: Average Condition of Wastewater Assets by Asset Type

Asset Type	Quantity	Average Condition State
Wastewater Mains	31 kilometres	Fair
Wastewater Facilities	2 Pumping Stations 1 Treatment Facility 1 Treatment Lagoon	Fair

2.3.3 Current Levels of Service

This subsection provides an overview of the Village’s level of service framework for wastewater service.

^[1] Percentages calculated based on replacement value of assets assessed in each condition category.



Table 2-8: Wastewater Community Levels of Service

Service Attribute	Community Levels of Service
Scope	The Village provides wastewater service to all properties except those on Commerce Court, Victoria Street (Private Road), Highway 124 from Paget to Tower Road and some waterfront properties that do not have access to Main Street.
Reliability	The Village strives to minimize disruption to wastewater service.
	The Village does not have combined sewers (sewers designed to carry both sanitary and storm water in a single pipe). Historical construction practices and the aging of existing infrastructure has resulted in degradation of the system over time, allowing storm and groundwater to enter the sanitary sewers (also referred to as inflow and infiltration) reducing available capacity in the sewer and treatment facilities.
	Several strategies are used to prevent sewage from overflowing into streets and backing up into homes when there are wet weather events. 90% of manholes have rain stops to prevent stormwater from entering the wastewater system. The system also has capacity to handle flows significantly higher than average daily flows to help address peak flows. If a facility is overwhelmed by excess flows, partial or full bypasses, and/or overflow procedures are used to relieve pressure on overwhelmed facility. This is done in accordance with the related Environmental Compliance Approval and the operating design of the facility.
	In accordance with O. Reg. 588/17, a description of the effluent that is discharged from the Village's wastewater treatment facility is provided in the treatment plant's Environmental Compliance Approval (ECA # 5728-B6QQ5E).



Table 2-9: Wastewater Technical Levels of Service

Service Attribute	Performance Measure	2021 Performance
Scope	Percentage of properties connected to the municipal wastewater system.	88%
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.	0 violations / connection

2.4 Stormwater

2.4.1 State of Local Infrastructure

The stormwater management system provides for the collection of stormwater in order to protect properties and roads from flooding. The Village’s stormwater infrastructure comprises approximately 3.4 kilometres of stormwater mains with a replacement cost of approximately \$3.8 million. Table 2-10 shows length, average age, and replacement cost for stormwater mains. A spatial illustration of the Village’s stormwater system and its extent is provided in Map 2-2^[1].

Table 2-10: Stormwater Infrastructure – Quantity, Age, and Replacement Cost by Asset Category

Asset Category	Quantity	Average Age	Replacement Cost (2022\$)
Stormwater Mains	3.4 km	30 years	\$3,780,000

^[1] Ditches are included in the map of the stormwater system, but are considered part of the road network.



Map 2-2: Stormwater System

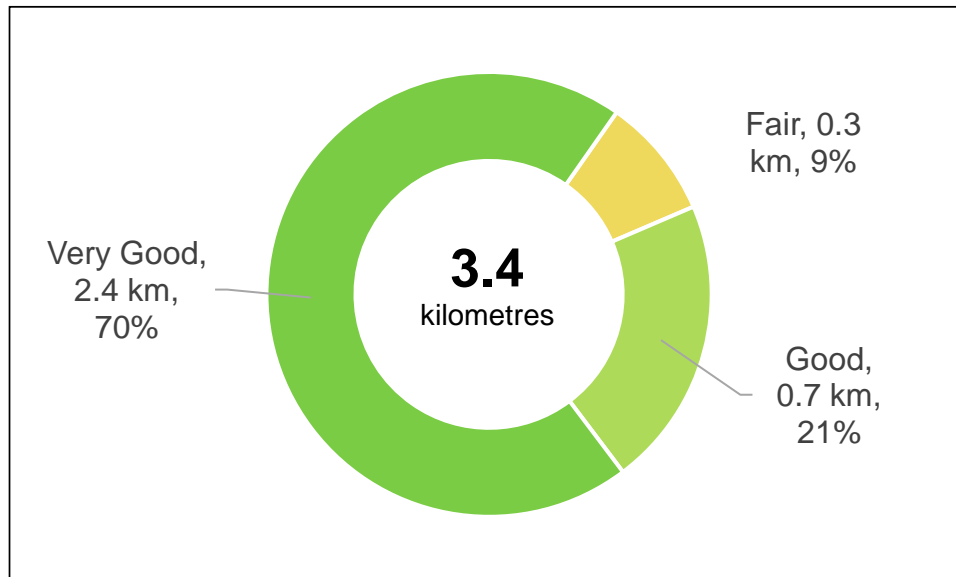


2.4.2 Condition

As with wastewater assets, the condition of the Village's stormwater mains was assessed by staff qualitatively on a five-point scale – Very Good, Good, Fair, Poor, and Very Poor. Figure 2-4 shows the distribution of stormwater mains by condition. On average, they are in Very Good condition.



Figure 2-4: Distribution of Stormwater Mains by Condition



2.4.3 Current Levels of Service

This section provides an overview of the Village’s level of service framework for stormwater service.

Table 2-11: Community Levels of Service – Stormwater

Service Attribute	Community Levels of Service
Scope	Map 2-2 shows the extent of the Village’s stormwater system.

Table 2-12: Technical Levels of Service – Stormwater

Service Attribute	Performance Measure	2021 Performance
Scope	Percentage of properties in municipality resilient to a 100-year storm.	100%
	Percentage of the municipal stormwater management system resilient to a 5-year storm.	100%



2.5 Population and Employment Growth

Based on the 2021 census, the Village had a population of 938 in 2021. The Village's draft Official Plan released for public review and consultation in May 2022 anticipates population being sustained or growing to 1,200 over the next 20 years.

Continued population growth may result in incremental service demands that would impact levels of service. If needed, the Village would address these pressures through established planning processes such as development of master plans for specific services. If future master planning studies identify the need for new infrastructure and/or upgrades of existing infrastructure to accommodate future population growth, the Village should consider the option of imposing development charges. Utilizing development charges would ensure that the effects of future population growth do not increase the cost of maintaining levels of service for existing taxpayers.



Chapter 3

Lifecycle Management Strategies



3. Lifecycle Management Strategy

3.1 Introduction

The lifecycle management strategy in this asset management plan identifies the lifecycle activities that would need to be undertaken to maintain the current levels of service presented in Chapter 2.^[1] 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.^[2] 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 maintain current levels of service. Asset management plans must include a ten-year capital forecast, identifying the lifecycle activities resulting from the lifecycle management strategy.

The following sections detail the ten-year forecasts of lifecycle activities and associated costs that would be required for the Village to maintain current levels of service.

3.2 Transportation Services

This section presents a preliminary estimate of the costs associated with maintaining the Village's core transportation assets (roads) at the current or potentially an improved level of service. The estimate is based on lifecycle models for roads developed with input from Village staff and condition data from the 2022 Road and Sidewalk Condition Assessment. This forecast will be refined in the next iteration of the asset management plan later this year.

^[1] Future iterations of the Village's asset management plan will include proposed levels of service and the lifecycle management strategy will identify the lifecycle activities that would need to be undertaken to provide the proposed levels of service,

^[2] 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.



The 10-year lifecycle expenditure forecast for core transportation assets is summarized in Figure 3-1 and provided in tabular form in Table 3-1. Average annual expenditures over the forecast period have been estimated at approximately \$684,000. The lifecycle expenditures of approximately \$2.8 million identified for 2023 are mainly for reconstruction of HCB roads with a PCI less than 40 in 2022. The lifecycle expenditures of approximately \$1.2 million identified for 2027 are also mainly for reconstruction of HCB roads. These roads have a PCI less than 55 but over 40 in 2022.

Figure 3-1: Lifecycle Expenditure Forecast for Core Transportation Assets (2022\$)

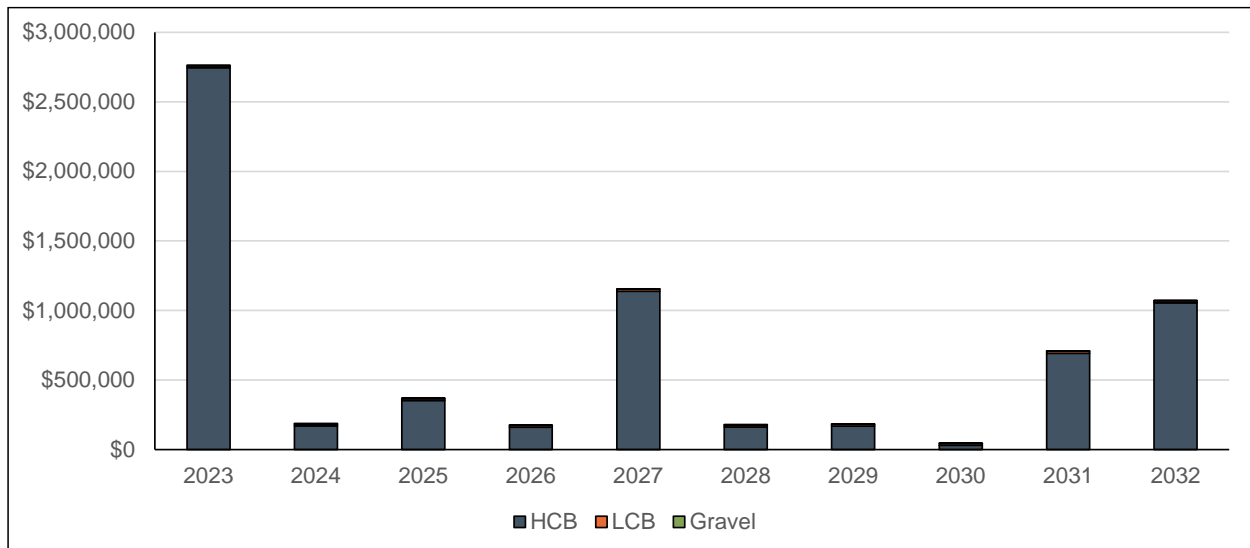




Table 3-1: Lifecycle Expenditure Forecast for Core Transportation Assets (2022\$)

Asset Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
HCB	\$2,746,336	\$170,211	\$352,720	\$159,569	\$1,138,631	\$162,672	\$167,668	\$29,565	\$692,782	\$1,055,484
LCB	\$13,894	\$13,894	\$13,894	\$13,894	\$13,894	\$13,894	\$13,894	\$13,894	\$13,894	\$13,894
Gravel	\$2,709	\$2,709	\$2,709	\$2,709	\$2,709	\$2,709	\$2,709	\$2,709	\$2,709	\$2,709
Total	\$2,762,940	\$186,815	\$369,324	\$176,173	\$1,155,235	\$179,276	\$184,272	\$46,169	\$709,385	\$1,072,088



3.3 Wastewater Services

This section presents a preliminary estimate of the costs associated with maintaining current level of service for wastewater infrastructure. The estimate for wastewater facilities is based on a six-year forecast from OCWA (2022-2027), who manages the Village’s wastewater system. Years six to ten in the lifecycle expenditure forecast have been left blank for wastewater facilities because a forecast for these years is not currently available. No replacements of wastewater mains are expected over the forecast period based on their age and expected useful life.

The 10-year lifecycle expenditure forecast for wastewater infrastructure is summarized in Figure 3-2 and is provided in tabular form in Table 3-1. Average annual expenditures over the forecast period have been estimated at approximately \$3,600. These expenditures are related to replacement of components at the wastewater treatment plant and the two pumping stations.

Figure 3-2: Lifecycle Expenditure Forecast for Wastewater Infrastructure (2022\$)

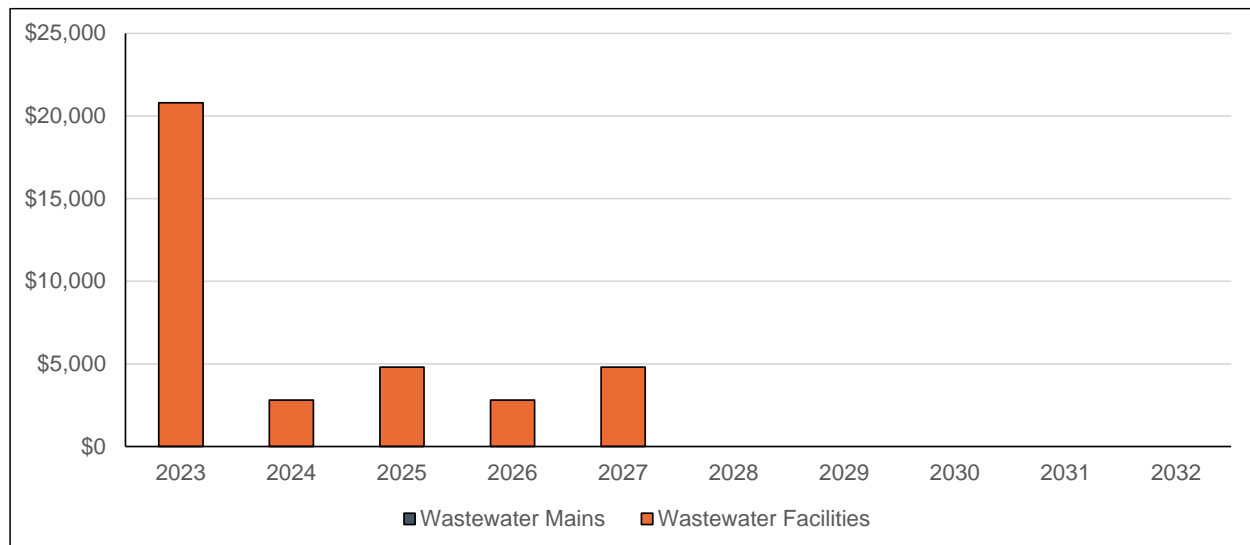




Table 3-2: Lifecycle Expenditure Forecast for Wastewater Infrastructure (2022\$)

Asset Type	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Wastewater Mains	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Wastewater Facilities	\$20,800	\$2,800	\$4,800	\$2,800	\$4,800					
Total	\$20,800	\$2,800	\$4,800	\$2,800	\$4,800	\$0	\$0	\$0	\$0	\$0



3.4 Stormwater Services

This section presents a preliminary estimate of the costs associated with maintaining current level of service for stormwater. The estimate for stormwater mains is based on age and expected useful life. No lifecycle expenditures are expected for stormwater mains over the next 10 years.



Chapter 4

Summary



4. Summary

This asset management plan has been developed to address the July 1, 2022 requirements of O. Reg. 588/17. The plan provides summary information for the Village's core infrastructure assets (including replacement cost valuation and condition), identifies current levels of service, and includes a 10-year forecast of lifecycle expenditures that would be required for the Village to maintain current levels of service. The plan is based on the best information available to the Village at this time. The Village is actively working on further expanding the asset management plan to include all Village assets, to have targets set for levels of service performance measures, and to include a detailed financial strategy. The ongoing expansion of the AMP will ensure the Village's compliance with the July 1, 2024 and July 1, 2025 requirements of O. Reg. 588/17.

Beyond regulatory compliance, the Village should continue working on integrating asset management planning with other municipal financial and planning documents. Furthermore, the Village will need to establish processes for reviewing and updating assumptions underlying the asset management plan on a regular basis to keep the plan relevant and reliable.