Township of Lucan Biddulph

ASSET MANAGEMENT PLAN

2025

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Executive Summary

The Township of Lucan Biddulph (Township) is updating its Asset Management Plan (AMP) to comply with Ontario Regulation (O. Reg.) 588/17. This regulation requires municipalities to use a comprehensive, evidence-based approach for managing their infrastructure. The 2025 AMP update delivers an integrated assessment of the Township's core and non-core assets, detailing their state of good repair (SOGR), levels of service, risks, and financial needs to ensure sustainable service delivery.

Scope of the AMP

Chapter 1 (Introduction) presents an overview of key asset management concepts, including the State of Local Infrastructure, Levels of Service (LOS), Risk Assessment, Growth, Lifecycle Activities, and Financial Strategy.

Chapters 2 through 9 focus on specific asset categories, as detailed in the table below. The Financing Strategy is presented in Chapter 10, which includes a scenario-based analysis and a proposed 10-year capital plan. Finally, Chapter 11 outlines the roadmap and next steps for the Township's ongoing asset management practices.

Core Assets	Non-Core Assets
Roads (Chapter 2)	Buildings and Facilities (Chapter 7)
Bridges and Culverts (Chapter 3)	Parks and Recreation (Chapter 8)
Water (Chapter 4)	Fleet and Equipment (Chapter 9)
Wastewater (Chapter 5)	-
Stormwater (Chapter 6)	-

Strategic Asset Management Policy Alignment

Township's Asset Management Vision:

To proactively management its assets to best serve the Township's objectives including:

- Prioritizing the needs of existing and future assets to efficiently and effectively deliver services;
- Supporting sustainability and economic development; and
- Maintaining prudent financial planning and decision making.

Goals include:

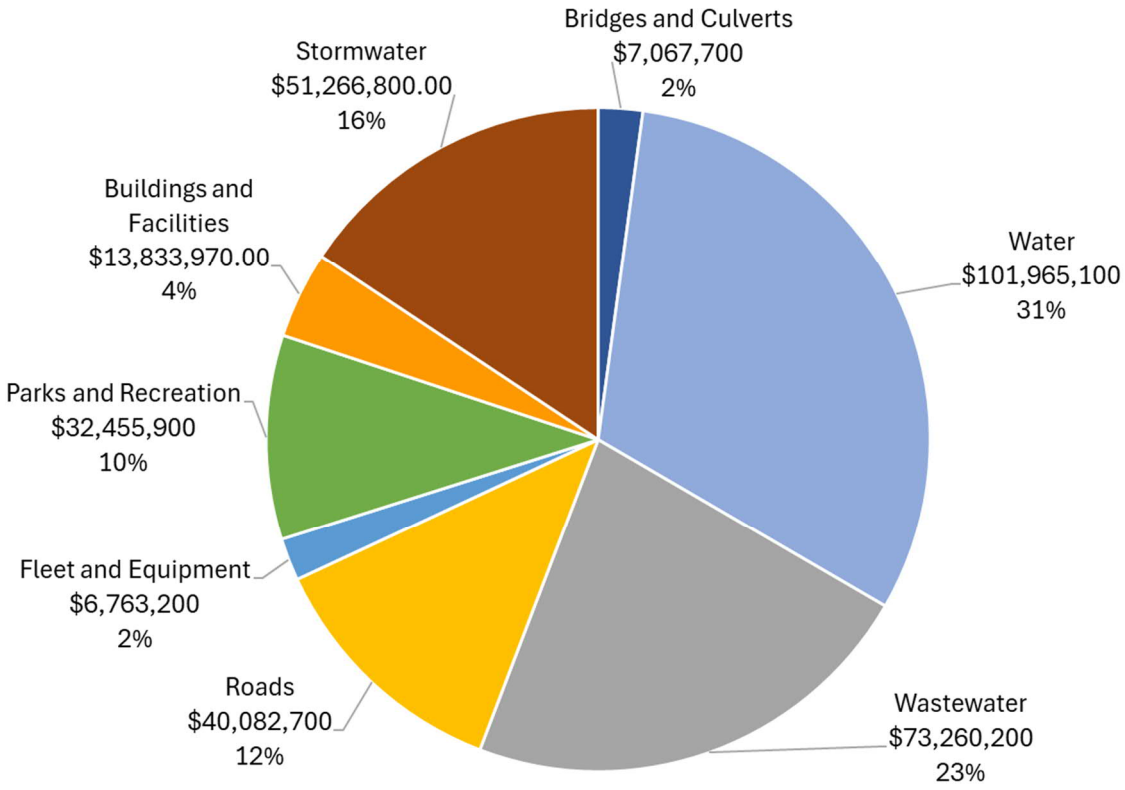
- Provide a framework for implementing asset management to enable a consistent and strategic approach at all levels of the organization;
- Provide guidance to staff responsible for asset management; and
- Provide transparency and demonstrate to stakeholders the legitimacy of decision-making processes which combine strategic plans, budgets, service levels and risk.

Regulatory Alignment

The 2025 AMP is an update to the 2022 AMP which requires alignment with the new regulation, O. Reg. 588/17, and as amended by O.Reg. 193/21 which requires all municipal assets to be covered in the asset management plan with proposed Level of Service (LOS) and a financial strategy for funding the LOS.

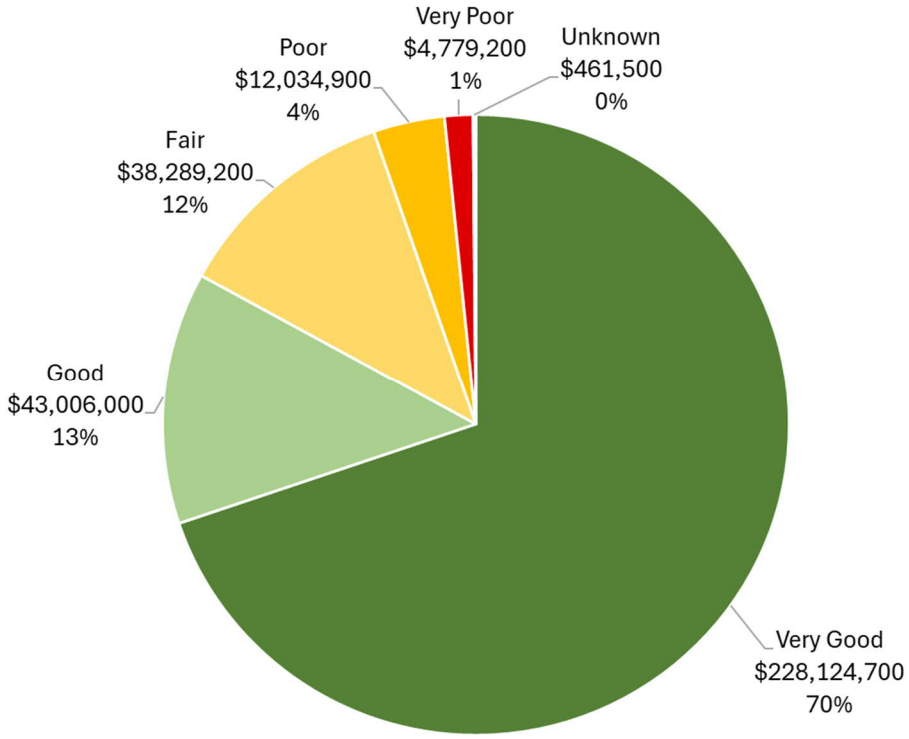
Asset Replacement Costs

The current replacement cost for the Township's infrastructure assets is $326.7 million (in 2025 dollars). The distribution of this cost by asset category is shown in the figure below. As illustrated, the Township's major assets include the water and wastewater systems.



Current State of Local Infrastructure

The current condition per asset replacement cost of the Township's infrastructure assets is shown in the figure below. Due to the relative age of the infrastructure, most assets are performing as intended with no major issues noted. Because water and wastewater systems make up over 50% of the asset portfolio, the majority of the Township's infrastructure falls within the Very Good and Good categories.

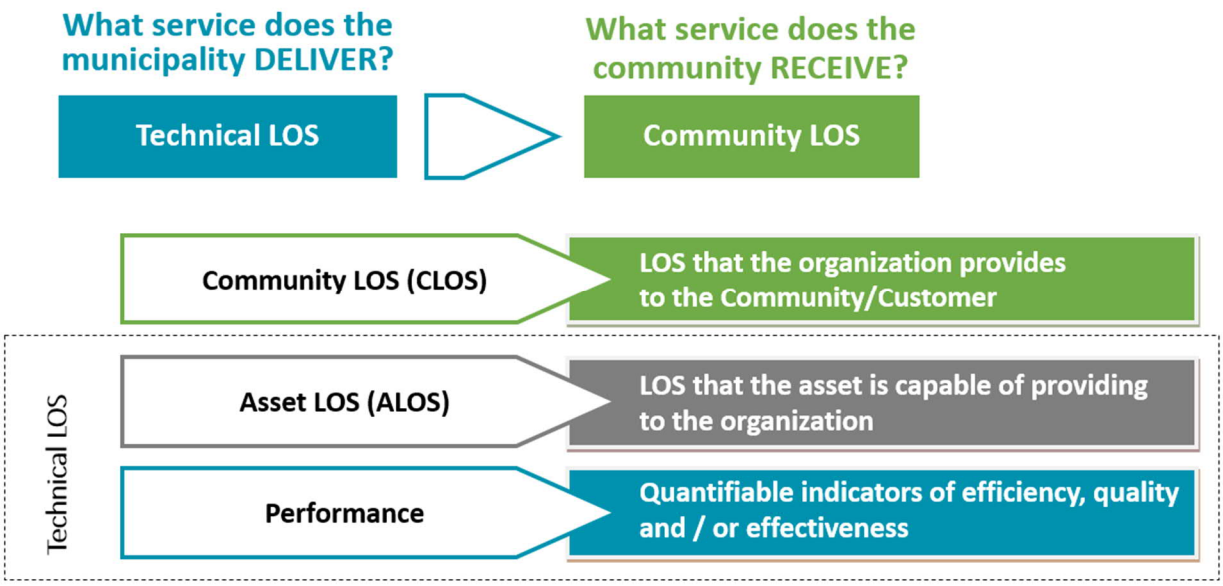


Levels of Service

The current and proposed Levels of Service (LOS) are described in terms of technical metrics and qualitative descriptions for each asset type. These measures are prescribed for core assets within O. Reg. 588/17. For non-core assets it is up to the Township to establish LOS parameters and measures.

LOS are presented in the figure below and defined as follows:

- Community LOS: LOS that the organization provides to the community, intended to be customer-focused, providing a qualitative description of scope and quality; and
- Technical LOS: LOS that the asset is capable of providing to the Township which is further measure by the performance of the asset, providing technical metrics that support the delivery of LOS.



Risk

Of the 2,200 assets tracked within the Township's asset management data with associated risk scores, none are currently classified as High risk.

There are 530 assets that were identified to be in the Moderate risk zone, which require monitoring for future replacement. The remaining assets are considered Low risk.

Growth and Future Demand

The Township is experiencing significant developments that directly impact the infrastructure capacity.

- **Population Growth:** The community is projected to grow to approximately 8,710 residents by 2046;
- Major Capital Commitments: To support this, the Township has identified growth-related projects totaling $26.62 million, including the expansion of the Lucan Wastewater Treatment Plant taking place in 2026 and upgrades to the Chestnut Sanitary Pumping Station;
- **Asset Assumption:** As development continues, the Township will assume ownership of new road, water, and wastewater assets, increasing the long-term maintenance and replacement liability; and
- Capacity Constraints: The Lucan Wastewater Treatment Plant currently operates at 77% to 83% of its rated capacity, making the planned expansion a critical priority for future development.

Lifecycle Management Strategy

The Township utilizes a lifecycle-based approach to determine the "right treatment at the right time" for its assets.

- **Pavement Preservation:** For the road network, the Township prioritizes maintenance activities like crack sealing on roads in Good condition to prevent water infiltration and extend surface life;
- **Water and Wastewater Innovation:** The strategy emphasizes structural relining for buried pipes, which provides a non-intrusive way to extend asset life without the high cost of full excavation; and
- **Project Integration:** A key recommendation is to coordinate capital planning across departments, such as timing watermain replacements to occur simultaneously with road reconstructions to capture cost efficiencies.

Financial Strategy

The Township's financial strategy provides a 10-year roadmap to achieve the proposed levels of service (LOS) while maintaining long-term fiscal sustainability. This strategy leverages a mix of tax levies, user fees, reserves, debt, and government grants to manage an infrastructure portfolio with a total Current Replacement Value (CRV) of $326.7 million (in 2025 dollars).

Funding Sources

The Township has historically funded capital work through a mix of funding sources. They include Tax Levy, Government fundings, grants and donations (i.e., OCIF, CCBF, etc.), Development Charges, Reserves and Debts.

The balance of these funding sources has varied year-to-year, particularly in years where the Township delivered major community infrastructure projects. Based on a review of the history spend, excluding one-time funding grants, the Township has spent on average $2.7 million per year.

Financial Scenario Analysis

The financial strategy uses three scenarios to model funding requirements:

1. Unlimited Budget: This scenario identifies the full reinvestment required to maintain assets at optimal condition with no funding limitations. While this does not represent a realistic municipal funding strategy, it establishes the true lifecycle need to maintain the full asset portfolio in a state of good repair without allowing condition to decline;
2. Maintain Current LOS: This scenario models the level of reinvestment required to sustain the Township's current level of service across infrastructure categories. It includes selected renewal and rehabilitation treatments that prevent asset condition from declining into poor states while still respecting operational and service standards; and
3. Proposed LOS: This scenario explores the effects of allowing some near-term decline in asset condition, particularly in areas where assets are approaching renewal but can remain functional if maintained at a reduced level. This approach is useful where grouping work, such as road reconstruction with water and wastewater replacement, creates cost efficiencies and avoids premature investment.

Based on the scenario analysis, the following table summarizes the results.

Scenario	10-Year Capital Investment	Objective & LOS Goal
Unlimited Budget	$44.3 Million	Eliminate the renewal backlog and maintain all assets in an optimal "State of Good Repair" without funding constraints.
Maintain Current LOS	$39.5 Million	Prevent asset conditions from deteriorating below their current state and sustain current performance levels.
Proposed LOS (Path Forward)	$25.9 Million*	Achieve a planned, managed investment level that allows for a calculated, modest decline in the condition of certain assets.

*Note: The Scenario 3 total does not include the $18.7 million investment secured for the Lucan Wastewater Treatment Plant expansion and upgrades.

Reinvestment Rate

Over the past five years, the Township has invested an average of $2.7 million per year in capital renewal and replacement projects across its asset portfolio. When this level of capital spending is compared to the Township's total Current Replacement Value (CRV) of approximately $326.7 million, the resulting current reinvestment rate is approximately 0.8% of CRV per year.

The target reinvestment rate for the Township is determined by applying a lifecycle-based approach. This approach integrates both full replacement at end-of-life and mid-life rehabilitation interventions. Applying this principle across the Township's assets results in an estimated reinvestment rate of approximately 0.8% of total asset replacement value per year to maintain its assets in a State of Good Repair (SOGR). This approach considers a slight reduction in the condition of assets; however, the current state of the assets is in Very Good condition and a slight reduction should not impact the risk of providing services.

Funding Gap and Sustainability

Under the Proposed LOS (Scenario 3), the Township's current annual reinvestment of $2.74 million is sufficient to meet immediate targets, resulting in no identified funding gap for this specific 10-year window.

However, a long-term sustainability gap of $0.52 million annually exists when compared to the broader Canadian infrastructure reinvestment standard of 1.0%. This gap represents a risk the Township must monitor as the infrastructure ages.

Capital Projects

Based on the condition, lifecycle management and financial strategy, the key capital projects (over $100,000) for the next three years are shown in the table below. These projects make up the greater reinvestment portfolio.

Year	Service	Projects	Estimated Cost
2026	Roads	Nicoline Ave (Reconstruction), Scott's Drive (Paving Bike Lane/Pedestrian Lane), Downtown Lucan (Electrical and Sidewalks), Light Posts	$1,100,000
	Water	Booster Station Computer Upgrades	$168,000
	Wastewater	Lucan WWTP (Upgrades and Expansion), Main Trunk Line Upgrades	$19,600,000
	Stormwater	Coursey Line Culvert (Replacement)	$125,000
	Buildings	Portable Washroom and Furniture	$129,210
	Parks and Rec	Asset Upgrades	$259,000
	Fleet and Equipment	Snow plow	$402,000
2027	Roads	Isabella St, Queen St, Station ST	$453,386
	Buildings	Lucan Biddulph Community Memorial Centre: Kitchen Upgrades	$259,800
	Fleet and Equipment	Biddulph Blanshard Pumper, Lucan Biddulph Fire Engine, Lucan Biddulph Equipment, Snow plow	$2,000,000
2028	Roads	King St	$260,355
	Water	Lucan Booster Pumping Station Upgrades	$676,000
	Wastewater	Wellington St	$135,100
	Fleet and Equipment	Biddulph Blanshard Bunker Gear, LED Light Heads, Boots; Trackless Sidewalk Plow	$345,400

Acknowledgements

The consulting team would like to express our appreciation to staff for their cooperation and input to this update. We acknowledge their commitment and flexibility to contribute to this project.

Project Team

- Kathryn Langendyk, Director of Finance/ Treasurer;
- Jeff Little, Director of Public Works;
- Darcey Cook, Director of Community Services & Facilities; and
- Ron Reymer, Chief Administrative Officer/ Clerk.

About this Report

Dillon Consulting Limited was retained by the Township of Lucan Biddulph to conduct an update to the Asset Management Plan to meet the requirements of O. Reg. 588/17: Asset Management Planning for Municipal Infrastructure and as amended by O. Reg. 193/21.

Consulting Team

- Taylor McNeill, Asset Management Specialist, Dillon Consulting Limited;
- Catherine Liscumb, Asset Management Analyst, Dillon Consulting Limited;
- Jason Johnson, Risk Screening Partner, Dillon Consulting Limited; and
- Megan Gallie, Asset Analyst, Dillon Consulting Limited.

1.0 Introduction

The 2025 Asset Management Plan (AMP) provides an update to the Township of Lucan Biddulph's (Township) 2022 AMP, in alignment with the Township's Strategic Asset Management Policy 100-54-2019 (Effective July 9, 2019) and *Ontario Regulation (O. Reg.) 588/17: Asset Management Planning for Municipal Infrastructure*, and as amended by *O.Reg. 193/21*.

The AMP documents the Township's assets and strategies based on available information at the time of writing the report and presents a snapshot in time. Assets will continue to deteriorate, and investments will be required to improve the condition and extend the useful life of the infrastructure in order to meet the "fit for purpose" measure of the assets in the delivery of services.

The AMP is intended to be a medium to long-term focused document for the Township to use during decision-making processes, including budgeting, and to assist in strategic planning.

1.1 Asset Management Overview

Asset management is a process of making the best possible decisions regarding the creation, maintenance, renewal, rehabilitation, disposal, expansion and procurement of infrastructure assets. The objective of asset management is to maximize the benefits of the assets, minimize risk and provide satisfactory levels of service to the public in a sustainable manner. It considers risk related to the lifecycle of the assets and requires multi-disciplinary team of planning, finance, engineering, technology, maintenance and operations.

Asset management considers the full lifecycle of the infrastructure, not just the initial cost for designing and constructing the asset, but the operations and maintenance each and every year.

Asset management is an integrated approach that municipalities can use to make informed decisions about their infrastructure. At its core, asset management is about delivering services to communities in a sustainable way. The essential questions for asset management, as described in the *InfraGuide: Managing Infrastructure Assets (October 2005),* are:

1. What do you have and where is it?
2. What is it worth?
3. What is its condition and expected remaining service life?
4. What is the level of service expectation, and what needs to be done?
5. When do you need to do it?
6. How much will it cost and what is the acceptable level of risk(s)?
7. How do you ensure long-term affordability?

These seven essential questions align to four phases of asset management: asset inventory, condition, levels of service (LOS) and analysis and strategy development. These questions align with O.Reg. 588/17 and ISO55000.

1.2 Scope of the AMP

The AMP is a tool for managing the full lifecycle of physical assets that support the delivery of the Township's services that meet the required levels of service. It provides a long-term perspective to support decision making regarding repairs, rehabilitation and replacement of the assets and managing risks.

The assets owned by the Township and included in the AMP are:

- Roads (Chapter 2);
- Bridges and Culverts (Chapter 3);
- Water (Chapter 4);
- Wastewater (Chapter 5);
- Stormwater (Chapter 6);
- Buildings and Facilities (Chapter 7);
- Parks and Recreation (Chapter 8); and
- Fleet and Equipment (Chapter 9).

1.2.1 Strategic Asset Management Policy Alignment

1.2.1.1 Township's Asset Management Vision:

To proactively manage its assets to best serve the Township's objectives including:

- Prioritizing the needs of existing and future assets to efficiently and effectively deliver services;
- Supporting sustainability and economic development, and
- Maintaining prudent financial planning and decision making.

Goals include:

- Provide a framework for implementing asset management to enable a consistent and strategic approach at all levels of the organization;
- Provide guidance to staff responsible for asset management, and
- Provide transparency and demonstrate to stakeholders the legitimacy of decision-making processes which combine strategic plans, budgets, service levels and risk.

1.2.2 Regulatory Alignment

The 2025 AMP is an update to the 2022 AMP which aligns with *O. Reg. 588/17,* and as amended by *O.Reg. 193/21*. The regulation requires the following four phases of compliance:

1. By July 2019: Municipalities to have a strategic asset management policy;
2. By July 2022: All core assets to be covered in the asset management plan with current LOS. Core assets include water, wastewater, stormwater, roads and bridges/culverts;
3. By July 2024: All assets owned by the municipality to be covered in the AMP. Non-core assets include buildings, fleet and equipment as well as green infrastructure assets; and
4. By July 2025: Municipalities will have approved proposed LOS and the lifecycle management and financial strategy for 10-year period to achieve the proposed LOS.

This AMP meets phase 4 compliance including proposed (target) levels of service for all assets and lifecycle management and financial strategy for 10-year period to achieve the proposed LOS (excluding natural assets).

1.3 State of Local Infrastructure

Each section of the State of Local Infrastructure sets out the following information:

- A summary of the assets in the category;
- The replacement cost of the assets in the category;
- The average age of the assets in the category, determined by assessing the average age of the components of the assets;
- The information available on the condition of the assets in the category; and
- A description of the Township's approach to assessing the condition of the assets in the category, based on recognized and generally accepted good engineering practices where appropriate.

1.3.1 Asset Replacement Costs

The current replacement cost for the Township's infrastructure assets is $326.7 million (in 2025 dollars). The distribution of this replacement cost by asset category is shown in Figure 1.

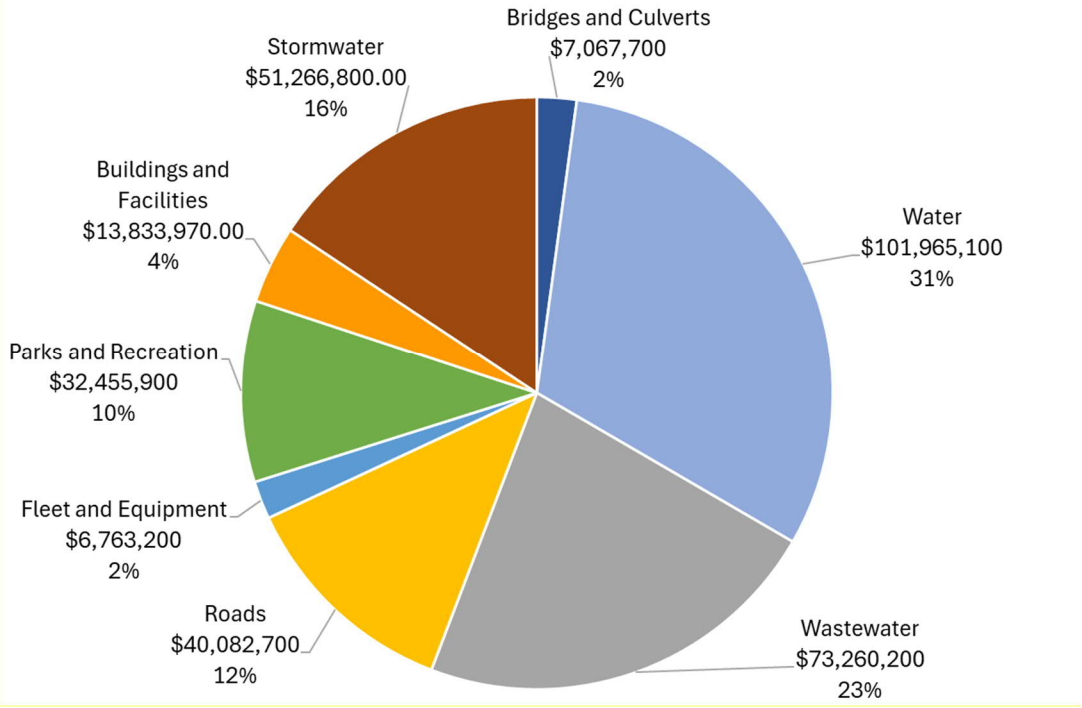


Figure 1: Asset Replacement Cost Distribution

1.3.2 Overall Asset Condition

The current condition per asset replacement cost of the Township's infrastructure assets is shown in Figure 2. The majority of the assets are in Very Good condition.

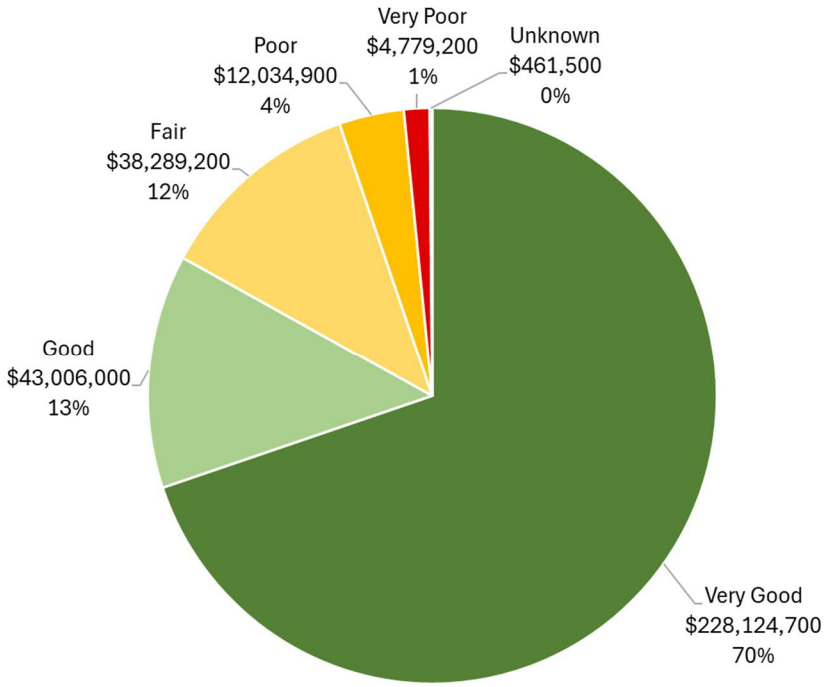


Figure 2: Asset Condition Distribution

1.4 Levels of Service

The current and proposed LOS are described in terms of technical metrics and qualitative descriptions for each asset type. These measures are prescribed for core assets within *O. Reg. 588/17*. For non-core assets it is up to the Township to establish LOS parameters and measures.

The definition for LOS is presented in Figure 3 and as follows:

- Community LOS: LOS that the organization provides to the community, intended to be customer-focused, providing a qualitative description of scope and quality; and
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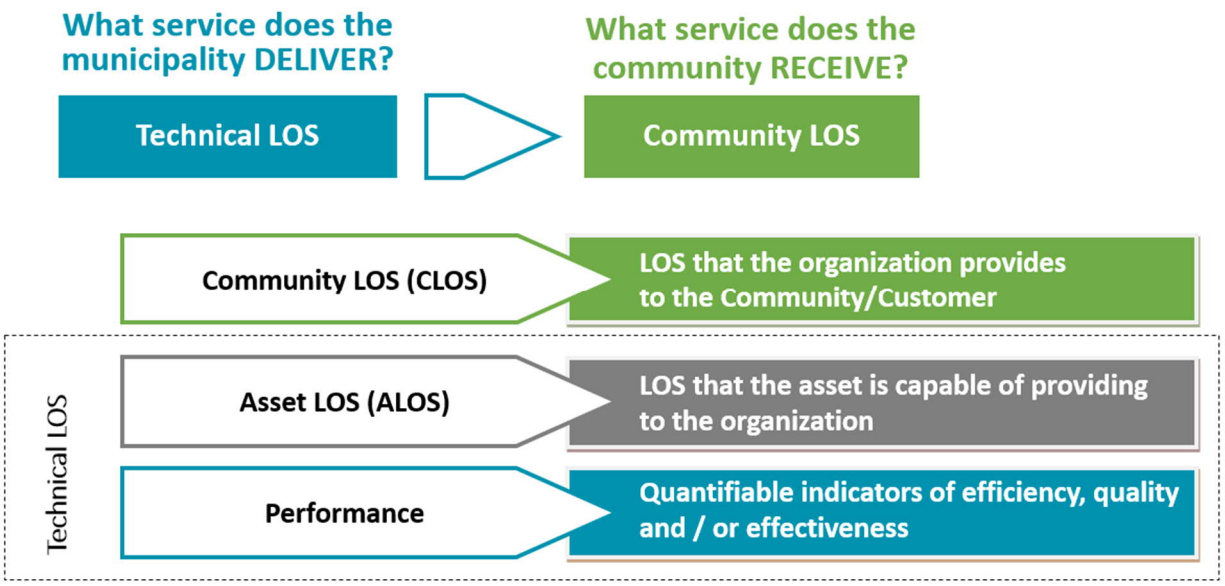


Figure 3: Levels of Service (Community LOS, Technical LOS, and Performance)

1.5 Risk Assessment

In determining the lifecycle activities for each asset category and identifying the priority activities, the risks associated with the options are to be considered. The risk rating for each asset within the asset category generates a risk profile for the entire asset category.

The assets with the highest risk rating help identify the priorities for the municipality. As part of assessing risk, this methodology considers the factors that increase the likelihood of a hazard occurring (or non-delivery of service) and the consequence. Figure 4 presents a risk “heat map” plotting likelihood and consequence.

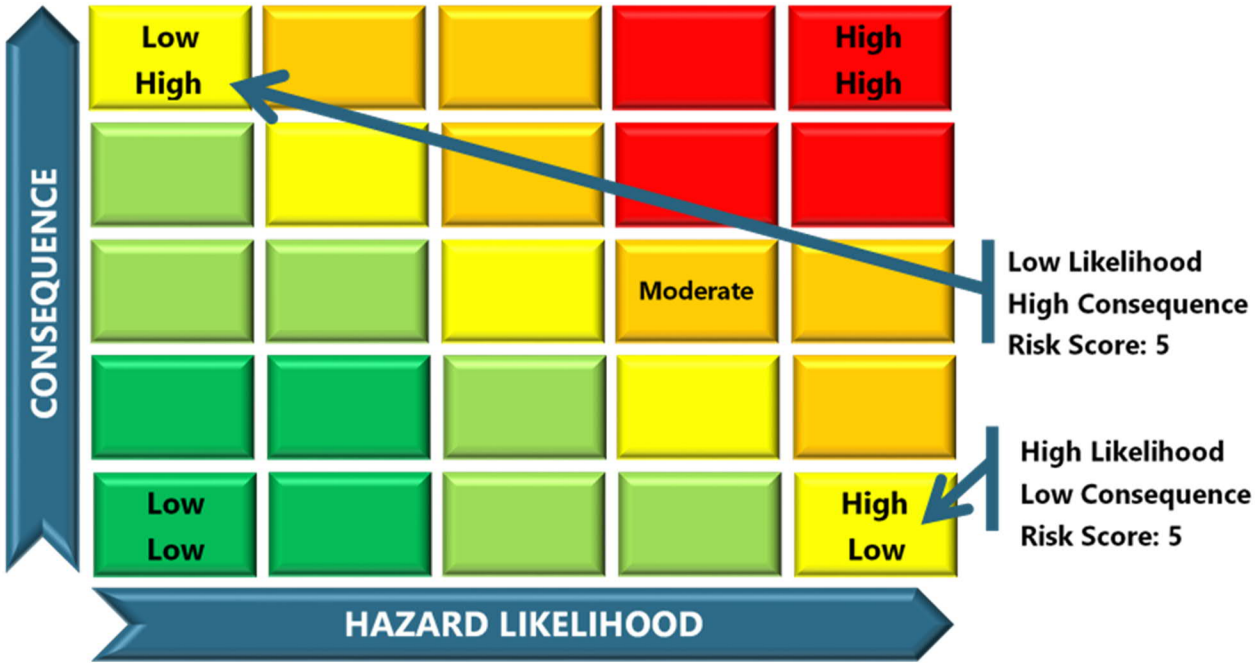


Figure 4: Risk Heat Map

A priority rating has been developed based on the calculated risk rating and displayed in Figure 4 in a 5 by 5 matrix. High risks are shown in the red zone (risk rating 17 to 25), Moderate risks are shown in the orange zone (risk ratings of 10 to 16), and Low risks are in the green and yellow zone (risk ratings of 1 to 9).

The approach and methodology to risk assessment is presented in the following sections. A risk profile for each asset category is presented in the corresponding asset category chapters.

1.5.1 Risk Methodology Approach

Risk is the likelihood and magnitude of a negative scenario (hazard) occurring that limits the ability of the asset to deliver the service. Risk is the consideration of asset failure and the consequence of the failure.

Risk = Likelihood of Occurrence x Consequence

The consequence considers the severity of the impact, vulnerability of the asset, and exposure to the negative scenario. Applying the methodology of a score of 1 to 5 for the likelihood and the consequence, the maximum risk rating is 25 (high).

1.5.2 Calculation of Likelihood of Occurrence

The factors that contribute to the likelihood of failure include:

- A – Condition of the asset;
- B – Performance (reliability); and
- C – Vulnerability to climate change.

Table 1-1 provides a description of these factors.

Table 1-1: Likelihood Factors

Factors	Low (1)	Moderate (3)	High (5)
A – Condition	Very Good (1)	Good (2); Fair (3)	Poor (4); Very Poor (5)
B – Performance	Always Reliable	Usually Reliable	Not Reliable
C – Climate Change	No or limited impact, quick recovery or mitigation in place	Limited impact with slower recovery; mitigation plan not in place	Moderate or high impact; no or limited mitigation plan

By separating condition and performance as two separate factors, there is an opportunity to consider assets in Poor condition that may still be performing well, compared to those that are not performing, as well as Good condition assets that may not be reliable. The climate change factor brings into consideration assets that are vulnerable to climate change scenarios such as intense rainfall, increased temperatures, extreme weather and drought. The climate change rating includes any mitigation activities in the scoring which reduces the risk and lowers the score.

Therefore, the likelihood of failure is (A + B + C)/3 (i.e., the average of the factors, assuming they are equally weighted).

1.5.3 Calculation of Consequence

The question to consider when calculating consequence is: *What increases the impact of non-delivery (or failure of the asset)?*

The factors that contribute to the consequence rating include:

- D – Impact or severity; and
- E – Importance of the asset in delivering service.

Both impact and importance contribute to the consequence and will be multiplied by the likelihood of occurrence. The two ratings are added together for a maximum consequence score of 5. See Table 1-2 for the description of consequence factors.

Table 1-2: Consequence Factors

Factors	Low	Moderate	High
D – Impact	Low or no impact (0)	Moderate impact (1)	High impact (2)
E – Importance of the asset in delivering service	Low importance (1)	Moderate importance (2)	High importance (3)

The importance ratings were established in consultation with Township staff. The most important assets for delivering service were identified, as well as moderate and low importance. How the importance rankings were applied in each asset category is presented in the section for each asset category.

1.5.4 Calculation of Risk

The risk calculation for each of the assets is determined as follows.

Risk= Likelihood of Occurrence X Consequence
Risk = (A + B + C)/3 X (D + E)

Where: A = Condition
B = Performance
C = Climate Change
D = Impact
E = Importance of the asset

The risk profile for all assets is shown in Figure 5. The relationship shown is fairly linear, with a sharp drop initially, indicating the Township has a broad range of risk across their assets and few High and Moderate risk assets. This is a good position to be in as it allows the management of risk and replacement of assets to move forward at a steady rate.

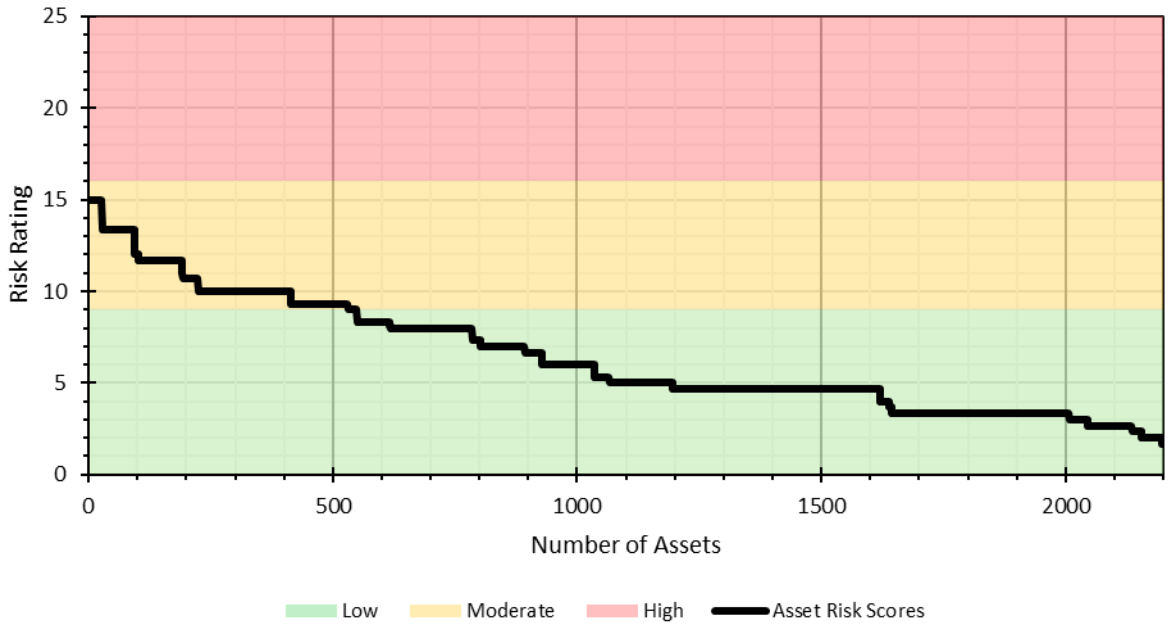


Figure 5: All Asset Risk Profile

Of the 2,200 assets tracked within the Township's asset management data, there are 530 in the Moderate risk zone with the remaining in the Low risk zone. These assets are considered high and moderate priorities for the implementation of lifecycle activities and possible replacement. The remaining assets are considered Low risk.

1.5.5 Climate Change

Climate change for the Lucan Biddulph and surrounding region involves shifting temperature and precipitation patterns over time. Temperatures are rising and extreme hot days (days >30C) are expected to increase from an average of 10 days per year historically, to 27 days per year by the 2050s, and 52 days per year by the 2080s. This means nearly two months of high heat days are expected towards the end of the century, and a higher number of annual heat waves. Mean winter temperatures are projected to increase from -5.1C historically, to -2.7C and 0C by the 2050s and 2080s, respectively. Heating degree days (building heating requirements) will decrease, and cooling degree days (building cooling requirements) will increase into the future, which may impact building occupants and HVAC systems (functionality and design).

In general, precipitation projections for the Lucan Biddulph region suggest an increase in annual precipitation, with spring and winter being the most impacted seasons. More intense spring and summer rainfall events are expected; and due to warmer winter temperatures, more precipitation will fall as rain or mixed precipitation than snow, as compared to historical baselines.
Freezing rain events and the potential for heavy lake effect snowfalls are expected to increase in frequency and/or intensity in the near future but over a shorter winter season. The record

"snowmageddon" snowfall of 177 cm from December 4-8, 2010 highlighted the impacts from record-breaking lake effect snowfalls due to reduced Great lake ice cover seasons and their higher water temperatures. Mid-winter rainfalls on snowmelt (e.g. February, 2018) also have the potential for increased winter flooding risks. During the warmer seasons, several tornado tracks have brushed the Lucan Biddulph region in the past few years, with risks for tornado damages likely to increase as the length of the severe thunderstorm season increases.

Overall, the proportion of the total precipitation that falls from extreme events, whether intense rain, snow or freezing rainfall, is likely to increase over all seasons, adding to the risks for assets and costs to maintain service levels. Conversely, longer or more frequent drought periods could increase peak demands for water.

There are many direct and indirect climate interactions expected under current and future climate conditions. Some of the direct climate-weather interactions are simpler to identify since they describe assets that are typically exposed to the outdoor weather elements (e.g., damages from flooding, high winds, snow and ice storms, and lightning and severe thunderstorms or tornadoes). Other impacts, such as the loss of power from winter storms or severe thunderstorms or loss of backup power due to fuel access and delivery issues are more indirect and can be overlooked. This is particularly true for the indirect impacts of accelerated wind on rain weathering, additional maintenance requirements or impacts of rising UV levels on asset materials (i.e., next couple of decades), reinforced concrete carbonation (temperatures, CO_2) from rising GHGs and temperatures or additional burdens for electrical power or water consumption. These ongoing changes in the climate will add to additional demands on operations and maintenance staff and costs of maintaining services.

1.5.6 Risk Assessment Limitations and Assumptions

Several key limitations and assumptions were made as part of the risk assessment process, which are summarized below:

- Field condition assessment data was used as available to determine state of infrastructure and risk. In the absence of field condition assessment data, asset age and estimated useful life was used to approximate physical condition; and
- Performance of individual assets was assumed as "Always Reliable" unless otherwise indicated by municipal staff, reviewed reports or provided asset data.

1.6 Growth

The 2021 Census population of the Township was 5,680, which is in the category of "less than 25,000" as established in *O. Reg. 588/17*.

In reference to the *Township of Lucan Biddulph Official Plan*, October 2024, and *Amendment No. 10 to the Official Plan of the Township of Lucan Biddulph (Final Draft),* May 2022, the Township is expected to grow to 8,710 persons by 2046.

Growth related assumptions and the potential impact on the lifecycle of the Township's assets is presented in Table 1-3.

Table 1-3: Growth Related Impacts on Lifecycle of Assets

Asset Category	Growth Impact Assumptions	How Assumptions Relate to Lifecycle of the Assets
Roads	• Increased traffic	• Potential increase in road maintenance costs and capital expenditures
Bridges and Culverts	• Increased usage of bridge crossings by vehicles in the area	• Potential traffic volume delays and mitigation required; and • Load considerations and regularly scheduled maintenance checks.
Water	• Increased service demands and expansion of network	• Potential increase in capital plan budget to expand network infrastructure and service requirements; and • Potential increase in operational costs to operate additional pumping and treatment equipment.
Wastewater	• Increased service demands and expansion of network; • Increased loading on wastewater treatment facility and effluent flow; and • Increased flow to central collection mains directly upstream of wastewater treatment facility.	• Potential increase in capital plan budget due to increase in service network; and • Potential increase in operational costs due to increase in wastewater treatment volume.
Stormwater	• Increased service demands and expansion of network; and • Increased storm volumes from urbanization.	• Potential increase in capital plan budget due to increase in service network size and capacity
Buildings and Facilities	• Increased facility usage; and • Changing service demands from aging population.	• Increase in capital expenditure for facility development in response to development; and • Increase in operating costs for facility services and maintenance.
Parks and Recreation	• Increased demand for services and variety/quantity of facilities and programs.	• Increase in operating costs for services and maintenance
Fleet and Equipment	• Increase in service demands - requiring increased operation or capacity at greater distances.	• Increased capital costs for purchase of additional assets to meet service needs; and • Increased operational costs in fleet maintenance and operational consumables.

Growth factors have been considered and projects where growth is a driving factor have been identified by the Township. Project description, proposed schedule and estimated budget are presented in Table 1-4 for projects identified in the next 10 years. These projects are either supported or identified by the *2021 Lucan Urban Servicing Master Plan* and the Township's *2024 Parks and Recreation Master Plan* or are linked to other priorities identified by the Township based on recent proposed growth or development.

New financing, such as development charges and special senior-level government funding, should be considered as part of any financial strategy for this plan to fund assets required for growth.

Table 1-4: Growth Related Projects, Schedule and Estimated Budget

Project Description	Proposed Schedule	Estimated Budget
Lucan Wastewater Treatment Plant Expansion and Chestnut Sanitary Pumping Station Upgrades	2026-2030	$26.6 million
Trunk Sanitary Sewer Upgrades to Accommodate Development	Varies	To be determined
Final Phases of Soccer Complex development (i.e., storage, washrooms, playground, etc.)	2026-2027	To be determined
Relocate Elm Street ball diamond to Community Centre	2028-2029	To be determined
Accessibility Upgrades to Scout Hall	2029-2030	To be determined
Second Ice Pad	To be determined	To be determined

Further, as new residential and commercial development advances within the Township, the Township will assume ownership of the respective road, water, wastewater, stormwater and bridge and culvert assets that the developers have installed as part of the required servicing for each development. With the recent review of the Official Plan, it is anticipated that there will continue to be additional development within the next 10 years and the corresponding municipal servicing will be assumed by the Township.

1.7 Lifecycle Activities

The lifecycle activities include activities that can be undertaken over an asset's useful life. These activities, under *O. Reg. 588/17*, are defined to include constructing, maintaining, renewing, operating and decommissioning of assets and all engineering and design work associated with these activities. Further, *Building Together – Guide for Municipal Asset Management Plans* (Ministry of Infrastructure) categorizes lifecycle activities into the following categories: non-infrastructure solutions, maintenance, renewal/rehabilitation, replacement, disposal, and expansion activities. Lifecycle activities have been identified for each of the asset categories considered within this AMP.

1.8 Asset Management Strategy

The Asset Management Strategy reviews the long-term outlook for managing the Township's assets across their entire lifecycle to maximize performance and ensure sustainable service delivery. The strategy's core focus is on selecting the most cost-effective lifecycle activities (maintenance, rehabilitation, or replacement) required to achieve defined Levels of Service (LOS).

This strategy utilizes financial modelling based on three distinct scenarios to inform capital planning and meet the compliance requirements of O. Reg. 588/17. The three scenarios reviewed for AMP which are summarized in Table 1-5, along with the objectives and constraints.

Table 1-5: Financial Modelling Scenarios

Scenario	Objective	LOS Goal	Constraint
1. Unlimited Budget	To identify the maximum capital investment necessary to eliminate the renewal backlog and provide budget when assets need replacement.	This scenario models an unconstrained analysis, providing an upper boundary of needs.	Assets are modeled to deteriorate until they reach a treatment trigger point, and action is taken only at that point ("never before"), failing to capture proactive, pre-trigger maintenance.
2. Maintain Current LOS	To determine the minimum required funding to prevent asset condition from deteriorating below its current state and sustain condition over the 10-year planning horizon.	Represents the minimal level of investment required to avoid accelerating deterioration and increasing infrastructure risk.	The modelling initially attempts to enforce a hard constraint on the LOS target. When this is unachievable, the model switches to a soft constraint, allowing the modeled LOS to temporarily dip below the target to ensure viability and prevent the premature replacement of functionally sound assets.
3. Proposed LOS	To model a planned, reduced investment level that allows for a calculated, modest decline in asset condition to achieve short-term budget affordability.	This involves aligning major renewals with future integrated projects while typically maintaining condition above a critical minimum threshold (e.g., above 40% remaining service life or a minimum average condition score of 75%).	The modelling relies on a soft constraint to allow temporary dips below the LOS target, preventing unwarranted replacement of functioning assets. Also, note that small asset categories may show disproportionately large LOS improvements upon replacing a single component.

1.8.1 General Constraints

The results derived from these scenarios must be interpreted with specific limitations of the modelling tool in mind.

- Time Horizon Constraint: All capital planning and lifecycle modelling are strictly constrained to a 10-year outlook. Therefore, the long-term impact of decisions made beyond this 10-year horizon is not directly captured in the models; and
- **Limited Treatment Activities:** The modelling tool has a highly restricted choice of lifecycle activities. For most service areas, the only available lifecycle activity is the complete replacement of the asset. Only Roads, Sewer, and Watermains include limited, pre-defined rehabilitation activities. This limitation restricts the tool's ability to select optimal, cost-effective maintenance or rehabilitation treatments in many categories.

1.9 Financial Strategy

The Financial Strategy outlines the financial needs to achieve the Township's Proposed Levels of Service (LOS) while reviewing the condition of assets. This section integrates the physical data of the Township's $326.7 million asset portfolio with funding model. Key components of this strategy include:

- Funding Sources: A breakdown of how the Township leverages various revenue streams, including the tax levy, user fees, development charges, debt, and provincial/federal grants (e.g., OCIF and CCBF);
- Financial Scenario Analysis: The plan evaluates three distinct investment paths (Unlimited Budget, Maintain Current LOS, and the Proposed LOS) to illustrate the trade-offs between funding levels and asset condition;
- Reinvestment Rates: An assessment of the Township's current reinvestment rate compared to the lifecycle-based target required to maintain a State of Good Repair (SOGR); and
- Sustainability & Gap Analysis: An identification of the long-term funding requirements and a comparison against Canadian infrastructure standards to highlight potential risks as the infrastructure ages.

This chapter provides a 10-year capital project needs based on the infrastructure needs for financial planning.

2.0 Roads

2.1 State of Local Infrastructure

The Township owns and maintains a road network which includes asphalt paved and gravel road assets, as well as sidewalks, streetlights, and roadside signage. Rural roads also include additional components such, as culverts and catch basins for drainage and guide rails for increased safety, while urban roads include streetlight components.

2.1.1 Asphalt and Gravel Road Assets

The Township owns and maintains 35.4 km of asphalt paved road assets and 81.5 km of gravel roads.

The asphalt paved roads are classified into the following categories:

1. Full Urban – asphalt paved road in an urban area, which includes curb and gutter and sidewalk;
2. Partial Urban – asphalt paved road in an urban area with no curb and gutter or sidewalk; and
3. Urban Rural – asphalt paved road in a rural area with gravel shoulder.

A summary of these assets by length is presented in Table 2-1. The average age of the paved network was calculated by classification and weighted by length, as shown in the table below. The average age of the gravel roads is unknown and difficult to establish based on the frequency of the routine maintenance that is completed on gravel roads.

Replacement costs for the asphalt paved road network were determined based on recent tender information and product information. These estimates cover full reconstruction, including the granular base and streetlighting.

Table 2-1: Summary of Road Asset by Classification

Road Classification	Total Length (km)	Average Age (years)	Expected Useful Life (years)	Estimated Replacement Cost
Full Urban	14.2	21	25	$14,891,500
Partial Urban	2.9	25	25	$1,752,000
Urban Rural	18.3	22	25	$9,623,100
Gravel	81.5	N/A	N/A	$11,002,500
Total	116.9	N/A	N/A	$37,269,100

The replacement costs for rebuilding a gravel road are estimated at $135,000 per km, including subgrade and culverts and catch basins for drainage and guide rails, as required. The total replacement cost for the gravel road network is estimated to be $11,002,500.

The rural road network also includes the following drainage and safety assets: 163 culverts, 430 catch basins and 40 sections of guide rail.

A current inventory of streetlights located along urban roads is not available, but as of 2015, there were 412 streetlights located collectively within the communities of Lucan, Granton, and Clandeboye.

2.1.1.1 Condition

Condition of the asphalt paved roads is routinely collected by the Township. The most recent condition assessment was undertaken in 2022 using Streetscan technology, which evaluated the condition of the paved road surfaces throughout the Township. The assessment establishes the Pavement Condition Index (PCI) for roadway segments on a scale of 0-100, where 100 represented a road in excellent condition, and 0 was a failed asset.

A summary of the road condition rating system and total length of road within each condition category is shown in Table 2-2.

Table 2-2: Road Condition Summary (2022 Streetscan)

Condition Description	Condition Score Category	Condition Rating	Total Length (m)	Percentage of Network
Excellent	1	85 to 100	13,219	37.3%
Good	2	70 to 85	14,466	40.8%
Fair	3	55 to 70	4,823	13.6%
Poor	4	40 to 55	1,691	4.8%
Very Poor	5	0 to 40	1,253	3.5%

Sections have been repaired or replaced between 2023 and 2025, which are not reflected in the table above. Based on straight-line deterioration from 2022, the average 2025 condition of asphalt roads are estimated at 65 (Fair).

2.1.2 Sidewalks

The Township owns and maintains approximately 19.7 km of concrete sidewalk. The sidewalk varies in width across the network, but the overall estimated surface area is 27,480 m^2. The average age of the existing sidewalks is estimated to be 11 years based on the 2022 StreetScan Assessment. The expected useful life is 50 years for concrete sidewalks.

The replacement cost of sidewalk is estimated to \$100/m^2. This includes the removal and installation of the concrete surface and granular base. The total estimated replacement cost for the sidewalk network is \$2,754,900.

2.1.2.1 Condition

A condition assessment was undertaken in 2022 using Streetscan, which evaluated the condition of the concrete sidewalks. The results of the assessment on a scale of 0-100, where 100 represented a sidewalk in excellent condition, and 0 was a failed asset. A summary of the sidewalk condition rating system and total length of sidewalk within each condition category is shown in Table 2-3.

Table 2-3: Sidewalk Condition Summary (2022 Streetscan)

Condition Description	Condition Score Category	Condition Rating	Total Length (m)	Percentage of Network
Excellent	1	85 to 100	11,025	54.5%
Good	2	70 to 85	6,128	30.3%
Fair	3	55 to 70	1,415	7.0%
Poor	4	40 to 55	1,137	5.6%
Very Poor	5	0 to 40	542	2.7%

2.1.3 Roadside Signs

In 2024, an assessment was completed to inventory and map all signage located alongside the rural roads within the Township. Table 2-4 outlines the inventory of signage that was documented through this assessment. Signage within the urban areas of Lucan and Granton were not inventoried and are excluded from this summary.

Table 2-4: Rural Roadside Signs Inventory

Sign Type Classification	Count	Average Age (years)	Expected Useful Life (years)	Estimated Replacement Cost
Regulatory (per OTM Book 5)	96	Unknown	15	$19,200
Warning (per OTM Book 6)	82	Unknown	15	$16,400
Other (e.g., no dumping, no parking)	13	Unknown	15	$2,600
Total	191	Unknown	15	$38,200

2.1.3.1 Condition

A condition assessment of rural roadside signage was conducted in 2024. Each sign was rated based on overall condition as well as reflectivity (on scales of Great - 1, Good - 2, Fair - 3 or Poor - 4). The documented results of the average condition ratings are summarized in Table 2-5.

Table 2-5: Rural Roadside Signage Condition Summary

Condition Description	Condition Score Category	Overall Condition Rating Sign Count (% of total)	Reflectivity Condition Rating Sign Count (% of total)
Great	1	124 (65%)	152 (80%)
Good	2	54 (28%)	29 (15%)
Fair	3	12 (6%)	8 (4%)
Poor	4	1 (<1%)	2 (1%)

2.2 Level of Service

Levels of service reporting requirements for road assets are outlined in Table 2-6 of O.Reg. 588/17. Table 2-6 and Table 2-7 outline the Township's current community and technical LOS for the roads.

Table 2-6: Community Level of Service – Roads

Service Attribute	Community Levels of Service (Qualitative Description)	Community LOS
Scope	Description, which may include maps, of the road network in the Municipality and its level of connectivity.	The roads in the Township are intended to serve local and through traffic in urban and rural settings, throughout the Township. A map of the road network can be found in Appendix A.
Quality	Description or images that illustrate the different levels of road class pavement condition.	Pavement condition was assessed in 2022. The average road condition of the roads is Good in 2025.

Table 2-7: Technical Level of Service – Roads

Service Attribute	Technical Levels of Service (Technical Metrics)	Technical LOS
Scope	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.	The Township's road length and how it relates to land area is shown in Table 2-8. This helps explain how much roadway must be maintained across the community.
Quality	For paved roads in the Municipality, the average pavement condition index value.	Based on the road condition assessment completed in 2022, the average Pavement Condition Index (PCI) value for the paved roads is 76 or Good.
	For unpaved roads in the Municipality, the average surface condition (e.g., Excellent, Good, Fair or Poor).	The average surface condition for the unpaved roads is Good.

See Table 2-8 for roadway type length of lane kilometres and proportion per square kilometer of area.

Table below shows the length of each road type and how much of it exists per square kilometre of land. This gives a simple picture of the scale of the road network across the Township.

Table 2-8: Proportion of Lane Kilometers

Street Type	Length of Lane-Kilometers	Lane-Kilometers as Proportion of sq. km of Land Area
Collector	252.8 km	1.5 km per 1 km^2
Local	239.9 km	1.4 km per 1 km^2

2.2.1 Current Performance

Asset performance measures were determined in consultation with the Township, which provide relevant metrics against which the Township can gauge the performance of their assets. The performance measures for roads assets, and their current values are shown in Table 2-9.

Table 2-9: Current Performance Measures - Roads

Asset Performance Measure	Current Value
Roads with spring load restrictions	• Coursey Line (Elginfield Road to William Street and Richmond Street to Mooresville Drive); • Saintsbury Line (Fallon Drive to Whalen Line); and • Fallon Drive (Mitchell Line to Granton Line).
Percentage of roads in Fair or Better condition	91.2%

2.3 Risk Assessment

The importance of road assets was determined in consultation with Township staff. An importance ranking criteria was applied to all road assets as described in Table 2-10 for establishing the risk ratings. The importance ratings prioritize roads in the Township based on higher usage or access to schools.

Table 2-10: Importance Ratings – Roads

Importance Rating	Description
High (3)	• Roads that lead to schools (Roman Line, Beech Street); • Gilmour Drive; • Spencer Avenue; and • Saintsbury Line.
Moderate (2)	• Market Street; • Bus routes (Kent Street, Walnut Street); • Elm Street; • Nicoline Avenue; and • Coursey Line.
Low (1)	• All other urban roads; and • All gravel roads.

Based on the risk methodology and importance ratings, 14% of assets fall within the Moderate risk zone, while the remaining 85% are classified as Low risk.

2.4 Lifecycle Activities – Roads

The following section describes the lifecycle activities that can be implemented within the asset management strategy for road assets. The primary lifecycle activities after construction include reconstruction, rehabilitation, and maintenance (see Table 2-11).

Table 2-11: Lifecycle Activities for Roads

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Construction	Creation	Adhering to codes, design guidelines, and expected traffic volume.	Road classification, surface type, and environment (rural vs. urban).
Reconstruction	Full surface (complex)	Full reconstruction, urban paving, and storm sewer/manhole adjustments.	Asset age, wear type, material, base condition, and environment.
Rehabilitation	Full surface (restorative)	Mill and Top Coat (50 mm to 100 mm), full depth removal, and repaving.	Previous lifecycle work, surface condition, and underlying base quality.
Maintenance	Localized or adjacent (small scale)	• Spot: Paving patches, spot repairs (<60 m); and • Specific: Ditching, edge widening, sub-drains.	Size of the damaged area (< 60 m for spot) and specific component needs.
Disposal	End of service life	Removal of components, disposal of materials, or barricading usage.	Health & safety protocols and facility approval for spent materials.

2.5 Asset Management Strategy – Roads

The asset management strategy for the road assets seeks to use the lifecycle activities in a manner that will achieve cost-effective and sustainable management of the road assets. The road assets will deteriorate on a non-linear basis, and the lifecycle activities can be implemented at varying stages within an asset's deterioration.

2.5.1 Condition Assessments

The road condition and usage are the primary drivers for lifecycle planning. Following the 2022 road and sidewalk condition assessment conducted by StreetScan, the Township has established a data-driven foundation for its asset management.

- Ongoing Updates: To maintain data, the Township plans to update these assessments in 2026 using the same StreetScan technology;
- Frequency: The network should continue to be reviewed on a scheduled basis (e.g., every four to five years) to track deterioration trends; and

- **Prioritization:** An annual review by the Township should be used to monitor high-usage or high-risk road segments between the StreetScan assessments.

2.5.2 Lifecycle Strategies for Paved Roads

Effective asset management requires selecting interventions based on the specific type and severity of deterioration.

- Maintenance: Focuses on early-stage preservation. Activities like crack sealing are most effective on roads in "Good" condition to prevent water infiltration and extend surface life; and
- **Rehabilitation:** Required once maintenance is no longer sufficient. Selection depends on surface material and the specific stage of the asset's lifecycle. Because the Township's network is relatively young, there is a strategic opportunity to move toward a pavement preservation model. By applying the "right treatment at the right time," the Township can minimize total lifecycle costs and mitigate service risks before full reconstruction is required.

Table 2-12 outlines the treatment types and the PCI ranges used to forecast financial needs for this AMP.

Table 2-12: Treatment Types - Roads

Road Classification	Treatment Type	PCI Range	Rebound PCI
Full Urban	Full Depth Replacement	0 to 20	100
Full Urban	Mill & Topcoat (Full)	20 to 45	90
Urban Rural	Full Depth Replacement	0 to 20	100
Urban Rural	Mill & Topcoat	20 to 35	90
Partial Urban	Full Depth Replacement	0 to 20	100
Partial Urban	Mill & Topcoat	20 to 35	90

2.5.2.1 Lifecycle Strategies for Gravel Roads

It is recommended that the gravel roads be graded regularly. Currently, the Township applies maintenance gravel to gravel roads every other year (50% of the Township gravel roads are completed annually). Localized repairs and maintenance are also be completed where required. Reconstruction of these roads may be required if condition is found to have deteriorated, however the expected lifespan is long.

In 2024, the Township completed a comprehensive *Road Safety Audit* (RSA) of its rural road network. The audit reviewed approximately 95 km of gravel roads and confirmed if there were any safety or drainage concerns on the roads.

2.5.3 Scenario Analysis

2.5.3.1 Paved Roads Assets

To understand the needs and projected work on the road assets within a 10-year outlook, major rehabilitation of mill and coat and reconstruction of the road surface was reviewed under varying financial scenarios to understand the impact on overall network condition. Gravel roads were omitted from analysis, as they are maintained through operations and not reconstructed at the same frequency as the paved roads. A summary of the analysis is outline in Table 2-13 below.

Table 2-13: Financial Scenarios for Road Assets (Paved)

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Rating (2035)
1	Unlimited Budget	$1,487,800	$14,878,000	65
2	Maintain Current LOS	$1,479,040	$14,790,400	65
3	Proposed LOS	$827,520	$8,275,200	49

The analysis shows that maintaining the Current LOS achieves an average condition index of 65 (Good) with an annual investment of $1.48 million, whereas adopting the Proposed LOS reduces the annual investment to $0.82 million but results in a slightly lower network condition index of 49 (Fair).

2.5.3.2 Sidewalks Assets

To understand the needs and projected works on the sidewalk assets within a 10-year outlook, reconstruction of the replacement of the sidewalks was reviewed under varying financial scenarios to understand the impact on overall network condition. A summary of the analysis is outline in Table 2-14 below.

Table 2-14: Financial Scenarios for Sidewalk Assets

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$17,350	$173,500	60
2	Maintain Current LOS	$17,350	$173,500	60
3	Proposed LOS	$64,030	$640,300	64

3.0 Bridges and Culverts

3.1 State of Local Infrastructure

The Township owns eight bridges and 16 structural culverts for a total of 24 structures.

The Ontario Structure Inspection Manual (OSIM) 2008 was used to classify bridges and culverts for consideration. Bridges and structural culverts are defined as structures providing vehicle or pedestrian passage across an obstruction, gap or facility that are greater than or equal to 3 m in span.

The inventory of the bridges is shown in Table 3-1. The assets ranges in age from 4 to 62 years, with an average age of 40 years. This distribution, detailed in Table 3-3, includes structures built as recently as 2021 and as early as 1963.

Table 3-1: Inventory of Bridges

Structure Name	Structure Type	Year Constructed	Age (years)
Bridge No. 2 – Coursey Line	Precast I Beams	1971	54
Bridge No. 4 – Mooresville Drive	Ridge Frame – Concrete	1993	32
Bridge No. 5 – Saintsbury Line	Precast I Beams	1965	60
Bridge No. 6 – Saintsbury Line	Precast I Beams	1965	60
Bridge No. 8 – Saintsbury Line	Precast I Beams	1964	61
Bridge No. 9 – Saintsbury Line	Ridge Frame – Concrete	1963	62
Bridge No. 11 – Roman Line	Ridge Frame – Concrete	2021	4
Whalen Boundary Bridge	Unknown	2016	9

*Note: Shared ownership with Township of Perth South

The inventory of the structures is shown in and Table 3-2. The structural culvert network varies in age distribution from 5 years old (constructed in 2020) to 66 years (constructed in 1959) and has an average age of 41 years old.

Table 3-2: Inventory of Structural Culverts

Structure Name	Structure Type	Year Constructed	Age (years)
Culvert No. 1 – Saintsbury Line	Ridge Frame – Concrete	1965	60
Culvert No. 3 – Saintsbury Line	Concrete Simple Span	1964	61
Culvert No. 10 – Roman Line	Concrete Simple Span	1963	62
Culvert No. 12 – Mooresville Drive	Corrugated Steel Pipe Arch	2002	23
Culvert No. 13 – Saintsbury Line	Ridge Frame – Concrete	1959	66
Culvert No. 14 – Coursey Line	Corrugated Steel Bolted Pipe Arch	2000	25
Culvert No. 15 – Coursey Line	Corrugated Steel Bolted Pipe Arch	2001	24
Culvert No. 16 – Observatory Drive	Ridge Frame – Concrete	1965	60
Culvert No. 17 – Stonehouse Line	Ridge Frame – Concrete	1960	65
Culvert No. 18 – Stonehouse Line	Ridge Frame – Concrete	1964	61
Culvert No. 19 – Fallon Drive	Concrete Culvert Pour-in-Place	2020	5
Culvert 20 – Roman Line	Twin Arch C.S.P.	Unknown	-
Culvert 21 – Mooresville Dr	Concrete - Rigid Frame	Unknown	-
Culvert 22 - Airport Dr	Twin C.S.P Round	Unknown	-
Campanale Way (North of Walnut Street)	Ridge Frame – Concrete	2013	12
Saintsbury Bridge Culvert	Twin C.S.P. Round	2017	8

The average expected useful life of a bridge or structural culvert is generally 75 years. With a good maintenance program, i.e. following recommendations from OSIM reports, the useful life of bridges can be extended, by improving the condition of the bridge or structural culvert to meet levels of service and performance.

The total replacement value for the bridge and structural culverts is estimated to be $7.1 million based on historical costs, inflated to 2025 dollars, as summarized in Table 3-3.

Table 3-3: Replacement Cost – Bridges and Structural Culverts

Asset Type	Quantity	Total Replacement Cost (2025)
Bridges	8	$4,714,000
Structural Culverts	16	$2,353,700*
Total	24	$7,067,700

*Note: Replacement Costs excludes Culvert 20, Culvert 21, Culvert 22, and Culvert Campanale Way.

3.1.1 Condition

The Township regularly undertakes condition assessment for bridge and structural culvert assets, determined through completion of OSIM inspections. The most recently having been completed in 2023 by Spriet Associates. In the absence of a current OSIM inspection for certain assets, their condition was determined by age-based straight-line deterioration modelling. The condition of all bridges and culverts,

along with the source of the corresponding condition data (OSIM 2023 or Age-Based), is presented in Table 3-4 and Table 3-5.

Table 3-4: Bridge Condition Summary

Bridge Name	Condition Data Source	Condition
Bridge No. 2 – Coursey Line	OSIM 2023	Good
Bridge No. 4 – Mooresville Drive	OSIM 2023	Good
Bridge No. 5 – Saintsbury Line	OSIM 2023	Good
Bridge No. 6 – Saintsbury Line	OSIM 2023	Good
Bridge No. 8 – Saintsbury Line	OSIM 2023	Good
Bridge No. 9 – Saintsbury Line	OSIM 2023	Good
Bridge No. 11 – Roman Line	OSIM 2023	Very Good
Whalen Boundary Bridge	Age-Based	Very Good

Table 3-5: Culvert Condition Summary

Structural Culvert Name	Condition Data Source	Condition
Culvert No. 1 – Saintsbury Line	Age-Based	Poor
Culvert No. 3 – Saintsbury Line	OSIM 2023	Good
Culvert No. 10 – Roman Line	OSIM 2023	Good
Culvert No. 12 – Mooresville Drive	OSIM 2023	Fair
Culvert No. 13 – Saintsbury Line	OSIM 2023	Good
Culvert No. 14 – Coursey Line	OSIM 2023	Good
Culvert No. 15 – Coursey Line	OSIM 2023	Fair
Culvert No. 16 – Observatory Drive	OSIM 2023	Good
Culvert No. 17 – Stonehouse Line	OSIM 2023	Fair
Culvert No. 18 – Stonehouse Line	OSIM 2023	Fair
Culvert No. 19 – Fallon Drive	OSIM 2023	Poor
Culvert No. 20 – Roman Line	OSIM 2023	Good
Culvert No. 21 – Mooresville Drive	OSIM 2023	Good
Culvert No. 22 - Airport Drive	OSIM 2023	Good
Campanale Way (North of Walnut Street)	Age-Based	Very Good
Saintsbury Bridge Culvert	Age-Based	Very Good

3.2 Level of Service

Levels of service for bridges and culverts are outlined in Table 5 of O.Reg. 588/17. Table 3-6 and Table 3-7 outline the Township's current community and technical levels of service for bridges and culverts.

Table 3-6: Community Levels of Service – Bridges and Culverts

Service **Attribute**	Community Levels of Service **(Qualitative Description)**	Community LOS
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	The Township's bridge and structural culvert network is designed to support various vehicle types, including: • Heavy transport vehicles; • Motor vehicles; • Emergency vehicles; • Agricultural vehicles and equipment; • Pedestrians; and • Cyclists.
Quality	Description or images of the condition of bridges and how this would affect use of the bridges. Description or images of the condition of culverts and how this would affect use of the culverts.	The condition of bridges and culverts are evaluated routinely (every two years) according to the OSIM requirements. For full descriptions and samples images of bridge and culvert condition classifications refer to the Ministry of Transportation's *Ontario Structure Inspection Manual 2008 and Field Inspection Guide* (April 2008). Bridges and culverts in Good condition typically operate as designed and would not receive any additional restrictions or limitations beyond those designed. Bridges and culverts in Fair to Poor condition may receive load restrictions or be subject to closure as deterioration affects asset capacity to safely and reliably deliver the designed level of service.

Table 3-7: Technical Levels of Service – Bridges and Culverts

Service **Attribute**	Technical Levels of Service (Technical Metrics)	Technical LOS
Scope	Percentage of bridges in the Municipality with loading or dimensional restrictions.	An OSIM bridge inspection report conducted in 2023 by Spriet Associates identified no bridges that are posted with loading restrictions
Quality	For bridges in the Municipality, the average bridge condition index value.	There was no BCI value provided in the OSIM report. It is recommended that a BCI value is provided in the next OSIM Report.
	For structural culverts in the Municipality, the average bridge condition index value.	There was no BCI value provided in the OSIM report. It is recommended that a BCI value is provided in the next OSIM Report.

3.2.1 Current Performance

Asset performance measures were determined in consultation with the Township, which provide relevant metrics against which the Township can gauge the performance of their assets. The performance measures for bridge and culvert assets and their current values are shown in Table 3-8.

Table 3-8: Bridge and Culvert Performance Measures

Asset Performance Measures	Current Value
Average daily traffic counts over bridges and structural culverts to assess usage	Average daily traffic counts from 2023 and 2024 for 17 of the 24 structures are provided in Table 3-9. The traffic count is based on the average of 2 or 3 separate counts conducted at each location in spring and fall 2023 and/or spring 2024.
Number of bridge or culvert failures/road closures	There were no bridge or culvert failures in 2023 or 2024.
Number of structures with load restrictions	There are no bridges or culverts with load restrictions.
Percentage of bridges and culverts in Fair or better condition	An overall condition index was not determined as part of the most recent OSIM inspection in 2023. It is recommended that an overall condition index be developed for the next OSIM inspections.

Table 3-9: Average Daily Traffic Counts for Bridges and Culverts 2023-2024

Structure Name	Average Daily Traffic Count
Bridge No. 2 – Coursey Line	460
Bridge No. 4 – Mooresville Drive	131
Bridge No. 5 – Saintsbury Line	837
Bridge No. 6 – Saintsbury Line	750
Bridge No. 8 – Saintsbury Line	750
Bridge No. 9 – Saintsbury Line	700
Bridge No. 11 – Roman Line	134
Culvert No. 1 – Saintsbury Line	1237
Culvert No. 3 – Saintsbury Line	927
Culvert No. 10 – Roman Line	134
Culvert No. 12 – Mooresville Drive	120
Culvert No. 13 – Saintsbury Line	750
Culvert No. 14 – Coursey Line	460
Culvert No. 15 – Coursey Line	525
Culvert No. 16 – Observatory Drive	48
Culvert No. 17 – Stonehouse Line	148
Culvert No. 18 – Stonehouse Line	148

3.3 Risk Assessment

The importance of bridge and structural culvert assets was determined in consultation with Township staff. An importance ranking criteria was applied to bridge and culvert assets as described in Table 3-10.

Table 3-10: Importance Ratings – Bridges and Culverts

Importance Rating	Description
High (3)	• Bridges and culverts on Saintsbury Line and Roman Line
Moderate (2)	• None
Low (1)	• All other bridges and culverts (Coursey Line, Stonehouse Line, Mooresville Drive, Observatory Drive, Campanale Way, and Walnut Street)

Based on the risk methodology and importance ratings, 38% of assets fall within the Moderate risk zone, while the remaining 62% are classified as Low risk.

3.4 Lifecycle Activities – Bridges and Culverts

The following section describes the lifecycle activities that can be implemented within the asset management strategy for bridge and structural culvert assets. Note that bridge assets refer to the entirety of the asset which is made up of bridge deck surface and bridge structure. The primary lifecycle activities include construction, inspections, maintenance and repair, replacement, and decommissioning/disposal. Table 3-11 summarizes the lifecycle activities for bridges and culverts.

Table 3-11: Lifecycle Activities for Bridges and Culverts

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Construction	Creation	Design and construction to provide intended services. Adherence to O. Reg. 160/02 and CSA S6 (Canadian Highway Bridge Design Code).	Compliance with provincial/national standards, intended use, and regional requirements.
Inspection	Condition Assessment	OSIM (Ontario Structural Inspection Manual) reports every 2 years. Identifying condition and recommending work for a 10-year period.	Regulatory requirement (O. Reg. 160/02) for all structures with a span > 3m and public safety.
Maintenance & Repairs	Preventative, reactive, and localized work	Cleaning/flushing, railing maintenance, painting steel, bearing maintenance, pest control, deck drainage, and repairing structural/deck deficiencies.	OSIM report recommendations, industry best practices, asset age, and the need to prevent further deterioration.
Replacement	Large-scale capital projects (Full surface/structure)	Total removal and replacement of the structure. Coordination with adjacent and connected infrastructure.	End of useful life, repair costs exceeding replacement costs, or requirements for increased capacity/LOS.

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Disposal	End of service life	Bridge closure, deconstruction, or lowering the Level of Service (e.g., converting vehicular to pedestrian access).	Health & safety protocols, state of degradation, and determination that the asset is no longer required for the service area.

3.5 Asset Management Strategy – Bridges and Culverts

The asset management strategy for bridges and structural culverts in the Township will employ the lifecycle activities to maximize the useful life of each asset.

3.5.1 Bridge Condition Assessments (OSIM)

In accordance with O. Reg. 160/02: Standards for Bridges, the Township performs mandatory inspections to ensure public safety and structural integrity.

- Ongoing Updates: Inspections are conducted every two years following the Ontario Structural Inspection Manual (OSIM) standards;
- Current Report: The most recent condition assessment and study was completed in 2023; and
- **Forecasting**: Each OSIM report provides a detailed 1-to-10-year outlook, outlining recommended maintenance and capital work based on the observed Bridge Condition Index (BCI).

3.5.2 Lifecycle Strategies

While the primary driver for lifecycle planning is the physical condition of the asset, the Township adopts a holistic approach by considering several additional variables:

- Risk & Consequence: Assessments account for the "consequence of failure" and the overall asset risk score;
- **Network Integration:** The condition of adjacent assets (such as connecting roads) is reviewed to ensure coordinated construction schedules; and
- Growth & Capacity: As the Township develops, structures are evaluated for their ability to meet increasing community growth and capacity requirements.

For detailed recommendations of asset management strategies refer to the most current OSIM inspection report.

3.5.3 Scenario Analysis

3.5.3.1 Bridge Assets

To understand the needs and projected works on the bridge assets within a 10-year outlook, reconstruction of the replacement of the bridges was reviewed under varying financial scenarios to understand the impact on overall network condition. A summary of the analysis is outline below in Table 3-12.

Table 3-12: Financial Scenarios for Bridge Assets

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$0	$0	Good
2	Maintain Current LOS	$0	$0	Good
3	Proposed LOS	$0	$0	Good

Given the well-maintained condition and long service life of all bridge assets, no investment is currently forecasted for this category. It is recommended to continue proactive maintenance as needed on the assets.

3.5.3.2 Culvert Assets

To understand the needs and projected works on the culvert assets within a 10-year outlook, reconstruction of the replacement of the culverts was reviewed under varying financial scenarios to understand the impact on overall network condition. A summary of the analysis is outline in Table 3-13 below.

Table 3-13: Financial Scenarios for Culvert Assets

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$43,500	$434,645	Fair
2	Maintain Current LOS	$43,500	$434,645	Fair
3	Proposed LOS	$12,500	$125,000	Fair

A softening of levels of services as a result of available funding is being considered. This decision could increase risk to the community. If cleaning, and minor repairs are reduced, then blockage and structural failures will increase, causing road closures, flooding of adjacent properties, safety incidents, and higher lifecycle costs—particularly during extreme rain events. It is recommended that the Township monitor the following as leading indicators:

- % culverts inspected per cycle;
- % with capacity restrictions from debris/sediment; and
- If available unit costs of emergency vs planned works.

4.0 Water

4.1 State of Local Infrastructure

The Township owns and operates a water distribution network. The asset inventory includes linear pipes, appurtenances and water facilities. A summary of the quantity of assets within the network is provided in Table 4-1.

Table 4-1: Water Asset Inventory Summary

Water Asset	Quantity	Unit of Measure
Watermain	45,365	Length (m)
Hydrant	123	Each
Valves	214	Each
Elevated Water Tower	1	Each
Booster Pumping Station/Reservoir	2	Each

The analysis within this report related to linear assets is predicated on the assumption that appurtenances (i.e., hydrants, valves) included in the system are required componentry that will be replaced in conjunction with the linear components and are expected to have similar lifespans and conditions as the linear components.

4.1.1 Linear Water Assets

The Township's water distribution network consists of approximately 45 km of watermain. The material types of the existing watermain are summarized in Table 4-2.

Table 4-2: Material Types of Watermain

Material Type	Diameter Size Range (mm)	Total Length (m)	Percentage of System
Cast Iron	100-150	843	2%
Ductile Iron	150-250	2,625	6%
PEX	25-50	337	<1%
PVC	50-350	41,560	92%

The average age of the water network is calculated by pipe material and weighted by length. These ages are compared against the expected useful life to determine replacement schedules, as summarized in Table 4-3. As data continues to be available regarding useful life of the watermain construction materials, these values can be reviewed and updated as appropriate.

Table 4-3: Average Age of Linear Water Assets by Pipe Material

Pipe Material	Average Age (years)	Expected Useful Life (years)	Estimated Replacement Cost
Cast Iron	52	50	$1,349,300
Ductile Iron	54	60	$4,200,400
PEX	22	60	$538,200
PVC	25	75	$90,648,300

Replacement costs for the linear water network were estimated based on recent tender information and product information. The replacement costs include costs necessary for full reconstruction of a segment, including trench and surface restoration. It is assumed that reconstruction works on the network will be completed using PVC watermain. The total replacement costs for the linear water network is estimated to be $96,736,200.

4.1.1.1 Condition

Condition of the linear water network was determined through a deterioration model, which estimates an asset condition based on the age and construction material of the segment. A summary of the average condition of watermain assets, weighted by length of pipe, is included in Table 4-4. The condition is reported on a scale of 0 to 100, where 100 represents an asset in perfect condition. The average condition score of all linear watermain assets (by length) is 90 or Very Good.

Table 4-4: Average Condition of Watermain Assets

Pipe Material	Total Length (m)	Average Condition Score	Percentage of Network
Cast Iron	843	60	2%
Ductile Iron	2,625	53	6%
PEX	337	96	<1%
PVC	41,560	95	92%

4.1.2 Complex Water Facility Assets

In addition to the linear watermain assets, the Township's water network also includes complex water facility assets that provide storage and distribution services. These complex facility assets include multiple components, including electrical, mechanical, structural, instrumentation and control, process, civil and architectural.

The complex water assets include the following:

- Lucan Elevated Water Tower;
- Lucan Booster Pumping Station; and
- Granton Booster Pumping Station and Reservoir.

Replacement costs for the complex wastewater facility assets were estimated based on individual components, as documented in the 2022 Condition Assessment completed by B.M. Ross and Associates Limited (BMROSS). To project the current value, the 2022 baseline costs were compounded annually using a 3% inflation rate. The resulting total replacement costs, expressed in 2025 dollars for each facility and the average age of component are summarized in Table 4-5.

Table 4-5: Complex Water Asset Replacement Costs

Complex Water Asset	Average Age of Components (years)	Estimated Replacement Cost
Lucan Elevated Water Tower	34	$2,766,600
Lucan Booster Pumping Station	31	$1,300,900
Granton Booster Pumping Station and Reservoir	29	$1,161,400
Total	30	$5,228,900

As part of the review of the various components of the complex water facility assets completed by BM Ross in 2022, expected useful lives were estimated by type of component, as outlined in Table 4-6.

Table 4-6: Complex Water Asset Component Expected Useful Life

Asset Component Type		Expected Useful Life (years)
Substructure	Foundations	75
Shell	Super Structure	50
	Exterior Enclosure	25
	Roofing	25
Interior	Interior Construction	25-50
	Stairs	50
	Interior Finishes	15
Services	Conveying	30-40
	Plumbing	25-30
	HVAC	10-25
	Fire Protection	10-40
	Electrical	20-40
Equipment and Furnishings	Equipment	20
	Furnishings	20-25
Special Construction	Special Construction	20-30
Sitework	Site Preparation	10-75
	Site Improvements	15-60
	Site Mechanical Utilities	15-60
	Site Electrical Utilities	20
	Other Site Construction	30-75
Process Equipment	Booster Pump	25
	Fire Pump	50
	Flow Metering	20
	Instrumentation and Control	15
	SCADA	10
	Tank and Containment	40
	Metering Pumps and Valves	10
	Control Valve	30
	Process Piping	50

4.1.2.1 Condition

The results of the condition assessment completed by BMROSS of the Township's complex water facility assets in 2022 is summarized in Table 4-7. The majority of asset components are in Good or Fair condition.

Table 4-7: Complex Water Facility Asset Condition Summary

Condition Description	Condition Score Category	Number of Components	Percentage of Total Components
Excellent	1	10	15%
Good	2	39	57%
Fair	3	19	28%
Poor	4	0	0%
Very Poor	5	0	0%

4.2 Levels of Service

Levels of service for water assets are outlined in Table 1 of the regulation, *O.Reg. 588/17*. Table 4-8 and Table 4-9 outline the Township's current community and technical levels of service for water assets.

Table 4-8: Community Levels of Service – Water

Service Attribute	Community Levels of Service (Qualitative Description)	Community LOS
Scope	Description, which may include maps, of the user groups or areas of the Municipality that are connected to the municipal water system.	The water distribution system provides water service to properties across the Township including the communities of Lucan and Granton.
	Description, which may include maps, of the user groups or areas of the Municipality that have fire flow.	Fire flow is only available within the communities of Lucan and Granton. The trunk distribution watermain between Lucan and Granton and 100 mm diameter watermain are not designed to provide fire flow.
Reliability	Description of boil water advisories and service interruptions.	The Township experienced one watermain break in 2023 due to a contactor hitting the main while drilling. A boil advisory was issued until samples were analyzed and determined safe.

Table 4-9: Technical Levels of Service – Water

Service Attribute	Technical Levels of Service (Technical Metrics)	Technical LOS
Scope	Percentage of properties connected to the municipal water system.	The percentage of properties within the Township with connection to the municipal water distribution system is 70%. This is based on 1,566 metered customers in the Township. In addition, the community of Clandeboye is connected to the Municipality of North Middlesex water distribution system.
	Percentage of properties where fire flow is available.	Approximately 95% of properties within the communities of Lucan and Granton where water service is provided also have fire flow available.
Reliability	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system.	There was 1 documented boil water advisory in 2023 which was in effect for 2 days. This equates to 2 connection-days per year compared to the 1,566 properties connected to the water system.
	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.	There was 1 documented water main break in 2023 which lasted 1 day. This equates to 1 connection-days per year compared to the 1,566 properties connected to the water system.

4.2.1 Current Performance

Asset performance measures were determined in consultation with the Township, which provide relevant metrics against which the Township can gauge the performance of their assets. The performance measures for the water network, and their current values are shown in Table 4-10.

Table 4-10: Performance Measures – Water

Asset Performance Measure	Current Value
Number of annual non-compliances of the *Ontario Drinking-Water System Regulations and Safe Water Drinking Act*	There was 1 non-compliance in 2024.
Cost efficiency (operating cost to provide service – $/household for water services)	Average operating cost for water for 2023 and 2024 was $440 per household connected to water service.
Number of watermain breaks and repair time	There was one watermain break in 2023 which took less than 1 day to repair.

4.3 Risk Assessment

The importance of water distribution mains and facilities was determined in consultation with Township staff. An importance ranking criteria was applied to all water assets as described in Table 4-11.

Table 4-11: Importance Ratings – Water

Importance Rating	Description
High (3)	• Lucan Booster Pumping Station; • Granton Booster Pumping Station and Reservoir; • Lucan Elevated Water Tower; • Trunk watermain between Lake Huron Primary Water Supply connection point and Lucan Elevated Water Tower; • Trunk watermain between Lucan and Granton; and • Trunk watermain along Community Drive between Main Street and William Street.
Moderate (2)	• Distribution watermains 250 mm in diameter or larger
Low (1)	• Distribution watermains less than 250 mm in diameter

Based on the methodology and importance rating, the assets fall within the following risk zones.

4.3.1 Water Linear

- Low: 100%;
- Moderate: 0%; and
- High: 0%.

4.3.2 Water Facility

- Low: 62%;
- Moderate: 38%; and
- High: 0%.

4.4 Lifecycle Activities – Water

The following section describes the lifecycle activities that can be implemented within the asset management strategy for water assets. The water assets include linear and vertical assets, lifecycle activities for each presented separately. The lifecycle activities for water assets include construction, maintenance, renewal, and decommissioning/ disposal (see Table 4-12 and Table 4-13).

Table 4-12: Lifecycle Activities for Water Assets (Linear)

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Construction	Creation & Full Replacement	Installing new servicing for growth; replacing deteriorated pipes at end of useful life.	Master plans, provincial guidelines, and growth usage projections.
Maintenance	Operating Condition	Routine works (flushing, cleaning); minor repairs to pipes or appurtenances.	Maintaining performance and mitigating condition issues.

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Renewal	Life Extension	Structural/non-structural lining; cathodic protection for ductile iron pipes.	Deteriorated condition in structurally sound pipes; corrosion prevention.
Operating	Life Extension (Non-Physical)	Non-infrastructure policies; tracking reactive repairs to determine actual condition.	Difficulty of visual inspection and the need for data beyond age-based theory.
Decommissioning	End of Service	Abandonment or removal of pipe to provide space for new underground infrastructure.	Service life exhaustion and right-of-way space requirements.

Table 4-13: Lifecycle Activities for Water Assets (Facility)

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Construction	Initial Creation	Building specialized facilities to adhere to regulated standards and municipal codes.	New service requirements and compliance with treatment regulations.
Maintenance	Performance Retention	Preventative, reactive, and major maintenance of specialized components.	Routine performance needs and response to component faults/issues.
Renewal	Modernization & Capacity	Updating components for code compliance; expanding existing infrastructure for growth.	Updated regulations, modernization needs, and service capacity changes.
Decommissioning / Disposal	Retirement	Removal from service; decommissioning of components; sale of property.	Health, safety, and environmental protocols; specialized treatment regulations.

As the water building assets are specialized for treatment and distribution services, there are additional factors that must be considered:

- Water treatment and distribution facilities are highly regulated. Any and all lifecycle activities undertaken must be done in compliance with codes and regulations; and
- Expansion of existing facilities may be required for additional water treatment and distribution capacity as a result of growth. Expansion activities may encompass multiple lifecycle stages, such as construction for additional infrastructure required, and renewal for expansion of existing infrastructure such as the treatment facility.

4.5 Asset Management Strategy – Water

The asset management strategy for water assets focuses on lifecycle activities that ensure the sustainable delivery of safe drinking water. Assets are managed to optimize their useful life while maintaining compliance with regulatory standards.

4.5.1 Water Condition Assessments

Because watermains are buried, condition and usage are the primary drivers for lifecycle planning. The Township establishes asset health through the following methods:

- Data-Driven Monitoring: Due to the difficulty of visual inspections, the Township monitors the expected condition of pipes based on age, material, and historical tracking of maintenance activities;
- Facility Reviews: For water facilities, the Township utilizes expected useful lives to forecast needs, supplemented by detailed building condition assessments. It is recommended that detailed facility assessments be updated every five years to refine the maintenance and improvement forecast, this would be completed in 2027/2028 to update the BMRoss information; and
- **Prioritization:** Buildings and segments identified with high risk scores or poor performance measures are prioritized for immediate assessment and intervention.

4.5.2 Lifecycle Strategies for Linear Water Assets

Effective management of the water distribution network requires selecting interventions that consider asset risk, importance, and the condition of adjacent infrastructure (sanitary or roadworks).

- Maintenance: Used as the first opportunity to extend life. This includes cleaning, flushing, and small section repairs;
- **Rehabilitation**: Includes structural relining, which offers a non-intrusive way to extend pipe life without full excavation; and
- **Reconstruction**: Once maintenance is no longer viable, segments are replaced or abandoned. Current best practices dictate the use of PVC material for all new construction and replacements.

The assets will deteriorate on a non-linear basis, and the various lifecycle activities can be implemented at varying stages within an asset's deterioration. Figure 6 provides a visualization of the theoretical deterioration curve for an asset, and the opportunity windows to conduct lifecycle activities within the expected useful life of an asset.

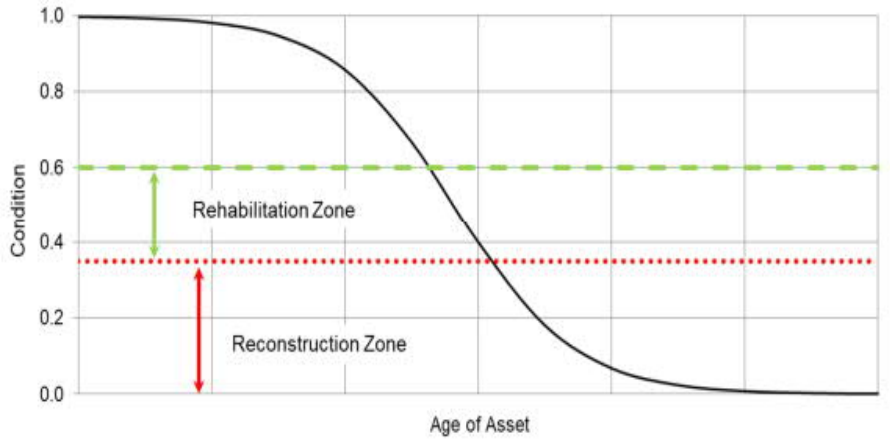


Figure 6: Deterioration of Assets and Lifecycle Activity Opportunities

Table 4-14 outlines the treatment types and condition ranges used to forecast the needs for this AMP.

Table 4-14: Average Condition of Linear Watermain Assets

Condition Range	Lifecycle	Treatment
1.0 to 0.60	Maintenance	Maintenance Works (cleaning, flushing), Small pipe section repairs
0.60 to 0.35	Rehabilitation	Localized repairs, Structural relining
0.35 to 0	Reconstruction	Pipe replacement or abandonment

4.5.3 Lifecycle Strategies for Water Facility Assets

The strategy for facilities seeks to maximize the economy of complex componentry (pumps, treatment equipment, and buildings) which degrade at different rates.

- **Routine Maintenance**: The Township continues existing maintenance schedules to ensure treatment efficiency and capacity;
- Climate Resilience: Management includes assessing the vulnerability of facility assets to climate change, informing necessary changes to renewal activities; and
- Level of Service (LOS): To maintain low service interruptions and adhere to "Certificate of Approval" (C of A) limits, the Township prioritizes upgrades that retain quality and quantity of treatment capacity.

4.5.4 Scenario Analysis

4.5.4.1 Linear Water Assets

To understand the needs and projected works on the linear water assets within a 10-year outlook, replacement activities were reviewed under varying budget values to understand the impact on overall asset condition. A summary of the analysis is outlined in Table 4-15 below.

Table 4-15: Financial Scenarios for Linear Water Assets

	Scenarios	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$478,700	$4,787,300	Very Good
2	Maintain Current LOS	$478,700	$4,787,300	Very Good
3	Proposed LOS	$23,100	$230,800	Very Good

4.5.4.2 Water Facility Assets

To understand the needs and projected works on the complex water assets within a 10-year outlook, replacement activities were reviewed under varying budget values to understand the impact on overall asset condition. A summary of the analysis is outlined in Table 4-16 below.

Table 4-16: Financial Scenarios for Complex Water Assets

	Scenarios	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$86,360	$863,600	Fair
2	Maintain Current LOS	$86,360	$863,600	Fair
3	Proposed LOS	$103,160	$1,031,600	Fair

5.0 Wastewater

5.1 State of Local Infrastructure

The Township owns and operates a wastewater collection and treatment system, containing linear pipes and appurtenances, and facilities for wastewater treatment and collection. A summary of the quantity of assets within the network is provided in Table 5-1.

Table 5-1: Wastewater Asset Inventory Summary

Water Asset	Quantity	Unit of Measure
Sanitary Sewer (gravity)	21,549	Length (m)
Sanitary Forcemain	4,254	Length (m)
Maintenance Holes	320	Each
Wastewater Treatment Plant	2	Each
Sanitary Pumping Station	3	Each
Lagoons	1	Each

The analysis within this report will be limited to the linear assets. This is predicated on the assumption that appurtenances included in the system are required componentry that will be replaced in conjunction with the linear components and are expected to have similar lifespans and conditions as the linear components.

5.1.1 Linear Wastewater Assets

The material types of the existing sanitary gravity sewers and forcemain construction are summarized in Table 5-2.

Table 5-2: Material Types of Sanitary Mains

Material Type	Diameter Size Range (mm)	Total Length (m)	Percentage of System
Asbestos Cement	200-375	10,159	39%
PVC	50-375	15,643	61%

The average age of the wastewater network is calculated by pipe material and weighted by length. These ages are compared against the expected useful life to determine replacement schedules, as summarized in Table 5-3. As data continues to be available regarding the useful life of sanitary sewer construction materials, these values can be reviewed and updated as appropriate.

Table 5-3: Average Age of Linear Water Assets by Pipe Material

Pipe Material	Average Age (years)	Expected Useful Life (years)	Estimated Replacement Cost
Asbestos Cement	56	60	$21,348,000
PVC	16	75	$34,963,000

Replacement costs for the linear wastewater network were estimated based on recent tender information and product information. The replacement costs include costs necessary for full reconstruction of a segment, including trench and surface restoration. It is assumed that reconstruction works will be completed using PVC piping for diameters ≤ 400 mm and concrete for larger sizes. The total replacement cost for the linear wastewater network is estimated to be $56,311,000.

5.1.1.1 Condition

Condition of the linear wastewater network was determined through a deterioration model, which estimates an asset condition based on the age and construction material of the segment. A summary of the average condition of wastewater assets, weighted by length of pipe, is included in Table 5-4. The condition is reported on a scale of 0 to 100, where 100 represents an asset in perfect condition. The average condition of all linear wastewater assets (by length) is 76 or Good.

The Township has previously undertaken condition assessment in 2018, which assessed the wastewater network. We recommend that an additional assessment is completed in the future.

Table 5-4: Average Condition of Linear Wastewater Assets

Pipe Material	Total Length (m)	Average Condition Score	Average Condition Rating
Asbestos Cement	10,159	47	Fair
PVC	15,644	99	Very Good

5.1.2 Complex Wastewater Facility Assets

In addition to the linear wastewater assets, the Township's wastewater network also includes complex facility assets that provide transmission and treatment services. These facility assets include multiple components, including electrical, mechanical, structural, instrumentation and control, process, civil and architectural. The complex wastewater facilities include:

- Lucan Wastewater Treatment Plant;
- Chestnut Sanitary Pumping Station;
- Granton Wastewater Treatment Plant;
- Granton Sanitary Pumping Station; and
- Joseph Sanitary Pumping Station.

Replacement costs for the complex wastewater facility assets were estimated based on a detailed review of individual components, as documented in the 2022 Condition Assessment completed by BMROSS. To project the current value, the 2022 baseline costs were compounded annually using a 3% inflation rate. The resulting total replacement costs, expressed in 2025 dollars for each facility, and the average age are summarized in Table 5-5.

Table 5-5: Complex Wastewater Facility Asset Replacement Costs

Wastewater Facility Asset	Average Age of Components (years)	Estimated Replacement Cost
Lucan Wastewater Treatment Plant	30	$12,263,300
Chestnut Sanitary Pumping Station	33	$2,659,100
Granton Wastewater Treatment Plant	25	$1,760,600
Granton Sanitary Pumping Station	25	$144,800
Joseph Sanitary Pumping Station	23	$121,400
Total	30	$16,949,200

As part of the review of the various components of the wastewater facility assets, expected useful lives were estimated by type of component, as outlined in Table 5-6.

Table 5-6: Expected Useful Life of Water Facility Components

Asset Component Type		Expected Useful Life (years)
Substructure	Foundations	75
Shell	Super Structure	50
	Exterior Enclosure	25
	Roofing	25
Interior	Interior Construction	25-50
	Stairs	50
	Interior Finishes	15
Services	Conveying	30-40
	Plumbing	25-30
	HVAC	10-25
	Fire Protection	10-40
	Electrical	20-40
Equipment and Furnishings	Equipment	20
	Furnishings	20-25
Special Construction	Special Construction	20-30
Sitework	Site Preparation	10-75
	Site Improvements	15-60
	Site Mechanical Utilities	15-60

Asset Component Type		Expected Useful Life (years)
	Site Electrical Utilities	20
	Other Site Construction	30-75
Process Equipment	Pumps	15-30
	Grit Separator/Mechanical Screen	30
	Blower	25
	Aeration Equipment	35-40
	Rotating Biological Contactor	50
	Clarifier Equipment	40
	Filter Equipment	30
	Ultraviolet Equipment	25
	Control and Instrumentation	15
	Flow Metering	20
	SCADA	10
	Metering Pumps and Valves	15
	Sluice/Knife Gate	50
	Process Piping	50

5.1.2.1 Condition

The results of the condition assessment completed by BMROSS of the Township's complex wastewater assets in 2022 is summarized in Table 5-7. The majority of asset components are in Good or Fair condition.

Table 5-7: Complex Wastewater Asset Condition Summary

Condition Description	Condition Score Category	Number of Components	Percentage of Total Components
Excellent	1	6	3%
Good	2	138	68%
Fair	3	57	28%
Poor	4	1	<1%
Very Poor	5	0	0%

5.2 Levels of Service

Levels of service for wastewater assets are outlined in Table 2 of the regulation, *O.Reg. 588/17*. Table 5-8 and Table 5-9 outline the Township's current community and technical levels of service for wastewater assets.

Table 5-8: Community Levels of Service – Wastewater

Service Attribute	Community Levels of Service (Qualitative Description)	Community LOS
Scope	Description, which may include maps, of the user groups or areas of the Municipality that are connected to the municipal wastewater system.	The Township provides wastewater collection and treatment services for properties, primarily located in urbanized areas.
Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes.	The Township's wastewater system does not include any combined sewer segments.
Reliability	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches.	The Township's wastewater system does not include any combined sewer segments.
Reliability	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes.	Stormwater has the potential to enter into the municipal wastewater system through multiple points of entry, including: • Direct connections from properties, including roof leaders, sump pumps, etc.; and • Inflow and infiltration within manholes and damaged pipes and joints.
Reliability	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid events described above.	Resiliency in the sanitary sewer system, in the event that inflow of stormwater occurs, is created through: • Prohibition of discharging of stormwater into the wastewater system; and • Designing wastewater infrastructure to provide minimum sizing and criteria as per current standards.
Reliability	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system.	The Township reports annually on performance of the wastewater treatment system, including description of the effluent discharged from the sewage treatment plants. Effluent is sampled weekly, and several quality parameters of the effluent are also tracked and documented in OCWA's Annual Reports. The quality parameters analyzed include Carbonaceous Biological Oxygen Demand ($CBOD_5$), Total Suspended Solids, Total Phosphorous, Total Ammonia Notrogen (TAN) and Unionized Ammonia. Samples are also collected weekly and tested for E. coli, pH, Dissolved Oxygen (DO) and Temperature.

Table 5-9: Technical Levels of Service – Wastewater

Service **Attribute**	Technical Levels of Service (Technical Metrics)	Technical LOS
Scope	Percentage of properties connected to the municipal wastewater system.	The percentage of properties in the Township with connection to the wastewater system is 71%.
Reliability	The number of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system.	The Township does not have a combined sewer system.
	The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.	The Township received no complaints for the Granton WWTP, and the Lucan WPCP for 2023 or 2024.
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.	There are 1,541 total properties connected to the municipal wastewater system. At the Lucan Wastewater Treatment Plant, there were no effluent limit exceedances for 2023 or 2024. At the Granton Wastewater Treatment Plant, there were no effluent limit exceedances for 2023 or 2024. There were challenges meeting the TSS objective, and the pH objective.

5.2.1 Current Performance

Asset performance measures were determined in consultation with the Township, which provide relevant metrics against which the Township can gauge the performance of their assets. The performance measures for the wastewater network, and their current values are shown in Table 5-10.

Table 5-10: Performance Measures – Wastewater

Asset Performance Measure	Current Value
Cost efficiency (operating cost to provide service – $/household for wastewater services)	Average operating cost for wastewater for 2023 and 2024 was $440 per household connected for wastewater services.
Number of customers that have experienced a service interruption in the last year	No customers experienced a service interruption in 2023 or 2024.
Average daily flow as percentage of wastewater treatment plants' rated capacity	• In 2023, the Lucan Wastewater Treatment Plant daily flow was 83% of the rated capacity of 1,700 m^3/day. In 2024, it was at 77% of the rated capacity; and • In 2023, Granton Wastewater Treatment Plant average daily flow was 41% of the rated capacity of 270 m^3/day. In 2024, it was at 38% of the rated capacity.

5.3 Risk Assessment

Importance of wastewater collection system and facilities was determined in consultation with Township staff. An importance ranking criteria was applied to all wastewater assets as described in Table 5-11.

Table 5-11: Importance Ratings – Wastewater

Importance Rating	Description
High (3)	• Lucan Wastewater Treatment Plant; • Granton Wastewater Treatment Plant; • Chestnut Sanitary Pumping Station and forcemain; and • Granton Sanitary Pumping Station and forcemain.
Moderate (2)	• Sanitary sewers 250 mm in diameter or larger; and • Joseph Sanitary Pumping Station.
Low (1)	• Sanitary sewers less than 250 mm in diameter.

Based on the methodology and importance ratings, the assets fall within the following risk zones.

5.3.1 Wastewater Linear

- Low: 100%;
- Moderate: 0%; and
- High: 0%.

5.3.2 Wastewater Facility

- Low: 50%;
- Moderate: 50%; and
- High: 0%.

5.4 Lifecycle Activities – Wastewater

The following section describes the lifecycle activities that can be implemented within the asset management strategy for wastewater assets. The wastewater assets include linear and vertical assets, lifecycle activities for each presented separately. The lifecycle activities for wastewater assets include construction, maintenance, renewal, and decommissioning/ disposal (see Table 5-12 for Linear and Table 5-13 for Buildings).

Table 5-12: Lifecycle Activities for Wastewater Assets (Linear)

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Construction	Creation & Replacement	Growth-related new servicing; replacement of deteriorated pipes at end of useful life.	Master plans, provincial design guidelines, and capacity requirements.
Maintenance	Operating Condition	Routine works such as flushing and cleaning; minor repairs to pipe segments.	Maintaining performance levels and preventing emergency failures.
Renewal	Life Extension	Structural or non-structural lining of pipe segments.	Deteriorated condition where the pipe remains structurally sound.
Operating & Decommissioning	Monitoring & Retirement	CCTV or zoom camera inspections; abandonment in place or removal of expended assets.	Condition assessment programs and the need for underground space.

Table 5-13: Lifecycle Activities for Wastewater Assets (Buildings)

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Construction	Initial Creation	Adhering to specialized standards, codes, and regulated treatment requirements.	Facility creation, growth mandates, and service capacity needs.
Maintenance	Preservation	Preventative, reactive, and major maintenance of specialized components.	Routine schedules and response to component faults or performance issues.
Renewal	Modernization	Updating existing components for code compliance or expanding treatment capacity.	Regulatory changes, modernization, and facility growth/expansion.
Decommissioning / Disposal	Retirement	Removal from service, decommissioning, or sale of facility assets.	Health, safety, and environmental protocols; specialized disposal requirements.

As the wastewater facility assets are specialized for treatment and collection services, there are additional factors that must be considered:

- Wastewater treatment and collection facilities are highly regulated. Any and all lifecycle activities undertaken must be done in compliance with codes and regulations; and
- Expansion of existing facilities may be required for additional wastewater treatment and collection capacity as a result of growth. Expansion activities may encompass multiple lifecycle stages, such as construction for additional infrastructure required, and renewal for expansion of existing infrastructure such as the treatment facility.

5.5 Asset Management Strategy – Wastewater

5.5.1 Linear Wastewater Assets

The asset management strategy for the wastewater assets in the Township will employ the lifecycle activities to maximize the useful life and economy of each asset.

5.5.1.1 Condition Assessments

Establishing a consistent condition profile is critical for effective decision-making. The Township maintains the network and facilities through:

- Pipe Videos: Utilizing visual inspections facilitated by CCTV or Zoom camera technology, the Township currently completes these assessments to help inform capital planning. A rotating schedule where 20% to 33% of the network is assessed annually, ensuring every pipe is reviewed every three to five years. This program is currently implemented in the Township;
- Facility Reviews: Detailed condition assessments which are conducted every five years to refine the timing of maintenance and improvements; and
- **Data-Driven Prioritization**: While condition is the primary driver, the Township also considers asset risk scores, importance, maintenance history, and the condition of adjacent infrastructure (roads/storm/water) to coordinate works.

5.5.1.2 Lifecycle Strategies for Linear Wastewater Assets

When a pipe's condition degrades, the Township reviews interventions in the following order:

- Maintenance: Cleaning, flushing, and small section repairs are prioritized to maintain flow and prevent blockages;
- **Rehabilitation**: Non-intrusive methods, such as structural relining, are used to extend the life of pipe segments without the need for full excavation; and
- **Reconstruction**: When maintenance and relining are no longer viable, pipes are replaced or abandoned in place following local design guidelines. Current standards specify PVC for pipes ≤400 mm and concrete for larger diameters.

A summary of the wastewater linear treatment types used to forecast the lifecycle of asset is provided in Table 5-14.

Table 5-14: Average Condition of Linear Wastewater Assets

Condition Range	Lifecycle	Treatment
1.0 to 0.60	Maintenance	Maintenance Works (cleaning, flushing), Maintenance hole repairs, Small pipe section repairs
0.60 to 0.35	Rehabilitation	Localized repairs Structural relining
0.35 to 0	Reconstruction	Pipe replacement or abandonment

The current level of service being provided in wastewater service delivery is generally a high average condition of the assets (resulting in low quantity of complaints or issues), and treatment quality within the C of A limits. To maintain these LOS values, the Township's strategy should continue to maintain a very good condition of the linear assets.

5.5.1.3 Lifecycle Strategies for Wastewater Facilities Assets

Beyond physical condition, the management of facility assets includes:

- **Routine Maintenance:** Existing maintenance schedules are continued to ensure daily operational efficiency and regulatory compliance;
- Climate Resilience: New construction and renewals incorporate vulnerability assessments to ensure facilities can withstand changing environmental conditions;
- Regulatory Compliance: Ongoing upgrades ensure treatment efficiency and capacity continue to meet Certificate of Approval (C of A) limits and user requirements; and
- Levels of Service (LOS): To maintain high levels of service and low complaint volumes, the Township prioritizes the proactive replacement of building and process components according to projected lifespans.

5.5.2 Scenario Analysis

5.5.2.1 Linear Wastewater Assets

To understand the needs and projected works on the linear wastewater assets within a 10-year outlook, replacement activities were reviewed under varying budget values to understand the impact on overall asset condition.: A summary of the analysis is outlined in Table 5-15 below.

Table 5-15: Financial Scenarios for Linear Wastewater Assets

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$266,700	$2,666,500	Good
2	Maintain Current LOS	$266,700	$2,666,500	Good
3	Proposed LOS	$135,000	$1,349,900	Good

5.5.2.2 Wastewater Facility Assets

The Township is currently advancing the Lucan Wastewater Treatment Plant Expansion Project, which is a significant capital undertaking intended to increase treatment capacity to support future residential and economic growth. In addition to expanding the plant to accommodate new development, the project includes upgrades to the existing treatment processes and the upsizing of the main trunk sewer, improving both operational performance and conveyance capacity within the system. Based on the figures submitted through the recent grant application, the total project value is estimated at up to $25 million, of which the Township has secured up to $17.6 million in grant funding. The project is scheduled to proceed to tender in December, with construction anticipated to begin in Spring 2026 and substantial completion expected in 2028.

To understand the needs and projected works on the water assets within a 10-year outlook, replacement activities were reviewed under varying budget values to understand the impact on overall asset condition. A summary of the analysis is outlined in Table 5-16.

Table 5-16: Financial Scenarios for Complex Wastewater Assets

	Scenarios	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$186,200	$1,862,400	Fair
2	Maintain Current LOS	$185,900	$1,859,300	Fair
3	Proposed LOS	$1,963,500	$19,635,000	Good

The financial analysis reveals a significant variance between the Proposed LOS and the other scenarios. While the Unlimited Budget and Maintain Current LOS scenarios focus primarily on lifecycle replacements for existing components (totaling approximately $1.86 million), the Proposed LOS scenario reflects a total investment of $19.6 million. This increase is largely attributable to the Lucan Wastewater Treatment Plant Expansion Project and, which are required to shift the overall asset condition from Fair to Good by 2035.

6.0 Stormwater

6.1 State of Local Infrastructure

The Township owns and operates a stormwater network. The asset inventory includes linear pipes, appurtenances and stormwater management facilities. A summary of the quantity of assets within the network is provided in Table 6-1.

Table 6-1: Stormwater Asset Inventory Summary

Stormwater Asset	Quantity	Unit of Measure
Storm Sewers	17,370	Length (m)
Maintenance Holes	200	Each
Catch Basins	468	Each
Stormwater Management Facilities	6	Each
Oil Grit Separators	2	Each

The analysis within this report will be limited to the linear assets. This is predicated on the assumption that appurtenances included in the system are required componentry that will be replaced in conjunction with the linear components and are expected to have similar lifespans and conditions as the linear components.

6.1.1 Linear Stormwater Assets

The material types by length of the existing storm sewer network are summarized in Table 6-2.

Table 6-2: Material Types of Storm Sewers

Material Type	Diameter Size Range (mm)	Total Length (m)	Percentage of System
Concrete	200-1200	11,942	68%
PVC	150-600	5,148	30%
Tile	100	189	1%
CSP	300	11	<1%
Asbestos Cement	200	81	<1%

The average age of the linear stormwater assets water network was calculated by pipe material, weighted by length of asset. The expected useful life of the linear stormwater assets is used to estimate the replacement schedule. The average age expected useful life and replacement cost by pipe material is summarized in Table 6-3.

Table 6-3: Average Age of Linear Stormwater Assets by Pipe Material

Pipe Material	Average Age (years)	Expected Useful Life (years)	Estimated Replacement Cost
Concrete	34	85	$34,586,300
PVC	14	75	$13,335,800
Tile	14	25	$331,200
CSP	19	25	$26,800
Asbestos Cement	55	70	$141,300

Replacement costs for the linear stormwater assets were determined based on recent tender information and product information. The replacement costs include costs necessary for full reconstruction of a segment, including trench and surface restoration. It is assumed that reconstruction works on the assets will be done using PVC material for pipes that are 400 mm in diameter or less, and concrete for sizes larger than 400 mm diameter. The total replacement costs for the linear stormwater network is estimated to be $48,421,400.

6.1.1.1 Condition

Condition of the stormwater network was determined through a deterioration model, which estimates an asset condition based on the age and construction material of the segment.

A summary of the average condition of linear stormwater assets, weighted by length of pipe, is included in Table 6-4. The condition is reported on a scale of 0 to 100, where 100 represents an asset in perfect condition. The average condition of all linear stormwater assets (by length) is 96 or Very Good.

Table 6-4: Average Condition of Stormwater Assets

Pipe Material	Total Length (m)	Average Condition Score	Average Condition Rating
Concrete	11,942	93	Very Good
PVC	5,148	99	Very Good
Tile	189	92	Very Good
CSP	11	98	Very Good

6.1.2 Stormwater Facility Assets

There are six stormwater management facilities and two oil grit separators that are currently assumed by the Township. A further breakdown of these facilities and corresponding their catchment area is outlined in Table 6-5.

Table 6-5: Stormwater Facility Assets

Stormwater Facility Name	Catchment Area (ha)
Ridge Crossing SWM Wet Pond	21.5
Lucan Industrial SWM Wet Pond	11.7
Loyens SWM Wet Pond	6.54
Reliance SWM Wet Pond	6.24
Van Roestel SWM Wet Pond	5.93
Olde Clover SWM Wet Pond	21.0
Campanale Oil and Grit Separator	1.45
Saintsbury Oil and Grit Separator	10.09

The replacement cost of the six stormwater management facilities is estimated at $2,698,200. This assumes a unit cost of $37,000 per hectare of drainage area, in reference to a unit cost provided in the City of Barrie's 2020 Stormwater Asset Management Plan inflated to 2025 Dollars assuming a 3% average annual inflation. The replacement costs of the two oil grit separators are estimated at $147,200 based on tender prices, which have been inflated to 2025 dollars.

The average age of the existing stormwater management facilities is estimated to be approximately 10 years old.

The expected useful life of SWM facilities varies depending on the type of facility and the rate of sediment accumulation and the frequency of clean outs that are completed. According to Infrastructure Canada, the average expected useful life of stormwater management ponds is 74 years and other end-of-pipe facilities is 63 years.

6.1.2.1 Condition

Comprehensive existing condition of the Township's stormwater facility assets is not currently available for all facilities. It is recommended that a condition assessment be completed of all components of each facility and incorporated into the next update of the AMP.

6.2 Levels of Service

Levels of service for water assets are outlined in Table 1 of the regulation, *O.Reg. 588/17*. Table 6-6 and Table 6-7 outline the Township's current community and technical levels of service for water assets.

Table 6-6: Community Levels of Service – Stormwater

Service Attribute	Community Levels of Service (Qualitative Description)	Community LOS
Scope	Description, which may include maps, of the user groups or areas of the Municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.	The stormwater management system in the Township is devised of a pipe network and stormwater management facilities, which provide conveyance of stormwater to protect properties.

Table 6-7: Technical Levels of Service – Stormwater

Service Attribute	Technical Levels of Service (Technical Metrics)	Technical LOS
Scope	Percentage of properties in municipality resilient to a 100-year storm.	The percentage of properties in the Township that are resilient to a 100-year storm currently unknown. It is recommended that further studies be completed in the future in order to assess the LOS metric.
	Percentage of the municipal stormwater management system resilient to a 5-year storm.	The percentage of the municipal stormwater management system resilient to a 5-year storm is currently unknown. It is recommended that further studies be completed in the future to assess this LOS metric.

6.2.1 Current Performance

Asset performance measures were determined in consultation with the Township, which provide relevant metrics against which the Township can gauge the performance of their assets. The performance measures for the water network, and their current values are shown in Table 6-8.

Table 6-8: Performance Measures – Stormwater

Asset Performance Measure	Current Value
Percentage of the community with stormwater quality and quantity control.	It is recommended that future analysis be completed in order to track this performance measure.
Inspection frequency of stormwater ponds and catch basins.	Catch basins are inspected once a year in rural areas, and once every three years in urban areas. Storm water pond inspection is completed based on specific needs; some will require annual attention while others are done every 5 years.

6.3 Risk Assessment

Importance of stormwater assets was determined in consultation with Township staff. An importance ranking criteria was applied to all watermains as described in Table 6-9.

Table 6-9: Importance Ratings – Stormwater

Importance Rating	Description
High (3)	• Stormwater management facilities; and • Trunk storm sewers.
Moderate (2)	• Oil grit separators; and • Local storm sewers.
Low (1)	• Catchbasins

Based on the methodology and importance rating, the assets fall within the following risk zones.

6.3.1 Stormwater Linear

- Low: 73%;
- Moderate: 27%; and
- High: 0%.

6.3.2 Stormwater Facility

- Low: 38%;
- Moderate: 62%; and
- High: 0%.

6.4 Lifecycle Activities – Stormwater

In the lifecycle of a stormwater management asset, there are multiple activities that can be taken, depending on the asset attributes. The expected lifecycle activities to be used on the Township assets are as follows Table 6-10.

Table 6-10: Lifecycle Activities of Stormwater Assets

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Construction	Creation / Full Replacement	New servicing where none exists; replacement of deteriorated pipes with current design standards.	Capacity needs, provincial/local design guidelines, and end of useful life.
Maintenance	Operating Condition	Flushing and cleaning; catch basin cleaning; street sweeping; minor structural repairs. Routine inspections of the conditions of SWM facilities Optimizing practices for winter snow and ice management	Annual inspection results, drainage area erosion, and sediment accumulation.

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Renewal	Life Extension	Structural or non-structural lining of pipes; periodic sediment removal from SWM facilities.	Pipe structural integrity (deteriorated but sound) and hydraulic performance.
Operating	Monitoring	CCTV or zoom camera inspections; non-infrastructure policy implementation.	Asset management strategy and condition assessment programs.
Disposal	End of Service	Abandonment in place or removal to provide space for new infrastructure.	Service life exhaustion and space requirements for new assets.

6.5 Asset Management Strategy – Stormwater

6.5.1 Condition Assessments

Accurate condition data is the primary driver for strategic decision-making. The Township manages the network through:

- **Inspection Methods:** Visual inspections are conducted using CCTV or Zoom camera technology. A consistent assessment program is recommended on a three-to-five-year cycle to track structural integrity; and
- Coordinated Factors: Beyond condition, the Township considers asset risk scores, upstream dependencies, expansion requirements, and the replacement needs of adjacent infrastructure (watermains, sanitary sewers, or roadworks).

6.5.2 Lifecycle Strategies

When a storm sewer's condition warrants intervention, the following hierarchy is applied:

- **Maintenance & Rehabilitation:** Localized repairs and structural relining are the first options explored to extend useful life. Relining is preferred for its non-intrusive nature and its ability to address individual pipe segments;
- **Reconstruction:** When rehabilitation is no longer viable, segments are reconstructed following current best practices;
- Material Standards: New construction and replacements typically utilize PVC for pipes ≤400 mm and concrete for diameters larger than 400 mm; and
- End of Life: Assets reaching the end of their useful life are either removed or safely abandoned in place.

6.5.3 Stormwater Management Facilities

The strategy for SWM facilities focuses on maintaining design capacity to ensure effective hydraulic and water quality control.

- Sediment Monitoring: In-situ measurements of sediment depth are conducted every three to five years to monitor facility performance;
- Cleanout Triggers: Following the MECP's Stormwater Management Planning and Design Manual (March 2003) guidelines, sediment removal is required when accumulation reduces removal efficiency by 5% or more; and
- **Restoration:** Periodic dredging returns the facility to its original design capacity, ensuring it continues to meet environmental and regulatory standards.

6.5.4 Scenario Analysis

6.5.4.1 Linear Stormwater and Facility Assets

To understand the needs and projected works on the stormwater assets within a 10-year outlook, replacement activities were reviewed under varying budget values to understand the impact on overall asset condition. A summary of the analysis is outlined in Table 6-11 below.

Table 6-11: Financial Scenarios for Stormwater Assets

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$5,200	$51,500	Very Good
2	Maintain Current LOS	$5,200	$51,500	Very Good
3	Proposed LOS	$13,700	$137,300	Very Good

7.0 Buildings and Facilities

The Township owns and maintains 7 buildings and facilities, excluding water, wastewater, stormwater, and parks and recreation facilities which for the purposes of this asset management plan, are categorized under their respective asset categories. These buildings and facilities assets include administrative, emergency service, cultural, and operations-related buildings.

7.1 State of Local Infrastructure

The average age and total replacement value of the Buildings & Facilities assets is $13.8 million, in 2025 dollars, as outlined in Table 7-1.

Table 7-1: Summary of Buildings and Facilities

Building/Facility Name	Average Age	Estimated Replacement Cost
Municipal Office and Library	10	$2,008,500
Public Works Building	12	$4,583,500
Sand and Salt Storage Shed	3	$705,550
Lucan Biddulph Fire Hall	23	$1,915,800
Biddulph Blanshard Fire Hall	31	$2,319,600
Ambulance Station	Unknown	$1,040,300
Museum	17	$1,260,720
Total		$13,833,970

The expected useful life of each building and facility asset and its various complex components varies dependent on the type of component. Table 7-2 outlines the expected useful life by asset component type.

Table 7-2: Building and Facility Asset Component Expected Useful Life

Asset Component Type		Expected Useful Life (years)
Substructure	Foundations	75
Shell	Super Structure	50
	Exterior Enclosure	25
	Roofing	25
Interior	Interior Construction	25-50
	Stairs	50
	Interior Finishes	15
Services	Conveying	30-40
	Plumbing	25-30
	HVAC	10-25

Asset Component Type		Expected Useful Life (years)
	Fire Protection	10-40
	Electrical	20-40
Equipment and Furnishings	Equipment	20
	Furnishings	20-25
Special Construction	Special Construction	20-30
Sitework	Site Preparation	10-75
	Site Improvements	15-60
	Site Mechanical Utilities	15-60
	Site Electrical Utilities	20
	Other Site Construction	30-75

7.1.1 Condition

A Facility Condition Assessment was conducted by Dillon Consulting in 2023 and the inspections evaluated the physical state of each facility and identified required renewal investments.

An overall Facility Condition Index (FCI) of 8.0% was assessed, indicating the portfolio is in Good condition overall.

To determine the FCI for each facility, the following formula was applied:

$$\text{FCI}\ (\%) = \left(\frac{\text{Estimated Condition Investment Required}}{\text{Estimated Replacement Cost}}\right) \times 100$$

The FCI calculated for each facility was developed using a standardized grading scale aligned with the Canadian Infrastructure Report Card (CIRC) approach as outlined in Table 7-3.

Table 7-3: Condition Ratings for Buildings Aligned with the CIRC

Condition Rating	% Threshold	Description
Very Good	≤ 5%	Facility is in excellent shape, with minimal renewal needs.
Good	> 5% and ≤ 15%	Facility shows some wear but performs well.
Fair	> 15% and ≤ 30%	Moderate deficiencies, attention needed to maintain service.
Poor	> 30% and ≤ 49%	Significant issues, major investment is likely required.
Very Poor	> 49%	Facility is in critical condition, urgent renewal or replacement needed.

Table 7-4 outlines the current condition of the overall portfolio based on the rating scale.

Table 7-4: Building and Facility Asset Condition

Building / Facility	Estimated Investment Required	FCI	Condition Rating (Grade)
Municipal Office and Library	$444,100	22.8%	Fair
Public Works Building	$19,300	0.4%	Very Good
Sand and Salt Storage Shed	$0	0%	Very Good
Lucan Biddulph Fire Hall	$323,000	17.4%	Fair
Biddulph Blanshard Fire Hall	$34,200	1.6%	Very Good
Ambulance Station	$175,600	17.4%	Fair
Museum	$106,700	8.7%	Good
Total	$1,158,200	8.0%	Good

7.2 Level of Service

Levels of service for building and facility assets are not defined in the regulation, *O.Reg. 588/17* as buildings are not considered core assets. Table 7-5 and Table 7-6 outline the Township's current community and technical levels of service for buildings and facilities.

Table 7-5: Community Levels of Service – Buildings and Facilities

Service Attribute	Community Levels of Service (Qualitative Description)	Community LOS
Scope	Description, which may include maps of the asset category	The building and facility assets are located throughout the Township, primarily within the communities of Lucan and Granton.
Quality	Description or images that illustrate the different levels or condition (if applicable). Consider hours of operation and/or when the service is available. • Hours of operation; and • Available services.	The quality of the buildings and accessibility vary, depending on the purpose of the building as follows: • Emergency Services are available 365 days a year, 24 hours a day, 7 days a week; • Administrative offices are available during business hours Monday-Friday 8:30 am-4:30 pm; • Public Works facilities are accessible by staff only; and • Library is accessible during business hours: o Monday and Friday 10:00 am-4:00 pm, Tuesday and Wednesday 10:00 am -8:00 pm, Thursday 4:00 pm-8:00 pm and Saturday 10:00 am-2:00 pm.

Table 7-6: Technical Levels of Service – Buildings and Facilities

Service Attribute	Technical Levels of Service (Technical Metrics)	Technical LOS
Scope	Provide breakdown of number of buildings by type providing service compared to the size of the community (geography or population).	The scope of the Township's buildings includes their availability to provide service. In Table 7-7 below, the building type, and number of buildings per capita per building type is provided.
Quality	Legal, regulatory and local standards.	The quality of Buildings and Facilities include the following legal, regulatory and local standards for the services provided: • Accessibility (AODA Standards); • Health and safety; and • Buildings must be in compliance with Ontario Building Code.

Table 7-7: Number of Buildings and Facilities per Capita

Building Type	Buildings per Capita
Fire Hall (2)	1 per 2,840 residents
Library	1 per 5,680 residents
Municipal Office	1 per 5,680 residents
Museum	1 per 5,680 residents

7.2.1 Current Performance

Asset performance measures were determined in consultation with the Township, which provide relevant metrics against which the Township can gauge the performance of their assets. Considering each building as a single asset, the performance measures and corresponding units established for buildings and facilities are shown in Table 7-8.

Table 7-8: Current Performance Measures for Buildings and Facilities

Asset Performances Measure	Current Value
Water usage (m^3 per year)	Table 7-9 outlines the water usage by building for 2023 and 2024.
Energy usage (kWh per year)	Table 7-9 outlines the energy usage by building for 2023 and 2024.
Operation and maintenance cost ($/population)	The 2023 - 2024 average operation and maintenance costs for buildings and facilities assets is approximately $21 per capita.

Table 7-9: Annual Water and Energy Usage for Buildings and Facilities for 2023-2024

Building / Facility	Water Usage (m^3)		Energy Usage (kWh)	
	2023	2024	2023	2024
Municipal Office and Library	105.5	108.0	94,741	104,155
Public Works Building	297.8	345.5	36,426	35,749
Lucan Biddulph Fire Hall	95.4	26.3	7,378	7,245
Biddulph Blanshard Fire Hall	0	0	16,380	16,950
Ambulance Station	71	110.0	Not available	Not available
Museum	22.9	27.1	16,235	16,745

7.3 Risk Assessment

Importance of municipal buildings and facilities was determined in consultation with the municipal staff. Although Parks and Recreation assets rank lower from a financial risk perspective, they provide significant community well-being benefits. Continued investment is important to maintain public confidence and ensure these services remain safe, accessible, and enjoyable for residents Table 7-10 outlines the importance rankings developed with staff and utilized in risk calculations.

Table 7-10: Importance Rating – Buildings and Facilities

Importance Rating	Building and Facility Asset
High (3)	• Lucan Biddulph Fire Hall; • Biddulph Blanshard Fire Hall; • Ambulance Station; • Municipal Office and Library; and • Sand and Salt Shed.
Moderate (2)	• Public Works Building
Low (1)	• Museum

Based on the risk methodology and importance ratings, 60% of assets fall within the Moderate risk zone, while the remaining 40% are classified as Low risk.

7.4 Lifecycle Activities – Buildings and Facilities

The following section describes the lifecycle activities that can be implemented within the asset management strategy for building assets (see Table 7-11). Note that, as previously discussed, building assets refers to the entirety of the asset which is made up of varying component systems depending on the use of the building. The primary lifecycle activities include construction, maintenance, renewal, and decommissioning/disposal.

Table 7-11: Lifecycle Activities of Building Assets

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Construction	Creation	Adhering to Ontario Building Code and regional requirements. Design for intended use.	Service requirements, building codes, and intended usage.
Maintenance	Service preservation	• **Preventative**: Ad-hoc or scheduled works; • **Reactive**: Response to issues; and • Major: Component replacement.	Manufacturer directives, condition assessments, and system failures.
Renewal	Modernization & Expansion	Adding new components, updating existing systems and renovations to suit change in services.	Code compliance, modernization, and service delivery changes.
Disposal	End of service life / Portfolio change	Removal of components/buildings, sale of property, decommissioning of portions.	Health & safety protocols, environmental regulations, and asset surplus.

7.5 Asset Management Strategy – Buildings and Facilities

7.5.1 Condition Assessments

Lifecycle activities for buildings vary significantly based on their unique components (HVAC, roofing, structural) and the specific services they provide.

- Detailed Reviews: The Township uses comprehensive condition assessments to determine required maintenance and the remaining useful life of key components. The last assessment was completed in 2023, it is recommended to update this information every five years; and
- Risk-Based Approach: The Township prioritizes buildings with high risk scores or those showing poor condition/performance measures.

7.5.2 Lifecycle Strategies for Buildings and Facilities

- **Routine Maintenance:** Existing schedules are assumed to be effective and should continue to ensure day-to-day operational reliability; and
- Climate Change & Resilience: Evaluations to understand how a changing climate may impact building assets. Findings from these assessments inform changes to how lifecycle activities are performed to increase structural and operational resilience.

7.5.3 Scenario Analysis

To understand the needs and projected works on the building and facility assets within a 10-year outlook, replacement activities were reviewed under varying budget values to understand the impact on overall asset condition. A summary of the analysis is outlined in Table 7-12 below.

Table 7-12: Financial Scenarios for Buildings and Facilities Assets

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$564,600	$5,645,500	Fair
2	Maintain Current LOS	$564,600	$5,645,500	Fair
3	Proposed LOS	$400,200	$4,001,900	Fair

8.0 Parks and Recreation

8.1 State of Local Infrastructure

The Township owns and maintains multiple parks and recreation facilities, trails and associated fleet and equipment. The Township's parks and recreation assets include the following:

8.1.1 Parks and Recreation Facilities and Trails

- Lucan Biddulph Community Memorial Centre, including Arena and Community Hall/Gym;
- Active Living Centre;
- Daycare;
- Community Centre Park (Soccer Fields, Ball Diamond, Playground, and Dog Park);
- Lucan Pool;
- Scout Hall;
- Granton Park (Playground Equipment, Ball Diamond, Skate Park and Pavilion);
- Elm Street Park (Pavilion, Splash Pad, All Wheels Park and Playground Equipment);

- Market Street Park (Pavilion, Playground Equipment, Ball Diamond);
- Spencer Park (Pavilion, Multi-use Courts and Playground Equipment);
- Lucan Soccer Complex;
- Elm Street Park Pathway;
- Granton Park Pathway;
- Lucan Biddulph Community Memorial Centre Park Walking Track;
- Market Steet Park Pathway;
- Olde Clover / Spencer Park Pathway; and
- Ridge Crossing Trail.

8.1.2 Parks and Recreation Fleet and Equipment

- Ice Resurfacer;
- Lawn mowers;
- Truck/plow;
- Tractor;
- Pickup trucks;

- Trailer;
- Ball diamond groomer;
- Arena equipment (i.e. Compressors and glycol system, safety netting, sound system, furnaces, scrubber, air exchange system, skate sharpener, dehumidifier, condenser, fitness space equipment, generator, scoreboard/time clock, sprinklers);
- Pool boiler; and
- Community Centre kitchen and canteen equipment and exhaust system.

The average age of the components of the Township's parks and recreation assets is 12 years old. The expected useful life of each parks and recreation asset and its various complex components varies dependent on the type of asset. Table 8-1 outlines the ranges of expected useful life by asset type and estimated replacement cost.

Table 8-1: Parks and Recreation Assets Replacement Cost

Asset Type	Range of Expected Useful Life (years)	Estimated Replacement Cost
Facilities and Trails	10-75	$30,884,800
Fleet and Equipment	10-20	$1,571,100
Total	N/A	$32,455,900

The estimated replacement costs of the Township's parks and recreation assets is $32.5 million based on historical costs, inflated to 2025 dollars.

8.1.3 Condition

Similar to the Buildings and Facilities assets, a Facility Condition Assessment was conducted by Dillon Consulting in 2023 for several parks and recreation facilities including park pavilions and the Scout Hall.

The Lucan Biddulph Community Memorial Centre was not assessed due to the recent completion of the extensive renovations. The inspections evaluated the physical state of each facility and identified required renewal investments.

An overall Facility Condition Index (FCI) of 5.4% was assessed, indicating the portfolio is in Good condition overall. The FCI calculated for each facility was used to determine its condition rating using a standardized grading scale aligned with the Canadian Infrastructure Report Card (CIRC) approach as outlined in Table 7-3. Table 8-2 outlines the overall condition of the parks and recreation facilities that were assessed as part of the 2023 Facility Condition Assessment.

Table 8-2: Parks and Recreation Facility Condition

Facility	Estimated Investment Required	FCI	Condition Rating (Grade)
Scout Hall	$55,300	5.0%	Good
Pavilion, Lucan Optimist (Elm Street)	$800	1.0%	Very Good
Pavilion, Granton Park	$24,650	3.9%	Very Good
Pavilion, Lion's (Market Street)	$8,250	10.3%	Good
Pavilion, Scout Hall	$19,700	24.6%	Fair
Pavilion, Spencer Ave	$0	0.0%	Very Good
Total	$108,700	5.4%	Good

The current average condition of all other parks and recreation assets (trails, fleet and equipment, etc.) is estimated based on age and estimated remaining service life and is estimated to be 'Fair'.

8.2 Level of Service

Levels of service for parks and recreation assets are not defined in the regulation, O.Reg. 588/17 as parks and recreation are not considered core assets. As such, level of services has been devised based on the content of the regulation, in consultation with the Township. Table 8-3 and Table 8-4 outline the Township's current community and technical levels of service for parks and recreation.

Table 8-3: Community Levels of Service – Parks and Recreation

Service Attribute	Community Level of Service (Qualitative Description)	Community LOS
Scope	Description, which may include maps of parks and recreation facility locations	The parks and recreation assets are primarily located in the communities of Lucan and throughout the Township and are accessible to residents for a variety of recreational activities.
Quality	Description or images that illustrate the different levels or condition (if applicable). Consider hours of operation and/or when the service is available. • Hours of operation; and • Available services.	Outdoor recreation facilities (parks, pool, playgrounds, sports fields, trails, pavilions) are available seasonally or year-round depending on the facility and on a rental basis (where applicable). Indoor recreation facilities (Community Centre, Scout Hall, Active Living Centre, Daycare) are available year-round and on a rental basis (where applicable).

Table 8-4: Technical Levels of Service – Parks and Recreation

Service Attribute	Technical Level of Service (Technical Metrics)	Technical LOS
Scope	Number of parks and recreation facilities per population	There are currently 11 parks and recreation facilities located throughout the Township. Based on a total population of 5,680 people, this equates to 1 parks facility per 516 people.
Quality	Legal/regulatory/local standards	Legal/regulatory/local standards include: • Grass cutting guidelines; and • Playground equipment annual inspection by a certified safety inspector.

8.2.1 Current Performance

Asset performance measures were determined in consultation with the Township, which provide relevant metrics against which the Township can gauge the performance of their assets. The performance measures for parks and recreation assets, and their current values are shown in Table 8-5.

Table 8-5: Parks and Recreation Performance Measures

Asset Performance Measures	Current Value
Usage rates of facilities (i.e., number of rentals, hours utilized, etc.)	Table 8-6 outlines the average usage of various parks and recreation facilities by number of rentals and hours utilized for 2023-2024.
Revenue, expenses and attendees of parks and recreation programs (i.e., pool and day camp)	Table 8-7 outlines the average annual revenue and expenses as well as number of attendees for program at the pool and day camp for 2023-2024.
Water usage (m^3 per year)	Table 8-8 outlines the water usage by parks and recreation facility for 2023 and 2024.
Energy usage (kWh per year)	Table 8-8 outlines the energy usage by parks and recreation facility for 2023 and 2024.
Operating expenses for parks and recreation fleet and equipment	The 2023-2024 average annual operating expenses for parks and recreation fleet and equipment was $33,270.

Table 8-6: Parks and Recreation Facility Usage Rates for 2023-2024

Facility		Number of Rentals	Hours Utilized
Lucan Biddulph Community Memorial Centre	Multipurpose Hall	59	1,502
	Main Hall	106	20,121
	Active Living Centre	53	853
	Ice Surface	1,525	3,158
Lucan Pool		7	7

Table 8-7: Revenue, Expenses, and Attendees of Parks and Recreation Programs for 2023-2024

Program	Revenue	Expenses (excl. wages)	Number of Attendees	
Lucan Pool	$69,201	$11,005	Public Swims	2,202
			Lessons	230
			Programs	105
Day Camp	$103,885	$3,915	575	

Table 8-8: Annual Water and Energy Usage for Parks and Recreation Facilities for 2023-2024

Facility	Water Usage (m^3)		Energy Usage (kWh)	
	2023	2024	2023	2024
Lucan Biddulph Community Memorial Centre (including Lucan Pool)	7,469	7,797	1,226,550	1,342,045
Scout Hall	306.1	25.5	5,431	5,284
Splash Pad	12,612.6	11,690.2	-	-

As shown in Table 8-9, facility revenues have experienced steady and significant growth across all event spaces over the four-year period. Total revenue increased from $463,308 in 2022 to $612,661 in 2025 (Oct), representing an overall rise of 32%. Year-over-year increases were consistent, with revenue growing by 12% from 2022 to 2023, 12% from 2023 to 2024, and 6% from 2024 to 2025. The majority of this growth is driven by strong demand for ice rentals, which rose from $409,563 in 2022 to $477,266 in 2025, an increase of 17%, along with expanding use of halls, parks, and recreation spaces. These upward trends demonstrate strong community participation and indicate that the Township's recreation facilities are being used more heavily each year.

Table 8-9: Annual Program Revenue from Event Space for 2022-2025

Event Space	Revenue Total			
	2022	2023	2024	2025 (10 months)
Halls	$27,440	$36,549	$54,898	$78,063
Pavilions	$850	$929	$2,280	$2,152
Pool*	$0	$306	$630	$2,288
Baseball & Soccer	$13,105	$15,065	$17,078	$18,284
Ice	$409,563	$445,289	$478,932	$477,266
Exercise	$12,350	$21,815	$26,678	$34,607
Grand Total	$463,308	$519,953	$580,496	$612,661

*Note: revenue for the pool only includes private rentals.

Program participation has also grown substantially, as shown in Table 8-10, with total attendance rising from 476 participants in 2022 to 1,173 participants in 2025, an increase of 146% over four years. Year-over-year growth has been particularly strong: attendance increased by 52% in 2023, 37% in 2024, and 19% in 2025. Summer Camp continues to be the most popular offering, nearly doubling from 345

participants in 2022 to 758 in 2025. Swim Lessons and March Break Camp have also expanded steadily, reflecting growing family demand for structured programs.

Table 8-10: Annual Program attendance from Events for 2022-2025

Event	Number of Attendance			
	2022	2023	2024	2025 (10 months)
Summer Camp	345	538	612	758
March Break Camp	10	24	40	30
Swim Lessons	103	142	317	340
Swim Team	18	18	19	45
Grand Total	476	722	988	1,173

8.3 Risk Assessment

Importance of parks and recreation assets was determined in consultation with the municipal staff. Table 8-11 outlines the importance rankings developed with staff and utilized in risk calculations.

Table 8-11: Importance Rating – Parks and Recreation

Importance Rating	Parks and Recreation Asset
High (3)	• Lucan Biddulph Community Memorial Centre; • Daycare; and • Ice Resurfacer.
Moderate (2)	• Sports Fields (Ball Diamonds, Soccer Fields/Complex); • Pool; and • Active Living Centre.
Low (1)	• Splash Pad; • Scout Hall; • Skate Park; • Playground; • Tennis Court; • Dog Park; • Pavilions; • Trails; • Bleachers; • Picnic Tables; • Lawn Mowers; and • Pickup Truck/Tractor.

Based on the risk methodology and importance ratings, 100% of assets fall within the Low risk zone.

8.4 Lifecycle Activities – Parks and Recreation

In the lifecycle of a Parks and Recreation asset, there are multiple activities that can be taken, depending on the asset attributes. The expected lifecycle activities to be used on the Parks and Recreation assets include acquisition, maintenance, and operation and decommissioning (Table 8-12).

Table 8-12: Lifecycle Activities for Parks and Recreation

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Acquisition	New or Used Assets	New/used purchases; adhering to municipal procurement; assessment of "Very Good" vs. variable condition.	Service delivery requirements and intended usage.
Maintenance & Renewal	Asset-specific preservation	• Fields: Turf care, aeration, irrigation repairs (8–12 years depending on usage); • Trails: Surface wear repair, vegetation control (Gravel trails may require resurfacing every 5–7 years, while asphalt trails may require rehabilitation every 12–15 years); and • Playgrounds: Safety inspections, equipment tightening (every 10–15 years based on manufacturer guidelines and CSA safety standards).	Intensity of use, weather exposure, CSA safety standards, and manufacturer guidelines.
Disposal	Retirement or Transfer	Removal from service; sale of asset; transfer to different department; hazardous material disposal.	Health & safety protocols and facility approval for out-of-service assets.

8.5 Asset Management Strategy – Parks and Recreation

The asset management strategy for the parks and recreation assets seeks to use the lifecycle activities in a manner that will achieve cost-effective and sustainable management of the assets.

Generally, if acquired new, the assets will begin their expected useful life in Very Good condition and performance. Throughout the lifecycle of the assets, routine maintenance should be conducted. As required, specific maintenance should be conducted. As an asset ages and approaches the end of its useful life, it is expected that the risk and maintenance costs associated with the asset will increase. There will be a point in the lifecycle where the risk and maintenance costs are such that replacement of the asset will be the preferred solution. This point will vary depending on the type of asset and the services delivered by each.

8.5.1 Scenario Analysis

8.5.1.1 Facility Assets

To understand the needs and projected works on the parks and recreation facility assets within a 10-year outlook, replacement activities were reviewed under varying budget values to understand the impact on overall asset condition. A summary of the analysis is outlined in Table 8-13 below.

Table 8-13: Financial Scenarios for Facility Parks and Recreation Assets

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$51,700	$517,200	Fair
2	Maintain Current LOS	$51,700	$517,200	Fair
3	Proposed LOS	$58,200	$582,300	Fair

8.5.1.2 Fleet and Equipment Assets

To understand the needs and projected works on the fleet and equipment assets within a 10-year outlook, replacement activities were reviewed under varying budget values to understand the impact on overall asset condition. A summary of the analysis is outlined in Table 8-14 below.

Table 8-14: Financial Scenarios for Fleet and Equipment Assets

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$237,900	$2,379,300	Good
2	Maintain Current LOS	$179,800	$1,797,600	Fair
3	Proposed LOS	$155,300	$1,553,400	Fair

8.5.1.3 Trails, Courts, and Associated Assets

To understand the needs and projected works on the parks and recreation trails, courts, and associated assets within a 10-year outlook, replacement activities were reviewed under varying budget values to understand the impact on overall asset condition. A summary of the analysis is outlined in Table 8-15 below.

Table 8-15: Financial Scenarios for Trails and Courts Parks and Recreation Assets

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$162,200	$1,622,100	Fair
2	Maintain Current LOS	$162,200	$1,622,100	Fair
3	Proposed LOS	$136,000	$1,359,600	Fair

9.0 Fleet and Equipment

9.1 State of Local Infrastructure

The Township owns and maintains 82 fleet and equipment assets, excluding parks and recreation fleet and equipment, which for the purposes of this asset management plan, are categorized within the Parks and Recreation service. The Township's fleet and equipment are summarized in Table 9-1.

Table 9-1: Fleet and Equipment Assets

Asset Type	Assets
Public Works	Graders, Sidewalk Plows, Backhoes, Snow Plows, Pickup trucks, Parking lot plow, Wood Chipper, and Generator.
Municipal Administration	Generator and Phone System.
Biddulph Blanshard Fire Department Equipment*	1 Fire Truck, 1 Pumper, 2 Tanker trucks, On Board Equipment, Bunker Gear, Helmets and Boots, Turnout Gear, Fire Hoses, Thermal Imaging Camera, Generator, LED Light Heads, Heated Pressure Washer, Ice Rescue Equipment, Rescue Tools, Radios, and Airpacks.
Lucan Biddulph Fire Department Equipment	1 Pumper, 1 Tanker Truck, 1 Rescue Van, On Board Equipment, Bunker Gear, Helmets and Boots, Turnout Gear, Thermal Imaging Camera, Generator, Auto Extrication Equipment, Air Packs, Air Compressor, Respirator Fit Tester, Gas Detector, Storage Trailer, Rescue Tools, Washing Machine, Ventilation Fan, and Radios.

*Note: shared ownership 51% / 49% between the Township of Lucan Biddulph and Township of Perth South.

The estimated replacement cost of the Township's fleet and equipment assets is $6.76 million based on historical costs, inflated to 2025 dollars as outlined in Table 9-2. The average age of the Township's fleet and equipment assets is 10 years old. The expected useful life of each fleet and equipment asset varies dependent on the type of asset. Table 9-2 outlines the ranges of expected useful life by asset type.

Table 9-2: Summary of Fleet and Equipment Assets

Fleet and Equipment Asset Type	Range of Expected Useful Life (years)	Estimated Replacement Cost
Public Works	10-15	$2,642,900
Municipal Administration	8-12	$136,300
Biddulph Blanshard Fire Department	10-15	$1,866,300
Lucan Biddulph Fire Department	10-15	$2,117,700
Total	N/A	$6,763,200

9.1.1 Condition

The current average condition of all fleet and equipment assets is estimated based on age and estimated remaining service life and is estimated to be 'Fair'.

9.2 Levels of Service

Levels of service for fleet and equipment assets are not defined in the regulation, *O. Reg. 588/17* as fleet and equipment are not considered core assets. As such, level of services have been devised based on the content of the regulation, in consultation with the Township. Table 9-3 and Table 9-4 outline the Township's current community and technical levels of service for fleet and equipment.

Table 9-3: Community Levels of Service – Fleet and Equipment

LOS Parameter	Community Levels of Service (Qualitative Description)	Community LOS
Scope	Description, which may include maps of locations where fleet and equipment is stored	Storage facilities for fleet and equipment assets are located across the Township. The storage location is dependent on the type of equipment by all fleet and equipment is stored any of the following facilities: Municipal Office, Public Works Building, Lucan Biddulph Fire Hall or the Biddulph Blanshard Fire Hall.
Quality	Description of fleet condition (i.e., maintained in 'good' or better condition in order to provide reliability	Condition ratings are not currently tracked for fleet assets based on a detailed condition inspection. It is recommended that the Township track condition in the future.

Table 9-4: Technical Levels of Service – Fleet and Equipment

LOS Parameter	Technical Levels of Service (Technical Metrics)	Technical LOS
Scope	Breakdown of number of fleet by department providing service compared to the size of the community (geography or population)	Public Works: The Township has 12 Public Works vehicle serving a population of 5,680, which equals 1 vehicle per 488 residents. Fire Departments: The Township operates 7 fire fleet vehicles serving the same population of 5,680, which equals 1 fire vehicle per approximately 811 residents.
Quality	Legal, regulatory, local standards	The fleet assets must adhere to applicable legal, regulatory and local standards, including: • Equipment in vehicle must meet Ontario Provincial Equipment Standards; • Manufacturer's recommendations or maintenance and life expectancy on equipment; • Vehicle/equipment preventative maintenance program; • Vehicle maintenance, safety; and • Driver training, equipment functioning (negligence, risk management).

With the variety in types of assets categorized as 'equipment' assets, it is not recommended to develop overarching levels of service for this category as the service being delivered by the assets is also greatly varied.

9.2.1 Performance Measures

Asset performance measures were determined in consultation with the Township, which provide relevant metrics against which the Township can gauge the performance of their assets. The performance measures for fleet and equipment assets, and their current values are shown in Table 9-5.

Table 9-5: Fleet and Equipment Performance Measures

Asset Performance Measures	Current Value
Fleet and equipment maintenance expenses or annual operating cost to provide service ($ per population)	The 2023-2024 average operating and maintenance expenses for fleet and equipment assets is approximately $33 per capita.
Maintenance expense per utilization ($/km or hour).	Not currently tracked, but it is recommended that the Township should track this performance measure in the future to compare amongst similar vehicles or established standards and identify vehicles which may be costing considerable operating dollars for low utilization.

9.3 Risk Assessment

Importance of fleet and equipment was determined in consultation with the municipal staff. Table 9-6 outlines the importance rankings developed with staff and utilized in risk calculations.

Table 9-6: Importance Rating – Fleet and Equipment

Importance Rating	Fleet and Equipment Asset
High (3)	• Fire trucks and associated equipment; • Sidewalk plow; • Road grader; and • Generators.
Moderate (2)	• Snow Plows; • Backhoe; and • Office equipment.
Low (1)	• Pickup trucks; • Lawn mowers; and • Office furniture.

Based on the risk methodology and importance ratings, 56% of assets fall within the Moderate risk zone, while the remaining 44% are classified as Low risk.

9.4 Lifecycle Activities – Fleet and Equipment

In the lifecycle of a fleet asset, there are multiple activities that can be undertaken, depending on the asset attributes. The expected lifecycle activities to be used on the fleet assets include acquisition, maintenance, and operation and decommissioning/disposal. Table 9-7 demonstrates the lifecycle stages for fleet and equipment.

Table 9-7: Lifecycle Activities for Fleet and Equipment

Lifecycle Stage	Scope	Key Activities / Examples	Primary Driver
Acquisition	Initial Procurement	Purchase of new/used units; direct replacement of assets at end-of-life.	End of useful life and municipal procurement procedures.
Maintenance	Ongoing Performance	Regular inspections; recording maintenance logs; addressing performance issues.	Manufacturer specifications and observed condition through regular usage.
Disposal	Decommissioning	Sale of asset; transfer between departments; removal to approved disposal facility.	Health & safety protocols and asset redundancy.

9.5 Asset Management Strategy – Fleet and Equipment

The asset management strategy for the fleet and equipment assets seeks to use the lifecycle activities in a manner that will achieve cost-effective and sustainable management of the assets.

Generally, if acquired new, the assets will begin their expected useful life in Very Good condition and performance. Throughout the lifecycle of the assets, routine maintenance should be conducted. As required, specific maintenance should be conducted. As an asset ages and approaches the end of its useful life, it is expected that the risk and maintenance costs associated with the asset will increase. There will be a point in the lifecycle where the risk and maintenance costs are such that replacement of the asset will be the preferred solution. This point will vary depending on the type of asset and the services delivered by each.

The Township should review usage of fleet and equipment assets to confirm if services are being provided adequately. The assets should also be routinely assessed and monitored for condition and performance, to inform any maintenance or replacement works required.

9.5.1 Scenario Analysis

To understand the needs and projected works on the fleet and equipment assets within a 10-year outlook, replacement activities were reviewed under varying budget values to understand the impact on overall asset condition. A summary of the analysis for all fleet and equipment assets is outlined in Table 9-8 to Table 9-11 below.

Table 9-8: Financial Scenarios for Public Works

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$241,200	$2,412,400	Fair
2	Maintain Current LOS	$241,200	$2,412,400	Fair
3	Proposed LOS	$240,500	$2,404,500	Fair

Table 9-9: Financial Scenarios for Municipal Administration

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$17,300	$172,500	Good
2	Maintain Current LOS	$17,300	$172,500	Good
3	Proposed LOS	$17,300	$172,500	Good

Table 9-10: Financial Scenarios for Biddulph Blanshard Fire Department

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$210,700	$2,106,600	Good
2	Maintain Current LOS	$86,900	$869,200	Poor
3	Proposed LOS	$128,200	$1,281,500	Fair

Table 9-11: Financial Scenarios for Lucan Biddulph Fire Department

	Budget Scenario	Average Annual Investment Over Timeframe	Total Investment Over Timeframe	Average Condition Index (2035)
1	Unlimited Budget	$374,500	$3,744,900	Good
2	Maintain Current LOS	$79,900	$798,800	Poor
3	Proposed LOS	$191,100	$1,911,400	Fair

10.0 Financial Strategy

This chapter serves as the high-level financial roadmap to bridge the gap between the current state and the proposed levels of service. As identified in O. Reg. 588/17, municipalities must identify the proposed LOS and associated 10-year lifecycle management and financial strategy to achieve the proposed LOS.

The chapter covers the following concepts:

- **Existing Funding Source**: Over the past 5-years, how and what has the Township spent on capital expenditures and from what funding sources;
- Current Replacement Value (CRV): The total cost, in 2025 dollars, to replace existing infrastructure assets is currently valued at $326.7 million;
- Proposed LOS: Based on the analysis of the three Scenario-Based Models to evaluate investment timing (Unlimited Budget, Maintain LOS, and Proposed LOS), how will the proposed levels impact the financial needs over the next 10-years; and
- Target Reinvestment Rate: The annual percentage of CRV that is proposed to be invested based on the levels of service over their lifecycle.

Various financing options, including reserve funds, debt, and grants can be considered during the process of developing the financial strategy. This section focuses on translating long-term asset needs into financial requirements.

10.1 Funding Sources

The Township's budget is comprised of three parts, which are outlined in Table 10-1. For the AMP, the financial strategy focuses on capital budget with support from the reserves.

Table 10-1: Township Budget Buckets

Part	Purpose	Primary Funding Sources
Operating Budget	Resources to deliver programs, services and facilities services to meet the needs of our growing community and accommodates for inflationary pressures.	Property taxes, User fees
Capital Budget	Provides for the infrastructure requirements of the municipality. The capital budget is used to either build or rehabilitate assets that will last for more than one year.	Taxes, Reserves, Debt, Grants, Development Charges
Reserves	Annual contributions from the operating budget to assist with creating a solid financial position to support the municipality's future cash requirements.	Operating surpluses, Planned transfers

Based on the Township's annual budget, they are made up of several sources which include:

- Tax Levy: Revenue generated from local property taxes;
- Capital Reserves: Funds set aside annually from the operating budget or specific levies;
- Debt Financing: Short or long-term borrowing;
- Grants (Federal & Provincial): Non-repayable funds from Provincial (OCIF) and Federal (CCBF) governments;
- Development Charges (DCs): One-time fees paid by developers per lot; and
- Water and Sewer Capital Levy: User-pay fees and monthly capital infrastructure levies.

The capital expenditures of these funding sources have varied year-to-year, particularly in years where the Township delivered major community infrastructure projects. Figure 7 below shows the funding sources over the past 5 years.

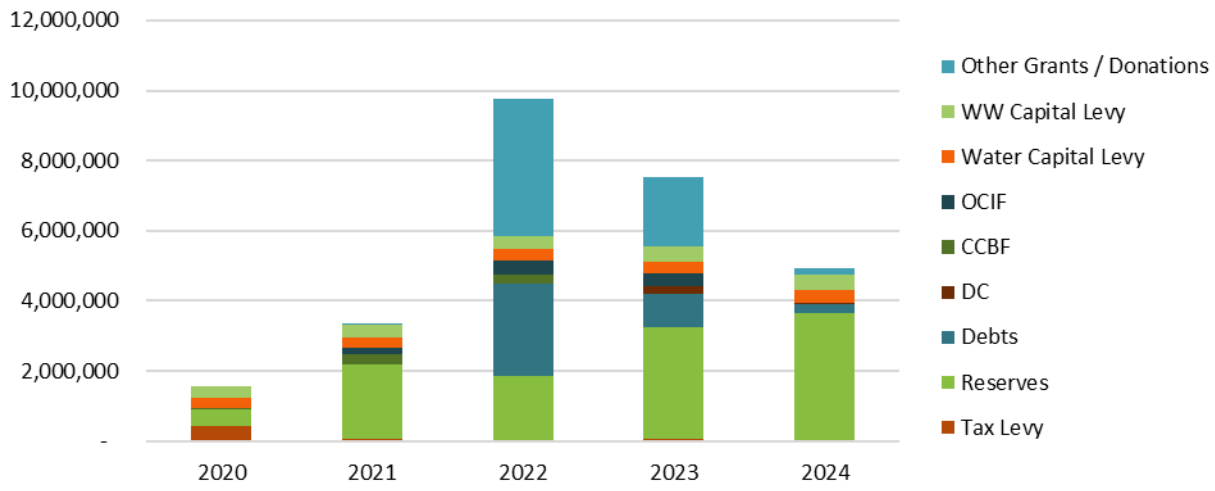


Figure 7: Funding Sources (2020 to 2024)

To support a sustainable funding baseline for the financial strategy, large capital funds have been removed from the average annual spend for this analysis. These include the construction of the Lucan Soccer Complex, Spencer Street Park upgrades, the Community Centre Phase 2 renovation (commissioned in 2023), and Granton Ball Diamond lighting improvements, were funded through a combination of reserves, debt, DCs, and significant one-time grant contributions showing high capital influx in 2022 and 2023.

Now that funding for the LWWTP expansion has been secured, wastewater capital funding requirements will be reassessed to ensure future rates remain appropriate and sustainable. Because renewal in these systems often occurs as large periodic capital projects rather than annualized spending, funding will continue to be carefully timed and reserved to avoid rate spikes. The Township's water and sewer operations are currently managed under an external operator agreement, which will be re-tendered in

2026, presenting an opportunity to further integrate capital planning, renewal prioritization, and financial alignment.

10.2 Reinvestment Rate

Municipal infrastructure experiences natural deterioration over time due to physical wear, environmental exposure, usage demands, and evolving service expectations. To help assets continue to function safely and reliably, the Township should periodically reinvest through lifecycle activities such as rehabilitation, repair, replacement, or component upgrades. The reinvestment rate can express this ongoing financial requirement as a percentage of the total capital replacement value of the asset. The actual reinvestment rate is calculated, using the planned capital funding over the CRV.

$$\text{Actual Reinvestment Rate} = \frac{\text{Annual Capital } \mathbf{Funding}}{Total\ Capital\ Replacement\ Value}$$

The Target Reinvestment Rate represents the annual capital investment level required to maintain the proposed LOS over time. This rate reflects a lifecycle approach of using the expected useful lives of assets and calculate the average annual investment necessary to sustain performance at the level of service. This rate is determined by the ratio of the annual capital requirement to the CRV.

$$\text{Target Reinvestment Rate} = \frac{\text{Annual Capital } \mathbf{Requirement}}{Total\ Capital\ Replacement\ Value}$$

The reinvestment rate is the annual capital investment as a percentage of the asset replacement value. While the funding analysis in the previous section has the benefit of highlighting years where there will be peaks in capital expenditure needs, reinvestment rates provide a simple annual target.

The 2016 Canadian Infrastructure Report Card found that rates of reinvestment are lower than targets recommended by asset management practitioners. The rate can vary based on factors such as the age of the infrastructure, the level of service and risk tolerance. The values provided are intended to be informative in nature. Table 10-2 demonstrates the 2016 average rate that municipalities reported on.

Table 10-2: Reinvestment Rate Benchmarks

Infrastructure Category	Lower Target Investment Rate	Upper Target Investment Rate	Canadian Average Reinvestment Rate (2016)
Potable Water (Linear)	1.0%	1.5%	0.9%
Potable Water (Non-Linear)	1.7%	2.5%	1.1%
Wastewater (Linear)	1.0%	1.3%	0.7%
Wastewater (Non-Linear)	1.7%	2.5%	1.4%
Stormwater (Linear)	1.0%	1.3%	0.3%
Stormwater (Non-Linear)	1.7%	2.0%	1.3%
Roads and Sidewalks	2.0%	3.0%	1.1%
Bridges	1.0%	1.7%	0.8%
Buildings	1.7%	2.5%	1.7%
Sports and Recreation Facilities	1.7%	2.5%	1.3%
Average	1.4%	2.0%	1.0%

With the increase in replacement costs, there has been an increase in the reinvestment rate from 2016 to closer to 2% for infrastructure which aligns closer to the upper target from 2016.

10.2.1 Current Reinvestment Rate

Over the past five years, the Township has invested an average of $2.7 million per year in capital projects across its assets. When this level of capital spending is compared to the Township's total CRV of approximately $326.7 million, the result is a current reinvestment rate of roughly 0.8% of CRV per year.

This average rate excludes large, one-time capital investments such as the Lucan Soccer Complex, Spencer Street Park improvements, the Community Centre Phase 2 Renovation, and the Granton Ball Diamond lighting upgrades as they do not represent recurring annual renewal funding capacity. This sustained reinvestment rate of 0.8% is below the industry benchmark of 2% of CRV typically required to maintain assets in a stable SOGR and maintain current performance. Table 10-3 outlines the average annual reinvestment rates by service area.

Table 10-3: Current Reinvestment %CRV/a

Service Area	Current Replacement Value ($2025)	5 Year's Average Capital Expenditure	Annual Reinvestment %CRV/a
Roads	$40,082,700	$580,800	1.4%
Bridges & Culverts	$7,067,700	$94,700	1.3%
Water	$101,965,100	$573,800	0.6%
Wastewater	$73,260,200	$683,000	0.9%
Stormwater	$51,266,800	$50,600	0.1%
Building & Facilities	$13,833,970	$210,400	1.5%
Parks & Recreation	$32,455,900	$313,800	1.0%
Fleet & Equipment	$6,763,200	$229,900	3.4%
Total	$326,695,570	$2,737,000	0.8%

The majority of the Township's infrastructure is relatively young and in good physical condition, such as large, recently installed portions of the water network, but as assets continue aging, renewal pressure will rise quickly and often unevenly. The reinvestment rate indicates if funding is keeping pace at a system level, while the condition of existing assets shows how soon and how urgently renewal is needed.

10.3 Scenario Based Financial Analysis

To understand when reinvestment should occur, and how different funding strategies influence asset condition and performance, an asset lifecycle tool was used to calculate forecasted activities. The model combines asset age, condition, deterioration curves, renewal cost options, and service level targets, and then forecasts capital needs over time based on different funding approaches. The strength of this model is that it does not simply total up asset replacement values; it optimizes reinvestment timing to preserve service levels while minimizing risk exposure and unnecessary early replacement.

The outputs used in this plan reflect the Township's current asset inventory, CRV, rehabilitation needs, and expected deterioration rates, and model renewal requirements across a 10-year planning horizon.

Three financial scenarios were analyzed to support planning and financial strategy discussion.

- Scenario 1 (Unlimited Budget): The Unlimited Budget scenario identifies the full reinvestment required to maintain assets at optimal condition, with no funding limitations. This scenario does not represent a realistic municipal funding strategy, but it establishes the true lifecycle need to maintain the full asset portfolio in state of good repair without allowing condition to decline;
- Scenario 2 (Maintain LOS): The Maintain LOS scenario models the level of reinvestment required to sustain the Township's current level of service across infrastructure categories. In this scenario,

selected renewal and rehabilitation treatments that prevent condition from declining into poor states while still respecting operational and service standards; and

- Scenario 3 (Proposed LOS): The Proposed LOS scenario explores the effects of allowing some decline in asset condition in the near term, particularly in areas where assets are approaching renewal but can remain functional if maintained at a reduced level until they can be replaced as part of a coordinated or larger capital project. This scenario is useful where grouping work such as road reconstruction with water and wastewater replacement creates cost efficiencies and avoids premature investment.

The summary of the results for each service are shown in Table 10-4.

Table 10-4: Summary of Financial Scenarios

Service Area	Scenario 1 (Unlimited Budget)	Scenario 2 (Maintain LOS)	Scenario 3 (Proposed LOS)
Roads	$15,051,400	$14,963,800	$9,040,500
Bridges & Culverts	$434,600	$434,600	$0
Water	$5,650,800	$5,650,800	$1,262,300
Wastewater*	$4,528,900	$4,525,800	$2,284,900
Stormwater	$51,500	$51,500	$137,300
Building & Facilities	$5,645,500	$5,645,500	$4,001,900
Parks & Recreation	$4,518,600	$3,936,900	$3,379,900
Fleet & Equipment	$8,436,400	$4,252,900	$5,885,200
Total	$44,317,700	$39,461,800	$25,992,000
Annual Reinvestment	1.4%	1.2%	0.8%

*Note: This total does not include the $18.7 million investment secured for the Lucan Wastewater Treatment Plant expansion and upgrades.

10.4 Proposed Level of Service Funding

The financial scenario #3 (proposed LOS) represents the forecasted path forward for the next 10-year planning period. While this strategy may allow for a calculated, modest decline in the condition of certain assets in the near term, this has minimal risk as the Township's infrastructure is in very good condition, and it would be challenging to maintain the existing financial needs to these conditions. The projected financial needs over the next 10 years for the services is shown in Table 10-5.

Table 10-5: Proposed LOS Scenario

Service	CRV ($2025)	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	10-year Capital Requirement	Reinvestment Rate (%CRV)
Roads	$40,082,700	$1,334,500	$493,300	$499,900	$394,100	$413,200	$2,997,800	$709,000	$717,400	$721,500	$759,700	$9,040,400	22.6%
Bridges & Culverts	$7,067,700	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	0.0%
Water	$101,965,100	$168,000	$0	$54,100	$0	$12,800	$146,100	$580,600	$119,000	$181,800	$0	$1,262,400	1.2%
Wastewater	$73,260,200	$935,000	$53,400	$135,100	$0	$685,400	$0	$0	$0	$476,100	$0	$2,285,000*	3.1%
Stormwater	$51,266,800	$85,800	$51,500	$0	$0	$0	$0	$0	$0	$0	$0	$137,300	0.3%
Buildings & Facilities	$13,833,970	$159,200	$102,000	$1,012,900	$10,100	$470,400	$45,000	$0	$1,515,800	$346,100	$340,500	$4,002,000	28.9%
Parks & Recreation	$32,455,900	$380,000	$819,000	$144,500	$149,800	$363,800	$233,300	$587,800	$175,100	$200,800	$325,900	$3,380,000	10.4%
Fleet & Equipment	$6,763,200	$457,000	$2,180,600	$398,600	$340,900	$419,700	$175,600	$122,900	$476,700	$708,900	$604,400	$5,885,300	87.0%
Total	$326,695,570	$3,519,500	$3,699,800	$2,245,100	$894,900	$2,365,300	$3,597,800	$2,000,300	$3,004,000	$2,635,200	$2,030,500	$25,992,400	8.0%

*Note: The total does not include the $18.7 million investment secured for the Lucan Wastewater Treatment Plant expansion and upgrades.

10.4.1 Funding Gap Analysis

Based on a review of current annual expenditures compared to the financial requirements of the Proposed LOS, the Township's current spending is sufficient to meet immediate targets. However, when benchmarked against the broader Canadian standard of 1.0%, a long-term sustainability gap emerges, a challenge currently shared by many Ontario municipalities.

The Proposed LOS scenario identifies a total capital reinvestment requirement of $25.9 million over the 10-year planning horizon, averaging $2.59 million per year. This represents a target annual reinvestment rate of approximately 0.8% of the total CRV.

With the Township's current annual reinvestment rate already at 0.8% ($2.74 million), there is no identified funding gap under the proposed service levels. However, if the Township were to align with the 1% reinvestment rate (the Canadian average reported in 2016), a funding gap would exist. Achieving this benchmark would require an annual investment of approximately $3.26 million, leaving an annual deficit of $0.52 million that the Township should monitor to ensure long-term asset health (see Table 10-6).

Table 10-6: Funding Gap Summary

Scenario	Annual Requirement	Current Investment	Annual Funding Gap
Proposed LOS (0.8%)	$2.59 million	$2.74 Million	None
Canadian Average (1.0%)	$3.26 million	$2.74 Million	$0.52 million

It is recommended that the Township proactively manage its financial position to bridge the distance between the proposed LOS and national benchmarks through the strategic use of reserves and available funding streams. Note that average annual reinvestment calculations exclude one-time grants; while these funds temporarily reduce pressure, they are not consistent enough for long-term baseline planning.

To mitigate future liability and help service continuity, the Township can look into implement the following financial strategies:

- Structured Reserve Planning: Continue making annual contributions to capital reserves to prepare for the larger, concentrated renewal events forecasted later in the planning timeframe;
- Strategic Debt and Grants: Utilize debt for long-life community infrastructure and leverage opportunistic grants to support major expansions. This ensures that stable, recurring revenue is prioritized for baseline renewal and SOGR activities; and
- Sustainable Rate Adjustments: Continue to align water and wastewater rates with projected renewal requirements to ensure these utility systems remain self-supporting.

By balancing immediate service level requirements with a long-term goal of reaching national reinvestment benchmarks, the Township can ensure fiscal resilience while maintaining the integrity of its core infrastructure.

10.5 Proposed Capital Projects

Capital infrastructure investment decisions can be challenging to navigate due to competing goals and priorities for the Township. A prioritization process can help consider various needs and create a path forward to achieve the proposed levels of service and forecast expenditures to support long-term budgeting considerations.

10.5.1 2026 to 2030 Projects

Table 10-7 to Table 10-13 detail the planned capital investments for the five-year period from 2026 to 2030. These projects represent lifecycle replacements, capacity expansions, and service improvements across all Township departments.

Table 10-7: 2026 to 2030 Projects – Roads

Year	Projects	Estimated Budget
2026	Downtown Lucan Electrical and Sidewalks, Light Posts, Nicoline Ave, Saintsbury Paved Shoulder, Scott's Drive (Paving Bike Lane), Traffic Control Measures Water St. Road Construction	$1,209,500
2027	High St, Isabella St, Queen St, Station St	$493,200
2028	Ann St, Head St, King St, Levitt St, Ontario St	$499,900
2029	Nagle Dr, Porte St	$394,100
2030	Community Dr, Francis St, Wellington St	$413,200

Table 10-8: 2026 to 2030 Projects – Water

Year	Projects	Estimated Budget
2026	Booster Station Computer Upgrades	$168,000
2028	Lucan BPS Upgrades Lucan Elevated Tank Upgrades	$688,100

Table 10-9: 2026 to 2030 Projects – Wastewater

Year	Projects	Estimated Budget
2026	Lucan WWTP: Upgrades and Expansion Main Trunk Line	$19,635,000
2027	Richmond St. from Wellington St. to Saintsbury Line	$53,400
2028	Wellington St. from Clarence St. to Saintsbury Line	$135,100
2030	Downtown Easement from Market St. to Alice St. Easement from Albert St. to Princess St. Easement from Head St. to End Easement from Market St to Stanley St Nicoline Ave from Elm St to Saintsbury Line	$685,500

Table 10-10: 2026 to 2030 Projects – Stormwater

Year	Projects	Estimated Budget
2026	Clandeboye Storm Water Control Coursey Line Culvert	$210,800
2027	Gibson Oil and Grit Separator	$51,500

Table 10-11: 2026 to 2030 Projects – Buildings & Facilities

Year	Projects	Estimated Budget
2026	Portable Washroom/Furniture Township Office Floor Tiles	$159,200
2030	Municipal/Library Building Upgrades	$425,300

Table 10-12: 2026 to 2030 Projects – Parks & Recreation

Year	Projects	Estimated Budget
2026	Second Ice Pad Design & General Park Upgrades	$$380,000
2027	Groomer, Kitchen Upgrades & Fencing	$321,400
2028	John Deere Tractor	$78,200
2029	Scout Hall Upgrades, Mower, & Chiller unit	$278,500
2030	Arena Interior, Playground Equipment, Bleachers, & Pavilions	$1,265,500

Table 10-13: 2026 to 2030 Projects – Fleet and Equipment

Year	Projects	Estimated Budget
2026	Grader Attachment, Tandem Snow Plow, Kubota Accessories	$457,000
2027	Major Fleet Renewal: LBF Fire Engine, BBF Pumper Truck, 2015 Tandem Plow, Service Truck, and various Fire/Safety equipment	$2,180,600
2028	Pickup Truck, Sidewalk Plow, Wood Chipper, BBF Fire Dept. Gear	$464,400
2029	Pickup Truck, LBF Fire Truck, LBF Bunker Gear, Parking Lot Plow and Attachments	$275,200
2030	Tandem Snow Plow, Generator, Bunker Gear	$419,700

The total estimated cost for investment needs from 2026 to 2030 is $31.3 million. This includes the $18.7 million upgrade and expansion of the Lucan WWTP.

10.5.1.1 **2031** to **2035** Projects

The long-term capital forecast identifies critical infrastructure needs for the subsequent five-year horizon. These projections allow the Township to plan for major facility upgrades and sustained road improvements. A summary of the key projects identified for 2031 to 2035 are outlined in Table 10-14.

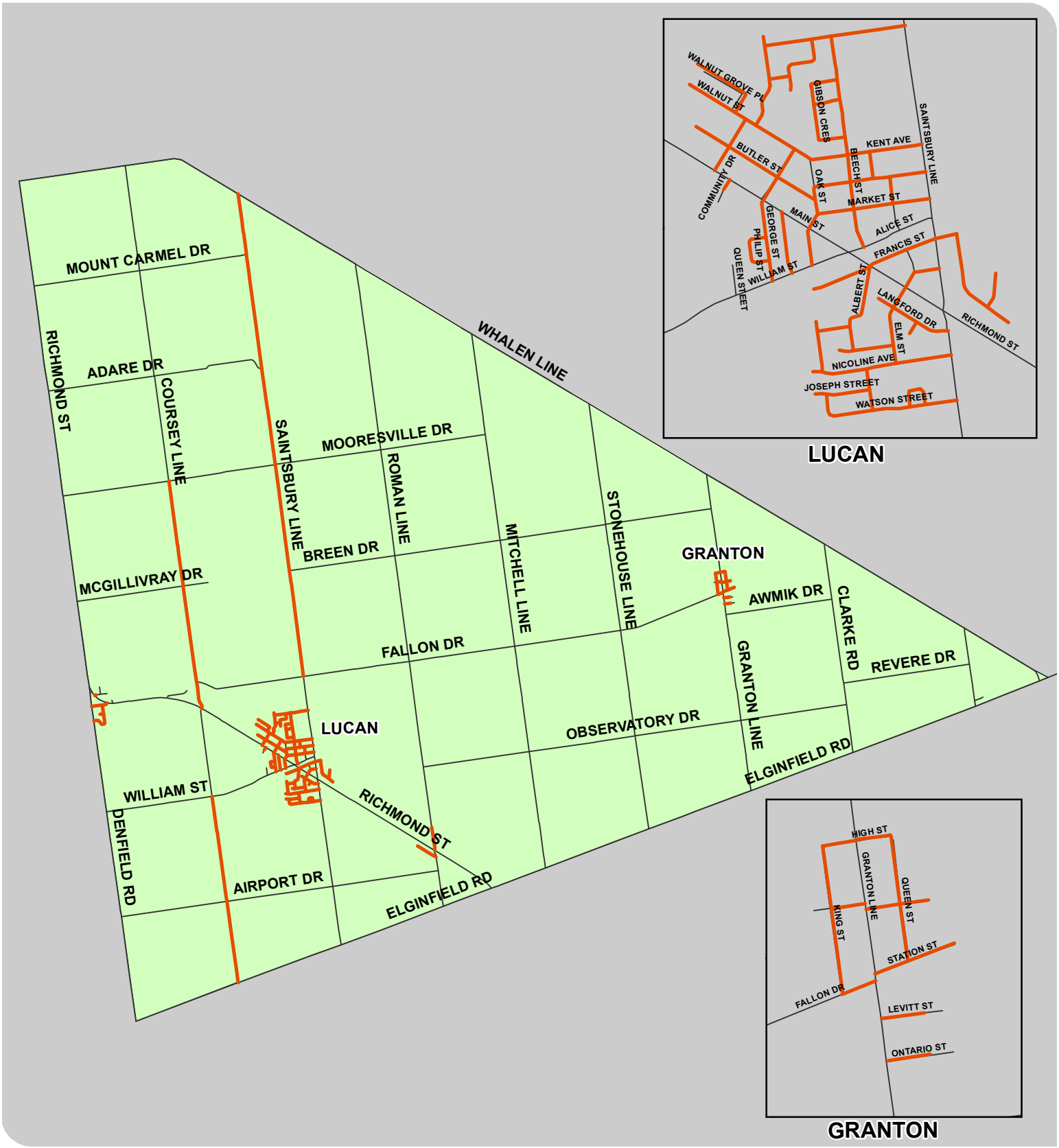
Table 10-14: 2031 to 2035 Projects – Summary of Key Projects

Service	Large Projects & Estimated Costs	Estimated Total Cost
Roads	Saintsbury Line ($1,729,800), Beech St ($443,000), Roman Line ($312,400), Gibson Cres ($308,700), Duchess Ave ($256,000), Kent Ave ($263,700), Albert St ($249,755), Clandeboye Dr ($182,000)	$5,905,400
Water	Harold Ct. Watermain Upgrades ($230,800), Granton BPS Upgrades ($97,000), Lucan Elevated Tank SCADA ($78,600)	$406,300
Wastewater	Francis St. from Clarence St. to Saintsbury Line ($150,700), Head St. from Granton Line to King St. ($57,200), Station St. from Queen to East Limit ($128,200), Queen St. from Station to Isabella ($91,260), Ann St. ($48,800)	$476,100
Buildings & Facilities	Public Works Building Upgrades ($507,100), Lucan Biddulph Fire Hall Upgrades ($897,000), Museum Upgrades ($670,000), Ambulance Station Upgrades ($611,900), Biddulph Blanshard Fire Hall Upgrades ($703,800)	$3,417,400
Parks and Recreation	Elm St. Park Splash Pad ($479,500), Pavilion Upgrades ($107,600), Fleet and Equipment Replacements ($419,000)	$1,056,300
Fleet and Equipment	LBF-Tanker ($328,500), Tandem Snow Plow ($291,200), BBF On Board Equipment ($174,300), LBF Air Packs ($155,800), Municipal Office Generator ($114,600)	$2,088,400

The total estimated cost for investment needs from 2031 to 2035 is $13.3 million.

Appendix A

Level of Service (Scope) Figures



TOWNSHIP OF LUCAN BIDDULPH
ASSET MANAGEMENT PLAN

OVERALL ROAD NETWORK
FIGURE 1

Township of Lucan Biddulph

TOWNSHIP OWNED ROADS (NON-GRAVEL)

LUCAN BIDDULPH BOUNDARY

DILLON CONSULTING

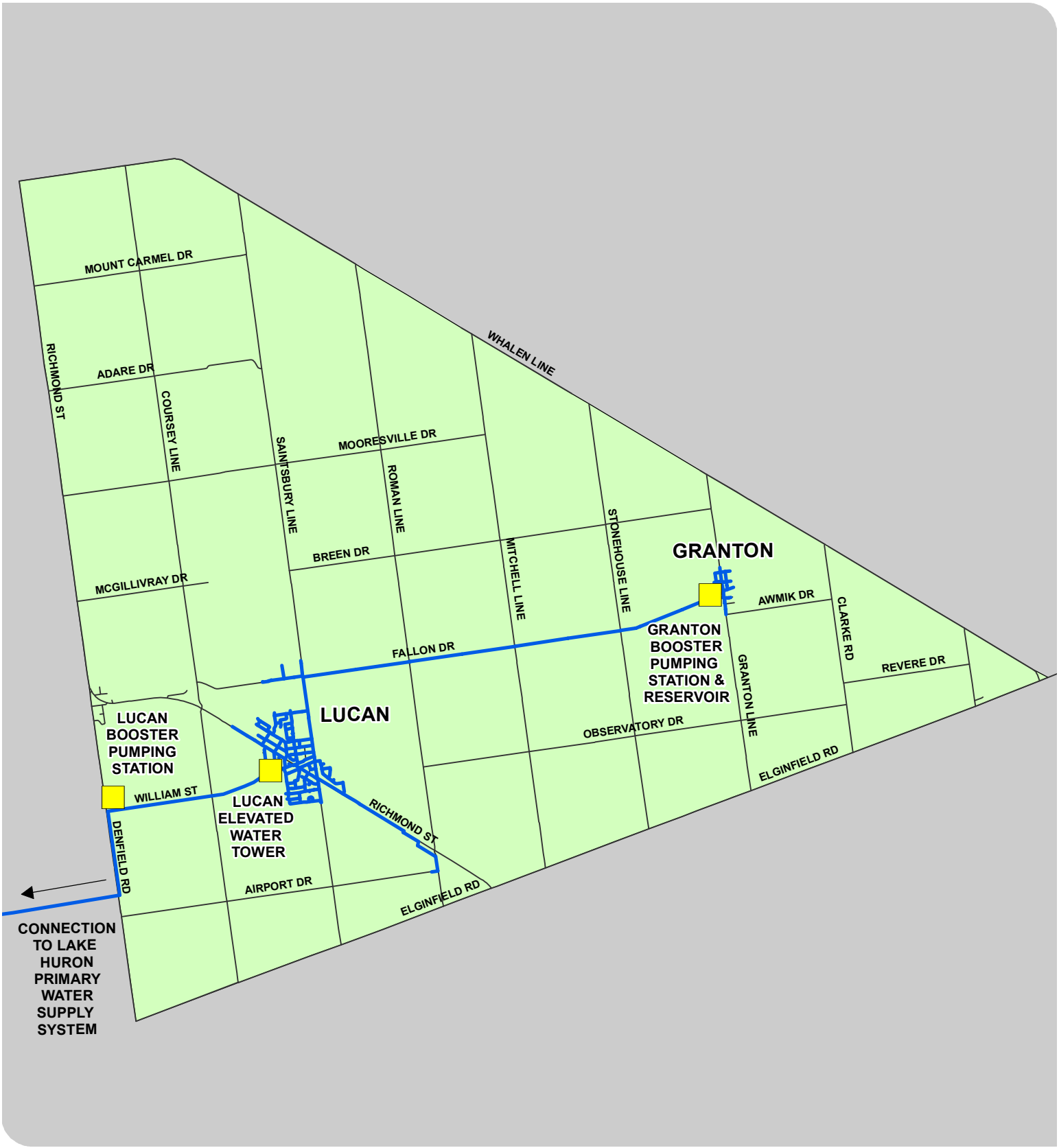
MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF LUCAN BIDDULPH AND COUNTY OF MIDDLESEX

MAP CREATED BY: CEL
MAP CHECKED BY: JDJ
MAP PROJECTION: NAD 1983 UTM Zone 17N

0 0.5 1 2 km

SCALE 1:100,000

PROJECT: 22-4101 STATUS: DRAFT DATE: 07/01/22



TOWNSHIP OF LUCAN BIDDULPH
ASSET MANAGEMENT PLAN

OVERALL WATER DISTRIBUTION SYSTEM
FIGURE 2

Township of Lucan Biddulph

WATERMAIN

LUCAN BIDDULPH BOUNDARY

DILLON CONSULTING

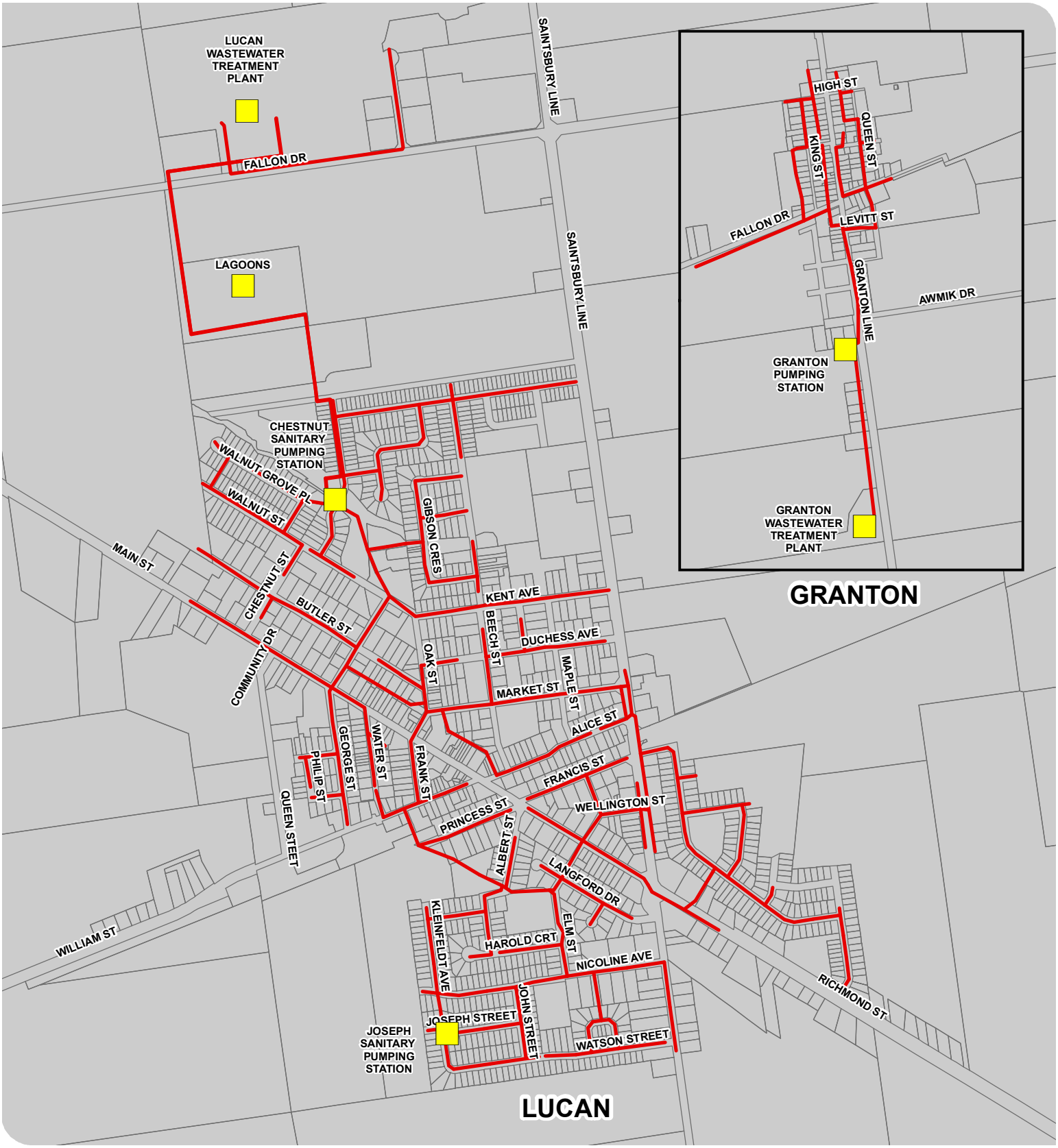
MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF LUCAN BIDDULPH AND COUNTY OF MIDDLESEX

MAP CREATED BY: CEL
MAP CHECKED BY: JDJ
MAP PROJECTION: NAD 1983 UTM Zone 17N

0 0.5 1 2 km

SCALE 1:100,000

PROJECT: 22-4101 STATUS: DRAFT DATE: 07/01/22



TOWNSHIP OF LUCAN BIDDULPH
ASSET MANAGEMENT PLAN

OVERALL WASTEWATER COLLECTION SYSTEM
FIGURE 3

Township of Lucan Biddulph

WASTEWATER COLLECTION SYSTEM

PARCELS

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF LUCAN BIDDULPH AND COUNTY OF MIDDLESEX

MAP CREATED BY: CEL
MAP CHECKED BY: JDJ
MAP PROJECTION: NAD 1983 UTM Zone 17N

PROJECT: 22-4101 STATUS: DRAFT DATE: 07/01/22

TOWNSHIP OF LUCAN BIDDULPH
ASSET MANAGEMENT PLAN

OVERALL STORMWATER COLLECTION SYSTEM
FIGURE 4

Township of Lucan Biddulph

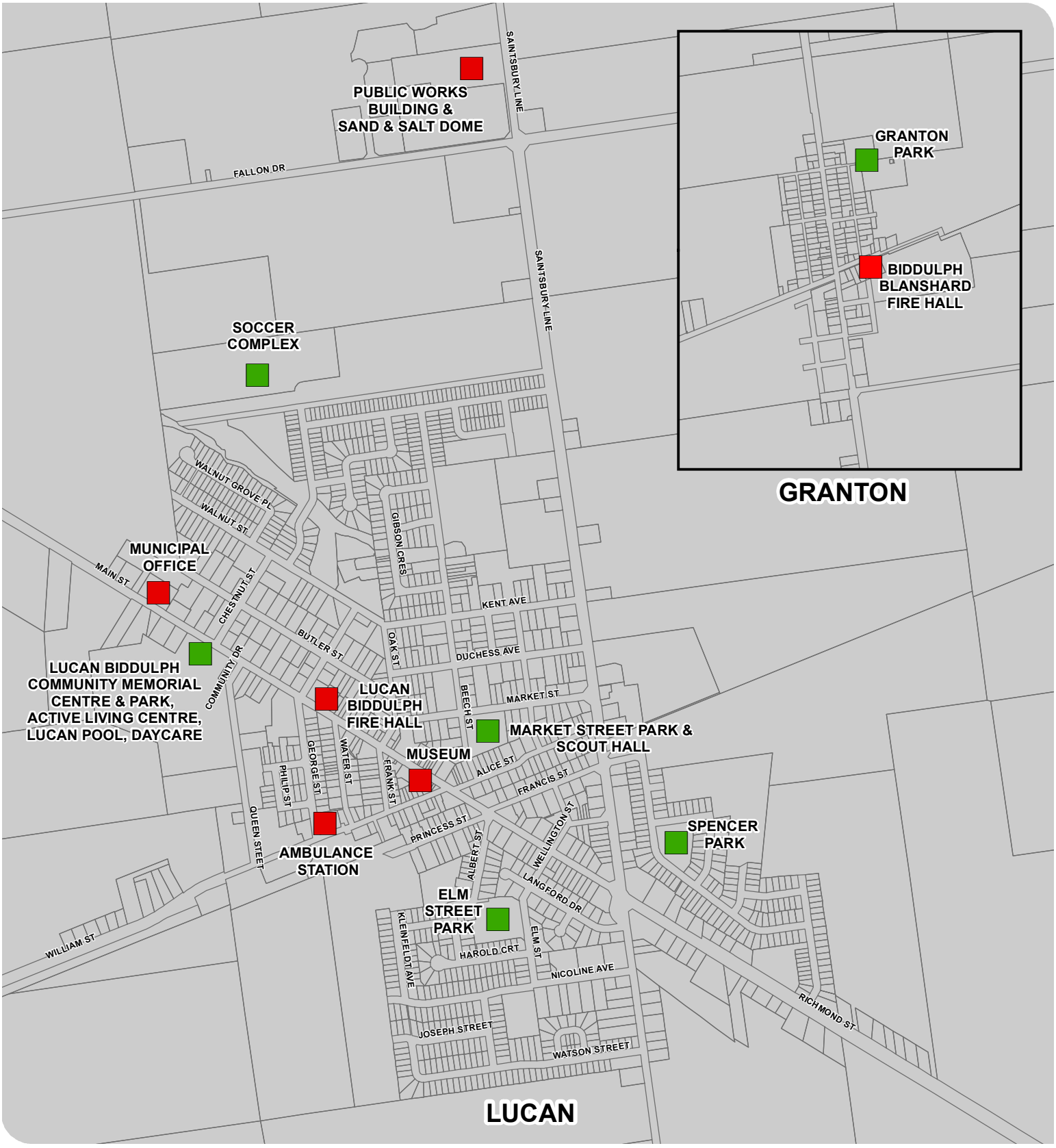
STORMWATER MANAGEMENT FACILITY
STORM SEWERS
PARCELS

MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF LUCAN BIDDULPH AND COUNTY OF MIDDLESEX

MAP CREATED BY: CEL
MAP CHECKED BY: JDJ
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 22-4101 STATUS: DRAFT DATE: 07/01/22



TOWNSHIP OF LUCAN BIDDULPH
ASSET MANAGEMENT PLAN

BUILDINGS & FACILITIES, PARKS & RECREATION ASSET LOCATIONS
FIGURE 5

Township of Lucan Biddulph

PARKS AND RECREATION FACILITIES

BUILDINGS AND FACILITIES

PARCELS

MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF LUCAN BIDDULPH AND COUNTY OF MIDDLESEX

MAP CREATED BY: CEL
MAP CHECKED BY: JDJ
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 22-4101 STATUS: DRAFT DATE: 07/01/22