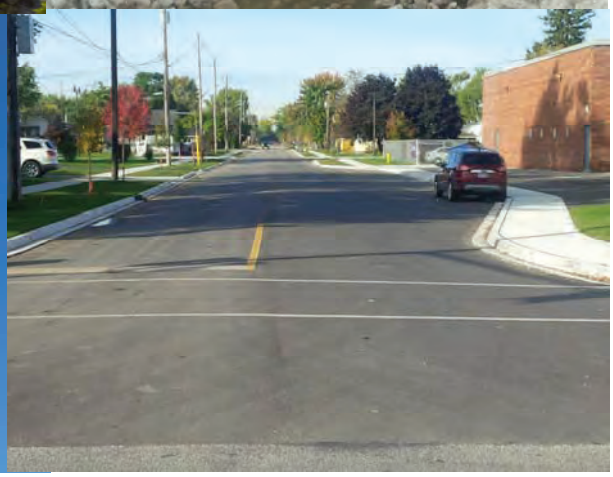
Town of Tecumseh

Asset Management Plan Version 3.0

2022



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1. Executive Summary

This document represents the second update to the Town's original Asset Management Plan (AMP v1) which was adopted by Council on December 10, 2013 (RCM-457/13). The AMP update (AMP v2) was adopted by Council on May 8, 2018 (RCM-157/18) and replaced AMP v1. The AMP update (AMP v3) was produced in-house, with contribution from the Public Works and Engineering, Financial Services, Technology & Client Services and Community & Recreation Services.

Once adopted, the Town's AMP v3 will replace AMP v2 in the annual budget process and preparation of the Five Year Capital Works plans.

The AMP is an active document that will be updated on a regular basis and will eventually be expanded to include all municipal capital assets.

The AMP includes:

1. Executive Summary – High level overview of the plan.
2. Introduction – Provides the framework for what the plan is, why it is necessary, how it ties into municipal goals, the scope and purpose and requirements under the new legislation.
3. Roadways 4. Bridges 5. Culverts < 3m 6. Storm Sewer 7. Water 8. Sanitary – These are detailed sections which address State of the Local Infrastructure, Desired Levels of Service, Lifecycle Activities, Population Assumptions and Asset Management Strategy by asset category. Information on what the Town has and what state it's in, the desired level of service and how it will be met are analysed.
9. Financing Strategy – Provides background on what our current approach includes as well as highlighting projected financial estimates.
10. Conclusion – Provides summary comments and highlights next steps in enhancing and refining the AMP.

Highlights of the AMP

The replacement cost of the Town's infrastructure assets is $853 million (2021$) which translates to $37,000 per resident or $95,000 per household.

AMP v3 accounts for the Town's core infrastructure assets and includes the following categories: Water, Wastewater, Stormwater, Roadways, Streetlights, Traffic Signals, Bridges and Culverts, and Culverts < 3m.

Funding sources for asset management include the General Tax Levy via the Town's Lifecycle program, Water and Wastewater Rates and Senior Government Grants.

Projected expenditures are based on strategic priorities, planning studies, engineering studies, forecasting models and asset management strategies (maintenance/rehabilitation/replacement programs). Detailed 10-year plans using current replacement costs can be found in the appendices.

Section 11, Financing Strategy, provides estimated reserve balances by taking into account beginning balances, known funding sources, and the 10-year plan expenditures inflated by a factor of 2% annually.

Projected total reserve balances over the course of this 10-year plan, holding annual lifecycle funding allocations at 2022 levels, are expected to drop significantly. This is due primarily to significant capital works planned to occur during the 10-year period, including:

- Manning Road Phase 3
- Climate Change and Flooding Resiliency
    - Construction of a new consolidated Scully and St. Mark's Pump Station
    - Riverside Drive Trunk Storm Sewer
    - Decommissioning of the existing St. Mark's Storm Pump Station
    - Construction of a new Peter J. Cecile Pump Station
- Tecumseh Hamlet, Oldcastle Hamlet and Manning Road Secondary Plan Area
- Oldcastle Sanitary Sewer Servicing

	2022	2023	2024	2031
Year End Balance	$39,573,000	$34,943,000	$29,723,000	$13,825,000

Stormwater and Wastewater reserves are specific areas of concern.

Stormwater reserves are projected to show significant negative balances starting in 2024. Large expenditures projected within this category include the Climate Change and Flooding Resiliency project as well as the growth projects noted above. These projects are necessary in order to achieve the strategic priorities arising out of the March 29, 2022 Strategic Priorities Workshop, which were set by Council at the May 5, 2022 Special Council Meeting where the Public Works & Engineering Services 2023-2031 Capital Plan was presented.

Similarly, Wastewater reserves are expected to show some negative balances throughout the planning period, just barely recovering by 2031. The timing disconnect between growth project expenditures and cost recoveries places a significant strain on this reserve.

Continued financial commitment to the Lifecycle program, New Infrastructure Levy and Water/ Wastewater Reserve Fund contributions are imperative.

A vital component of the financing strategy is Senior Government Grants. The Town will continue to urge senior levels of government to adopt a multi-year stable grant determination system to allow municipalities to be able to plan for government support with some degree of

reliability. Long term planning will assist all three levels of government to optimally coordinate infrastructure investments.

The planned course of action for continuous improvement of the AMP is as follows:

- 2022: Review requirements under Phase II for all assets
- 2022/2023: Incorporate updates to AMP to meet Phase II requirements
- 2023: Complete update to AMP for Phase II requirements by July 1, 2023

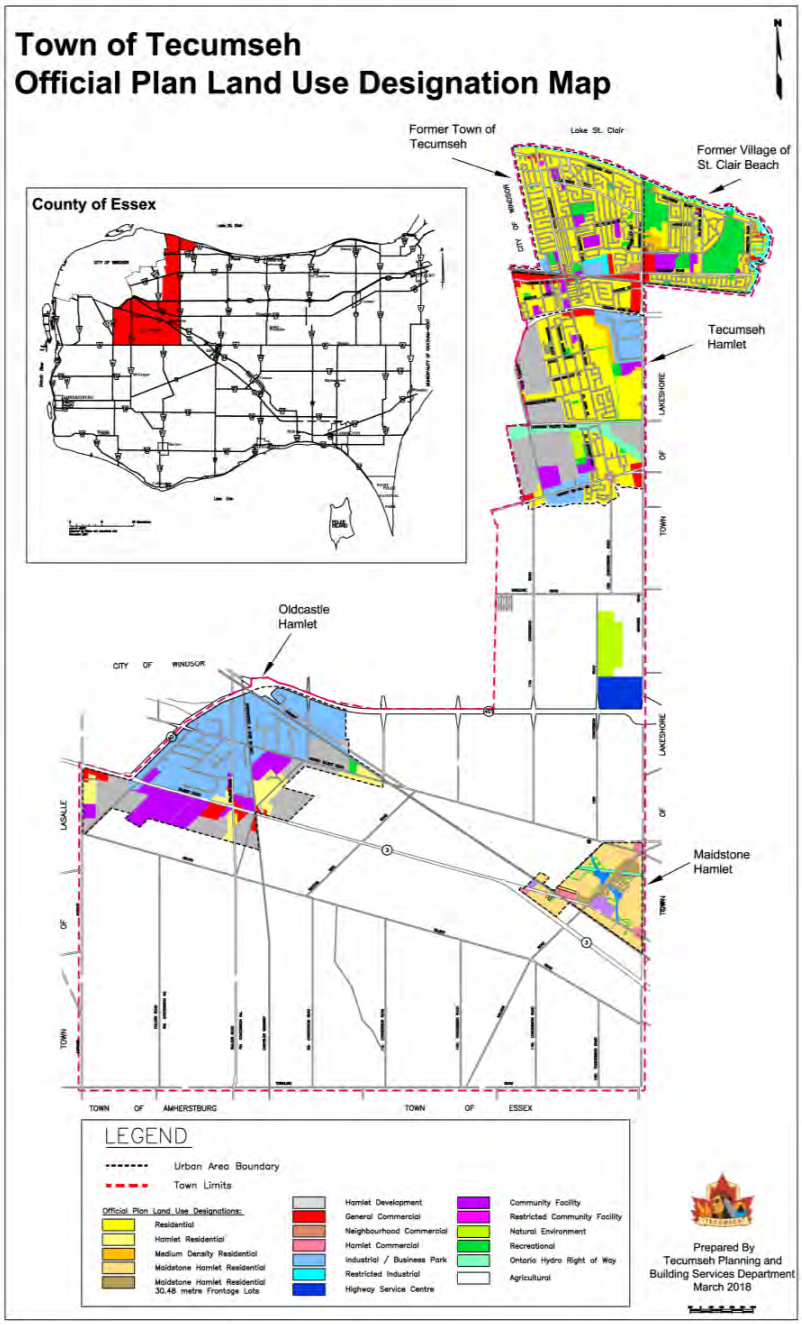
2. Introduction

Community Profile

The Town of Tecumseh, located in the northwest corner of Essex County on the south shoreline of Lake St. Clair, has a combination of both urban and rural characteristics. The Town continues to enjoy a small town ambiance, notwithstanding its location adjacent to the City of Windsor and the rapidly urbanizing communities of the Towns of LaSalle and Lakeshore. The 2021 Census Canada population for the Town of Tecumseh was 23,300.

While a majority of its 94.7 square kilometers of land area in the Town continues to be used for agricultural production, three distinct and separate settlement areas contain the community features typical of an urban area, including residential, recreational, institutional, commercial and industrial development.

The former Town of Tecumseh, along with the former Village of St. Clair Beach and the Tecumseh Hamlet (which is situated within the former Township of Sandwich South) form the main urban centre of the Town. This urban area is located at the northerly end of the Town and is situated adjacent to and east of the City of Windsor.



Maidstone Hamlet and Oldcastle Hamlet are the only other settlement areas within the Town. Maidstone Hamlet formed as a rural service area along old Highway No. 3 and has a modest population of approximately 350. The Oldcastle Hamlet consists primarily of the Oldcastle Business Park – a major regional employment area – but also contains a small residential population. It is positioned at the convergence of significant provincial and regional transportation routes including King's Highways 401 and 3 and County Roads 9, 11 and 46.

Background

The Town of Tecumseh's Asset Management Plan (AMP) is a forward-thinking, holistic planning tool for the care of existing and new infrastructure assets. The AMP will guide investment decisions to maximize benefits, manage risk and provide satisfactory levels of service to the public in a financially sustainable manner.

This revision marks the second update to the initial AMP, which was originally adopted by Council in December 2013. The first update to AMP was completed in 2018.

AMP development is a complex exercise utilizing multiple disciplines which includes Engineering, Finance, Information & Communication Services, Planning and Facilities Management. It takes into consideration:

- Strategic priorities
- Expected levels of service
- Risk
- Maintenance strategies
- Asset integration
- Financing strategies

Importance of Asset Management

The Town of Tecumseh owns core infrastructure assets with a total replacement cost of $853 million. This represents approximately $37,000 total infrastructure assets per resident, or $95,000 per household. These assets support the delivery of services that have a direct impact on resident quality of life.

Services the Town provides include, but are not limited to:

- Municipal Buildings
- Police
- Information & Communication Systems
- Crossing Guards
- Animal Control
- Culture
- Fire
- Emergency Measures
- Transportation Services
- Engineering Services
- Garbage Collection & Disposal
- Storm Sewers
- Parks
- Arena
- Outdoor Pool
- Recreation Programs
- Transit
- Water
- Wastewater
- Winter Control Operations

Municipal taxes are the main source of funding for the maintenance and replacement of these assets, excluding water and wastewater, which are funded by user rates. It is important to ensure that the Town's assets, which in turn support municipal services, are managed in a way that strikes a balance between affordability, service level, and risk.

As part of the 2005 budget process, Council approved an increase to the tax levy for a Lifecycle Program. The intent was to provide the Town the resources for infrastructure replacement. The program was phased-in over a ten-year period to meet the target requirement of $6.4 million. As per the 2022 budget, the target has been adjusted to $9.5 million.

Further, the 2015 budget introduced a special New Infrastructure Levy (NIL) to begin addressing the funding requirements for asset additions. The 2022 budget includes an allocation of $1.75 million, with recommendations to increase this allocation over the next few years to reach the current annual requirement of $2.35 million.

Asset Management takes capital/lifecycle budgeting one-step further by incorporating actual TCA inventory replacement requirements. Additionally, recommendations from various plans and studies were considered to ensure the plan provides for growth. Ultimately, the goal of the AMP is to ensure that the Town does 'the right thing at the right time' concerning asset investment and planning.

Municipal Goals

The Town's Strategic Priorities form the framework for municipal policies and direction, work plans and resource allocations. The Strategic Priorities for 2019-2022 adopted by Council are as follows:

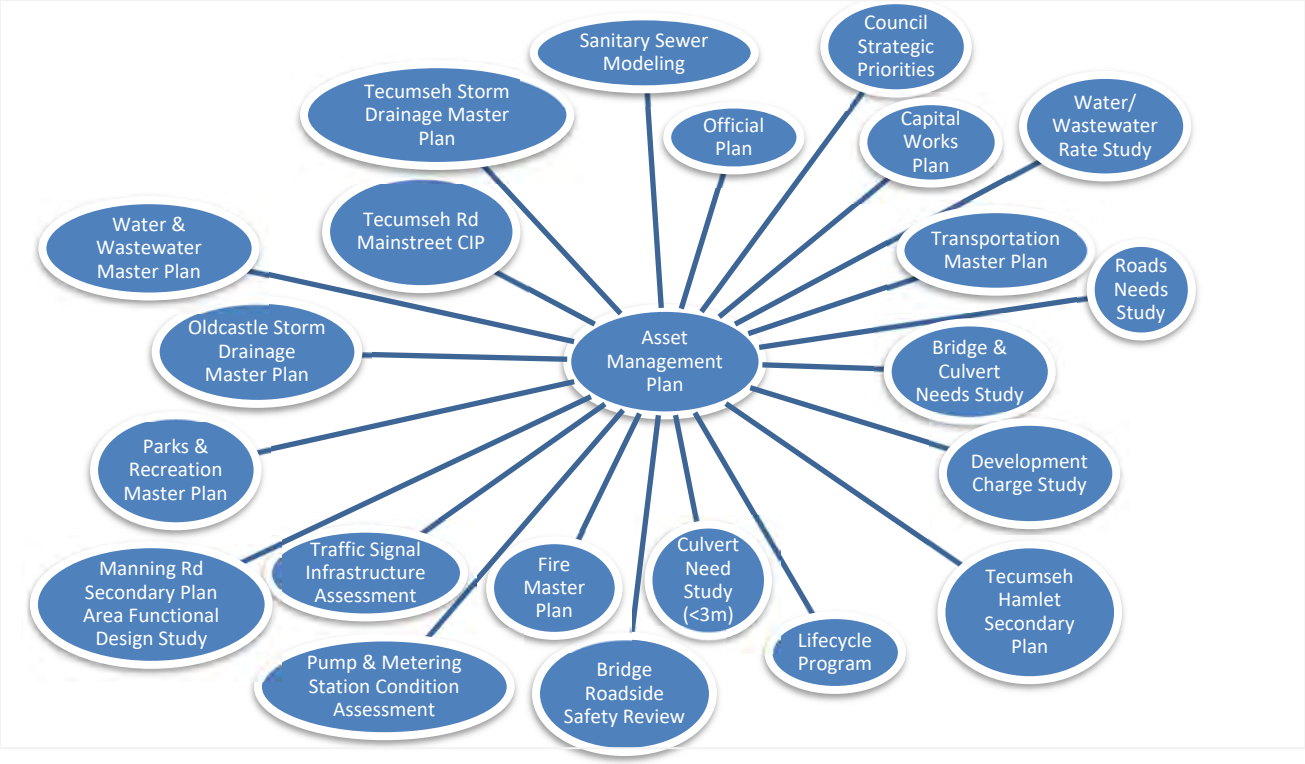
1. Make the Town of Tecumseh an even better place to live, work and invest through a shared vision for our residents and newcomers.
2. Ensure that the Town of Tecumseh's current and future growth is built upon the principles of sustainability and strategic decision-making.
3. Integrate the principles of health and wellness into all of Tecumseh's plans and priorities.
4. Steward the Town's "continuous improvement" approach to municipal service delivery to residents and businesses.
5. Demonstrate the Town's leadership role in the community by promoting good governance and community engagement, by bringing together organizations serving the Town and the region to pursue common goals.

Strategic Priority 2 underscores the importance of long term planning with regards to infrastructure assets. Completion of an AMP is directly in line with this Strategic Priority.

Relationship to Other Municipal Strategic Documents

In addition to the Strategic Priorities, the Asset Management Plan must take into account the various master plans and studies, as shown in the following illustration.

Figure 2-1 - Relationship of the Asset Management Plan to Other Municipal Strategic Documents



Recommendations from these various documents are consolidated and factored into the AMP. Consequently, AMP analyses will be considered as part of the annual budget process.

The strategic documents in Figure 2-1 are referenced throughout the bulk of this plan, with many being utilized to record respective data of assets including the 10-year plans for the various asset categories.

These documents are available to the Public through the Town Hall and the official Town website. A copy of each plan, study, or report can be accessed on the Town's Asset Management Plan webpage.

Senior Government Support

The Province released a long-term infrastructure plan, Building Together, in June 2011. This plan called on all three levels of government to work together to address the municipal infrastructure deficit. In response to the requirements set forth in Ministry of Infrastructure's publication *Building Together – Guide for Municipal Asset Management Plans*, an Asset Management Plan was prepared in-house and presented to Council in December 2013. It was subsequently updated in 2018 as part O. Reg 588/17 requirements for the municipalities throughout Ontario.

O. Reg 588/17 specifies requirements in 2021 (pushed to 2022 due to the COVID-19 pandemic), 2023, and 2024. As a phased approach to developing an Asset Management Plan, the bulk of the requirements will be completed by July 1, 2024.

Following such, the Town will be required to update the Asset Management Plan every five years after the year in which the plan is completed. Updates will include additions and revisions of asset inventory, 10-year plans, and financials as required and supported through the various plans mentioned above and referenced in this document.

Senior Government financial support is a crucial element of an AMP. Long term planning is essential for the coordination of infrastructure investment among all three levels of government.

To illustrate the significant role senior levels of government play; the Town's 2022 Capital budget projects expenditures of $31.9 million, with senior levels of government contributing $6.7 million of the required funding.

In the past decade, $15.1 million of provincial grant funding and $10.4 million of federal grant funding has been applied towards capital projects. Going forward, there is $5.9 million of unallocated deferred grant revenue (2021 year-end) that is currently available to be used towards future capital works. In addition, recent grant announcements for current and future projects include:

- Disaster Mitigation and Adaption Fund (DMAF) 2020 Intake - $10.7 million to be used for the Climate Change and Flooding Resiliency project (construction of a new consolidated Scully and St. Mark's Pump Station and a Riverside Drive Trunk Storm Sewer; decommissioning of the existing St. Mark's Storm Pump Station; and construction of a new Peter J. Cecile Pump Station).
- Investing in Canada Infrastructure Program (ICIP): Green Stream Stage II, 2021 Intake - $2,566,550 combined Federal and Provincial funding to be used towards the Centennial and Woodridge Drive Watermain project.
- Rail Safety Improvement Program (RSIP) - $1,232,640 to be used for the Lesperance Road VIA Rail Crossing Improvements project.
- Canada Community Revitalization Fund (CCRF) - $750,000 to be used towards the Riverside Drive Trail project.
- Investing in Canada Infrastructure Program (ICIP) Public Transit Stream - $466,617 combined Federal and Provincial funding to be used towards the Construction of an off-road multi-purpose pathway to link to Tecumseh Transit System (Lesperance Road).

Population Projections and Assumptions

On February 23, 2021, Town Council rescinded the three separate Official Plans in effect for the three former municipalities (the Town of Tecumseh, the Village of St. Clair Beach and the Township of Sandwich South) that amalgamated to form the current Town of Tecumseh and adopted a new Official Plan (OP), in accordance with the Planning Act. The OP was subsequently approved by the County of Essex (the Approval Authority) on June 21, 2021.

Included within section 1.5.3 of the OP are population forecasts based on population forecasts in the County of Essex Official Plan. The Town anticipated an increase in population of approximately 6,530 people over a 20-year period from 2011-2031, approximately 19% of Essex County's growth.

These projections were also analyzed and validated through the 2019 Development Charges Background Study which validated a 20-year increase in population of approximately 6,880 people with a total population forecast of 30,330 by 2040. The 2021 Census data for Tecumseh included a population of approximately 23,300 for a difference of approximately 7,030 people at a projected population of 30,330 in 2040.

For new developments throughout the municipality, the Town will rely on the 2019 Development Charges By-law for growth within the municipality in areas that are not currently serviced. New infrastructure will be funded by development charges to provide adequate levels of service for new development and ensure existing infrastructure such as trunk sewers, has the required capacity for desired levels of service.

Population increases will need to be considered for each core asset to ensure the adequate capacity of existing infrastructure. Each asset is affected differently by population density increases or increased use that can affect capacity, performance, and replacement timelines. The issues affecting each asset will be expanded in their respective sections along with a summary of investigations that the Town has commenced with regards to each asset category.

Scope

The Town's 2013 AMP included projections for the following asset categories: Water, Wastewater, Stormwater, Roads, Bridges and Culverts. Enhancements to Version 2 included the additional infrastructure categories of Streetlights, Traffic Signals, Culverts < 3m, Storm Facilities, Water Facilities, and Sanitary Sewer Facilities. Enhancements to Version 3 include the addition of Levels of Service for core assets, Lifecycle Activities, and the population assumptions associated with such. Future enhancements to the next version in 2023 and 2024 are further detailed below.

Purpose

To provide detailed information to assist Council and Administration with planning and decision-making in order to:

- Guide the management and funding of the Town's infrastructure assets
- Ensure availability of resources to accommodate growth
- Provide acceptable levels of service
- Ensure the safety and well-being of Town of Tecumseh residents and visitors
- Protect the environment

Future of Municipal Asset Management

The Ontario government passed O. Reg. 588/17, which is an asset management planning regulation under the Infrastructure for Jobs and Prosperity Act, 2015, S.O. 2015, c.15. Full adoption is required by July 1, 2024. The regulation allows for phasing in of the AMP to be completed by the following dates:

July 1, 2019 – Strategic Asset Management Policy - Requires municipalities to outline commitments to best practices and continuous improvement. The policy must include:

- ✓ Municipal goals, plans and policies the AMP will support
- ✓ Process for how the AMP affects the development of the municipal budget
- ✓ Principles that guide the AMP
- ✓ Process for alignment with land-use planning framework
- ✓ Commitment to consider climate change mitigation and adaptation
- ✓ Approach taken for continuous improvement
- ✓ Identification of executive lead and involvement of Council
- ✓ Commitment to public engagement

Clearly, the expectation is that each municipality must produce a robust and detailed policy that supports their asset management planning process. A review and potential update of the policy is required **every five years**.

July 1, 2022 – Phase I – Originally scheduled for 2021 and then postponed due to the onset of the COVID-19 Pandemic to 2022, this is AMP for core assets must include the following components:

- ✓ Asset inventory by category, which includes a summary of assets, replacement costs, average age, condition information, and a description of the approach used to assess the asset condition
- ✓ Current levels of service measured by standard metrics
- ✓ Lifecycle activities and costs required to maintain levels of service for each category
- ✓ Assumptions regarding future changes in population or economic activity (for municipalities with populations of less than 25,000)

Core assets for Phase I can be defined as: roads, bridges and culverts, water, wastewater and stormwater assets.

July 1, 2023 – Phase II – Building upon the previous phase, the AMP must include all assets.

July 1, 2024 – Phase III – AMP requirements are enhanced to include the following:

- ✓ Proposed levels of service and justification
- ✓ Proposed performance for each asset category over a ten year period
- ✓ Lifecycle management and financing strategy
- ✓ Integration of population and economic activity assumptions with lifecycle management and financing strategy (for municipalities with populations of less than 25,000)

- ✓ Disclosure and explanation of other key assumptions

Post 2024 – Requirements following the adoption of the AMP under Phase III are as follows:

- ✓ The AMP must be reviewed and updated every five years
- ✓ The AMP must be endorsed by the executive lead of the municipality
- ✓ Reviewed by Council on or before July 1 of each year
- ✓ The AMP and Policy must be posted on the website and a hard copy must be provided to individuals upon request.

Next Steps

Research, education, and collaboration will be critical going forward given the ever-increasing legislated demands placed upon municipalities with regard to asset management.

The planned course of action going forward is as follows:

- 2022: Review requirements under Phase II for all assets
- 2022/2023: Incorporate updates to AMP to meet Phase II requirements
- 2023: Complete update to AMP for Phase II requirements by July 1, 2023

3. Roadways

3.1 State of the Local Infrastructure

Inventory

Roads:

The Town of Tecumseh maintains an extensive network of urban, semi-urban and rural roads of all classes, with the exception of Class 1 roads such as County Road 22.

The Town commissioned a Roads Needs Study (RNS) in 2019 to assess the existing road system and railway crossings in the Town and to prepare a comprehensive plan for improving and maintaining the road systems.

Prior Roads Needs Studies classified the road inventory into three main categories:

Urban:	Roads having curb and gutter and storm sewer drainage
Semi-Urban:	Roads without curb and gutter in built-up urban areas
Rural:	Roads without curb and gutter outside built-up urban areas

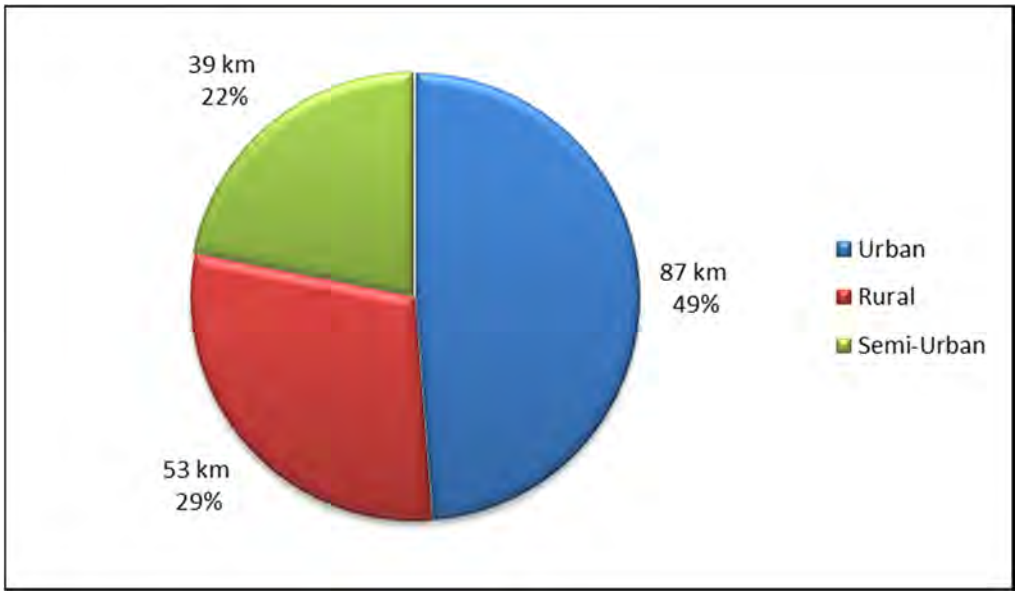


Figure 3-1: Road Inventory by Road Classification

A centerline-kilometer is a measure of one kilometer of road, regardless of the number of lanes. A lane kilometer is a measure of one kilometer of road multiplied by the number of lanes. The Town maintains approximately 180 centerline-kilometers of roadway (varying from two to four lanes), consisting of varying materials such as asphalt, concrete, and tar and chip.

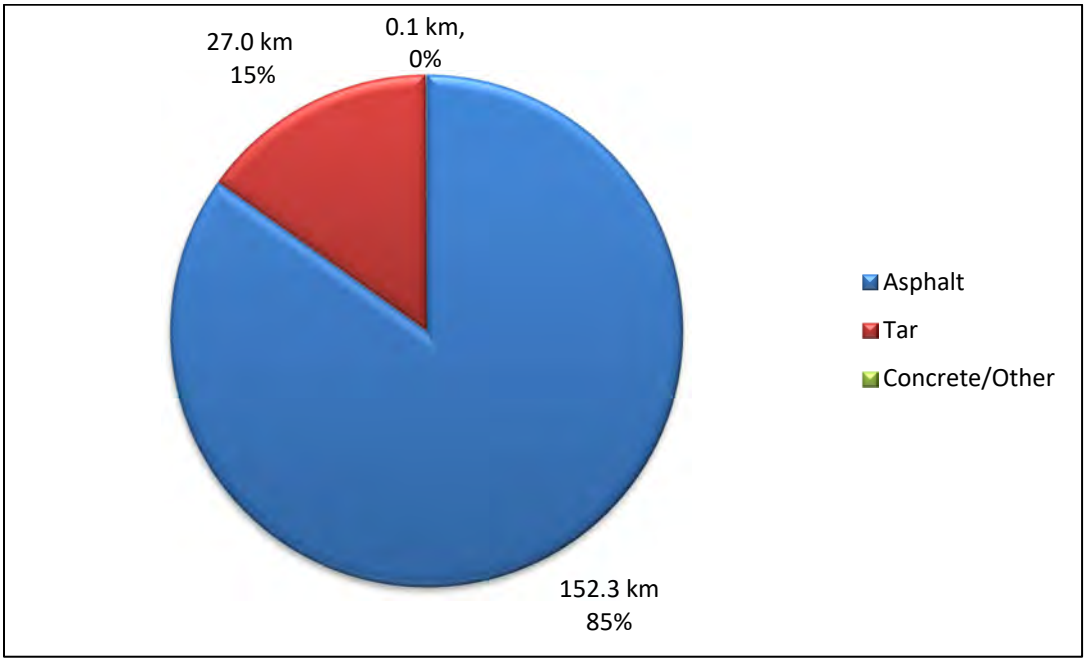


Figure 3-2: Road Inventory by Material (excludes Connecting Links)

Detailed information on the roads asset infrastructure is maintained in the Town's GIS system. Roads are split into segments, usually intersection to intersection. Each segment is assigned a unique GIS ID.

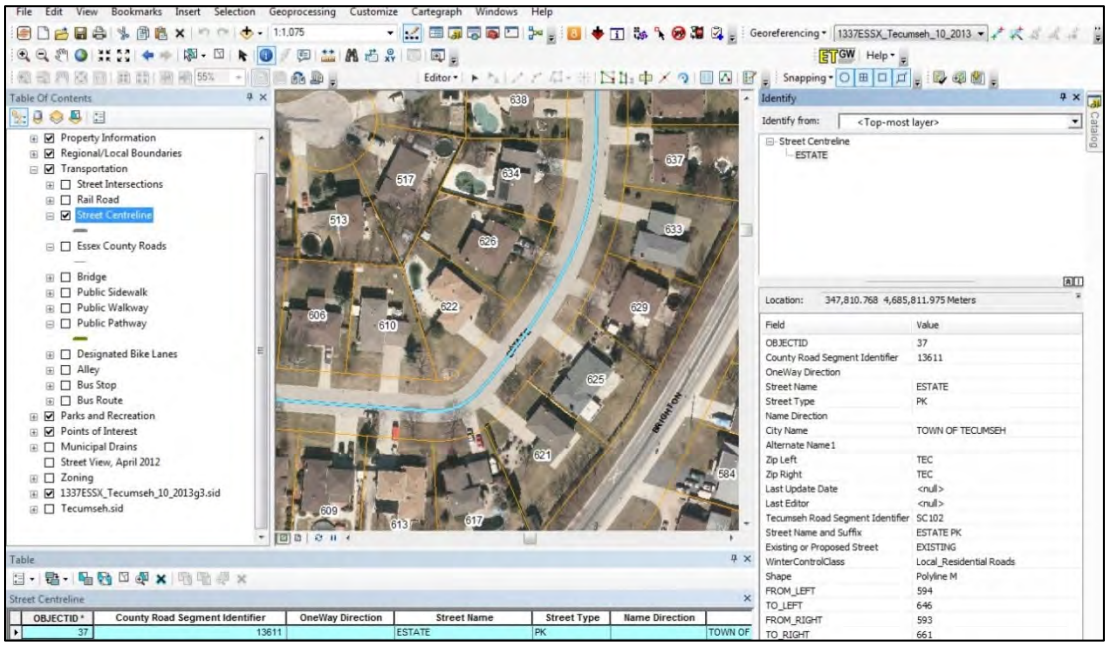


Figure 3-3: GIS screenshot of Road Segment SC102 - Estate Park

Please refer to Appendix A for a complete inventory of the Town's roads.

Some roads under the Town's jurisdiction serve to connect to the County road system, and are referred to as County Connecting Links. The Town of Tecumseh and the County of Essex have entered into a Connecting Link Agreement to share the costs of maintaining these roads. The Town is responsible for keeping in a proper state of repair all necessary curbs, gutters, catch basins, combined sewers, storm sewers or drains, sidewalks, traffic signal systems, street lighting and road signing or any other special work. The County maintains the pavement and roadway by performing or arranging for the following work whenever necessary or required: spray patching, cold and hot mix patching, surface sealing, routing and sealing of cracks, centreline pavement marking, and snow removal.

The Connecting Links have been included in the Town's asset inventory; however, it should be noted that the Town is responsible for a portion of the Connecting Links in the following percentages:

County	Local Name	Distance (m)	Area (m^2)	County's Share	Town's Share
County Road 2	Tecumseh Road	4,325.9	53,629.5	61.4%	38.6%
County Road 19	Manning Road	1,681.8	19,973.1	56.7%	43.3%
County Road 21	Brighton Road	332.0	2,079.9	100.0%	0.0%

Streetlights:

As part of the 2015 Capital Works Program, Council approved the conversion of the Town's existing streetlights to energy efficient LED technology. A comprehensive streetlight inventory was completed as part of this project. Currently, the Town owns a total of 2,312 streetlights with poles of varying material such as wood, concrete, or steel. Please refer to Appendix B for a complete inventory of the Town's streetlights.

Traffic Signals:

The Town owns traffic signal infrastructure located at 11 intersections, one mid-block cross walk, and two signalized pedestrian crossovers. Traffic signal infrastructure includes poles, luminaires, mast arms, traffic signal heads, pedestrian signal heads, pedestrian push buttons, hand holes, loop detectors, cabinets, controllers, wiring and conduit. Please refer to Appendix C for a complete inventory of the Town's traffic signals.

Valuation

An inventory and historical cost valuation of the roads was completed in 2009 in order to comply with the Public Sector Accounting Board's requirements for the reporting of tangible capital assets. Historical costs were based on deflated replacement costs at the time. The expected useful life for accounting amortization purposes is 50 years for roads, 40 years for streetlights, and 20 years for traffic signals.

Detailed asset accounting data is maintained in CityWide software. Although CityWide assigns its own unique identifier, each asset can be cross-referenced to a GIS ID. The database is updated annually prior to financial statement preparation.

Roads infrastructure asset accounting valuations as of the 2021 year end are as follows:

	Roads	Streetlights	Traffic Signals	Total
Historical Cost	$ 102,248,744	$ 4,317,551	$1,099,742	$ 107,666,037
Accumulated Amortization	$ 53,907,669	$ 2,241,458	$ 853,755	$ 57,002,882
Net Book Value	$ 48,341,075	$ 2,076,093	$ 245,987	$ 50,663,155

Replacement costs were updated for the preparation of this Asset Management Plan. As shown in Appendix A, the total replacement cost of the roads network is $203,455,000. Details on assumptions and unit costs can be found in Appendix A-1.

Total road replacement cost is $203 million!

Asset Age

As per the Town's Tangible Capital Asset Accounting Policy, the single asset approach is used for the capitalization of all linear assets. What that means for roads assets is that the surface and base are capitalized as one asset. Therefore, roads assets are only updated in the CityWide database when both the surface and base are reconstructed.

As shown in the following graph, accounting records indicate that 42% of the Town's roads are over 41 years old. This means that 42% of the road network is close to or has surpassed the expected useful life. While the accounting perspective on road age indicates that over 42% of our roads are older, the limitation to this approach is that the installation or reconstruction year is the only variable taken into account. Roads may age differently depending on traffic and maintenance activities. Therefore, road segments that are older "on paper" may actually be in decent shape.

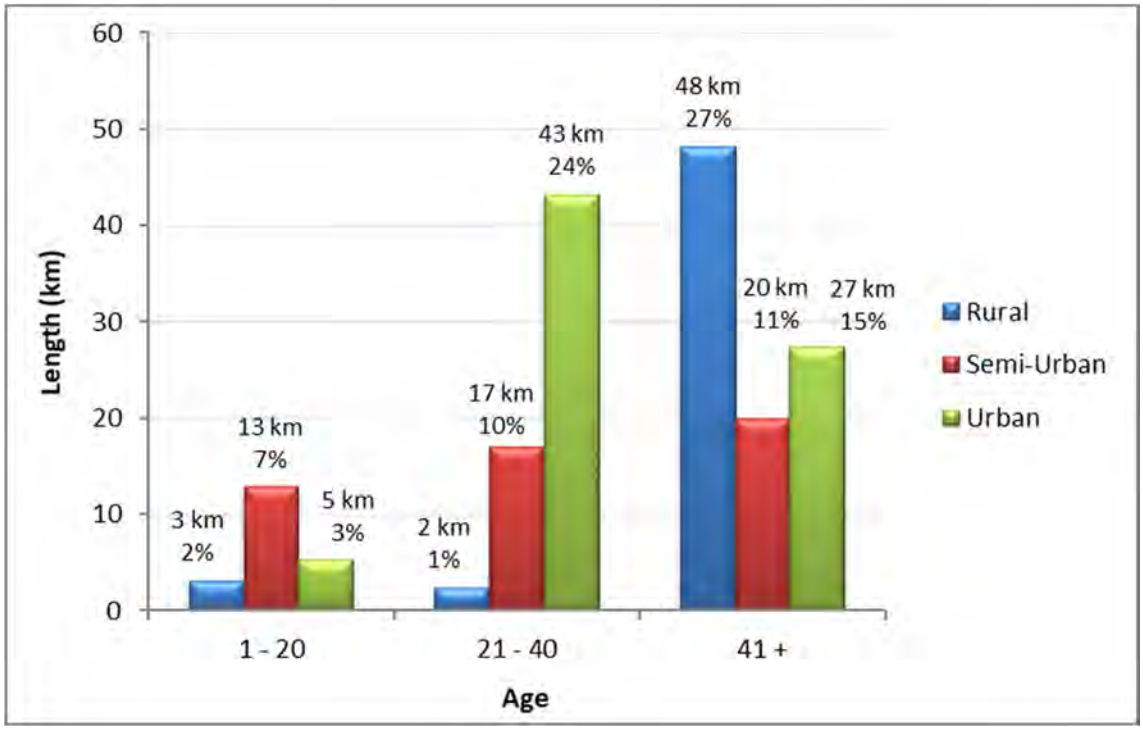


Figure 3-4: Age distribution from an accounting perspective

Streetlights are also recorded as single assets. Notably the age of the streetlights in the accounting database is based on the installation year of the pole, even if the arm and fixture have been replaced. Streetlights are pooled by acquisition year, and asset pools are deemed disposed once fully depreciated. In other words, streetlights are not tracked individually.

The single asset approach is used for the capitalization of traffic signals as well. As noted above, traffic signals are comprised of many components. For the purpose of financial reporting, the total of the component costs is recorded in the database.

This underscores the importance of looking beyond accounting records in the preparation of an asset management plan. That was the rationale behind the establishment of a multi-disciplinary Asset Management committee that includes members of Finance, Public Works and Engineering Services, Information Technology (IT), and Planning Departments.

Asset Condition

Roads:

In order to effectively manage and maintain the state of Tecumseh's roads, Public Works staff utilize RNS conducted approximately every five years.

The RNS provides an evaluation of the Town's roads, identifies needed improvements, and recommends timing of works. Each road segment is assigned a Pavement Condition Index

(PCI). The PCI is a numerical rating between 0 and 100 which factors in a measured Ride Condition Index (RCI) and surface defects in the pavement such as surface deformations and cracking.

The RNS allows staff to analyze and prioritize road rehabilitation strategies and assist in planning for funding needs. The Study also serves as a measuring tool for the five-year period prior with respect to the work that was accomplished.

Figure 3-5: Examples of various 2014 PCI ratings

In the 2019 RNS, it was noted that the overall PCI rating was 77.05.

The 2019 RNS indicated that 9% of the road system was found to be in need of some form of repair within the next 1-5 year timeframe. This statement would equate to a PCI of less than 60. During that study the average PCI in the Town was established at 77.

This continued improvement can be attributed to the aggressive approach that the Town has taken on an annual basis since the 2008 RNS was completed. The highest priority roads were addressed in the annual asphalt program where approximately $1,000,000 was spent on repaving roads only. This effort was also bolstered by a funding period by different levels of Government that allowed the Town to move forward on a number of full reconstruction projects that encompassed all aspects of infrastructure, not just the roads. This PCI indicates that on average Tecumseh roads are in a state of repair that can be described "6-10 year" window for required improvement with greater emphasis on the fact that a large number of roads rate within the "beyond 10 year" window for a time of improvement. This statement is of course based on average and all situations are reviewed individually.

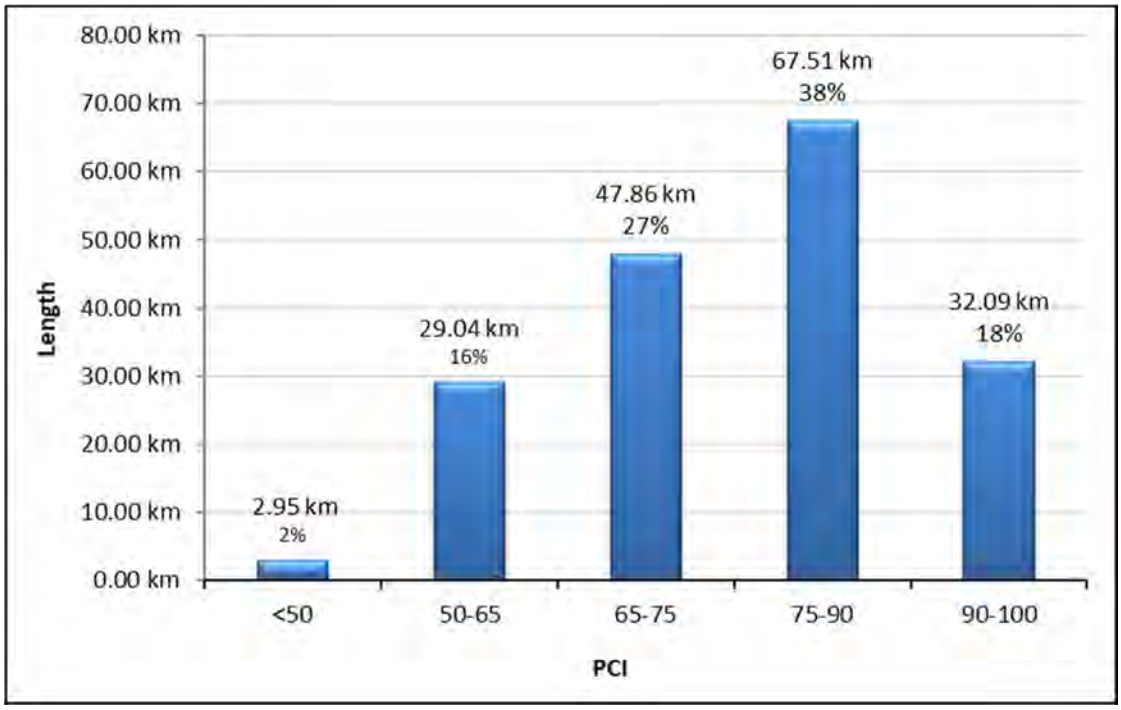


Figure 3-6: 2019 Pavement Condition Index (excludes Connecting Links)

The above graph shows that 99.6 km's or 56% of the Town's roads are rated at PCI 75 or above. It also shows that 47.9 km's or 27% of the Town's roads are rated between PCI of 65 to 75. That means 83% of the Town's roads fall within a 6-10+ year time of improvement window.

In the 2019 RNS it was found that 4km or 2% of the Town roads were rated at a PCI below 50. That is described as "Now" for time of improvement. The key to managing the Town of

Tecumseh roads is to apply the correct rehabilitation strategy at the correct time. This includes applying preventative maintenance strategies to roads in the early stages of deterioration (e.g., crack sealing), then applying rehabilitation strategies at later dates and ultimately reconstructing the road when the useful life has expired.

Road reconstruction is closely coordinated with other infrastructure replacements such as sewers and watermains in order to achieve a level of cost saving. Initiatives such as these help to increase the customers' level of service as well as reduce frequency of large-scale construction activities. This is a key factor to achieving improvements while achieving overall benefits to the customer through the use of sound planning.

Streetlights:

Many municipalities have recently commenced converting existing streetlight inventory to more energy efficient LED technology. LED streetlights consume less energy than traditional lighting technologies, resulting in lower energy costs. Beyond the energy savings derived from the overall decrease in power consumption, LED streetlights can result in additional operations and maintenance savings.

The Town of Tecumseh undertook a town wide conversion to LED in 2015 with installation completed in 2016.

Traffic Signals:

A condition assessment was conducted for all traffic signal infrastructure owned and maintained by the Town, including 11 intersections, one mid-block cross walk, and two pedestrian crossovers. Traffic signal infrastructure includes poles, luminaires, mast arms, traffic signal heads, pedestrian signal heads, pedestrian push buttons, hand holes, loop detectors, cabinets, controllers, wiring and conduit.

The traffic signal condition assessment was used as the basis for identifying the recommended priority, scope and cost for related infrastructure improvements, which could be utilized by the Town to develop a long-term, comprehensive maintenance and capital replacement strategy.

Asset Management Policies

The Roads Condition Assessment Policy discusses the use of Roads Needs Studies to determine the condition of the Town's inventory of roads. The Policy further designates an acceptable time frame for updating road condition assessments i.e. how often Roads Needs Studies are to be conducted. Refer to Appendix D for a copy of the Roads Condition Assessment Policy.

The draft Data Verification Policy provides a guideline for the review of data that is collected or provided to the Town. Refer to Appendix E for a copy of the Data Verification Policy.

3.2 Desired Levels of Service

The Town of Tecumseh has aggressively pursued road rehabilitation strategies over the last fifteen years in order to get to the current state of the road conditions. The Town has an average PCI of 77.05. The town actively spent in excess of $12 million on roads asphalting projects since the RNS in 2008 in order to arrive at this PCI.

It is Administration's intent to ensure that the Town continue to maintain acceptable levels of service, which can be qualified as;

- A PCI of 70 on average throughout the Town
- Any road rated as a "Now" time of improvement (PCI of less than 50) in the current RNS are slated for some form of work within a two-year window
- Any road rated as a "1-5 year" time of improvement (PCI 50-60) is addressed in some manner within the timeframe
- All roads as rated are actively reviewed in conjunction with other infrastructure Projects in order to achieve efficiencies of Town dollars
- The Road Needs Study shall be renewed on a five-year basis in order to set these levels of service.

Administration recommends that in order to stay at or above the level of service as described above, the Town continue the annual programs as implemented today. The current program consists of spending approximately $1,200,000 dollars per year in various activities ranging from crack sealing to mill and paving of roads. These annual lists are developed through the use of the RNS and through staff observations.

The Town proposes to renew the RNS in two years (2024) in order to gauge the Town effectiveness in the replacement/rehabilitation strategies to date. This will be reviewed on a five-year basis going forward.

3.3 Current Levels of Service

In addition to the Town's desired level of service, O. Reg 588/17 requires that Municipalities provide levels of service related to specific qualitative descriptions and technical metrics, described as Community Levels of Service and Technical Levels of Service, related to each core asset. For Roads, this includes a measurement of the type of roads within the municipality, PCI values for paved roads, and surface conditions for unpaved roads.

3.3.1 Community Levels of Service

The Town provides the Community Levels of Service (CLOS) summary as specified in O. Reg 588/17 in Table 3-1. This table will be further expanded in the future to provide a better quantified CLOS.

Service Attribute	Community Levels of Service
Scope	The existing road network in the Town of Tecumseh includes Provincial, County, and Municipal roads. Municipal roads are classified as either arterial roads, collector road, or local roads. Municipal roads throughout the Towns network are further classified as Urban or Rural.
Quality	The Town of Tecumseh adheres to and follows study methods recommended by the Ministry of Transportation Ontario (MTO), Transport Canada, and the American Society for Testing Materials Pavement Condition Index rating system model when defining pavement conditions. These values are determined through the Town's Road Needs Study completed every two years. Visual representations of the number system can be seen in this section.

Table 3-1: Community Level of Service

3.3.2 Technical Levels of Service

The Town provides the Technical Levels of Service (TLOS) summary as specified in O. Reg 588/17 in Table 3-2. This table has been further expanded to include items described in the Desired Levels of Service section. These technical metrics will be expanded as part of future updates to the AMP.

Service Attribute	Performance Measure	Measure Type	Current Performance	Target
Scope	Number of lane-kilometres of arterial roads as a proportion of square kilometres of land area of the municipality.	O. Reg	2.69 Lane-Km/Km2	Target not set
	Number of lane-kilometres of collector roads as a proportion of square kilometres of land area of the municipality.	O. Reg	0.83 Lane-Km/Km2	Target not set
	Number of lane-kilometres of local roads as a proportion of square kilometres of land area of the municipality.	O. Reg	0.28 Lane-Km/Km2	Target not set
Quality	For paved roads in the municipality, the average pavement condition index value.	O. Reg	77.05	70
	For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor).	O. Reg	N/A	N/A

Service Attribute	Performance Measure	Measure Type	Current Performance	Target
	The percentage of roads that received some form of work within a two year window from when they were rated as a “Now” time of improvement (PCI of less than 50) in the current Roads Needs Study	Municipal	Data not yet recorded	>80%
Sustainability	The number of years where the Road Needs Study is renewed	Municipal	5	5

Table 3-2: Technical Level of Service

3.4 Lifecycle Activities

Preventative maintenance is a proactive strategy to maintain and extend the pavement life and is the key mechanism that the Town utilizes to ensure that the level of service for the road network is maintained. Figure 3-7 below from the National Guide to Sustainable Municipal Infrastructure - Timely Preventative Maintenance for Municipal Roads, September 2002 from the Nation Research Council depicts the benefits that preventative maintenance strategies can provide in extending pavement life. Preventative maintenance treatments can consist of the following:

- Machine Patching
- Crack Sealing
- Slurry Sealing
- Micro-Surfacing
- Surface Treatment (chip seal, seal coat)
- Thin Hot Mix Overlay

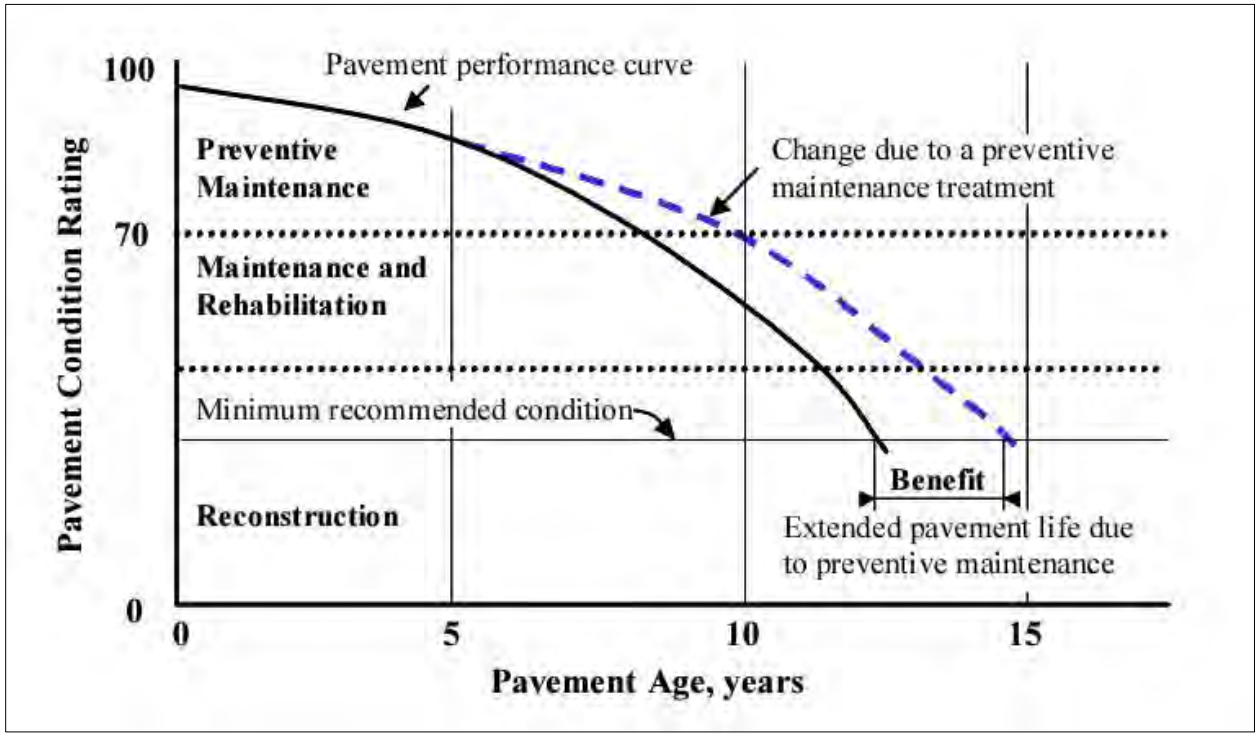


Figure 3-7: Preventative Maintenance Strategies and Impacts to Pavement Life

For preventative maintenance to be effective, the correct maintenance type (outlined above) must be completed at the correct time. This involves regular inspections of the road network to identify and remediate any newly developed defects before they become more severe. Preventative maintenance measures must also be completed in a timely manner, as delays can increase the severity of the defect and reduce the effectiveness of the strategy. In order to carry out effective preventative maintenance strategies it is critical that dedicated road maintenance funds be allocated specifically for this purpose.

Currently, the Town completes preventative maintenance and rehabilitation on the road network through:

- Crack Sealing
- Surface Treatment (Tar and Chip Overlays)
- Mill and Pave

Rehabilitation

Dillon Consulting finalized the Towns 2019 RNS on the Town's road infrastructure in April of 2020. Each road segment was assigned a PCI rating. Recommended treatment types and estimated unit costs were provided for the next five years, corresponding with the timing currently set by the Town between each RNS. The RNS report indicated that the Town's roads are in good shape overall, with an average PCI of 77 for the entire network.

Road segments were ranked according to the PCI assigned by RNS, lowest to highest. The study lays out four separate maintenance and rehabilitation strategies for a 5 year program with a 10 year program option including rehabilitation of infrastructure in the 60-70 PCI range.

Maintenance/Rehabilitation Strategies	Total Program Costs	Annual Average Cost	Resulted Weighted Average PCI
Option 1 (Recommended and Approved) 5 Year Program Rehabilitation for Roads in "Now" Category & Maintenance for Roads in "1-5" and "6-10" Category: • Reconstruction for PCI Below 45 • Rehabilitation for PCI of 45-55 • Maintenance for PCI of 55-70 • Monitor PCI greater than 70	$4.56 M	$0.91M/yr.	75.0
Option 2 5 Year Program Rehabilitation for Roads in "Now" and "1-5 Category • Reconstruction for PCI Below 45 • Rehabilitation for PCI of 45-60 • Monitor PCI greater than 70	$6.31 M	$1.26M/yr.	74.8
Option 3 10 Year Program Rehabilitation for Roads in "Now", "1-5", and "6-10" Categories (PCI less than 70) • Reconstruction for PCI Below 45 • Rehabilitation for PCI of 45-70 • Monitor PCI greater than 70	$32.5 M	$3.25M/yr.	75.1 (78.2 after 5 years)
Option 4 5 Year Program Do Nothing	$0	$0/yr.	71.6

Table 3-3: 5 to 10 year Rehabilitation Options

Option 1 was the recommended and approved program that the Town most recently adopted (Motion: RCM -139/20). The annual average costs for each of the next five years associated with this option is approximately $910,000, equating to the amount traditionally budgeted for the Asphalt Program.

Under this plan, all road segments with PCIs of less than 70 are planned to be addressed in the next five years.

Option 4 provides the lifecycle activities that can be completed at the lowest cost to maintain a PCI average above 70. Although not currently quantified, doing such would simply defer future costs and cause approximately 7.1 km (4%) of the road network to have a PCI less than 45. This strategy would achieve PCI requirements but would not follow Time of Improvement criteria set out in this plan.

Replacement

The Town of Tecumseh normally replaces (reconstructs) municipal roadways when it is no longer economically feasible to carry out rehabilitation or where it is beneficial to carry out a reconstruction in conjunction with renewal or replacement of other infrastructure.

There have been a number of municipal roadways that have been identified in Environmental Assessments, the RNS, and other Planning Studies that require reconstruction within the next five years. The vast majority of the remaining municipal roads that will need reconstruction in the future will be dictated by combining infrastructure replacement projects with the pavement condition in order to optimize cost savings by minimizing disruption and restoration costs.

Population Forecasts and Growth Assumptions

Population Forecasts

As discussed in section 2 of this plan, the 20-year population projection as included in the Town's Official Plan, is an increase of 6,880 people for a total population of 30,330 by the year 2040.

Transportation Master Plan

The Town's Transportation Master Plan was completed at the end of 2016. An analysis of the Town's road network and intersection performance did not identify any capacity related issues. However, an analysis of the regional road network performance identified several regional (i.e. County and MTO) roads and intersections which are approaching or are at capacity in the existing conditions. The County, MTO and the City of Windsor are planning to undertake a number of significant capital projects before the end of the planning period which will address the identified road network deficiencies. Operational issues may need mitigation measures (minor change to the geometric conditions of the approaches and /or optimization of the traffic control) to alleviate operational and safety concerns if the planned major capital projects are delayed. These intersections are primarily under the ownership of MTO and/or the County and, as such, mitigation measures would be the responsibility of senior levels of government. Project implementation will need to be monitored to determine the potential need for local intersection modifications in the future.

The Plan also identified minor non-capacity recommended works to Lesperance Road to make it more bicycle user-friendly and significant streetscape works to Tecumseh Road within the Tecumseh Road CIP to make this section of Tecumseh a more pedestrian-friendly destination.

Development

New roads will be constructed as part of proposed residential and industrial developments, which will eventually be assumed, owned and maintained by the Town. As these roads are constructed they will be added to the Town's list of assets and included in future versions of the Asset Management Plan.

The majority of the Town's future (residential) growth will be limited to areas referred to as (i) The Manning Road Secondary Plan Area, and (ii) The Tecumseh Hamlet Secondary Plan Area and (iii) within the Oldcastle Hamlet Area. Functional Design Studies for the Manning Road Secondary Plan Area and the Tecumseh Hamlet Area will be completed, which will include the preliminary design of road infrastructure within each study areas.

There are a number of current proposals, along with future opportunities for industrial development within the Oldcastle Hamlet Area. These roads will be installed at the cost of the developer, which will in turn be assumed by the Town at the end of the maintenance period.

3.5 Asset Management Strategy

3.5.1 Asset Management Programs

The following provides an overview of the types of Asset Management programs conducted.

Maintenance

These maintenance activities will be undertaken by Public Works forces or competent contractors under the guidance of Public Works and are intended to find any deficiencies and or issues at the onset in order to address them in an adequate timeframe and also limit the extent of remedial repairs.

MAINTENANCE (cont'd)

Activity	Program Descriptions	Frequency	Measures
Signs	PW inspects the condition of Town signs weekly, annually or as defined in MMS. Yearly, Town staff reviews reflectivity through the use of the manual method. PW has contracted a third party consultant to perform a comprehensive sign inventory and retro reflectivity analysis. Results will be available shortly. The analysis will indicate a percentage of the Town's signs that meet current regulations.	As needed	Internal/contractor checks
Street Marking	Annually, PW tries to contract approximately 10-20 km of centerline painting from the local County Works department. Approximately 5-15 km of edge lines are repainted annually. PW forces strive to repaint approximately 5 intersections yearly as well as to replace traffic arrows and stop bars on an as needed basis. A consistent yearly tender should be considered.	Annual	Number of complaints
Christmas Lights	Annually, PW places approximately 100 large Christmas decorations on Town poles and lights. Prior to placement, all lights are inspected for use. Lights are reviewed for damage when stored at the end of the season.	Annual	Fewer complaints of lights not working
Street Banners	The Town places approximately 90 banners twice yearly for the local BIA. The Town poles and banner mounts are inspected for wear during the placement and changeover of the banners.	Bi-annual	Frequency of bracket failure decreases
Snow and Ice Control	The Town actively plows and maintains 181 km's of roadway during the winter control season. All major roads are plowed within the timeframes set out in MMS. In fact, history has shown that PW actually exceeds MMS on every timeframe given for the classification of roads. Public Works also strives to clear all side streets and cul-de-sacs within the timeframe designated by MMS for that road classification. Almost all work is handled by PW forces using some rented equipment and assistance from other departments. Public Works also plows and maintains 35 km's of sidewalks throughout the winter control season using Town forces and equipment.	As needed	Fewer occurences of frost heave of sidewalks and roads

Table 3-4: Maintenance Activities

Renewal/Rehabilitation

This strategy is intended to address issues of a significant proportion in order to extend the useful lifespan of the asset before its condition deteriorates to a degree such that the asset must be replaced. This strategy is used in roadways quite extensively due to the large costs and significant disruptions associated with a total replacement. Work such as this could be employed more than once during an asset's lifespan and extend it past the estimated lifespan if

the work is performed within a reasonable timeframe.

RENEWAL/REHABILITATION

Activity	Program Descriptions	Frequency	Measures
Road Maintenance & Surface Repairs	Public Works will either repair small sections or deficiencies using in house forces or contract this work out. These repairs usually are relatively small in size and have been maintained for some time using maintenance techniques such as cold	Annual	PCI increases when assessed
Asphalt Patching-Minor	Annually, PW coordinates with Water Services and watermain breaks and sewer repairs are asphalt patched by own forces or contracted out.	As needed	Fewer complaints
Asphalt Patching-Major	Annual asphalting contract; annual tar & chip contract. PW spends approximately $700,000 annually on resurfacing asphalt and tar & chip roads.	Annual tender	Fewer road sections progressing to renewal
Roadside Maintenance-Shouldering	Annually PW places new shoulder stone on the roadside shoulder with the aid of grader.	Annual in the spring	Amount of stone dictates stone lost from plowing operations
Crack Sealing	As part of the annual Capital Works Plan, $50,000 is spent on crack sealing various roads within the municipality in order to proactively extend service life.	Annual tender	Road sections achieve additional useful years
Preventative Maintenance	Crossover culverts are checked prior to tar and chip jobs. Catch basins are checked and repaired prior to any surface asphalt replacement contracts.	As needed	Fewer repairs in roads that are not at a major rehabilitative stage
Curbing/Shoulders	PW repairs or replaces sections of curb that are damaged from winter control, as well as replaces or repairs sections of curb that are removed as part of another repair.	Annual review	Number of complaints
Sidewalks & Walkways	Annually, PW spends approximately $70,000 repairing or replacing concrete sidewalks that are deemed to be a trip hazard or have reached its service life (i.e. cracks). A company has been contracted to cut trip hazards that are	As needed	Increase in pedestrian activities and fewer trip and fall lawsuits
Traffic Signals	The Town manages the traffic signals through the use of an outside contractor. Town forces attend to these signals on an as needed basis and request the Contractor should the work entail more specific knowledge of the equipment.	As needed	Contractor checks and replaces equipment that fails testing
Signs	PW inspects the condition of Town signs weekly, annually or as defined in MMS. Yearly, Town staff reviews reflectivity through the use of the manual method. PW has contracted a third party consultant to perform a comprehensive sign inventory and retro reflectivity analysis. Results will be available shortly. The analysis will indicate a percentage of the Town's signs that meet current regulations. PW has actively been replacing all warning signs as well as regulatory signs in the last 3 years. Budget has been $26,000/yr.	Annual reflectivity assessment and post assessment	Signs and posts straightened as needed

Table 3-5: Renewal and Rehabilitation Activities

Replacement

This strategy is employed when the asset has reached its useful lifespan and the costs associated with renewal/rehabilitation will approach the full replacement cost or where it is beneficial to carry out a reconstruction in conjunction with renewal or replacement of other

infrastructure. This strategy is usually reserved for assets that have had very little maintenance work performed during its lifespan and for which remedial methods will not be adequate.

REPLACEMENT

Activity	Program Descriptions	Frequency	Measures
Asphalt Patching-Major	Capital works planning incorporates roads that are or have reached useful life for total replacement in conjunction with other infrastructure (watermain, sewer).	Annual	Fewer road sections progressing to replacement
Curbing/Shoulders	PW repairs or replaces sections of curb that are damaged from winter control.	As needed	Number of complaints
Sidewalks & Walkways	Annually, PW performs a comprehensive inspection of every sidewalk in the municipality. PW spends approximately $70,000 each year to repair or replace concrete sidewalks that are deemed to be a trip hazard or have reached its service life (i.e. cracks). Every 3-5 years, the plan is to have a third party review the conditions to give an assessment of in house inspection and replacement effectiveness.	Annual	Fewer trip and fall lawsuits
Streetlights	During capital works planning, streetlights are reviewed and targeted for replacement to newer energy efficient models.	Annual	Reduced operational costs
Traffic Signals	Capital projects that may incorporate traffic signals are reviewed and infrastructure is assessed for replacement.	Annual	Reduced contractor costs for repair and maintenance
Signs	PW inspects the condition of all Town signs weekly, annually or as defined in MMS. Yearly, the Town reviews reflectivity through the use of the manual method. Signs are replaced as necessary.	Annual-as required	Compliance with MMS Regs
Street Banners	The Town places approximately 90 banners twice yearly for the local BIA. The Town poles and banner mounts are inspected for wear during the placement and changeover of the banners.	As needed	Fewer complaints
Snow and Ice Control	The Town actively plows and maintains 181 km's of roadway during the winter control season. All major roads are plowed within the timeframes set out in MMS. In fact, history has shown that PW actually exceeds MMS on every timeframe given for the classification of roads. Public Works also strives to clear all side streets and cul-de-sacs within the timeframe designated by MMS for that road classification. **Equipment is reviewed and recommended for replacement on a Council approved 7-10 year schedule.**	As approved by Council	Fewer downtimes results include safer roads and sidewalks

Table 3-6: Replacement Activities

Disposal

This strategy is employed typically as part of larger infrastructure projects. The Town of Tecumseh achieves little to no value for disposal of any materials associated with roadways. Newer technologies are being explored that maximize the use of disposed of materials and reuse them in the reconstruction process.

DISPOSAL

Activity	Program Descriptions	Frequency	Measures
Road Maintenance & Surface Repairs	During repairs that are initiated by PW, our forces actively strive to recycle materials that are available in order to take advantage of cost savings. **Stone road base is recycled and reused in other applications or the same application.**	As performed	Smaller in house repairs cost less
Sidewalks & Walkways	Sidewalks or pathways removed for disposal are stockpiled at the Town yard and disposed of at a dumpsite for a fee. Concrete used to be recycled but recently aggregate companies have stopped accepting. It is not cost effective for PW to stockpile and crush in house.	As removed	Nil
Streetlights	Public Works contracts Essex Power for the maintenance of street lights. PW maintains the decorative street lights located on Tecumseh Road and Manning Rd. **When these lights are totally replaced, PW tries to salvage any fixtures for parts for possible future repairs.**	As repaired	Annual maintenance costs decrease
Traffic Signals	The Town manages the traffic signals through the use of an outside contractor. Town forces attend to these signals on an as needed basis and request the contractor should the work entail more specific knowledge of the equipment. When theses signals are replaced, PW and/or the contractor will salvage any fixtures and parts for possible future repairs.	As repaired	Service cost savings
Signs	A sign that is removed from service that cannot serve any purpose is salvaged for scrap metal value.	As removed	Nil
Snow and Ice Control	The Town does not try and recycle snow melt in any form for brine making. We do however, dispose of snow removal equipment as needed. **Trucks and plow equipment go to auction. Specific equipment is also auctioned or traded in, whatever is more of a benefit to the Town.**	As replaced	Trade-ins reduce purchase price; income for PW operating budget

Table 3-7: Disposal Activities

3.5.2 10 Year Plan

A detailed 10 Year Plan was generated for the entire Roads network that includes both rehabilitation and replacement schedules. Please refer to Appendix F for detail by road segment and Appendix F-1 for detail by traffic signal.

4. Bridges

4.1 State of the Local Infrastructure

Inventory

The Town of Tecumseh owns and maintains fifteen (15) bridges and three (3) culverts. All structures (bridges and large culverts) having a clear span of 3.0 meters or more were inventoried and appraised in accordance with the requirements established in the Ontario Structure Inspection Manual (OSIM).

In 2020, the Town of Tecumseh undertook a Bridge and Culvert Needs Study, which was an update to previous studies performed in 2018, 2016, 2014, 2008 and 2003. In the Summer of 2021, two bridges in the East Townline Drain (Structures 1028 and 1029) were removed and placed with drain enclosures as part of the Manning Road Phase 2 road improvements.

Structure ID	Asset Name	Span Length (m)	Structure Type
Culvert / 1010	West Townline Drain at Malden Road Culvert	4.8	Corrugated Steel Pipe Arch
Culvert / 1021	Pike Creek at Twelfth Concession Culvert	6.5	Corrugated Steel Pipe Arch
Culvert / 2001	Townline Rd Drain at Eighth Concession Culvert	3.0	Corrugated Steel Pipe Arch
Bridge / 1002	Pike Creek at Twelfth Concession Bridge	15.8	Concrete Rigid Frame
Bridge / 1003	Pike Creek at Twelfth Concession Bridge	15.7	Concrete Slab on Steel Girder
Bridge / 1004	Sullivan Drain at Twelfth Concession Bridge	5.5	Concrete Rigid Frame
Bridge / 1005	Pike Creek at Baseline Road Bridge	15.0	Concrete Slab on Steel Girder
Bridge / 1006	Sullivan Creek at Baseline Road Bridge	4.6	Concrete Rigid Frame
Bridge / 1009	Pike Creek at Malden Road Bridge	4.8	Concrete Rigid Frame
Bridge / 1011	Malden Road Drain at South Talbot Road Bridge	3.7	Concrete Rigid Frame
Bridge / 1013	Webster Drain at Eighth Concession Bridge	3.6	Concrete Rigid Frame
Bridge / 1014	Townline Road Drain at Sixth Concession Bridge	3.7	Concrete Rigid Frame
Bridge / 1015	Merrick Creek Drain at Sixth Concession Bridge	5.5	Concrete Rigid Frame
Bridge / 1016	Collins Drain at Outer Drive Bridge	3.1	Concrete Rigid Frame
Bridge / 1028	East Townline Drain at St. Thomas Street Bridge	4.9	Concrete Rigid Frame
Bridge / 1029	East Townline Drain at Little River Bridge	4.9	Concrete Rigid Frame
Bridge / 1	Lakewood Park Pedestrian Bridge	23.8	Bowstring Pratt Truss
Bridge / 2	Malden Road Pedestrian Bridge	12.2	Pratt Truss

Table 4-1: Summary of Assets identified in the 2020 Bridge & Culvert Needs Study

Notes:

- *Bridge 1028 and Bridge 1029 were replaced with drain enclosures in 2021 as part of the Manning Road Phase 2 Improvements*

Detailed information on the bridge asset infrastructure is maintained in the Town's GIS system. Each asset is assigned a unique GIS ID.

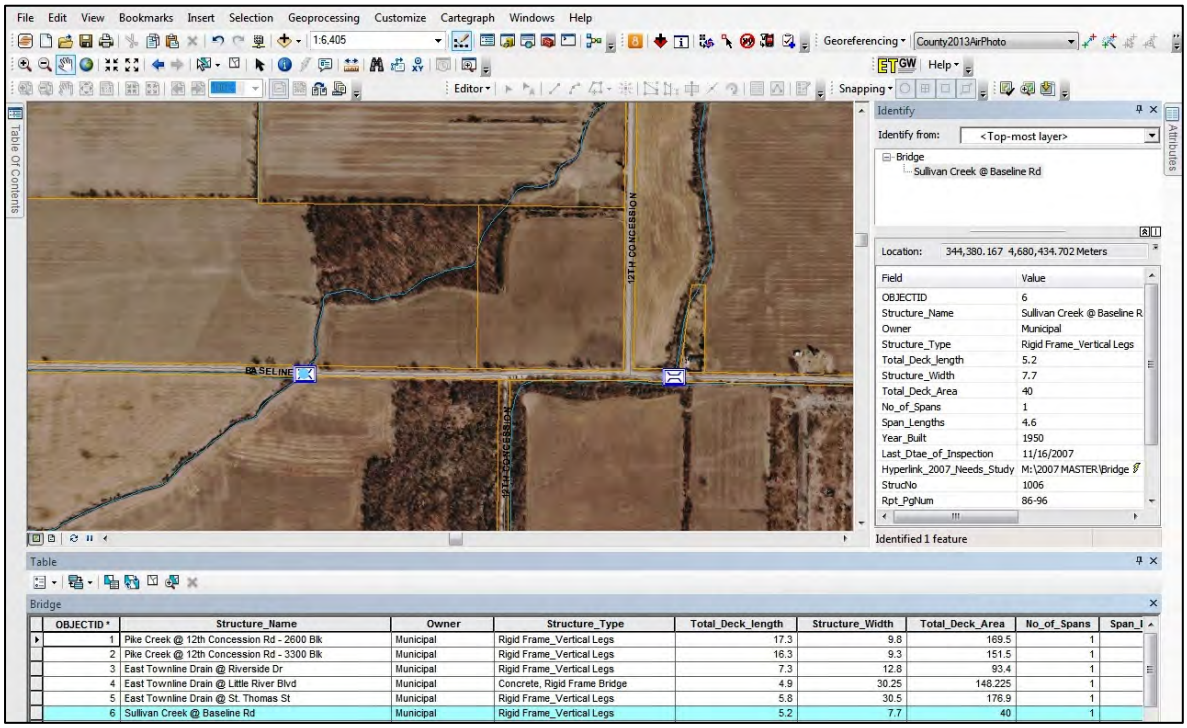


Figure 4-1: GIS screenshot of Structure 1006 - Sullivan Creek at Baseline Road bridge

Valuation

An inventory and historical cost valuation of bridges and large culverts was completed in 2009 in order to comply with the Public Sector Accounting Board's requirements for the reporting of tangible capital assets. Historical costs were based on deflated replacement costs at the time. The expected useful life for accounting amortization purposes is 50 years for bridges and 25 years for large culverts.

Detailed asset accounting data is maintained in CityWide software. Although CityWide assigns its own unique identifier, each asset can be cross-referenced to a GIS ID. The database is updated annually prior to financial statement preparation.

Bridge and large culvert asset accounting valuations as of the 2021 year end are as follows:

	Bridges	**Culverts > 3m**	**Total**
Historical Cost	$ 6,019,207	$ 220,334	$ 6,239,541
Accumulated Amortization	$ 1,966,677	$ 220,334	$ 2,187,011
Net Book Value	$ 4,052,530	$ -	$ 4,052,530

Current replacement costs were obtained from a structural engineering consultant and reviewed by the Town's engineer. As shown in Appendix G, the total replacement cost of the bridge and culvert network is $13,174,000.

Total bridge and large culvert replacement cost is $13.2 million!

Asset Age

The age for the Town's Bridges and Culverts has been summarized in the table below.

Structure ID	Asset Name	Structure Type	Construction Year/Last Major Rehab
1002	Pike Creek at Twelfth Concession Bridge	Concrete Rigid Frame	1961/2016
1003	Pike Creek at Twelfth Concession Bridge	Concrete Slab on Steel Girder	1965/2013
1004	Sullivan Drain at Twelfth Concession Bridge	Concrete Non-Rigid Frame	1965/2020
1005	Pike Creek at Baseline Road Bridge	Concrete Slab on Steel Girder	1955/2014
1006	Sullivan Creek at Baseline Road Bridge	Concrete Rigid Frame	2015
1009	Pike Creek at Malden Road Bridge	Concrete Rigid Frame	2007
1010	West Townline Drain at Malden Road Culvert	Corrugated Steel Pipe Arch	1995
1011	Malden Road Drain at South Talbot Road Bridge	Concrete Rigid Frame	2007
1013	Webster Drain at Eighth Concession Bridge	Concrete Non-Rigid Frame	1965/2020
1014	Townline Road Drain at Sixth Concession Bridge	Concrete Non-Rigid Frame	1955/2020
1015	Merrick Creek Drain at Sixth Concession Bridge	Concrete Rigid Frame	2007
1016	Collins Drain at Outer Drive Bridge	Concrete Rigid/Non-Rigid Frame	1975/2005
1021	Pike Creek at Twelfth Concession Culvert	Corrugated Steel Pipe Arch	1965
1028	East Townline Drain at St. Thomas Street Bridge	Concrete Rigid Frame	1975
1029	East Townline Drain at Little River Bridge	Concrete Rigid Frame	1975
2001	Townline Road Drain at Eighth Concession Culvert	Corrugated Steel Pipe Arch	2012
1	Lakewood Park Pedestrian Bridge	Bowstring Pratt Truss	2016
2	Malden Road Pedestrian Bridge	Pratt Truss	2015

Table 4-2: Summary of Asset's age identified in the 2020 Bridge & Culvert Needs Study

Notes:

- *Bridge 1028 was replaced in 2021 as part of the Manning Road Phase 2 Improvements*
- *Bridge 1029 was replaced with a 750mm diameter storm sewer in 2021 as part of Manning Road improvements*

As per the Town's Tangible Capital Asset Accounting Policy, the single asset approach is used for the capitalization of all linear assets. What that means for bridge assets is that the deck, superstructure and substructure are capitalized as one asset.

As shown in the graph below, accounting records indicate that over 1/2 of the Town's bridges/large culverts have surpassed the expected useful life.

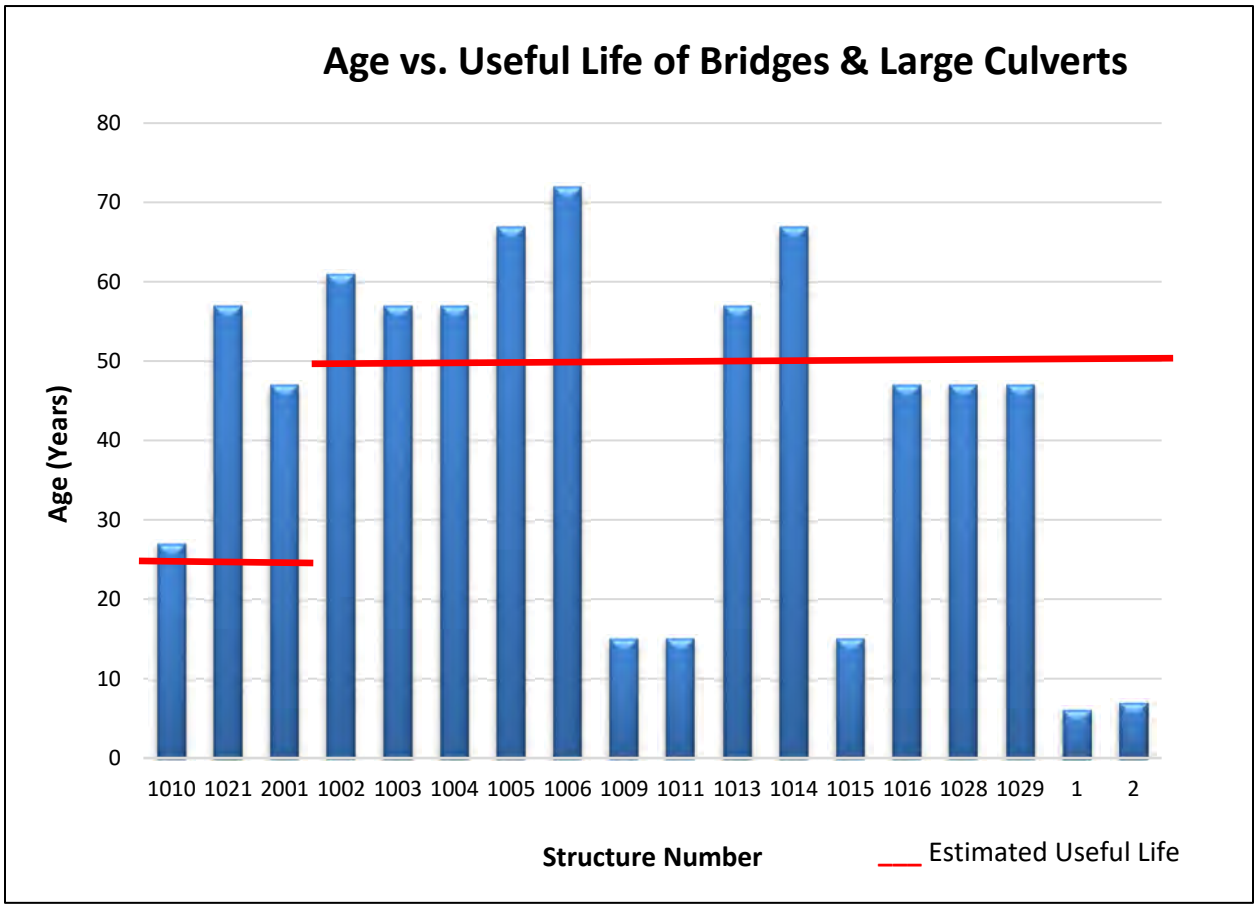


Figure 4-2: Age vs. useful life from an accounting perspective

While the accounting perspective on bridge age indicates that over one half of our bridges have surpassed the estimated useful life, the limitation to this approach is that the installation or reconstruction year is the only variable taken into account. Bridges may age differently depending on traffic, maintenance activities, rehabilitation and other factors.

Asset Condition

In 2007/2008, the Town of Tecumseh commissioned a Bridge and Culvert Needs Study. The results were that 12 structures or 70% of the total bridges and culverts were deemed deficient or to become deficient in the study period. Ten (10) of the twelve (12) identified structures were deemed to be urgent, requiring works in less than one year.

Then in 2012, the Town undertook a condition review of five (5) structures requiring capital works in order to determine a 5 year plan for repair/replacement of the structures. Work was prioritized as follows:

2013 – Rehabilitation of structures 1003 and 1005 and engineering for structure 1006
2014 – Replacement of structure 1006 and engineering for structure 1002
2015 – Rehabilitation of structure 1002.

In 2014, the Town of Tecumseh commissioned a Bridge and Culvert Needs Study, which was an update to previous studies performed in 2008 and 2003. The Study reported an average Bridge Condition Index (BCI) of 74.9, a significant improvement from the 2003 BCI of 66.0. (Please refer to the 'Bridge Condition Index' section for detail on this measure).

Based on the 2014 assessment, the following bridge work was undertaken:

- Structure 1006 – Sullivan Creek at Baseline Road Bridge – Engineering was completed in 2014. Bridge replacement coordinated with Baseline Road remedial works in 2015.
- Structure 1002 – Pike Creek at 12th Concession Bridge – Engineering was completed in 2014. Major bridge rehabilitation coordinated with Baseline Road remedial works in 2015.
- Structure 1028 – East Townline Drain at St. Thomas Street Bridge – Minor bridge repairs completed in 2016. Structure was removed as part of the Manning Road Improvements Phase 2 project scheduled in 2021.
- Structure 1029 – East Townline Drain at Little River Bridge – Minor bridge repairs completed in 2016. Structure was removed as part of the Manning Road Improvements Phase 2 project scheduled in 2021.

In 2016 the Study was updated as per Bridge Condition Assessment Policy # 82.2 which requires renewal on a two year basis. This study identified three bridges which required rehabilitation within 1-5 years. These included the following bridges:

- Pike Creek at 12th Concession Road Bridge No. 1004: $327,000 est.
- Merrick Creek at 8th Concession Road Bridge No. 1013: $326,500 est.
- Colchester Townline Drain at 6th Concession Road Culvert No. 1014: $347,500 est.

Rehabilitation of the above bridges were completed in 2020 and new BCI's have been included in the most recent BNS.

Following the 2016 BNS, the Study was updated in 2018 and 2020 as per the Bridge Condition Assessment Policy # 82.2. The study identified the need to complete routine maintenance at a number of bridges and major rehabilitation work at the Collins Drain at Outer Drive Bridge No. 1016, at an estimated value of $300,000.

Public Works staff utilizes Bridge and Culvert Needs Studies conducted every two years in order to effectively manage and maintain the state of Tecumseh's bridges and culverts. The Town will continue to engage the services of a Consulting firm with specialized training in analysis of structure and deterioration. These tools allow staff to analyze and prioritize road/infrastructure rehabilitation strategies and assist in planning for funding needs based on forecasted deterioration. The Town will continue to utilize Bridge and Culvert Needs Studies going forward to help prioritize projects. The Bridge and Culvert Needs Study will also serve as a measuring tool for the two year period prior with respect to the work that was accomplished.

Bridge Condition Index

The 'Bridge Condition Index' (BCI) was developed by the Ministry of Transportation as a means of combining the inspection information obtained through the OSIM data into a single value. The BCI is calculated using asset management principals based upon the remaining economic worth of the bridge. The index is essentially a planning tool to assist the Town in scheduling improvements and is the approximate ratio of current value of a structure to its estimated replacement cost, and should not be used to rate or indicate the safety of a bridge. The BCI is organized into ranges of 0 to 100, where 100 would represent a newly constructed bridge. Generally the BCI ratings are considered as:

(i) 70 to 100 - 'good' condition
(ii) 60 to 70 - 'fair' condition
(iii) less than 60 - 'poor' condition

The average BCI of 78.4 as calculated from the results of the 2020 Bridge and Culvert Needs Study indicates that the Town is maintaining the bridge infrastructure in overall good condition.

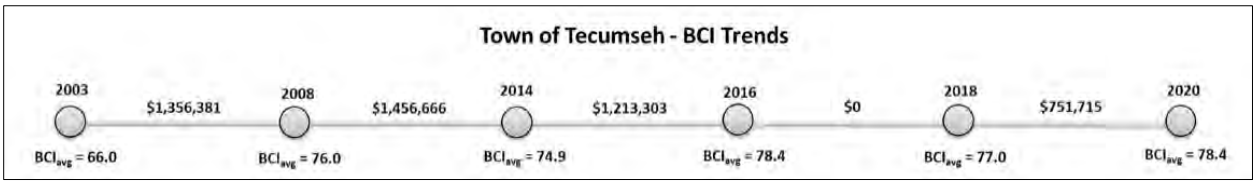


Figure 4-3 Impact of Town investment on average BCI

The BCI for each structure was back calculated from the previous 2003, 2008, 2014, 2016, and 2020 Needs Study reports and the results are summarized in the following table.

Structure ID	2003	2008	2014	2016	2018	2020
1002	73.9	73.4	61.5	85.8	83.0	80.5
1003	66.8	63.0	97.7	92.6	82.3	79.8
1004	74.1	74.1	71.8	70.1	70.3	83.6
1005	59.8	55.4	88.9	86.0	85.1	82.4
1006	68.1	68.2	42.6	100.0	95.7	92.6
1009	42.0	98.8	97.4	97.1	85.0	81.4
1010	73.2	71.7	71.1	70.4	72.3	70.3
1011	58.8	100.0	92.5	91.7	90.4	86.1
1013	74.9	71.2	60.6	58.8	58.7	80.5
1014	65.9	65.1	56.4	53.5	53.3	77.7
1015	53.5	100.0	99.4	96.4	84.6	82.4
1016	71.3	88.7	87.5	77.5	76.7	75.0
1021	75.0	75.0	68.9	67.4	68.1	66.2
1028	73.8	70.1	67.3	63.6	59.2	57.6
1029	74.1	72.7	67.9	64.8	60.4	58.9
2001	50.1	68.6	67.4	79.2	76.3	73.1
1	-	-	-	-	92.1	91.5
2	-	-	-	-	92.5	91.7
BCI_{Avg}	**66.0**	**76.0**	**74.9**	**78.4**	**77.0**	**78.4**

Table 4-3: Bridge Condition Index Trends

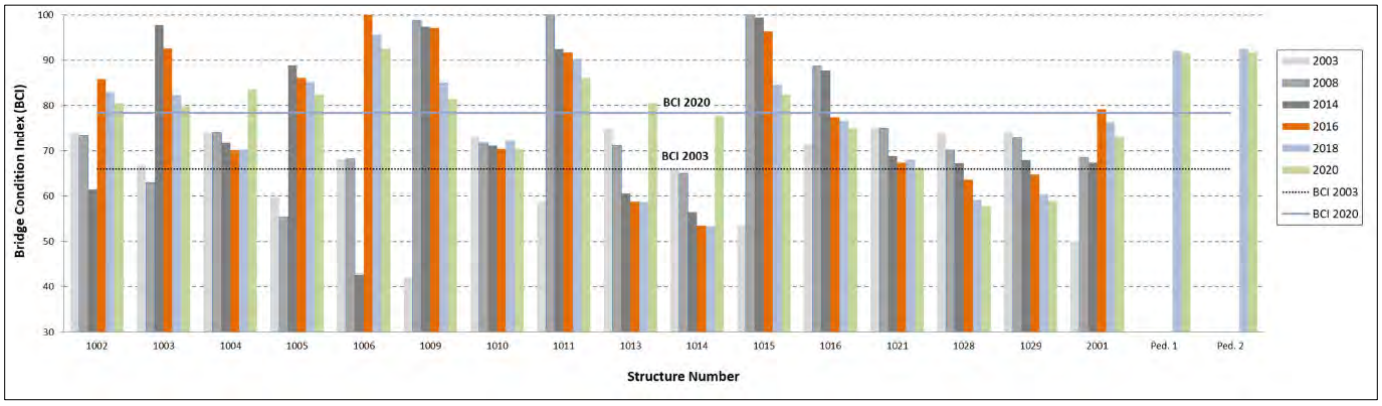


Figure 4-4: Historical BCIs by Structure

Asset Management Policies

The Bridge Condition Assessment Policy discusses the use of Bridge Needs Studies to determine the condition of the Town's bridge and large culvert structure inventory. The Policy further designates an acceptable timeframe for updating bridge condition assessments i.e. how often Bridge Needs Studies are to be conducted. Refer to Appendix H for a copy of the Bridge Condition Assessment Policy.

The Data Verification Policy provides a guideline for the review of data that is collected or provided to the Town. Refer to Appendix E for a copy of the Data Verification Policy.

4.2 Desired Levels of Service

The Town of Tecumseh has pursued differing bridge and culvert rehabilitation strategies over the last 13 years in order to get to the current state of the bridge and culvert conditions. The Town actively spent in excess of $4,800,000 on bridge and culvert projects since the Bridge and Culvert Needs Study in 2003 in order to arrive at the current conditions. It is Administration's intent to ensure that the Town continue to maintain acceptable levels of service, which can be qualified as;

- Annual Inspection and maintenance programs established and put in place
- Any bridge or culvert rated as a "Now" time of improvement in the current Needs Study are slated for some form of work within a two-year window
- Any bridge or culvert rated as a "1-5 year" time of improvement is addressed in some manner within the timeframe
- All bridges and culverts as rated are actively reviewed in conjunction with other infrastructure Projects in order to achieve efficiencies of Town dollars
- The Bridge and Culvert Needs Study to be renewed on a two-year basis in order to set these levels of service. This is also a legislative requirement.

Administration recommends that in order to stay at or above the level of service as described above, the Town establish the annual programs as described. A program consisting of annual review of the factors detailed in the last Consultants review will be reviewed and examined. These inspections and any resulting maintenance can be undertaken by Town of Tecumseh forces or tendered out on an annual basis with Public Works overseeing the program. A commitment of funds will need to be established for this ongoing program of which the initial costs may be higher than the future realized costs.

The Town proposes to renew the Bridge and Culvert Needs Study in 2022 in order to gauge the Town effectiveness in the replacement/rehabilitation strategies to date. This will be reviewed on a two-year basis going forward.

Performance Indicators- These are the main activities within each operating budget. These activities (PI's) link directly to the level of service provided to the customer. The PI's also

include tasks that help extend useful life. **A good balance between asset replacement through capital funding and ongoing maintenance provides the best cost efficiency and service productivity.**

4.3 Current Levels of Service

In addition to the Town's desired level of service, O. Reg 588/17 requires that Municipalities provide levels of service related to specific qualitative descriptions and technical metrics, described as Community Levels of Service (CLOS) and Technical Levels of Service (TLOS) for each core asset. For Bridges, this includes a percentage of bridges with restrictions and the average BCI for bridges and structural culverts within the municipality.

4.3.1 Community Levels of Service

The Town provides the Community Levels of Service (CLOS) summary as specified in O. Reg 588/17 in table 4-4. This table will be further expanded in the future to provide a better quantified CLOS.

Service Attribute	Community Levels of Service
Scope	The existing Bridges within the Town of Tecumseh's road network support all classes of vehicle including motor vehicles, heavy transport vehicles, buses, emergency vehicles, cyclists and pedestrians. The Town's two pedestrian bridges support cyclist, pedestrians, and small maintenance equipment.
Quality	The Town of Tecumseh adheres to and follows the best practices outline in the Ontario Structure Inspection Manual (OSIM) to determine the condition of Bridges. The Town utilizes a third-party consultant to inspect all bridges every two years to identify major work, routine maintenance, and evaluate bridge condition through the Bridge Condition Index, which was developed by the MTO.

Table 4-4: Community Levels of Service

4.3.2 Technical Levels of Service

The Town provides the Technical Levels of Service (TLOS) summary as specified in O. Reg 588/17 in table 4-5. These technical metrics will be expanded as part of future updates to the AMP.

Service Attribute	Performance Measure	Measure Type	Current Performance	Target
Scope	Percentage of bridges in the municipality with loading or dimensional restrictions.	O. Reg	0%	0%
Reliability	For bridges in the municipality, the average bridge condition index value.	O. Reg	80.1	70
	For structural culverts in the municipality, the average bridge condition index value.	O. Reg	69.9	70
Sustainability	The number of years where the Bridge Needs Study is renewed	Municipal	2	2

Table 4-5: Technical Levels of Services

The BCI calculated in the 2020 BNS was 78.4 – an increase in overall condition from the 2018 BCI value of 77. The current BCI indicates the Town is maintaining their infrastructure portfolio in good condition. Recent spending has increased the average BCI from 66.0 in 2003 to 78.4 in 2020. The removal of structures 1028 and 1029 (in 2021 as part of the Manning Road Improvement Project) from the Town's asset list would further increase the average BCI to 80.9.

4.4 Lifecycle Activities

Similar to that of other core assets, preventative maintenance is a proactive strategy to maintain and extend the life of existing bridges. There are four categories of Lifecycle Activities related to maintaining levels of service of bridge and culvert infrastructure. These include:

- Routine Maintenance
- Rehabilitation (Minor and Major)
- Replacement
- Disposal

Similar to that of road infrastructure, ideal management of bridges and culverts includes identifying necessary repairs at the correct time to extend asset life and reduce unnecessary costs. Responsible maintenance is key to ensuring that assets are maintained at the lowest overall costs. Failure to identify preventative maintenance and minor rehabilitation has the potential to incur costs to the Town, reduce asset service life, and reduce levels of service to the public.

Figure 4-5 below, from the Bridge Preservation Guide - Maintaining a Resilient Infrastructure to Preserve Mobility, Spring 2018 from the U.S. Department of Transportation Federal Highway

Administration, provides a visual representation of increased service life for bridge infrastructure following smart condition-based maintenance practices.

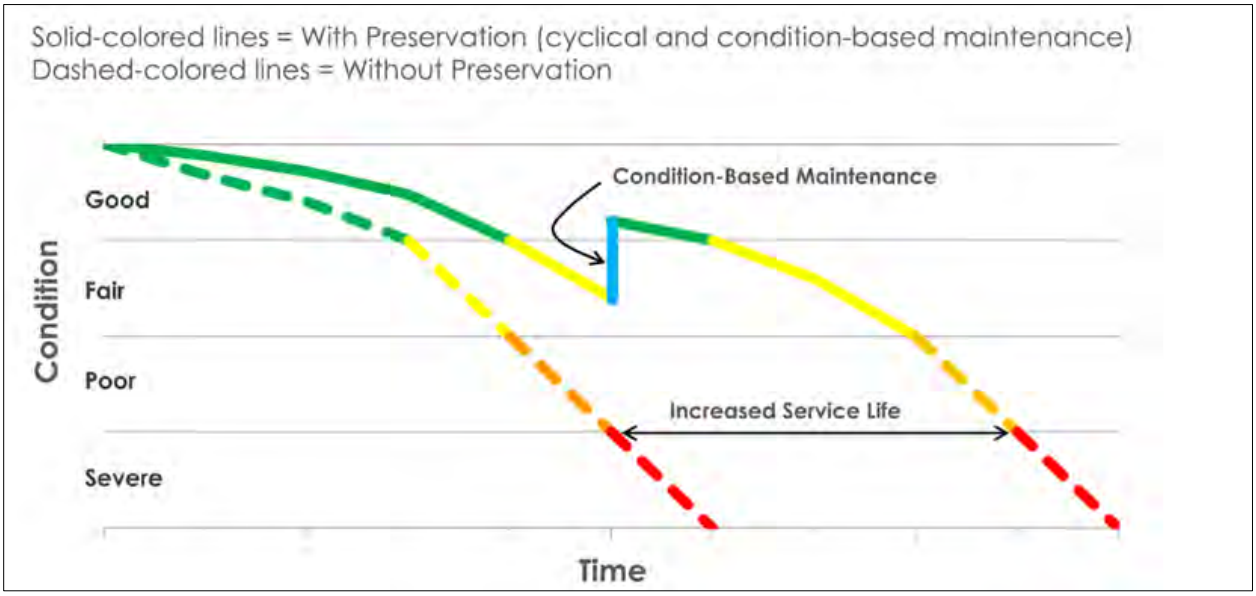


Figure 4-5: Smart Condition Based Maintenance Practices

Source: Bridge Preservation Guide - Maintaining a Resilient Infrastructure to Preserve Mobility, Spring 2018, U.S. Department of Transportation - Federal Highway Administration

Utilizing the findings from the most recent BNS and completing maintenance, repairs, and rehabilitation of bridge structures are the key mechanisms to ensure that bridge assets can be maintained cost-effectively and that they provide adequate levels of service to residents and users. Table 4-3 identifies the recommendations, or lifecycle activities. from the 2020 BNS which should be completed in the next 10 years.

Structure ID	Asset Name	Assessment Year	Condition / Comments
1002	Pike Creek at Twelfth Concession Bridge	2020	Major rehabilitation completed in July 2016. No capital works necessary. Recommended routine maintenance includes routine maintenance and erosion control.
1003	Pike Creek at Twelfth Concession Bridge	2020	Bridge rehabilitated in 2013. Recommended routine maintenance includes bearing shoe plate condition and bridge cleaning. No capital works necessary.
1004	Sullivan Drain at Twelfth Concession Bridge	2020	No capital works necessary.
1005	Pike Creek at Baseline Road Bridge	2020	Bridge rehabilitated in 2014. Recommended maintenance includes; bridge cleaning; guiderail repair and replacement; erosion protection; and crack sealing. No capital works necessary.

Structure ID	Asset Name	Assessment Year	Condition / Comments
1006	Sullivan Creek at Baseline Road Bridge	2020	Fully replaced in 2015. No capital works necessary.
1009	Pike Creek at Malden Road Bridge	2020	New structure constructed in 2007. No capital works necessary. Recommended maintenance includes; barrier post repair, erosion protection upgrades, headwall crack repair, bridge object marker sign installation; and rout and seal the approach wearing surfaces
1010	West Townline Drain at Malden Road Culvert	2020	Recommended maintenance includes: crack sealing of the wearing surfaces; replacement/repair of guiderails; and object marker installation. No capital works necessary.
1011	Malden Road Drain at South Talbot Road Bridge	2020	New structure constructed in 2007. Recommended maintenance includes crack sealing of the wearing surfaces and culvert barrel. No capital works necessary.
1013	Webster Drain at Eighth Concession Bridge	2020	No. capital works necessary
1014	Townline Road Drain at Sixth Concession Bridge	2020	No capital works necessary.
1015	Merrick Creek Drain at Sixth Concession Bridge	2020	New structure constructed in 2007. No capital works necessary. Recommended maintenance includes removal of debris in waterway and road shoulder repairs.
1016	Collins Drain at Outer Drive Bridge	2020	Recommended major rehabilitation in the next 6 to 10 years inclusive of waterproofing replacement, concrete patch repair, and crack injection work.. Recommended maintenance includes barrier post repair, sign installation, and north embankment maintenance. Monitoring of cracks at soffit recommended.
1021	Pike Creek at Twelfth Concession Culvert	2020	Recommended maintenance includes: adding additional fill height over structure, improvement of erosion control, and object marker installation. protection of embankments.
1028	East Townline Drain at St. Thomas Street Bridge	2020	Temporary repairs completed in July 2016. The existing structure has been replaced during the enclosure of the East Townline Drain in 2021.as part of the Manning Road Improvements Phase 2 project
1029	East Townline Drain at Little River Bridge	2020	Temporary repairs completed in July 2016. The existing structure was removed in 2021 and replacement with a local storm sewer as part of the Manning Road Improvements Phase 2 project.
2001	Townline Road Drain at Eighth Concession Road Culvert	2020	No capital works required. Recommended maintenance includes: crack sealing or asphalt resurfacing and parging of precast block joints
1	Lakewood Park Pedestrian Bridge	2020	No capital works required. Recommended maintenance includes: wire brush and coat corded welded connections and repair damaged railing

Structure ID	Asset Name	Assessment Year	Condition / Comments
2	Malden Road Pedestrian Bridge	2020	No capital works required. Recommended maintenance includes: provide erosion control and remove waterway debris.

Table 4-6: Bridge & Culvert Condition Assessments

Based on the 2020 assessments, two structures, Bridge No. 1028 and Bridge No. 1029 were identified to be addressed in the 1-5 year time frame. In the summer of 2021 these bridges were removed and replaced with drain enclosures as part of the Manning Road Phase 2 project.

Bridge No. 1028 and Bridge No. 1029 were subsequently replaced with a 3000mm x 1800mm box culvert and 750mm diameter local storm sewer, respectively. These bridges will be removed in the following BNS.

Bridge No. 1016 has been identified as the only structure needing structure improvement in the 6-10 year time frame.

Rehabilitation

Rehabilitation of Bridge infrastructure is generally broken into two types of repairs: minor rehabilitation and major rehabilitation. The Town utilizes the biennial BNS to identify and plan for both minor and major rehabilitations. Given the two-year period study gap, the Town can plan and allocate funding to complete rehabilitations at the most ideal timeframe for each asset. The 2020 BNS has identified the need to complete a major rehabilitation on one bridge in the next 6 to 10 years at an estimated cost of approximately $300,000.

Replacement

Replacement of Town bridges and culverts will be planned through recommendations received in the most recent BNS to identify and plan for the replacement of existing bridges when it is no longer economically feasible to carry out preventative maintenance, minor rehabilitation, or major rehabilitation. The 2020 BNS did not identify any bridges requiring replacement in the next 10 years.

Utilization of standard lifecycles and inflation rates should be used in future amp updates to determine the yearly contribution amounts required to conduct bridge asset replacements outside of the 10-year plan.

Disposal

The Town's 2020 BNS identified the disposal of two bridges, bridge 1028 and 1029, which were to be replaced with a box culvert and local storm sewer as part of the Manning Road Phase 2 Improvements. These bridges were disposed of in 2021 and subsequently will be removed from

the disposal recommendations in the 2020 BNS. The 2020 BNS did not identify any further bridges requiring disposal.

4.4.1 Population Forecasts and Growth Assumptions

Population Forecasts

As discussed in section 2 of this plan, the 20-year population projection as included in the Town's Official Plan, is an increase of 6,880 people for a total population of 30,330 by the year 2040.

Transportation Master Plan

The Town's Transportation Master Plan was completed at the end of 2016. An analysis of the Town's road network and intersection performance did not identify any capacity related issues. Subsequently, there are no recommendations to increase bridge size or capacity.

Development

A review of the development of settlement areas noted in the Town's Official Plan did not identify any properties which will require new bridges to be constructed as part of future developments.

4.5 Asset Management Strategy

4.5.1 Asset Management Programs

The following provides an overview of the types of Asset Management programs conducted by the Town.

Maintenance

These maintenance activities will be undertaken by Public Works forces and are intended to find any deficiencies and or issues at the onset in order to address them in an adequate timeframe and also limit the extent of remedial repairs.

MAINTENANCE

Performance	Program Descriptions	Frequency	Measures
Maintenance & Repairs	Complete maintenance work on bridges as noticed by PW forces. A bridge needs study was conducted in 2003, 2008, 2014, 2016, 2018, and 2020.	As needed	Extends useful life
Inspections	PW strives to conduct a bi-annual inspection of all bridges in the Municipality in compliance with Provincial legislation. PW reviews bridge decks as part of monthly, weekly , daily road patrols.	As dictated by legislation	Compliance with legislation

Table 4-7: Maintenance Performance

Renewal/Rehabilitation

This strategy is intended to address issues of a significant proportion in order to extend the useful lifespan of the asset before its condition deteriorates to a degree such that the structure must be replaced. This strategy is used on bridges quite extensively due to the large costs and significant disruptions associated with a total replacement. Work such as this could be employed more than once during an asset's lifespan and extend it past the estimated lifespan if the work is performed within a reasonable timeframe.

RENEWAL/REHABILITATION

Performance	Program Descriptions	Frequency	Measures
Maintenance & Repairs	Complete maintenance work on bridges as noticed by PW forces. A bridge needs study was conducted in 2003, 2008, 2014, 2016, 2018, and 2020. The 2020 Bridge Needs Study identifies one bridge for rehabilitation at an estimated cost of $300,000. Replacement of bridge decks in timely fashion can extend asset lifespan until the supports need replacement.	As identified through inspections	Extends useful life

Table 4-8: Renewal/Rehabilitation Performance

Replacement

This strategy is employed when the asset has reached its useful lifespan and the costs associated with renewal/rehabilitation will approach the cost of full replacement. This strategy is usually reserved for assets that have had very little maintenance work performed during its lifespan and for which remedial methods will not be adequate.

REPLACEMENT

Performance	Program Descriptions	Frequency	Measures
Maintenance & Repairs	When assessment dictates that rehab of the structure is not warranted or feasible, the structure is scheduled for demolition and replacement. Newer techniques or designs are explored and used to help reduce future maintenance cost to the Municipality.	Bridges approx 50 years or as required; Culverts approx 25 years or as required.	Useful lifespan renewed

Table 4-9: Replacement Performance

Disposal

This strategy is employed typically as part of larger infrastructure projects. When a bridge asset is converted to an enclosed storm sewer, the Town would eliminate it from the bridge asset inventory (and add it to another asset category). Typically, conversion of bridges to enclosed drains will result in overall lower costs for maintenance, however, the initial disposal cost is quite expensive.

DISPOSAL

Performance	Program Descriptions	Frequency	Measures
Enclosure	When possible and economically feasible, conversion of the structure to an enclosed storm sewer is explored. By enclosing the drain and removing the bridge, the asset essentially is removed from the bridge category. For example, the East Townline Drain at St. Thomas Street bridge and the East Townline Drain at Little River bridge, structures 1028 and 1029 respectively, have been replaced with a new storm sewer system as part of the Manning Road Improvements Phase 2 in 2021.	Where possible	Less frequent and intensive safety assessment (bi-annual inspection).

Table 4-10: Disposal Performance

4.5.2 10 Year Plan

In order to formulate the 10 Year Plan, the condition review was used to rank the work required for the next ten years. The 2020 Bridge and Culvert Needs Study was used to estimate the timeline of work required for the remaining structures. Generally, it was assumed that a major rehab would occur halfway through the structure lifecycle. Costs were based on engineering estimates in reference to the 2020 Bridge and Culvert Needs study.

Please refer to Appendix I for the detailed 10 Year Plan.

5. Culverts < 3 metres

5.1 State of the Local Infrastructure

Inventory

A culvert is defined as a structure that is typically embedded in soil which allows the flow of water under a road, trail etc. The Town of Tecumseh owns and maintains 76 culvert structures having spans less than or equal to or less than 3.0 metres, consisting of varying types and materials.

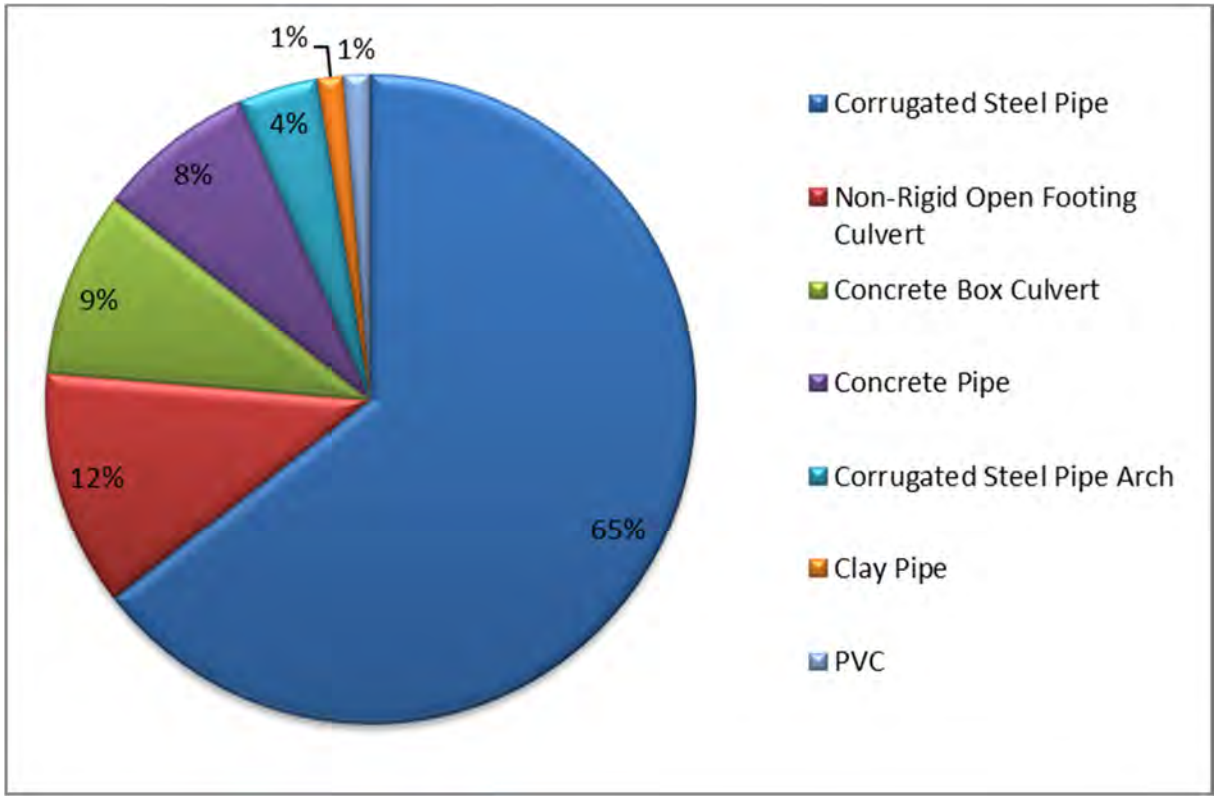


Figure 5-1: Culvert Types

In 2016, the Town of Tecumseh undertook a Culvert Needs Study (Structures with Spans < 3.0m). The purpose of the study was to identify all existing culverts with spans less than three metres, conduct a condition assessment, and to prepare a comprehensive plan for improving and maintaining these structures for the next 10-year period.

There are a total of 71 existing culverts with a span less than three metres that were inspected in accordance with the latest version of the Ontario Structure Inspection Manual (OSIM) published by the Ministry of Transportation (MTO). Five additional culverts identified since the completion of the report will be included in the next Culvert Needs Study.

Detailed information on the culvert inventory is maintained in the Town's GIS system. Each culvert is assigned a unique identifier.

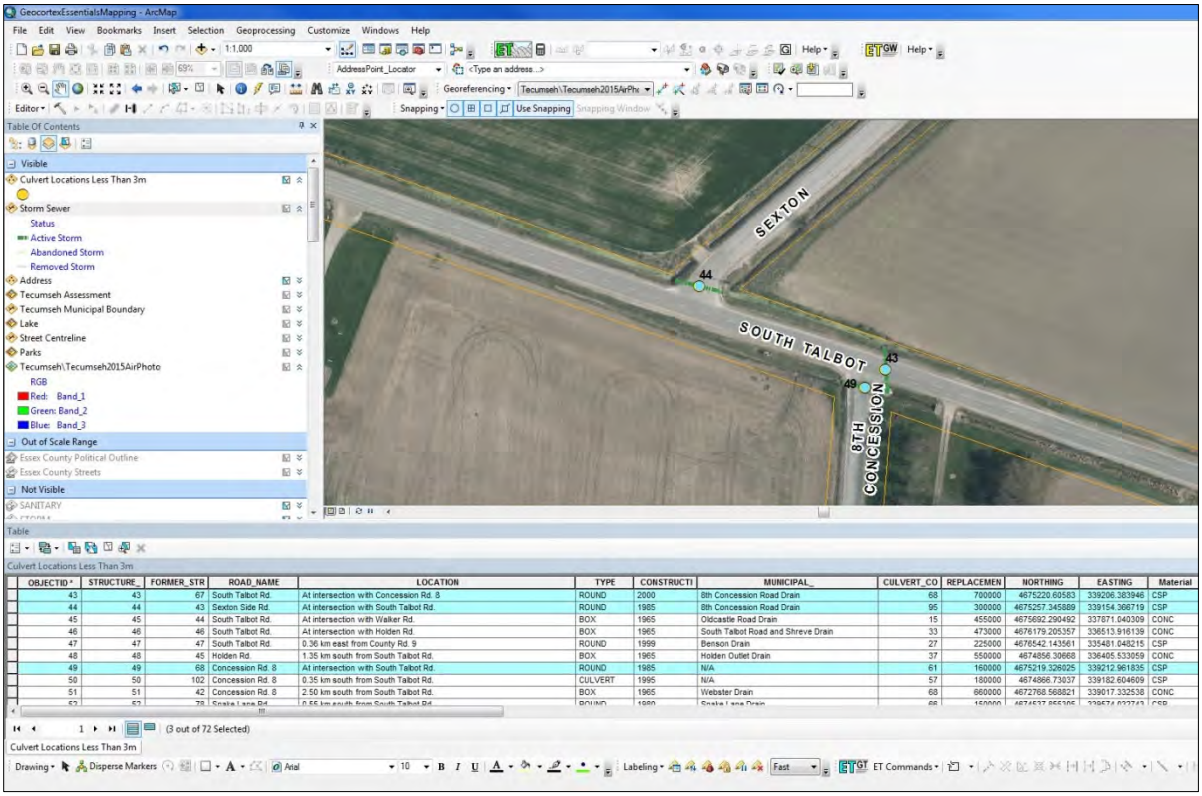


Figure 5-2: GIS screenshot of Culvert Structures 43, 44 and 49

Please refer to Appendix J for a complete inventory of the Town's culverts <3m.

Valuation

In 2009, an inventory and historical cost valuation of the culverts <3 m was completed in order to comply with the Public Sector Accounting Board's requirements for the reporting of tangible capital assets.

Historical costs were based on deflated replacement costs at the time. The expected useful life for accounting amortization purposes was assumed to be 25 years for steel and 50 years for concrete culverts.

Detailed asset accounting data is maintained in the CityWide software. The database is updated annually prior to financial statement presentation.

Asset accounting valuations for culverts < 3 metres as of the 2021 year end are as follows:

$ 3,056,362	Historical Cost
$ 1,033,690	Accumulated Amortization
$ 2,022,672	Net Book Value

Replacement costs have been calculated using the most recent Culvert Needs Study and engineering estimates. As show in Appendix J, the total replacement cost for culverts < 3 m is $19,970,000.

Total Culverts < 3 m replacement cost is $20 million!

Asset Age

The age for the Town's Culverts < 3m has been summarized in the table below.

Age (Years)	# of Culverts					
	Corrugated Steel Pipe (CSP)	Concrete	Open Footing Box	Concrete Box	Clay Pipe	Polyvinyl Chloride (PVC)
0-10	4	2	-	3	-	-
11-20	10	-	-	2	-	-
21-30	12	-	1	1	1	1
31-40	15	-	-	-	-	-
41-50	10	4	1	-	-	-
51-60	1	-	6	-	-	-
61-70	-	-	1	-	-	-
71-80	-	-	-	1	-	-
Total	52	6	9	7	1	1
Average Age	29	30	52	21	21	24

Table 5-1: Average age by culvert type

As shown above, the average age is 30 years for Corrugated Steel Pipe (CSP) culverts and 43 years for concrete culverts. However, culverts may age differently depending on traffic, maintenance activities and other factors, so it is important to take asset condition into account when planning capital works.

Asset Condition

Culvert Condition Index (CCI)

The 'Bridge Condition Index' (BCI) was developed by the Ministry of Transportation as a means of combining the inspection information obtained through the OSIM data into a single value. The BCI is essentially a planning tool to assist the Town in scheduling improvements for the structure. However, the BCI was not exactly the right metric to use due to the small sizes of some of the culvert structures. Therefore, the Town's engineering consultant has provided a 'Culvert Condition Index'(CCI) which is calculated in a similar manner as the BCI where only the culvert element (barrel or concrete frame) is considered for condition indexing.

The CCI is categorized into a range of 0 to 100, where a rating of **80 to 100** in 'Excellent' condition would represent a newly constructed culvert free of any immediate repair needs, **60 to 80** in 'Good' condition; **40 to 60** in 'Fair' condition, and a rating **less than 40** in 'Poor' condition where immediate repairs would be required.

Poor	Fair	Good	Excellent
0 – 40	40 – 60	60 – 80	80 - 100

Table 5-2: Culvert Condition Index Range

The replacement value of the culverts in each CCI is depicted graphically below.

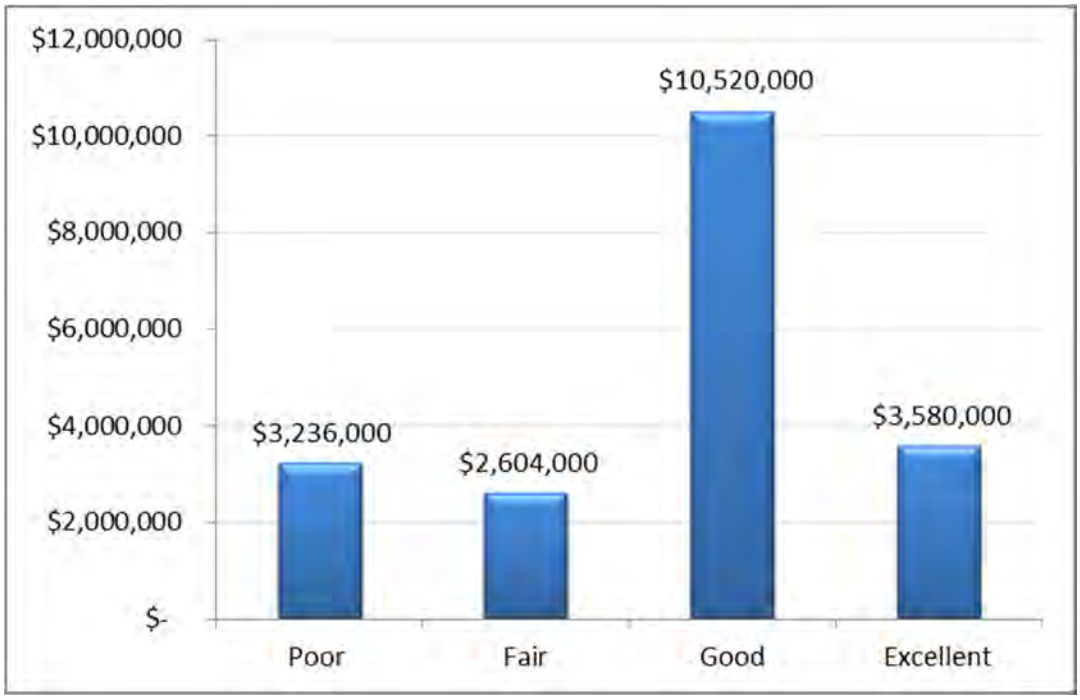


Figure 5-3: Culvert Inventory Condition

An average CCI of 63.0 calculated from the results of the 2016 investigation reveals that the overall inventory average is at the lower end of the 'Good' condition range. This indicates that there is some work to be done to maintain the condition of the inventory.

One third of the inventory is categorized as being 'Poor' or 'Fair'. The Culvert Study identified 25 structures with deficiencies that should be addressed within the next year or in certain cases a maximum of ten years. The following table presents a summary of the Town's culvert construction needs for the next ten years.

Timing	Replacement/ Rehabilitation	Roadside Safety	Total	# Culverts
< 1 Year	$ 680,000	$ -	$ 680,000	2
1 – 5 Years	$ 3,669,500	$ 200,000	$ 3,669,500	19
6 – 10 Years	$ 1,396,000	$ -	$ 1,396,000	4
Total	$ 5,745,500	$ 200,000	$ 5,945,500	25

Table 5-3: Ten Year Construction Needs

Asset Management Policies

The Culvert Condition Assessment Policy discusses the use of Culvert Needs Studies (Structures with Spans less than 3.0m) to determine the condition of the Town's culvert structure inventory. The Policy further designates an acceptable timeframe for updating culvert condition assessments i.e., how often Culvert Needs Studies are to be conducted. Refer to Appendix K for a copy of the Culvert Condition Assessment Policy.

The Data Verification Policy provides a guideline for the review of data that is collected or provided to the Town. Refer to Appendix E for a copy of the Data Verification Policy.

5.2 Desired Levels of Service

It is Administration's intent to ensure that the Town continue to maintain acceptable levels of service, which can be qualified as;

- Annual Inspection and maintenance programs established and put in place
- Any culvert rated as a "Now" time of improvement in the current Needs Study is slated for some form of work within a two-year window
- Any culvert rated as a "1-5 year" time of improvement is addressed in some manner within the timeframe
- All culverts as rated are actively reviewed in conjunction with other infrastructure Projects in order to achieve efficiencies of Town dollars

- The Culvert Needs Study to be renewed on a five-year basis in order to set these levels of service.

Administration recommends that in order to stay at or above the level of service as described previously, the Town establish the annual programs as described.

A program consisting of annual review of the factors detailed in the last Consultants review will be reviewed and examined. These inspections and any resulting maintenance can be undertaken by Town of Tecumseh forces or tendered out on an annual basis with Public Works overseeing the program. A commitment of funds will need to be established for this ongoing program of which the initial costs may be higher than the future realized costs.

The Town proposes to renew the Culvert Needs Study in 2022 in order to gauge the Town effectiveness in the replacement/rehabilitation strategies to date. This will be reviewed on a five-year basis going forward.

Performance Indicators- These are the main activities within each operating budget. These activities (PI's) link directly to the level of service provided to the customer. The PI's also include tasks that help extend useful life. **A good balance between asset replacement through capital funding and ongoing maintenance provides the best cost efficiency and service productivity.**

5.3 Asset Management Strategy

5.3.1 Asset Management Programs

The following provides an overview of the types of Asset Management programs conducted by the Town.

Maintenance

These maintenance activities will be undertaken by Public Works forces and are intended to find any deficiencies and or issues at the onset in order to address them in an adequate timeframe and also limit the extent of remedial repairs.

MAINTENANCE

Performance	Program Descriptions	Frequency	Measures
Maintenance & Repairs	Complete maintenance work on culverts as noticed by PW forces. A culvert needs study was conducted in 2016.	As needed	Extends useful life
Inspections	PW strives to conduct inspections of all culverts in the Municipality every five years. PW reviews culvert decks as part of monthly, weekly , daily road patrols.	As needed	Extends useful life

Table 5-4: Maintenance Performance

Renewal/Rehabilitation

This strategy is intended to address issues of a significant proportion in order to extend the useful lifespan of the asset before its condition deteriorates to a degree such that the structure must be replaced. Work such as this could be employed more than once during an asset's lifespan and extend it past the estimated lifespan if the work is performed within a reasonable timeframe.

RENEWAL/REHABILITATION

Performance	Program Descriptions	Frequency	Measures
Maintenance & Repairs	forces. A culvert needs study was conducted in 2016. The 2017 Five Year Capital Works Plan did not identify any culverts to be rehabilitated.	As identified through inspections	Extends useful life

Table 5-5: Renewal/Rehabilitation Performance

Replacement

This strategy is employed when the asset has reached its useful lifespan and the costs associated with renewal/rehabilitation will approach the cost of full replacement. This strategy is usually reserved for assets for which remedial methods will not be adequate.

REPLACEMENT

Performance	Program Descriptions	Frequency	Measures
Maintenance & Repairs	When assessment dictates that rehab of the structure is not warranted or feasible, the structure is scheduled for demolition and replacement. The 2017 Five Year Capital Works Plan identifies sixteen (16) culverts for replacement at an estimated cost of $3.49 million.	Concrete box culverts approx 50 years or as required; CSP culverts approx 25 years or as required.	Useful lifespan renewed

Table 5-6: Replacement Performance

Disposal

This strategy is employed typically as part of larger infrastructure projects. This may occur with the installation of a storm sewer network, where existing culverts/ditches are removed/filled in.

DISPOSAL

Performance	Program Descriptions	Frequency	Measures
Enclosure	When possible and economically feasible, conversion of the structure to an enclosed storm sewer is explored. By enclosing the drain and removing the culvert, the asset essentially is removed from the culvert category. These opportunities will arise with road reconstructions to an urban cross-section and the installation of storm sewers.	Where possible	Less frequent and intensive safety assessment.

Table 5-7: Disposal Performance

5.3.2 10 Year Plan

Rehabilitation/Replacement

In order to formulate the 10 Year Plan, the condition review was used to rank the work required for the next ten years. The 2016 Culvert Needs Study was used to estimate the timeline of work required. Costs were based on engineering estimates in reference to the 2016 Culvert Needs study. Please refer to Appendix L for the detailed 10 Year Plan.

6. Storm Sewer Collection System

6.1 State of the Local Infrastructure

Inventory

A storm collection system is designed to drain excess rain or ground water from paved streets and parcels of land. A storm sewer collection system consists of sewer gravity pipes, services and pumping stations. The majority of the storm water flows are directed to one of eight storm water pumping stations and pumped directly to Lake St. Clair. The rest of the storm water collection system is directed to local drains which ultimately discharge to Lake St. Clair or the Detroit River.

Storm Sewers:

There are a total of 144 km of storm sewers, varying in size from 100mm to 2400mm diameter. Pipe materials generally consist of Asbestos Cement (AC), Reinforced Concrete (RC), Polyvinylchloride (PVC) and Polyethylene (PE).

Storm Manholes:

There are a total of 1,442 storm manholes, varying in size from 1200mm to 3600mm diameter. The manhole material consists of precast reinforced concrete.

Storm Services:

There are a total of 6,267 storm services equating to an approximate length of 63 km from the trunk storm sewer to the property line (for which the Town is responsible for). These services are generally 150mm diameter, with material consisting of Asbestos Cement (AC), Reinforced Concrete (RC), and Polyvinylchloride (PVC).

Storm Pumping Stations:

There are eight pumping stations (PS) located within the Town that are operated and maintained by the Town's Public Works staff:

a) Lesperance Road Pumping Station – Located at 12280 Lesperance Road (Riverside Drive/Lesperance Road intersection).
b) West St. Louis Pumping Station – Located at 12924 Riverside Drive (between Centennial Drive and Barry Avenue).
c) East St. Louis Pumping Station – Located at 13079 Riverside Drive (east of Centennial Drive).
d) Manning Road Pumping Station – Located at 13400 Riverside Drive (Riverside Drive/Manning Road intersection).
e) Scully Pumping Station – Located at 13698 Riverside Drive (Riverside Drive/Edgewater Boulevard intersection).
f) St. Mark's Pumping Station – Located at 13770 Riverside Drive (Riverside Drive/St. Mark's intersection).

g) Peter Cecile Pumping Station – Located at 14080 Riverside Drive (Riverside Drive/Kensington Boulevard intersection).
h) Brighton Road Pumping Station – Located at 511 Brighton Road.

Stormwater Management Facilities:

There are a total of nine (9) stormwater management facilities located within the Town that are operated and maintained by the Town's Public Works staff:

a) Stormceptor Manhole STC 2000 – Located at 12215 Westlake Drive
b) Stormceptor Manhole STC 1500 – Located at 262 Starwood Lane
c) Water Quality Unit ADS 3620WQA (off-line) – Located at 1402 Carmelita Court
d) Water Quality Unit ADS 4840WQA00 (in-line) – Located on Elderberry Court adjacent to 2670 Wildberry Crescent
e) Stormwater Pond (dry, quantity only) – Located behind 13120 Elderberry Court
f) Stormwater Pond (wet, quality only) – Located in Lakewood Park (off Hayes Ave.)
g) Stormwater Pond (dry, quantity only) – Located in the northeast corner of Buster Reaume Park (off of Lanoue Street)
h) Stormwater Pond (dry, quantity only) – Located west of 1100 Highway No.3
i) Overland Grassed Swale & French Drain – Located behind 12127 Emma Maria Crescent

Detailed information on the storm sewer assets is maintained in the Town's Geographic Information Systems (GIS) system. Storms sewers are split into segments, manhole to manhole, with each segment assigned a unique GIS ID.

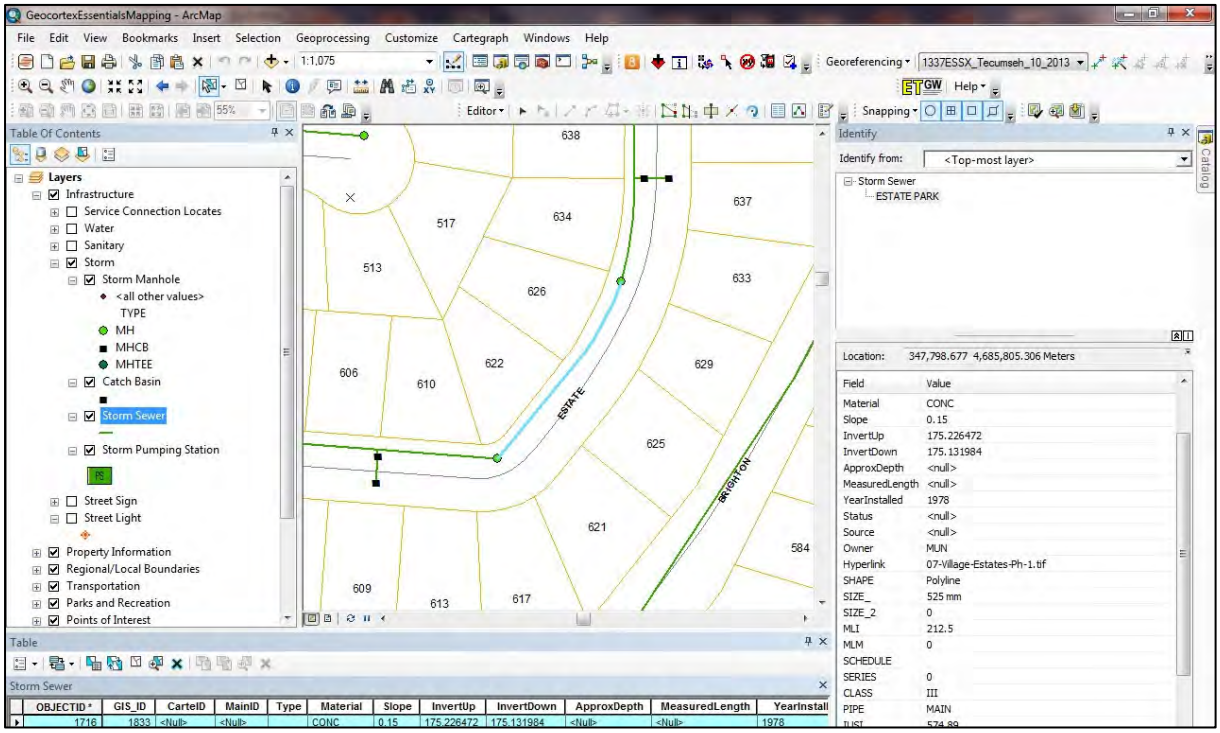


Figure 6-1: GIS screenshot of GIS ID # 1833 - Estate Park storm sewer segment

Please refer to Appendix M for a complete storm sewer inventory.

Valuation

An inventory and historical cost valuation of the storm sewer system was completed in 2009 in order to comply with the Public Sector Accounting Board's requirements for the reporting of tangible capital assets. Historical costs were based on deflated replacement costs at the time. The expected useful lives for accounting amortization purposes are as follows: storm sewers 65 years; pumping station structure 50 years; roof 20 years; mechanical/electrical 20 years; SCADA 10 years.

Detailed asset accounting data is maintained in CityWide software. Each asset found in CityWide can be cross-referenced to a GIS ID. The database is updated annually prior to financial statement preparation.

Storm sewer system asset accounting valuations as of the 2021 year end are as follows:

	Storm Sewers	Storm Facilities[1]	Total Storm
Historical Cost	$ 62,803,613	$ 15,837,698	$ 78,641,311
Accumulated Amortization	$ 25,394,690	$ 6,360,701	$ 31,755,391
Net Book Value	$ 37,408,923	$ 9,476,997	$ 46,885,920

[1] Includes storm pump stations, backup generators

Replacement costs were updated for the preparation of this Asset Management Plan. As shown in Appendix M, the total standalone replacement cost of storm sewers, manholes and storm services is $198,612,500. Cost savings could be incurred if storm sewer replacements were combined with road work, resulting in a reduced replacement cost of $176,425,400. Details on assumptions and unit costs can be found in Appendix M-1.

Total storm sewer replacement cost is $199 million!

Asset Age

Storm Sewers, Manholes, and Services:

The age of the storm sewer segments (sewers, manholes and services) can be found in the Town's GIS database.

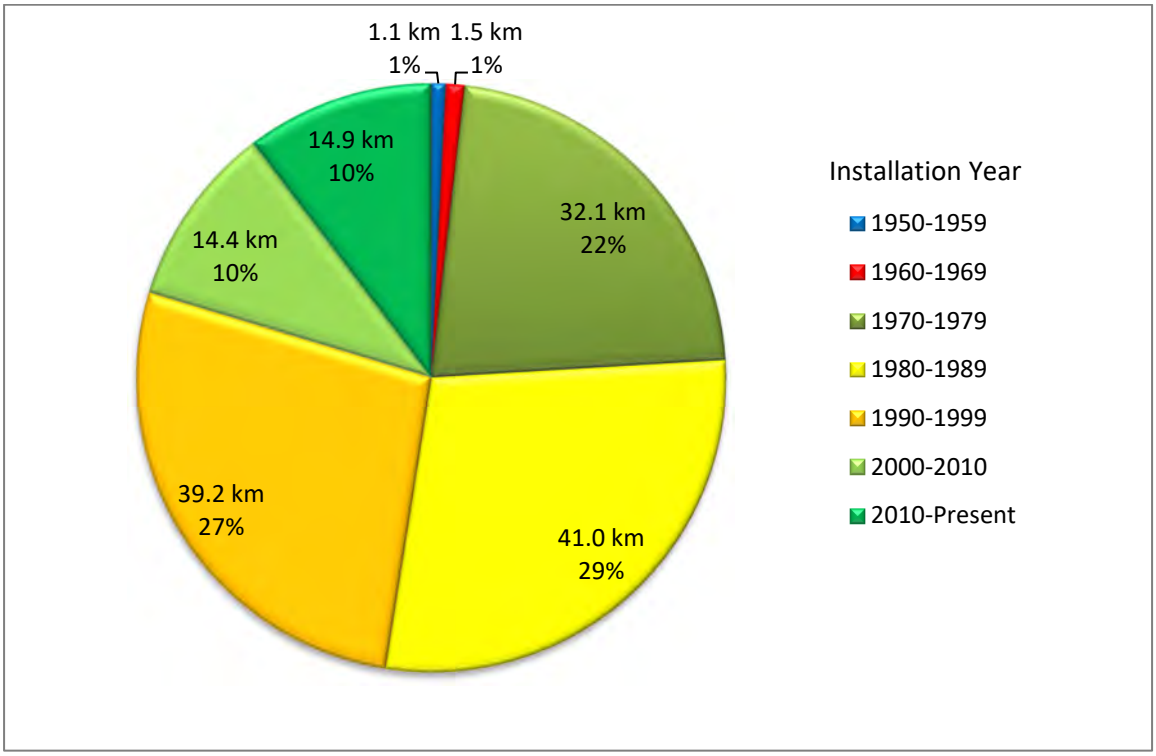


Figure 6-2: Storm Sewer installation year (as recorded in the GIS database)

From the above graph, it can be seen that only 2.6 km of the Town's storm sewers were installed in the 1950's and 1960's. Almost 1/4 of the storm sewers were installed in the 1970's. Relatively speaking that means that 1/4 of the Town storm piping system is between 43 and 52 years old. Traditionally, an expected lifespan of a storm sewer is anywhere from 50 -75 years depending on conditions. Conversely, this also highlights that 76% of the Town's storm sewer system is relatively 'new' with 47% of the system being installed since 1990.

The following graph shows the average age and remaining useful life by storm sewer material. Asbestos Cement (AC) storm sewers are the oldest with an average age of 55 years. Polyethylene (PE) and polyvinylchloride (PVC) storm sewers are the newest with 37 and 50 average years remaining respectively.

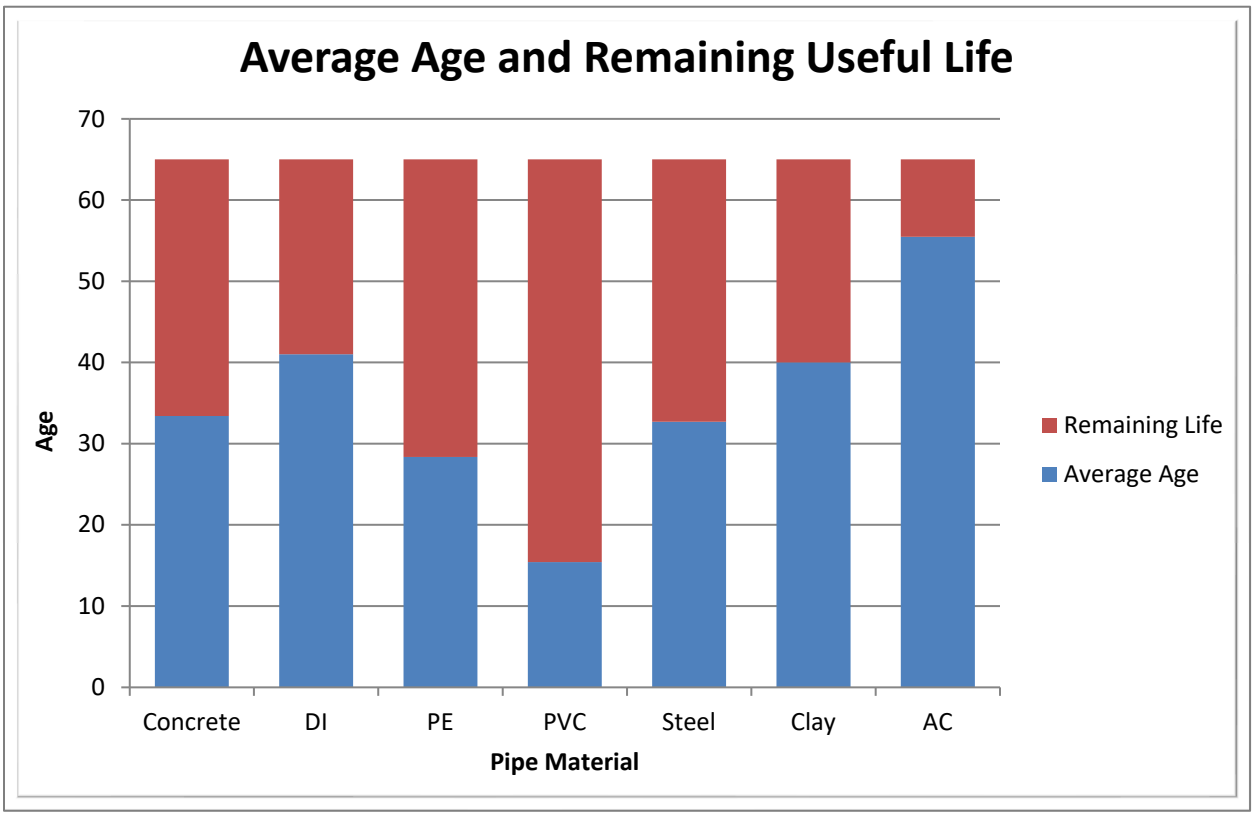


Figure 6-3: Average age by material type compared to remaining useful life

Storm Pumping Stations:

a) Lesperance Road Pumping Station – Originally installed in 1957; upgrades completed in 1976; expanded in 2002.
b) West St. Louis Pumping Station – Originally installed in 1991.
c) East St. Louis Pumping Station – Originally installed in 1980.
d) Manning Road Pumping Station – Reconstruction completed in 2015.
e) Scully Pumping Station – Originally installed in 1984.
f) St. Mark's Pumping Station – Originally installed in 1988.
g) Peter Cecile Pumping Station – Originally installed in 1974.
h) Brighton Road Pumping Station –reconstruction completed in 2010.

Backup power generators were installed for all storm pumping stations in 2014.

Stormwater Management Facilities:

a) Stormceptor Manhole STC 2000 – Installed in 1996 as part of the Westlake Residential Subdivision.

b) Stormceptor Manhole STC 1500 – Installed in 1995 as part of the Silverman Residential Subdivision.
c) Water Quality Unit ADS 3620WQA (off-line) – Installed in 2015 as part of the Arbour Grove Valente Townhomes Development.
d) Water Quality Unit ADS 4840WQA00 (in-line) – Installed in 2014 as part of the Strawberry Ridge Phase 4 Residential Development.
e) Stormwater Pond (quantity only) – Installed in 2014 as part of the Strawberry Ridge Phase 4 Residential Development.
f) Stormwater Pond (quality only) – Installed in 2015 as part of the Estates of Lakewood Park.
g) Stormwater Pond (dry, quantity only) – Installed in 1996 as part of the Greenhills Development.
h) Stormwater Pond (dry, quantity only) – Installed in 2000 as part of the Rosati – Blackacre Industrial Park Development.
i) Overland Grassed Swale & French Drain – Installed in 1997 as part of the Dimu Subdivision Phase 1 Residential Development.

Asset Condition

Storm Sewers:

Town staff have reviewed a representative amount of video collected on the storm sewer system and given it a Sewer Performance Grade (SPG) to assist in determining the condition of the sewers. The total length of storm sewer video the Town has is approximately 8.71 km. The Town has reviewed all of the video available. It consisted of concrete pipe installed in the 1970's through to PVC pipe and concrete pipe installed in the 1980's to present day. The video available is approximately 6.0% of the entire infrastructure network. Typically, the Town does not actively collect video inspections of storm sewer unless there is an operational issue to be addressed. The condition assessment of the storm sewers based on the review of these videos will be used to assist in the assessments over the entire collection system in order to arrive at an overall SPG ranking.

Tecumseh staff reviewed video data in order to assign grades to the sections of storm sewer within the Town. A representative sample, which is all the video available, was chosen with the results to be used to assist in evaluating the overall system.

The sewer condition classification was undertaken using the Sewer Performance Grade, or SPG method of classification. This method is based on the Water Resource Centre (WRC) pipe condition classification method. It provides ratings for the sewer sections ranging from a SPG 1 to a SPG 5.

Sewer Condition Assessment

SPG 1- No Defects
SPG 2- Minor Defects
SPG 3- Likely to Deteriorate
SPG 4- Likely to Collapse in Future
SPG 5- Collapse Imminent

Ratings for sewer sections are always based on the worst defect found in the section.

Overall, storm sewers installed since 1980 appear to have an SPG rating of 2 or 1 which is regarded as an above acceptable rating. The sewers installed in the 1970's had noticeable defects and an associated SPG rating of SPG 2 to SPG 3. Using the reviewed video data to arrive at an estimated cost of repair would not be a fair representation of the overall condition within the collection system. Operational observations can indicate that there are areas of the Town that have deficient or in some cases non-existent storm sewer systems. There are two older areas of the Town of Tecumseh that have a variety of materials that have been installed over the years to create some type of storm water collection system.

As for an overall rating of the storm collection system it would be Administration's assessment that the system is at or about an SPG 3. This rating is arrived mostly based on the observations of the Town's Public Works staff. As the older areas are addressed with rehabilitation efforts, the overall rating of the system will increase.

Storm Manholes:

The conditions of the existing manholes have not yet been reviewed as part of the Asset Management Plan. Typically, precast concrete manholes have a life expectancy that surpasses the life of the adjacent sewers and services. Leaks and failures observed in manholes are usually at the point of connections and are repaired concurrently with other trenchless repairs that are being completed on the sewer trunk and services.

Storm Services:

The conditions of the storm services were not reviewed as part of the Asset Management Plan. Typically, the services are not videoed unless they are part of the Town's Inflow and Infiltration (I&I) Program. The age, material and condition of the sewer trunk are key indicators that provide insight where potential issues may be.

Storm Sewer Catch Basins & Leads:

The conditions of the storm catch basins and leads were not reviewed as part of the Asset Management Plan. Typically, the conditions of the catch basins are not assessed as part of storm sewer or roads condition assessment. The catch basins and leads are

replaced as part of the road reconstruction works, and their associated costs have been incorporated into the Roads Section of the Asset Management Plan.

Storm Pumping Stations:

a) Lesperance Road Pumping Station – Originally installed in 1957; Upgrades completed in 1976; Expanded in 2002.
b) West St. Louis Pumping Station – Originally installed in 1991.
c) East St. Louis Pumping Station – Originally installed in 1980.
d) Manning Road Pumping Station – Reconstructed in 2015.
e) Scully Pumping Station – Originally installed in 1974.
f) St. Mark's Pumping Station – Originally installed in 1957.
g) Peter Cecile Pumping Station – Originally installed in 1974.
h) Brighton Road Pumping Station –Reconstructed in 2010.

In 2016, the Town conducted an assessment of the storm pumping stations to understand the condition and to effectively prioritize rehabilitation and replacement work in the future. The work conducted included a visual site inspection of all structures, identification of deficiencies, preparation of preliminary estimates, and identification of priority/suggested timing to address the noted deficiencies.

Rating methodologies were developed and applied to the conditions of the metering stations. The following tasks were completed in conducting the condition assessments:

- Creation of a catalogue of equipment, services and building components including mechanical, electrical, structural, and architectural.
- Assessment of each component for replacement cost and life expectancy.
- Identification of any violations to existing codes.
- Categorizing required repairs and maintenance needs based on urgency.

Each condition rating was assigned condition indicators to assist in the consistent evaluation of assets. The condition ratings of asset components were used in determining an overall condition index, indicating the general condition of the asset as a whole. The condition index was determined using a weighting of each asset component and associated condition rating.

Condition	Rating
Critical	5
Poor	4
Fair	3
Good	2
Very Good	1

Table 6-1: Storm Sewer Condition Ratings

Determining a score for condition alone does not provide sufficient information to prioritize improvements. A poor condition rating on a less essential asset will not equate to an essential asset in need of imminent rehabilitation.

The risk drivers that affect the stormwater infrastructure include the percentage of system impacted, asset failure, environmental or social impacts, and population impacted. Each factor has been attributed a range of values to help describe the anticipated impacts and severity of each of the risk factors.

A composite risk value was determined using a formula derived to reflect the specific asset risks. Development of the formula considered the particular assets being evaluated, and each risk factor's interconnection and influence on the overall system.

Prioritized recommendations arising out of the facilities assessment are as follows:

Station Name	Risk Rating	Condition Rating	Combined Rating	Immediate Costs	Longer Term Costs	Totals
Lesperance Road PS	7	1.9	8.9	$80,200	$444,000	$524,200
West St. Louis PS	8	1.8	9.8	$50,950	$28,000	$78,950
(East) St. Louis PS	5	1.8	6.8	$65,000	$39,500	$104,500
Manning Road PS	10	1.0	11.0	$0	$0	$0
Scully (Edgewater) PS	4	1.8	5.8	$12,000	$6,500	$18,500
St. Mark's PS	5	2.2	7.2	$525,000	$0	$525,000
Peter Cecile (Kensington) PS	3	1.7	4.7	$13,000	$86,500	$99,500
Brighton Road PS	4	1.0	5.0	$0	$0	$0
Totals for Storm Pumping Stations				**$746,150**	**$604,500**	**$1,350,650**

Table 6-2: Storm Pumping Stations Prioritized Recommendations

Following the assessment the Town was successful in receiving funding for the construction of a consolidated Scully (Edgewater) and St. Marks pumping stations in addition to the reconstruction of the PJ Cecile (Kensington) pumping stations. Long-term costs have been affected and are included within the 10 year plan for the replacement of the pumping stations.

Asset Management Policies

The Storm Sewer Collection System Condition Assessment Policy discusses the review of camera inspection videos in order to assign an SPG. The Policy further designates an acceptable timeframe for the review of the sewer network. Refer to Appendix N for a copy of the Storm Sewer Collection System Condition Assessment Policy.

The Data Verification Policy provides a guideline for the review of data that is collected or provided to the Town. Refer to Appendix E for a copy of the Data Verification Policy.

6.2 Desired Levels of Service

With respect to the collection system and the current state of all pumping stations, it would be conservatively described as acceptable. Currently, two PS are considered 'new' or reconstructed with the replacement and consolidation of two as well as the replacement of one additional PS scheduled in the coming years. The remaining three other stations are approximately between 25 and 50 years old. Continued investment and vigorous Preventative Maintenance (PM) will keep these stations running for their useful lifespans.

With respect to the mainline collection system the overall rating is appropriate for its age. An overall rating of SPG 3 is indicative of needed investment. Continued investment in mainline sewer repairs will continue to keep the collection system at an acceptable range. The areas that are below acceptable range need to be identified and appropriately scheduled for major reconstruction or rehabilitation, whichever fits the program. Mainline rehabilitation programs realized from this Asset Management Plan need to be established and implemented for a period of time before any significant gains can be fully realized system wide.

The Town of Tecumseh will need to establish aggressive storm sewer rehabilitation strategies over the next coming years in order to strive to achieve higher than the current rating conditions. It is Administration's intent to ensure that the Town continue to maintain acceptable levels of service (LOS) and this LOS can be qualified as;

- Yearly tenders to flush and camera inspect storm sewers. Goal of inspecting all sewers once within a 20 year time frame
- All SPG 5 defects scheduled for some kind of remedial attention within 6 months
- All SPG 4 defects scheduled to receive remedial attention within 2 years
- An overall average SPG 3 for the Town's collection system, based on current assessments
- Yearly review of all facility assets with annual inspections and reports
- Once every 5 years a full scope condition assessment is performed and remedial works planned and carried out with respect to any urgent needs identified.

Storm Sewer Assessment: The storm sewer system continues to be monitored and assessed to determine opportunities for improvements to the system that could increase the level of service and reduce the risk of basement flooding. The collection system is maintained by Public Works staff by responding to public complaints.

6.3 Current Levels of Service

In addition to the Town's desired level of service, O.Reg 588/17 requires that Municipalities provide levels of service related to specific qualitative descriptions and technical metrics, described as Community Levels of Service and Technical Levels of Service, related to each core asset. For Storm assets, this includes a measurement of the percentage of properties in

the municipality resilient to a 100-year storm and the percentage of the municipal stormwater management system resilient to a 5-year storm.

Community Levels of Service

The Town provides the Community Levels of Service (CLOS) summary as specified in O.Reg 588/17 in Table 6-3. This table will be further expanded in the future to provide a better quantified CLOS.

Service Attribute	Community Levels of Service
Scope	The Town of Tecumseh owns and operates approximately 144 km of storm sewer which generally service the urban areas of Town such as North Tecumseh, Tecumseh Hamlet, Oldcastle Hamlet, and St. Clair Beach. The system consists of roadside drains, municipal drains, swales, and overland flow routes which direct stormwater to Lake St. Clair and the Detroit River. The Town owns and operates eight (8) pumping stations and 8 stormwater management facilities which address water quality, water quantity, or both quality and quantity. The Town is currently in the process of an aggressive timeline to address both quantity and quality of water within the Town's stormwater system to protect residents and waterways.

Table 6-3: Community Levels of Service for Stormwater (Qualitative Description)

Technical Levels of Service

The Town provides the Technical Levels of Service (TLOS) summary as specified in O. Reg 588/17 in Table 6-4. These technical metrics will be expanded as part of future updates to the AMP.

Service Attribute	Performance Measure	Measure Type	Current Performance	Target
Scope	Percentage of properties in municipality resilient to a 100-year storm.	O.Reg	14%	Target Not Set
	Percentage of the municipal stormwater management system resilient to a 5-year storm.	O.Reg	Current Performance Not Yet Available	Target Not Set

Table 6-4: Technical Levels of Service for Stormwater (Technical Metrics)

6.4 Lifecycle Activities

Storm assets include a range of different components including; local sewers; trunk sewers; access manholes; private drain connections; pumping stations, oil grit separators, dry ponds, and wet ponds. Each asset is managed in a slightly different manner depending on the material,

purpose, and lifecycle. The four categories of lifecycle activities to maintaining levels of service of sanitary asset are:

- Routine Maintenance
- Renewal/Rehabilitation
- Replacement
- Disposal

Maintenance

Maintenance of storm assets, further outlined in the Asset Management Strategy section, are completed by Town staff and competent contractors as required. These activities are completed anywhere from daily, weekly, or as needed based on operations of the stormwater system.

The risks associated with maintenance include service disruption and asset failure should maintenance not be identified, completed, or is completed at the incorrect time. Asset failure may result in service disruptions which decrease the level of service to residents and increases operational costs.

Renewal/Rehabilitation

Renewal and Rehabilitation activities, further outlined in the Asset Management Strategy section, are key to ensuring that storm assets operate appropriately and do not experience failures.

Similar to that of Maintenance, the risks associated with renewal and rehabilitation are increased costs, asset failure, and decreased levels of service should renewal and rehabilitation not be identified, completed, or completed at the incorrect time. Not conducting necessary renewal work may lead to storm assets requiring replacements, which drastically increase costs and can cause unnecessary disruption.

In addition to the above, should the level of protection not be adequate for the design storm of the asset, this may result in increased cost for restoration work should the system not be able to perform as designed.

Replacement

Replacement of storm assets, further outlined in the Asset Management Strategy section, is the most costly lifecycle activity to maintain sufficient stormwater services and the level of service to residents. Replacement is generally identified through a review of asset life, condition, performance, and failures. The Town's Stormwater Master Plan's provide recommendations on replacement of assets based on increasing their level of service to provide a more resilient storm system.

The risks associated with replacement include increased maintenance costs, and decreased level of service should a replacement not be identified, completed, or completed at the incorrect time. There exists a risk of increased cost should replacement be conducted earlier than required.

Disposal

Disposal of storm assets, further outlined in the Asset Management Strategy section, are generally completed during new installation of storm sewer main or pumping stations and their respective components.

The risks associated with disposal are quite low compared to other lifecycle activities as the Town does not receive much benefit or risk from completing or not completing disposal. Risks associated with disposal are increased construction costs for infrastructure should abandoned sewers not be identified in Town records or out in the field. The Town has an extensive GIS system and these risks are low.

Population Forecasts and Growth Assumptions

Population Forecasts

As discussed in section 2 of this plan, the 20-year population projection as included in the Town's Official Plan, is an increase of 6,880 people for a total population of 30,330 by the year 2040.

Storm Water Master Plans

The Town has undertaken two Storm Drainage Master Plans in recent years to analyse the Town's existing stormwater system and develop plans to combat localized flooding experienced with the increased amount of heavy rain events.

The first Master plan, The Tecumseh Storm Water Master Plan was completed for in the north end of the Town within the Tecumseh Hamlet, St. Clair Beach, and Tecumseh urban areas. The plan was adopted by Council in 2019 and includes recommendations to increase the level of service of the stormwater system and its resiliency for increased rain events.

The Town will continue to incorporate the findings and recommendations in these plans in future projects in addition to standalone projects to increase the level of service delivered to residents. Many of these projects are included within the 10 year plan in Appendix O.

The second Master Plan, The Oldcastle Storm Water Master Plan, was completed in 2022 for the Oldcastle Hamlet area within the south westerly region of the Town of Tecumseh. The plan was adopted by Council in 2022 with extensive modeling and multiple recommendation scenarios to improve the areas stormwater management system.

Although the Oldcastle Storm Water Master Plan was adopted just this year, the Town will be incorporating the findings and approved recommendations in future projects as well as forecasts in future Asset Management Plan updates.

Growth

The Town of Tecumseh is currently in the process of completing a number of studies pertaining to stormwater management and how it directly relates to future development and growth within the Town.

- The Upper Little River Master Plan, Environmental Assessment is currently ongoing and is being completed in cooperation with the City of Windsor and the Essex Region Conservation Authority. The Upper Littler River Creek watershed is located in the southeast part of the City of Windsor and the west part of the Town of Tecumseh and is approximately 45 km^2. The study commenced to document existing conditions and to recommend stormwater management measures to protect existing resources as development continues within the upper reaches of the Little River watershed. It is anticipated this study will be completed in 2022.

- A Functional Design Study for the Manning Road Secondary Plan Area is being updated in 2022 and includes the preliminary design of the storm sewers and a regional stormwater management facility within the study area. Development is anticipated to progress in a number of phases at the discretion and cost of the developers.

- A Municipal Class Environmental Assessment and a Functional Design Study for the Tecumseh Hamlet Secondary Plan Area is currently being completed, and will be comprised of a preliminary design for the storm sewers and four regional stormwater management facilities. It is anticipated this study will be completed in early 2023.

Development

Assets and Construction Costs

New storm assets will be constructed as part of proposed residential and industrial developments, which will eventually be assumed, owned, and maintained by the Town. As these assets are constructed, they will be added to the Town's list of assets and included in the future versions of the Asset Management Plan.

There are a number of current proposals, along with future opportunities for industrial development within the Oldcastle Hamlet Area. These assets, which can include sewers, pumping stations, and stormwater management facilities will be installed at the cost of the developer, which will, in turn, be assumed by the Town at the end of the maintenance period.

Stormwater System Capacity

The Town currently utilizes the two master plans to ensure the capacity of the existing stormwater system and future upgrades can handle stormwater and overland flow from development. The Town requires that industrial, commercial, and large residential developments complete stormwater management reports which abide by design considerations in these master plans and to limit release rate, contain stormwater from large rain events and treat stormwater before releasing it into the municipal stormwater systems.

By regulating and reviewing developments with stormwater in mind, the Town is able to avoid increased costs to deal with increased capacity from development.

Developments which fall outside of the area encompassed in the stormwater master plans will fall the Windsor/Essex Region Stormwater Management Standards Manual completed by the Essex Region Conservation Authority and adopted by the Town in 2019 with exception of municipal drains. Developments will be required to meet pre-development conditions of the subject properties.

6.5 Asset Management Strategy

6.5.1 Asset Management Programs

The following provides an overview of the types of Asset Management programs conducted by the Town.

Maintenance

These maintenance activities will be undertaken by Public Works forces or competent contractors under the guidance of Public Works and are intended to find any deficiencies and or issues at the onset in order to address them in an adequate timeframe and also limit the extent of remedial repairs.

MAINTENANCE

Performance	Program Descriptions	Frequency	Measures
Storm Sewer Main Flushing	Mainline sewers flushed on an as needed basis through the course of the year. Manholes are inspected and sewer levels gauged in areas of known problems during periods of high flows. Sewers are flushed and cleared of all possible buildup. Annual tender with a goal of flushing every sewer in the Town in a twenty year period is a goal to work towards. Budgetary constraints will be an issue.	As Needed	Less backups and claims
Video Inspection	Locations of suspected problems are investigated and video inspected on an as needed basis. All videos are loaded and filed in the GIS database and are accessed for review periodically. Locations identified for repair are accomplished through trenchless technologies (grouting, lining, sleeve).	As needed	Maximization of maintenance efforts
Catch Basins	The Town annually strives to flush catch basins in high risk areas prone to flooding as well as in areas of high traffic flow. PW strives to establish a catch basin flushing routine in order to flush and inspect every catch basin in the Town within a 5 year period. During road patrols, the PW patroller identifies catch basins that are in need of rehabilitation and documents them for action. PW staff strive to repair this list within a year of identification. The catch basin is inspected to determine if repair or replacement is the correct rehabilitative measure. This process is accelerated for roads that are being considered for pavement rehabilitation or slowed down for roads being targeted for full rehabilitative measures.	Annually/ coordinated with road works	Maximization of storm system, re-establish sumps, less debris into sewer
Service Call Outs	Town staff is available to respond and attend to customer requests 24/7 on call coverage.	24 hrs/7 days	Number of calls
Monitoring	Public Works currently maintains SCADA on two of the eight storm pumping stations within the Town, Brighton Road Storm PS and the Manning Road Storm PS. This is accessed at the Town offices for review of the daily data to observe and evaluate any maintenance possibilities (i.e. high or low flows). These records are also used to gauge success of any repairs completed that can be possibly measured.	Daily	Access to historical trends for analysis
Storm Sewer Pump Stations	The Town actively maintains eight (8) storm water PS within the Town. Public Works maintain all the storm PS with weekly inspections for operation defects or deficiencies. These deficiencies are addressed immediately unless they are of a major nature (i.e. main pump or screw replacement) which would require funding approval from Council. These stations undergo annual ESA inspections as well as routinely are adjusted to allow all pumps to be exercised to maximize lifespan of the infrastructure. These eight storm pump stations have had back up power generators installed to facilitate operation during periods of hydro disruption. Since the installation of these generators , staff attend the stations at least monthly to exercise and operate the stand by generators. Annually, the stations with back up power generators receive an entire stand by generator inspection which includes maintenance on the generator, motor and all electrical switches and operators. The units undergo an entire load test to ensure they will operate as intended when needed. This is currently undertaken with the eight storm pump stations.	Weekly	Fewer breakdowns and unexpected costs

MAINTENANCE (cont'd)

Performance	Program Descriptions	Frequency	Measures
PDC (Private Drain Connections) Inspections	The Town has been actively camera inspecting PDCs on an as requested basis. If any issues are found, they are directed to be repaired in one of two ways. If it is on the private side, the homeowner is requested to repair it. If it is in the ROW, it is considered for replacement.	As Requested	Fewer unexpected future costs due to timely repair
Ditch Cleaning	Public Works receives ditch cleaning requests and acts on them as appropriate. If it is a roadside drain, it is reviewed and scheduled for maintenance if necessary. If it is a Municipal Drain, it is directed to our Drainage Superintendent. Public Works strives to maintain these ditches within a timely fashion but does not have a set guideline for a repair timeframe. It is really addressed on a priority basis as deemed in the field. Work is generally accomplished by Town Staff.	As Identified	Less flooding complaints, proper storm water flow
Culverts	Generally small culverts, such as driveway culverts, are maintained through flushing by PW staff. Again these are serviced on primarily an as requested basis. A formalized flushing program is something that PW strives to establish but currently does not have. If the culvert requires repair or replacement, PW request the owners of the culvert to do so. It is the Town's policy that ownership of the culvert lies with the property that the culvert provides access to.	As identified	Less flooding complaints, proper storm water flow

Table 6-5: Maintenance Performance

Renewal/Rehabilitation

This strategy is intended to address issues of a significant proportion in order to extend the useful lifespan of the asset before its condition deteriorates to a degree such that the asset must be replaced. This strategy is used for storm sewers quite extensively due to the large costs and significant disruptions associated with a total replacement. Work such as this could be employed more than once during an asset's lifespan and extend it past the estimated lifespan if the work is performed within a reasonable timeframe.

RENEWAL/REHABILITATION

Performance	Program Descriptions	Frequency	Measures
Storm Sewer Main	When identified through regular maintenance, mainline sewers may warrant some rehabilitative measures. These are usually in the form of grouting of joints.	As Identified	Extend useful life, limit possibilities of sinkholes above pipe and costly repair work
Video Inspection	Locations of suspected problems are investigated and video inspected on an as needed basis. All videos are loaded and filed in the GIS database and are accessed for review periodically.	As Identified	Upgrade of Sewer condition assesment rating
Catch Basins	Catch basins identified as requiring rehabiltative work through maintenance and inspection. Work usually consists of rebuilding the top of the manhole and sealing incoming and outgoing pipes. Sometimes lids are replaced due to damage or deterioration.	As Identified	Reset useful life

RENEWAL/REHABILITATION (cont'd)

Performance	Program Descriptions	Frequency	Measures
Storm Sewer Pump Stations	The Town actively maintains eight (8) storm water PS within the Town. Public Works maintain all the storm PS with weekly inspections for operation defects or deficiencies. These deficiencies are addressed immediately unless they are of a major nature (i.e. main pump or screw replacement) which would entail Council decisions. When rehabilitative work is undertaken it is usually considered with other work in the area first in order to capitalize on Capital Project funding. Typically renewal work consists of work on the pumps and motors. PW will start to institute electrical rehab as part of the program.	Project Driven	Extended useful life; reduce O&M costs
PDC (Private Drain Connections) Inspections	The Town has been actively camera inspecting PDCs on an as requested basis. If any issues are found, they are directed to be repaired in one of two ways. If it is on the private side, the homeowner is requested to repair it. If it is in the ROW, it is considered for replacement.	As Identified	Reduced claims for sewage backup
Ditch Cleaning	Public Works receives ditch cleaning requests and acts on them as appropriate. Typical renewal or rehab work involves re-establishing grades and slopes of the ditch. Work is generally accomplished by Town Staff.	As requested/ identified	Reduced flooding complaints, improved storm water flow
Culverts	Generally small culverts, such as driveway culverts, are maintained through flushing by PW staff. If the culvert requires repair or replacement, PW request the owners of the culvert to do so. It is the Town's policy that ownership of the culvert lies with the property that the culvert provides access to. If the culvert is a roadside drain, then rehab methods are explored. PW has used CIPP relining methods in order to repair aged culverts.	As Identified	Reset useful life

Table 6-6: Maintenance Performance

Replacement

This strategy is employed when the asset has reached its useful lifespan and the costs associated with renewal/ rehabilitation will approach the cost to fully replace. This strategy is usually reserved for assets that have had very little maintenance work performed during its lifespan and remedial methods will not be adequate.

REPLACEMENT

Performance	Program Descriptions	Frequency	Measures
Storm Sewer Main	Mainline sewers are typically considered for replacement as part of larger capital projects. These replacements usually are required in order for an increase in flow or for new development.	As Identified	Increased storm capacity, fewer flooding compliants
Video Inspection	Locations of suspected problems are investigated and video inspected on an as needed basis.	As Identified	Upgrade of sewer condition assessment rating
Catch Basins	Public Works will replace catch basins that are constructed of CSP when the useful life is reached. CSP is replaced with concrete catchbasins and cast iron lids.	As Identified/ required	New useful life

REPLACEMENT (cont'd)

Performance	Program Descriptions	Frequency	Measures
Storm Sewer Pump Stations	The Town actively maintains eight (8) storm water PS within the Town. When capital funding opportunities arise, the replacement of aging stations is explored. The replacement of pump stations has also been identified in the Town's Storm Drainage Master Plan (2019) where five of the eight stations were identified for rehabilitation or replacement to increase the level of service to the overall stormwater system.	As Identified/ funding available	Increased pumping capacity; development potential; decreased flooding
PDC (Private Drain Connections) Inspections	The Town has been actively camera inspecting PDCs on an as requested basis. If any issues are found, they are directed to be repaired in one of two ways. If it is on the private side, the homeowner is requested to repair it. If it is in the municipal right-of-way, the Town will consider it for replacement.	As Identified	Fewer flooding claims
Culverts	PW will consider replacement for culverts which belong to the Town. Typically this is explored prior to any major road restoration or reconstruction, and the opportunity to complete the work together is reviewed. If a culvert is found to be beyond restoration or too complex, replacement will be considered.	As Identified	Better storm water management (flow)

Table 6-7: Maintenance Performance

Disposal

This strategy is employed typically as part of larger infrastructure projects. The Town of Tecumseh achieves little to no value for disposal of any storm sewer collection system piping. There can be costs associated with disposal of any facility assets associated with storm sewer pumping stations although they are typically limited to residual scrap value.

DISPOSAL

Performance	Program Descriptions	Frequency	Measures
Storm Sewer Main	Mainline storm sewer is only ever disposed if it is totally structurally deficient. It may be removed and disposed due to inadequate size, but typically this is not the case.	As required	Nil
Storm Sewer Pump Stations	Typically as PW has replaced PS, the salvaged equipment is past its useful lifespan and only retains scrap value. In the future, as stations are disposed of during replacement, the gensets will be recovered and reused.	As Required	Nil

Table 6-8: Maintenance Performance

6.5.2 10 Year Plan

A detailed 10 Year Plan was generated for the storm sewer system includes both rehabilitation and replacement schedules. Please refer to Appendix O for detail by asset ID.

Rehabilitation

The Town would like to implement a work plan on the storm sewers similar to what was initiated in 2011 to address areas within the Town's sanitary sewer system that are subject to high inflow and infiltration (I & I) over the next 10 years. The first phase of the work plan includes flushing

of sewers, video inspection, and sewer repairs to alleviate the inflow and infiltration occurring within the sewer system.

The Town has set the following targets to maintain the storm sewer system at the desired level of service:

- Yearly tenders to flush and camera inspect storm sewers
- All SPG 5 defects scheduled for some kind of remedial attention within 6 months
- All SPG 4 defects scheduled to receive remedial attention within 2 years
- An overall average SPG 3 for the Town's collection system, based on current assessments
- Yearly review of all facility assets with annual inspections and reports
- Once every 5 years a full scope condition assessment is performed and remedial works planned and carried out with respect to any urgent needs identified.

Under this plan, all of the storm sewers will be flushed, video inspected, and repaired in keeping with the Town's desired level of service. Costs were derived from recent tenders received for similar works as part of the current sanitary sewer I & I program.

Traditionally, approximately $250,000 has been budgeted for the sanitary sewer I & I program. The Town would like to implement a similar program for the storm sewers. Works were planned each year based on the age of the asset, type of material, and location. The works for the storm sewers coincide with works to be performed on the sanitary sewers in an attempt to reduce costs and address the most critical assets. The planned works over the 10 year work plan have an average cost of $360,000 each year.

7. Water Distribution System

7.1 State of the Local Infrastructure

Inventory

Under the terms and conditions of the 2004 Water Agreement executed among the Windsor Utilities Commission (WUC), City of Windsor and Town of Tecumseh, Tecumseh water is currently supplied by the Windsor Water System. The Town is responsible for its own distribution system within the boundaries of Tecumseh and is responsible for any new storage works that may be required to supply its flow of water. Storage for equalization and peak hour flow of water for Tecumseh is the responsibility of the WUC.

Watermains:

The Town owns approximately 220 km of watermain, varying in size from 50mm to 600mm diameter. The pipe materials consist of Cast Iron (CI), Ductile Iron (DI), Concrete, Polyethylene (PE), and Polyvinylchloride (PVC).

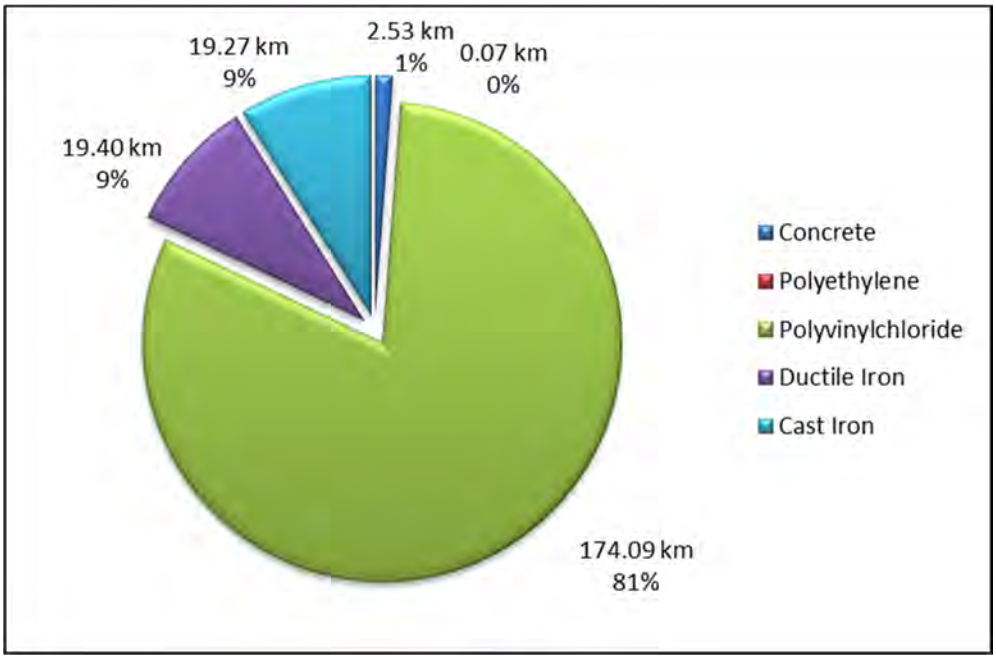


Figure 7-1: Watermain inventory by material type

As shown above, the majority of the Town's watermain inventory consists of PVC pipes, which are expected to outlast cast iron and ductile iron watermains. PVC has a longer life expectancy than ductile or cast iron because it does not break down in soil conditions or through electrolysis. With PVC, there is no deposit build up in the watermain which improves water quality and flow.

Water Services:

There are a total of 9,065 water services equating to an approximate length of 90 km from the trunk watermain to the property line (for which the Town is responsible for). These services range in size from 19mm to 150mm diameter with service materials generally consisting of copper or polyethylene (PE). There are a small number of lead services which are connected to cast iron mains.

Water Meters:

Water meters are an important component of the Town's water distribution system. Every residential, industrial, commercial and institutional customer is equipped with a water meter to ensure that each individual customer is being billed for only the water consumed. The Town owns approximately 9065 water meters of varying sizes.

Metering Stations:

There are a total of eleven metering stations (boundary meters) which are monitored using SCADA, measuring flow, volume and pressure. Locations are as follows:

a) Dillon Drive – between the intersections Rendezvous Drive and Gauthier Drive
b) McNorton Street – west of the St. Thomas intersection
c) Tecumseh Road – between the intersection of Southfield Drive and Banwell Road
d) County Road 22 – located on Mulberry Drive between the intersection of Arpino Avenue and Southfield Drive, north of County Road 22
e) County Road 42 – on the south side of County Road 42, east of the Concession 11 intersection
f) Baseline Road – on the north side of Baseline Road, between the intersection of Concession 10 and Concession 11.
g) 8th Concession Road – east of 8th Concession Road, south of Highway 401
h) County Road 46 – on the south side of County Road 46, south of the Highway 401 eastbound on and off ramps
i) Walker Road – west side of Walker Road, south of the Highway 401 overpass
j) North Talbot Road – north side of North Talbot Road, west of the Dumouchelle Street intersection
k) Howard Ave. – located on Howard Avenue, east of Howard Road, south of Highway 401

Storage Facility:

The Town owns and operates one elevated storage facility (water tower) with a capacity of 4,540 m^3.

Service Areas and Distribution System Components

The north Tecumseh water service area (north of Highway 401) includes the urban settlement areas of Tecumseh, St. Clair Beach and Tecumseh Hamlet, and rural areas north of Highway 401; and is supplied from the Windsor Water System through metering facilities at the Town boundary on Dillon Drive, McNorton Street, Tecumseh Road, County Road 22, County Road 42 and, in the future, on Intersection Road.

The south Tecumseh water service area (south of Highway 401) includes urban settlement areas of Oldcastle Hamlet, and Maidstone Hamlet, and rural areas south of Highway 401; and is supplied from the Windsor Water System through existing supply connections at the Town boundary on Baseline Road, and at the Town boundary in Oldcastle Hamlet on the 8th Concession Road, County Road 46, Walker Road, North Talbot Road and Talbot Road (Highway 3).

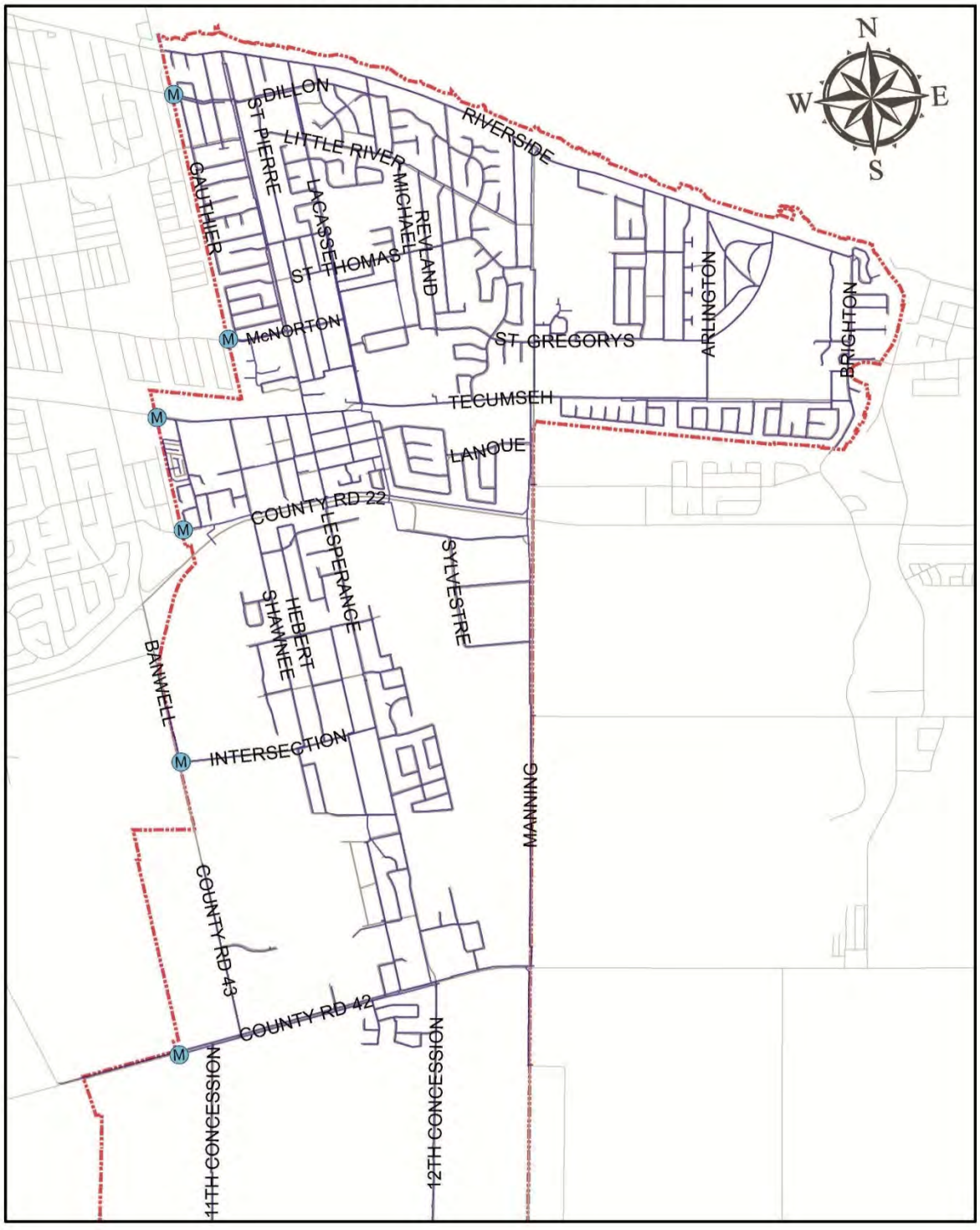
North Tecumseh Water Service Area

The distribution system in the north Tecumseh water service area is operated by the Town of Tecumseh and consists of approximately 137.3 km of watermains ranging in size from 50 mm (2") to 600 mm (24") in diameter as detailed in Table 7-1. The north service area boundary is identified on Map 7-1.

Pipe Size (mm)	Watermain Length (km)		
	Tecumseh North Settlement Area	Rural Area	Total
<100	1.1	0.5	1.6
150	71.6	1.3	72.9
200	26.7	2.9	29.6
250	12.0	-	12.0
300	10.0	-	10.0
400	8.8	-	8.8
600	2.4	-	2.4
Total	**132.6**	**4.7**	**137.3**

Table 7-1: Distribution System in North Tecumseh Water Service Area

North Tecumseh Water Service Area



Map 7-1: North Service Area Boundary

The north distribution system is currently supplied from the Windsor Water System through the following metering connections:

- 400 mm diameter feedermain on Dillon Drive
- 300 mm diameter feedermain on McNorton Street
- 400 mm diameter feedermain on Tecumseh Road
- 600 mm diameter feedermain on County Road 22
- 600 mm diameter feedermain on County Road 42
- (future) 600 mm diameter feedermain on Intersection Road

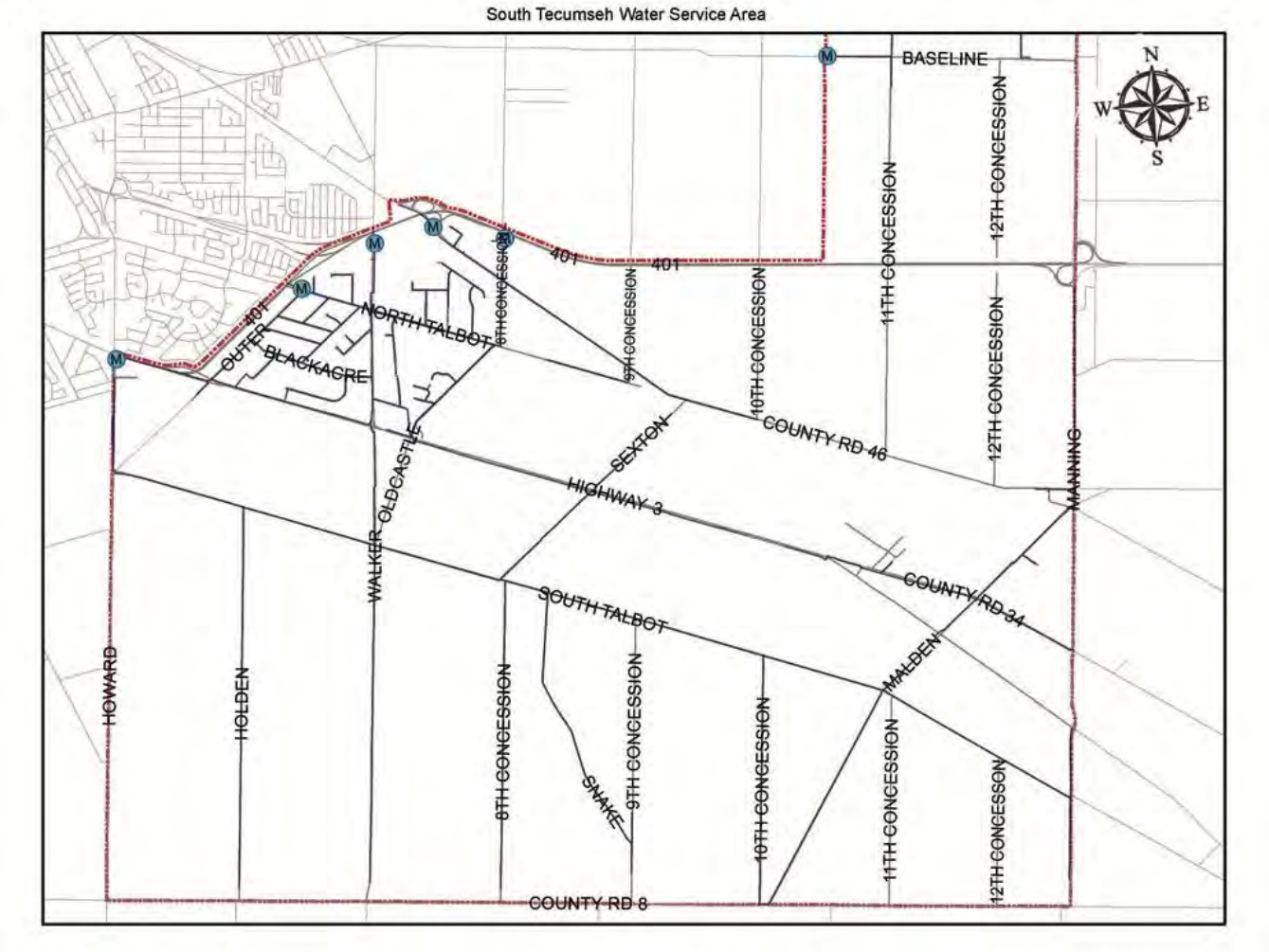
The feedermains on Dillon Drive, McNorton Street and Tecumseh Road extend from the Town boundary through the centre of Tecumseh (Planning Area) to the elevated water tank on Tecumseh Road, and are interconnected through a new 300 mm feedermain on Lesperance Road and the existing 400 mm trunk watermain on Lacasse Boulevard. The 600 mm diameter feedermain on County Road 22 extends from the Town boundary to Manning Road (County Road 19) and is connected to the 400 mm diameter feedermain on Tecumseh Road. The 600 mm diameter feedermain on County Road 42 extends from the Town Boundary to Lesperance Road and is connected to the 300 mm diameter distribution mains on St. Alphonse Avenue and on Lesperance Road.

South Tecumseh Water Service Area

The distribution system in the South Tecumseh water service area is operated by the Town of Tecumseh and consists of approximately 83.2 km of watermains ranging in size from 100 mm (4") to 600 mm (24") in diameter as detailed in Table 7-2. The south service area boundary is identified on the Map 7-2.

Pipe Size (mm)	Watermain Length (km)			
	Oldcastle Hamlet Settlement Area	Maidstone Hamlet Settlement Area	Rural Areas	Total
<100	-	0.3	0.7	1.0
150	2.4	0.2	11.6	14.2
200	19.2	2.8	23.4	45.4
250	2.3	-	2.7	5
300	4.6	1.3	5.1	11.0
400	4.7	-	-	4.7
600	1.9	-	-	1.9
Total	**35.1**	**4.6**	**43.5**	**83.2**

Table 7-2: Distribution System in South Tecumseh Water Service Area



Map 7-2: South Service Area Boundary

The south distribution system is currently supplied from the Windsor Water System through the following connections:

- 200 mm diameter feedermain on Baseline Road
- 200 mm diameter feedermain on 8th Concession Road
- 600 mm diameter feedermain on County Road 46
- 300 mm diameter feedermain on Walker Road
- 300 mm diameter feedermain on North Talbot Road
- 200 mm diameter feedermain on Talbot Road.

The feedermains on 8th Concession Road and County Road 46 supply the north east end of Oldcastle Hamlet. The 300 mm diameter feedermain on Walker Road and North Talbot Street connect to the 300 mm diameter trunk watermain on Talbot Road (Highway 3) which supplies Oldcastle Hamlet, the rural areas south of Highway 401, and Maidstone Hamlet.

Consolidated Water Distribution System

The existing water distribution system will be operated as a single distribution system with connections through the Windsor Supply System. In the future, the Town intends to extend trunk watermains from County Road 42 to connect to the south service area to improve system performance.

Please refer to Appendix P for a watermain inventory.

Valuation

An inventory and historical cost valuation of watermains was completed in 2009 in order to comply with the Public Sector Accounting Board's requirements for the reporting of tangible capital assets. Historical costs were based on deflated replacement costs at the time. The expected useful life for accounting amortization purposes was assumed to be 60 years for ductile and cast iron pipes and 80 years for concrete and PVC mains.

Detailed asset accounting data is maintained in CityWide software. Although CityWide assigns its own unique identifier, each asset is cross-referenced to a GIS ID. The database is updated annually for capital works prior to financial statement preparation.

Water infrastructure asset accounting valuations as of the 2021 year end are as follows:

	Watermains	Metering Stations	Water Tower	Water Meters	Total Water
Historical Cost	$ 53,869,992	$ 2,092,726	$ 1,753,666	$ 2,123,142	$ 59,839,526
Accum. Amortization	$ 17,067,698	$ 883,010	$ 788,603	$ 957,707	$ 19,697,018
Net Book Value	$ 36,802,294	$ 1,209,716	$ 965,063	$ 1,165,435	$ 40,142,508

Replacement costs were updated for the preparation of this Asset Management Plan. As shown in Appendix P, the total standalone replacement cost of the watermain network is $152,757,200. Cost savings could be incurred if watermain replacements were combined with road work; resulting in a reduced replacement cost of $128,772,600. Details on assumptions and unit costs can be found in Appendix P-1.

Total watermain replacement cost is $153 million!

Asset Age

As shown in the following graph, GIS records indicate that 73% of the Town's watermains are less than 40 years old, with 20% under 20 years old.

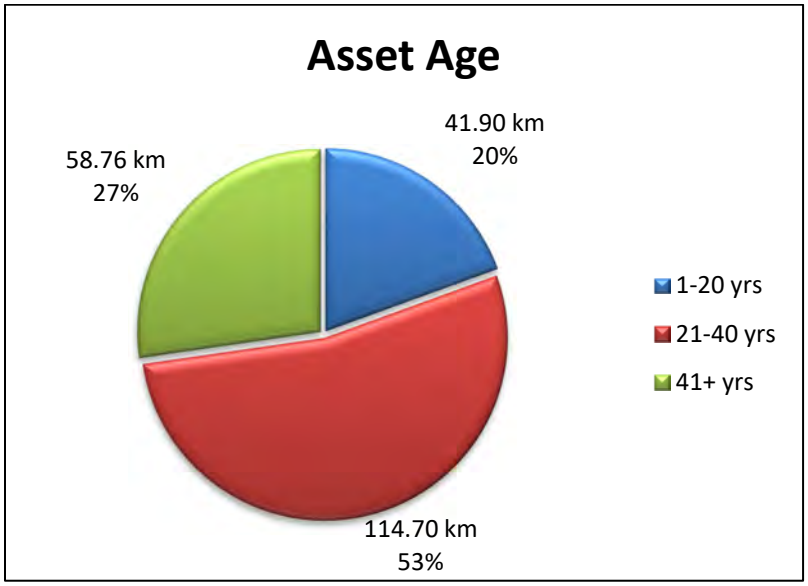


Figure 7-2: Age distribution (as recorded in the GIS database)

As mentioned earlier, 81% of the Town's watermain inventory is comprised of PVC pipes. Most of the newer mains are made of PVC.

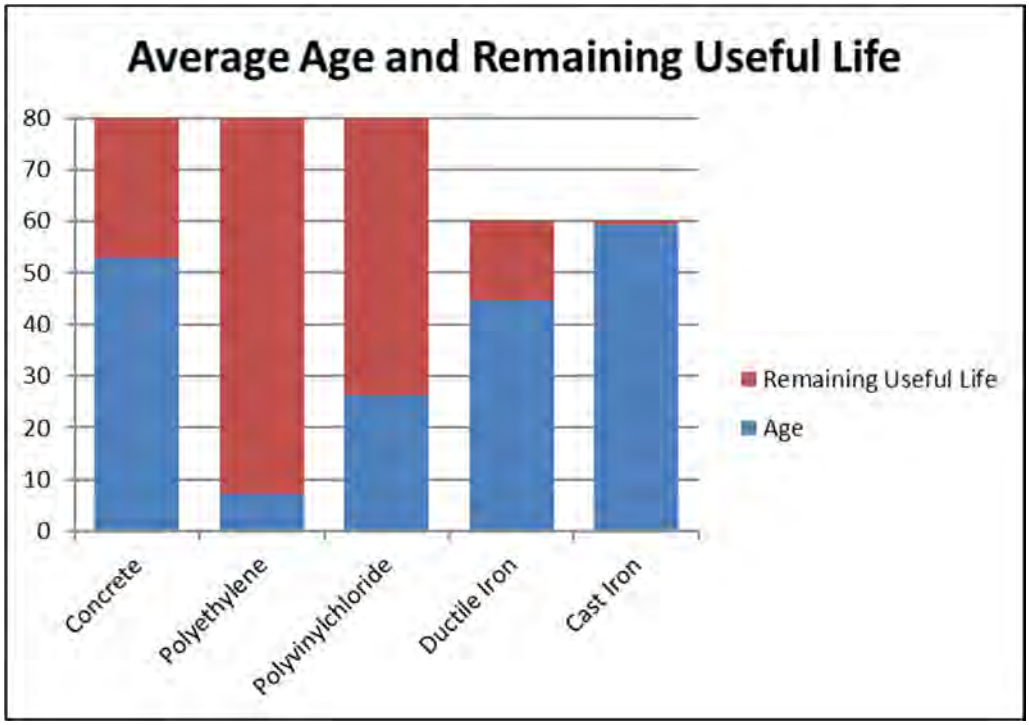


Figure 7-3: Average age by material type compared to remaining useful life

Figure 7-3 shows that PVC watermains, the majority of the inventory, have an average age of 26 years.

The previous graph is a good representation of where assets are in terms of lifecycle. Cast iron and ductile iron are the oldest and should be targeted for replacement first.

Asset Condition

Watermains:

The straight line, age-based method was used to assign asset condition for watermain infrastructure. The rationale behind this is that cast iron and ductile iron pipes, which are the oldest, have the highest frequency of watermain breaks. Cast iron mains over time have mineral deposit buildups which can cause lower water flows for fighting fires and possibly water quality issues. What is happening in the field coincides with the useful life data as shown in Figure 7-3. Thus, it makes sense that those asset types that are nearing the end of their lifecycles should be replaced first.

The watermain asset condition grade was determined using the following formula:

Condition = Service Life Remaining / Useful Life

The condition grades were grouped as follows:

Condition	Grade Range
Critical	0 - 20
Poor	21 - 40
Fair	41 - 60
Good	61 - 80
Excellent	81 - 100

Table 7-3: Watermain Condition Grades

Grouping the assets in such a manner makes it easier to prioritize watermain replacements. Obviously, watermains that are deemed to be in critical condition should be addressed first. It should be considered whether any of those watermain replacements could be combined with road works in order to achieve cost savings.

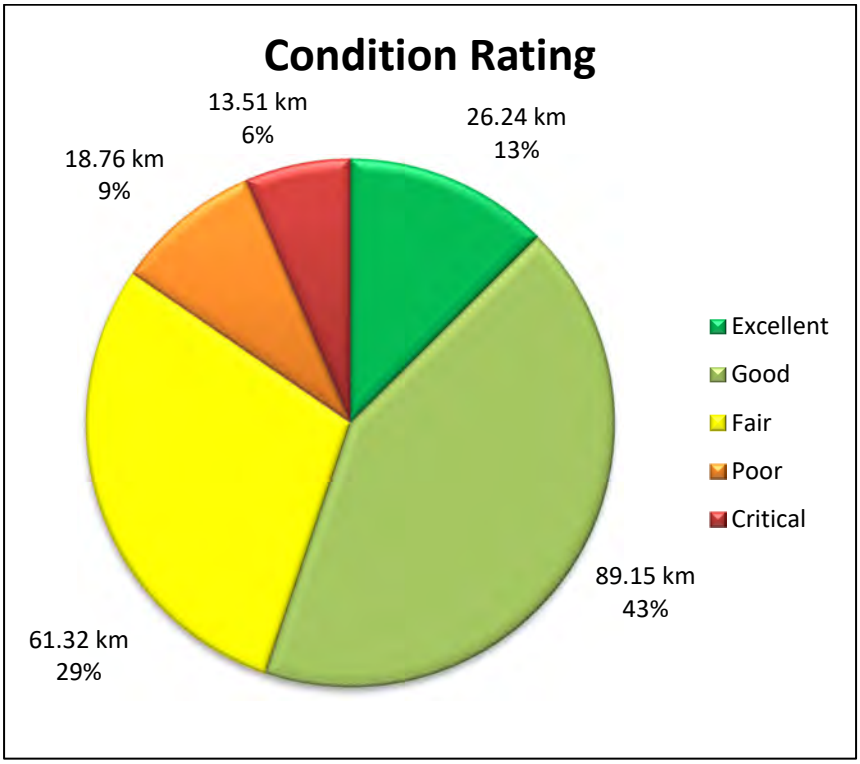


Figure 7-4: Watermain Asset Condition

The above graph shows that 6%, or 13.51 km, of the Town's watermains are in critical condition. The majority of these watermains are cast iron and should be prioritized for replacement.

Metering Stations:

In 2016, the Town conducted an assessment of water facilities to understand the condition and to effectively prioritize rehabilitation and replacement work in the future. The work conducted included a visual site inspection of all structures, identification of deficiencies, preparation of preliminary estimates, and identification of priority/suggested timing to address the noted deficiencies. Refer to Appendix Q for a water facilities inventory.

Rating methodologies were developed and applied to the conditions of the metering stations. The following tasks were completed in conducting the condition assessments:

- Creation of a catalogue of equipment, services and building components including mechanical, electrical, structural, and architectural.
- Assessment of each component for replacement cost and life expectancy.
- Identification of any violations to existing codes.
- Categorizing required repairs and maintenance needs based on urgency.

Each condition rating was assigned condition indicators to assist in the consistent evaluation of assets. The condition ratings of asset components were used in determining an overall

condition index, indicating the general condition of the asset as a whole. The condition index was determined using a weighting of each asset component and associated condition rating.

Condition	Rating
Critical	5
Poor	4
Fair	3
Good	2
Very Good	1

Table 7-4: Metering Station Condition Ratings

Risk associated with operation of the water metering facilities is consistent across all metering stations, so only a condition rating is required.

Prioritized recommendations arising out of the facilities assessment are as follows:

Station Name	Condition Rating	Immediate Costs	Longer Term Costs	Totals by Station
Dillon Drive	2.9	$ 2,100	$ 2,000	$ 4,100
McNorton Street	2.8	3,400	2,000	5,400
Tecumseh Rd.	2.8	3,800	2,000	5,800
County Road 22	2.9	5,100	20,900	26,000
County Road 42	2.8	9,400	1,300	10,700
Baseline Road	2.7	4,200	1,500	5,700
8th Concession Road	2.8	20,500	1,500	22,000
County Road 46	2.9	12,000	1,500	13,500
Walker Road	2.8	5,700	2,800	8,500
North Talbot Road	3.0	35,900	1,500	37,400
Howard	1.2	2,500	1,500	4,000
Grand Totals		**$ 104,600**	**$ 38,500**	**$ 143,100**

Table 7-5: Water Metering Stations Prioritized Recommendations (2021$)

Asset Management Policies

The Water Distribution System Condition Assessment Policy discusses the use of a straight line, age-based method to assign asset condition for watermain infrastructure. The policy discusses other indicators used to assess the condition of the distribution system. Refer to Appendix R for a copy of the Water Distribution System Condition Assessment Policy.

The Data Verification Policy provides a guideline for the review of data that is collected or provided to the Town. Refer to Appendix E for a copy of the Data Verification Policy.

7.2 Desired Levels of Service

Flow tests measure the amount of water that will flow through the watermain when a fire hydrant is opened fully. This test is performed by the Town approximately every five years. Fire department industry standards look for a minimum of 500 gallons per minute (GPM). Hydrants in the Town that fall below this amount are colour coded black and the Fire Department is notified. These areas (watermain and fire hydrant) are listed for replacement or upgrade when an opportunity is available.

Watermain breaks are documented and filed. During watermain repairs, the Water Operator examines the external condition and if possible the internal condition of the watermain and will note the condition on the repair sheet. Excessive watermain breaks, over 7 within 1km length of watermain, are noted and reviewed for possible replacement by the Manager Water Services and the Manager Engineering Services.

Water quality is measured weekly by Town Water Operators and water quality concerns from water customers are documented and reviewed weekly. Poor water quality (discoloured water or low chlorine residuals) are used to measure the internal quality of the watermain. Water quality is measured with equipment that gives a value (#) of chlorine residual (free chlorine left in the water) in parts per million (ppm). Ministry of the Environment Conservation and Parks (MECP) minimum standards are set at 0.05 ppm. Chlorine residual reads of less than 0.05 ppm must be reported to the local health unit. Water quality indicators are also used to assist in determining the life of the watermain.

Every fire hydrant is operated and inspected at least 3 times a year and painted every 4 years. Fire hydrants that become too costly to repair or maintain are replaced (some of the replacement parts of a fire hydrant can and will add up to more than the cost to replace the hydrant).

A Town Water Operator does an internal and external visual inspection of the water tower weekly. In addition, the water tower is inspected by Landmark (the company that built the water tower) every 5 years as per AWWA recommendations. These inspection reports and recommendations are reviewed to determine how to protect and extend the life of this asset.

Boundary Water Meters are inspected twice a year by the company that built the stations. Recommendations are given in a report to the Manager of Water Services. In addition, there is a 24/7 computer monitoring system built into each station that allows the Manager of Water Services to review data/problems that might affect the life of this asset. For example, a cold temperature alarm could indicate possible damage to electronic equipment if the temperature issue is not resolved. Another example is an illegal entry alarm triggers the immediate dispatch of a Water Operator to prevent or reduce damage to the asset.

In summary, it is Administration's intent to ensure that the Town continue to maintain acceptable levels of service, which can be specifically qualified as;

- Watermain flow tests performed every 5 years
- Watermain flow test result greater than 1,000 gallons per minute (GPM)
- Less than 3 watermain breaks per km
- Meet or exceed the MECP best practice for minimum standard of 0.20 ppm chlorine residual.
- Fire hydrant inspection 3 times/year; painting every 4 years
- Water tower inspections every 5 years
- Boundary water meter inspections twice/year.

7.3 Current Levels of Service

In addition to the Town's desired level of service, O.Reg 588/17 requires that Municipalities provide levels of service related to specific qualitative descriptions and technical metrics, described as Community Levels of Service and Technical Levels of Service, related to each core asset. For Water assets, this includes a measurement of the percentage of properties within the municipality which are connected to the municipal water system and where fire flow is available. Reliability is quantified by measuring the number of connection-day where boil water advisories are in place and connection-days where watermain breaks are experienced by properties.

7.3.1 Community Levels of Service

The Town provides the Community Levels of Service (CLOS) summary as specified in O.Reg 588/17 in Table 7-6. This table will be further expanded in the future to provide a better quantified CLOS.

Service Attribute	Community Levels of Service
Scope	The Town of Tecumseh owns and operates a class 2 water distribution system, that receives its drinking water from the City of Windsor. The distribution system is comprised of approximately 220 km of watermain servicing approximately 9,065 properties within the municipality.
Reliability	The Town of Tecumseh's water distribution system provide fire flow to all residents currently receiving water service within the municipality. Similar to that above, this equates to approximately 9,065 properties.

Table 7-6: Community Levels of Service

7.3.2 Technical Levels of Service

The Town provides the Technical Levels of Service (TLOS) summary as specified in O.Reg 588/17 in Table 7-7. This table has been further expanded to include items described in the Desired Levels of Service section. These technical metrics will be expanded as part of future updates to the AMP.

Service Attribute	Performance Measure	Measure Type	Current Performance	Target
Scope	Percentage of properties connected to the municipal water system.	O.Reg	97.2%	Target Not Set
	Percentage of properties where fire flow is available.	O.Reg	97.2%	Target Not Set
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.	O.Reg	0.6 to 9057 Properties	Target Not Set
	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.	O.Reg	280 to 9057 Properties	Target Not Set
	The number of watermain breaks per kilometer per year	Municipal	0.35	< 3

Table 7-7: Technical Levels of Service

7.4 Lifecycle Activities

Water assets include a range of different components ranging from watermains to valve boxes to fire hydrants to monitoring and sampling equipment. Each asset is managed in a slightly different manner dependent on the material, purpose, and lifecycle. The four categories of Lifecycle Activities related to maintaining levels of services of Water assets include:

- Routine Maintenance
- Renewal/Rehabilitation
- Replacement
- Disposal

Watermain's and the respective services connected to them are the main asset costs attributed to the water distribution system. These assets are generally assessed on a condition, material, and age basis.

Maintenance

Maintenance of water assets, further outlined in the Asset Management Strategy section, are completed by Town staff and competent contractors as required. These activities are completed anywhere from daily, weekly, annually, or as needed based on operations of the water distribution system.

The risks associated with maintenance include service disruption and asset failure should maintenance not be identified, completed, or is completed at the incorrect time. Asset failure may result in service disruptions which decreases the level of service to residents and increases operational costs.

Renewal/Rehabilitation

Renewal and Rehabilitation activities, further outlined in the Asset Management Strategy section, is key to ensuring that assets do not experience failures.

Similar to that of Maintenance, the risks associated with renewal and rehabilitation are increased costs, asset failure, and decreased levels of service should renewal and rehabilitation not be identified, completed, or completed at the incorrect time. Not conducting necessary renewal work may lead to water assets requiring replacements, which drastically increase costs and disrupt service.

Replacement

Replacement of water assets, further outlined in the Asset Management Strategy section, is the most costly lifecycle activity to maintain water services and the level of service. Replacement is generally identified through review of asset life, condition, performance, and failure.

The risks associated with replacement include service disruption, increased maintenance costs, and decreased level of service should replacement not be identified, completed, or completed at the incorrect time. There exists a risk of increased cost should replacement be conducted earlier than required.

7.4.1 Population Forecasts and Growth Assumptions

Population Forecasts

As discussed in section 2 of this plan, the 20-year population projection as included in the Town's Official Plan, is an increase of 6,880 people for a total population of 30,330 by the year 2040.

Water and Wastewater Master Plan

Municipalities can recognize the benefit of comprehensive long-range planning exercises that examine problems and solutions for an overall system of municipal services. Master Plans are not intended to address specific local problems or to plan for projects on a project-by-project basis. The Class Environmental Assessment process defines Master Plans as:

> *"Long range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. These plans examine an infrastructure system(s) or group of related projects in order to outline a framework for planning for subsequent project and/or developments."*

The Town's Water and Wastewater Master Plan was updated in 2018 from the previous 2008 plan update. An analysis of the Town's water distribution system identified areas within the Town which required additional watermains, booster stations, and local upgrades including a second water Tower in the Oldcastle Hamlet area. This plan investigated existing capacity and future capacity of areas designed designated for future development.

It should also be noted that the timing of the various projects within this plan has been established based on anticipated growth rates in Tecumseh and on a fiscally responsible capital works program. The Town will have the option to advance or defer specific projects depending upon the rate of growth experienced in Tecumseh, or upon the petition by a developer (or group of developers) provided that the financial impacts of advancing certain projects are reviewed and mitigated through collection of Development Charges or through Front-End Financing arrangements.

The servicing strategies and capital programs were also updated based on projects currently underway, whether in study, design or construction stage. This has led to more detailed project information, schedules and capital cost estimates.

Development

New watermains, services, hydrant, and sampling stations will be constructed as part of proposed residential and industrial developments, which will eventually be assumed, owned and maintained by the Town. As these watermains are constructed they will be added to the Town's list of assets and included in future versions of the Asset Management Plan.

The majority of the Town's future (residential) growth will be limited to areas referred to as (i) The Manning Road Secondary Plan Area, and (ii) The Tecumseh Hamlet Secondary Plan Area and (iii) within the Oldcastle Hamlet Area. Functional Design Studies for the Manning Road Secondary Plan Area and the Tecumseh Hamlet Area will be completed, which will include the preliminary design of water infrastructure within each study areas.

There are a number of current proposals, along with future opportunities for industrial development within the Oldcastle Hamlet Area. Watermains within these areas will be installed

at the cost of the developer, which will in turn be assumed by the Town at the end of the maintenance period. Trunk watermain installations or upgrades within this area will be funded through development charges identified in the Town's DC Study.

7.5 Asset Management Strategy

7.5.1 Asset Management Programs

The following provides an overview of the types of Asset Management programs conducted by the Town.

Maintenance

These maintenance activities will be undertaken by Water Services Division or competent contractors under the guidance of Water Services and are intended to find any deficiencies and or issues at the onset in order to address them in an adequate timeframe and also limit the extent of remedial repairs.

MAINTENANCE

Performance	Program Descriptions	Frequency	Measures
Watermain, Valves & Service Breaks	Repairs to watermains, water valves and services as quickly as needed during the course of the year.	As needed	Compliance with SOP's and Reg's, number of incidents
Water Valves	Operate all water valves in the distribution system. Work off mapping system so that every valve is checked and operated over the course of a 5 year period. This type of maintenance work usually takes place in the spring, summer or fall months.	Annual	Operation of valve
Fire Hydrants	All fire hydrants are completely operated and flushed between the months of May and July every year. All fire hydrants are winterized (water removed for the barrel of the hydrant) and rechecked a 2nd time during the course of the winter months. Winterizing takes place from November until April every year.	Annual	Operation of hydrant, leaks
Auto Flushers	Auto Flushers are used to flush water in the distribution system as needed. These units required maintenance on a "as needed" basis and undergo visual checks/tests every fall.	As needed and annually for calibration	Water quality
Metering Chambers	Metering chambers are large above/underground units used to house water measuring equipment. These chambers need to be checked for water damage, leaks and calibration.	As needed and annually for calibration	Visual inspection for ground settlement

MAINTENANCE

Performance	Program Descriptions	Frequency	Measures
Backflow Valves	Backflow valves in the water distribution system require testing and general repairs as needed.	As needed and annually for calibration	Tested by Licenced Technician including recommendations
Equipment Calibration	There are a number of pieces of equipment that are used in the water distribution system that require testing/calibration maintenance on a yearly basis.	As needed and annually for calibration	Tested by Licenced Technician including recommendations
Supervisory control and data acquisition (SCADA) system	Number of pieces of equipment that are used in water distribution system that require testing/calibration maintenance on daily basis	Daily	Tested by Licenced Technician including recommendations
Anode Program	Used to control the corrosion of a metal surface by making it the cathode of an electrochemical cell.	3 Year Review	Tested and Inspected by Licenced Technician
Water Tower	The Town water tower is maintained to ensure the area is secure, clean, and that the lighting and room heating system is working. The structure is inspected and maintained on a five year cycle by the same company that built it.	Weekly and a 5 year cycle for the structure	Inspected by builder including maintenance recommendations
Weekly Bacteria Sampling	Take weekly bacteria samples from water sampling station and the water distribution system. Samples are taken to a MECP accredited lab.	Weekly	Water sample readings
Weekly Chlorine Sampling	Take weekly bacteria samples from water sampling station and the water distribution system. Results taken by the water operator are measured in parts per million (PPM).	Weekly	Water sample readings
Lead sampling	Take water samples to test for lead. These samples are taken to a MECP accredited lab.	Twice a year	Water sample readings
Haloacetic Acids (HAAs)	Take HAA samples from water sampling station and the water distribution system. These samples are taken to MECP accredited lab	Quarterly	Water sample readings
Trihalomethanes (THMs)	Take THM samples from water sampling station and the water distribution system. These samples are taken to MECP accredited lab	Quarterly	Water sample readings
Sample Stations	Sample stations used to obtain distribution water samples. These units required maintenance on a “as needed” basis and undergo visual checks/tests weekly	Weekly	Water sample readings
Water Meter	There are approximately 9,065 water meters in the water distribution system that require testing and general repairs as needed	Daily/weekly	Water volume
Water Fill Stations	Used to provide potable drinking water to rural residence	Daily	Water volume
Water Asset Locating	Locate watermains, water services, water valves and fire hydrant as requested by consultants or contractors. Water assets are located to provide correct information so that the asset may not get damaged when excavation takes place.	Daily/weekly	Number of water locates requested

Table 7-8: Maintenance Performance

Renewal/Rehabilitation

This strategy is intended to address issues of a significant proportion in order to extend the useful lifespan of the asset before its condition deteriorates to a degree such that the asset must be replaced. This strategy is used in water distribution systems quite extensively due to the

large costs and significant disruptions associated with a total replacement. Work such as this could be employed more than once during an asset's lifespan and extend it past the estimated lifespan if the work is performed within a reasonable timeframe.

RENEWAL/REHABILITATION

Performance	Program Descriptions	Frequency	Measures
Watermains	Watermain renewal/rehabilitation is based on age/type of material, amount and frequency of breaksand any water quailty or flow problems.	Reviewed yearly	Number and frequency of breaks and complaints
Water Valves	Repaired as necessary or as part of the renewal program.	Reviewed yearly	Operation of valve
Fire Hydrants	Repaired as necessary or as part of the renewal program.	Reviewed yearly	Operation of hydrant, leaks
Auto Flushers	Repaired as necessary or as part of the renewal program.	Reviewed yearly	Water quality
Metering Chambers	Long term replacement - 75 plus years.	Reviewed yearly	Visual inspection for ground settlement
Backflow Valves	Repaired as necessary or replaced whatever is more cost effective.	Reviewed yearly	Tested by licenced Technician including recommendations
Equipment Calibration	Repaired as necessary or replaced whatever is more cost effective.	Reviewed yearly	Tested by licenced Technician including recommendations
Supervisory control and data acquisition (SCADA) system	Number of pieces of equipment that are used in water distribution system that require testing/calibration maintenance on daily basis	Reviewed daily	Tested by Licenced Technician including recommendations
Anode program	Used to control the corrosion of a metal surface by making it the cathode of an electrochemical cell.	3 year review	Tested and Inspected by Licenced Technician
Sample Stations	Repaired as necessary or replaced when needed	Yearly	Tested by Licenced Technician
Water Fill Stations	Number of pieces of equipment that are used in process that require testing/calibration maintenance on daily basis	Daily	Tested by Licenced Technician
Water Tower	Long term replacement - 75 plus years.	5 year review	Inspected by builder including rehabilitative recommendations
Water Meter Upgrade Program	Replaced every 15 to 20 years or as needed.	15 to 20 years	Water volume

Table 7-9: Renewal/Rehabilitation Performance

Replacement

This strategy is employed when the asset has reached its useful lifespan and the costs associated with renewal/rehabilitation will approach the full replacement cost. This strategy is usually reserved for assets that have had very little maintenance work performed during its lifespan and for which remedial methods will not be adequate.

REPLACEMENT

Performance	Program Descriptions	Frequency	Measures
Watermains	Watermain replacement is based on age/type of material, amount and frequency of breaks, consolidation with other municipal infrastructure improvements and any water quailty or flow problems.	Reviewed yearly	Number and frequency of breaks and incorporation into annual capital works programs
Water Valves	Water valve replaced during watermain replacement or if repairs cost more than replacement.	Reviewed yearly	Operation of valve
Fire Hydrants	Fire hydrants replaced during watermain replacement or if repairs cost more than replacement.	Reviewed yearly	Operation of hydrant, leaks
Auto Flushers	Auto flushers replaced during watermain replacement or if repairs cost more than replacement.	Reviewed yearly	Water quality
Metering Chambers	Very long service life, only replaced if problems occur.	Reviewed yearly	Visual inspection for ground settlement
Backflow Valves	Tested every year and replaced only when cost of repairs is more than replacement.	Reviewed yearly	Tested by licenced Technician including recommendations
Equipment Calibration	Hand held equipment tested every year, only replaced when cost of repairs is more than replacement.	Reviewed yearly	Tested by licenced Technician including recommendations
Supervisory control and data acquisition (SCADA) system	Tested daily, replaced when costs of repairs is more than replacement	Reviewed Daily	Tested by Licenced Technician including recommendations
Anode program	Replacement based on life expectancy by certified technician	3 Year Review	Tested and Inspected by Licenced Technician
Water Fill Stations	Repaired as necessary or replaced when needed	As Required	Tested by Licenced Technician
Water Tower	Long life expected - 75 years - complete inspection by manufacturer every 5 years.	5 years	Inspected by builder including major reconstruction recommendations
Sample Stations	Repaired as necessary or replaced when needed	Yearly	Water Sample Readings
Water Meter Upgrade Program	Water meters are replaced as needed but have a life expectancy of 15 to 20 years.	Daily	Water volume

Table 7-10: Replacement Performance

Disposal

This strategy is employed typically as part of larger infrastructure projects. The Town of Tecumseh achieves little to no value for disposal of any water distribution system piping. There can be costs associated with disposal of any facility assets associated with the water distribution system although they are typically limited to residual scrap value.

DISPOSAL

Performance	Program Descriptions	Frequency	Measures
Watermains	Watermains are taken out of service as they are replaced. Abandonded and capped in place for smaller sized watermains, abandonded, caped and filled with lean grout for larger watermains. Watermains that are removed are disposed of at the Town's cost.	As required	Nil
Water Valves	Water valves are replaced when a problem is found or during watermain replacement. Sold for scrap where possible, otherwise disposed at Town cost.	As required	Nil
Fire Hydrants	Fire hydrants are replaced when a problem is found or during watermain replacement. Sold for scrap where possible, otherwise disposed at Town cost.	As required	Nil
Auto Flushers	Auto flushers are replaced when a problem is found or during watermain replacement. Sold for scrap where possible, otherwise disposed at Town cost.	As required	Nil
Metering Chambers	During watermain replacement/relocation project. Sold for scrap where possible, otherwise disposed at Town cost.	As required	Nil
Backflow Valves	Backflow valves are replaced when there is a problem. Sold for scrap where possible, otherwise disposed at Town cost.	As required	Nil
Supervisory control and data acquisition (SCADA) system	Replaced or removed when the system has met its useful life	As required	Nil
Sample Stations	Sample stations are replaced when a problem is found that is more then repair costs. Disposed at Town cost	As required	Nil
Water Fill Stations	Repaired as necessary or replaced when needed	As required	Nil
Water Tower	Replaced or removed when the Tower has met its useful life.	As required	Nil

Table 7-11: Disposal Performance

7.5.2 10 Year Plan

A detailed 10 Year Plan was generated for the water distribution system that includes watermain replacements and reconstruction works. Please refer to Appendix S for detail by asset ID.

8. Sanitary Collection System

8.1 State of the Local Infrastructure

Inventory

The sanitary collection system consists of sewer gravity pipes, services, pumping stations, forcemains, and metering stations. The majority of sanitary sewage flows are treated at the Lou Romano Water Reclamation Plant (LRWRP) and the Little River Pollution Control Plant (LRPCP) both of which are owned and operated by the City of Windsor.

Sanitary Sewers:

There are a total of 119.2 km of sanitary sewers, varying in size from 100mm to 2250mm diameter. The pipe materials consist of Asbestos Cement (AC), Reinforced Concrete (RC), and Polyvinylchloride (PVC).

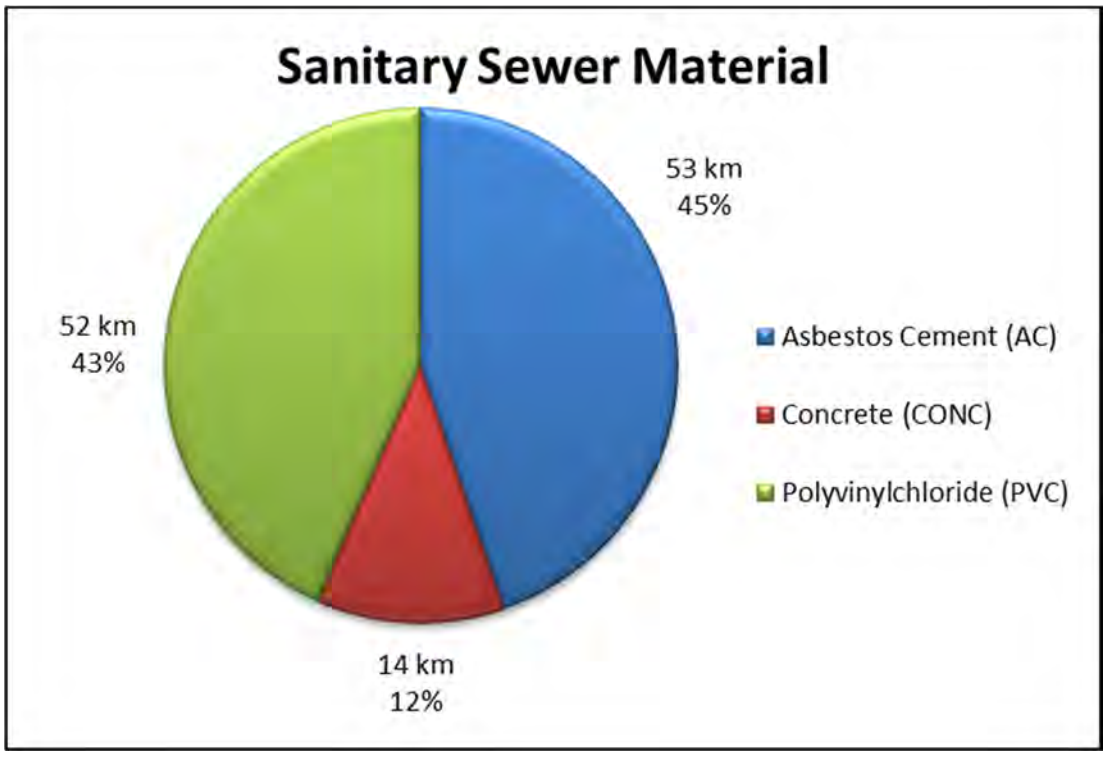


Figure 8-1: Sanitary Sewer Inventory by Material

Sanitary Manholes:

There are a total of 1,551 sanitary manholes, varying in size from 1200mm to 3000mm diameter. The manhole material consists of precast reinforced concrete.

Sanitary Services:

There are a total of approximately 7,800 sanitary services equating to an approximate length of 78 km from the trunk sanitary sewer to the property line (for which the Town is responsible for). These services are generally 125mm diameter, with material consisting of Asbestos Cement (AC), Reinforced Concrete (RC), and Polyvinylchloride (PVC).

Sanitary Forcemains:

There is a total of 0.8 km of sanitary forcemains, varying in size from 150mm to 350mm diameter. The pipe materials consist of Reinforced Concrete (RC) and Polyvinylchloride (PVC).

Pumping Stations:

There are four pumping stations located within the Town that are operated and maintained by the Ontario Clean Water Authority (OCWA):

a) Cedarwood Pumping Station – Located at 345 Gauthier Drive (Gauthier/Cedarwood intersection).
b) Lakewood Pumping Station – Located at the Manning Rd/Little River intersection (Lakewood Park).
c) Sylvestre Pumping Station – Located at 1600 Sylvestre Drive (Sylvestre west of Desro).
d) St. Alphonse Pumping Station – Located at 2571 St. Alphonse Street (St. Alphonse/County Road 42 intersection).

Metering Stations:

There are a total of five metering stations located within the Town that are being monitored using a Supervisory Control and Data Acquisition (SCADA) system. This provides the Town with historic flow and volume data. These five stations have all been constructed or retrofitted into existing stations in the Town of Tecumseh since 2010. These SCADA systems consist of flow meters and electronics to provide real time accurate data to Town staff to assist in daily operational work. Locations are:

a) Meter #1 – WP 01 – Cedarwood Pumping Station
b) Meter #2 – TSM 02 – County Road 22 at Shawnee Flume
c) Meter #3 – WP 03 – Lakewood Pumping Station
d) Meter #4 – TSM 04 – North Talbot Road Flume
e) Meter #5 – TSM 05 – 8th Concession Road at Hwy #401 Flume

Detailed information on the sanitary sewer assets is maintained in the Town's Geographic Information Systems (GIS) system. Sanitary sewers are split into segments, manhole to manhole, with each segment assigned a unique GIS ID.

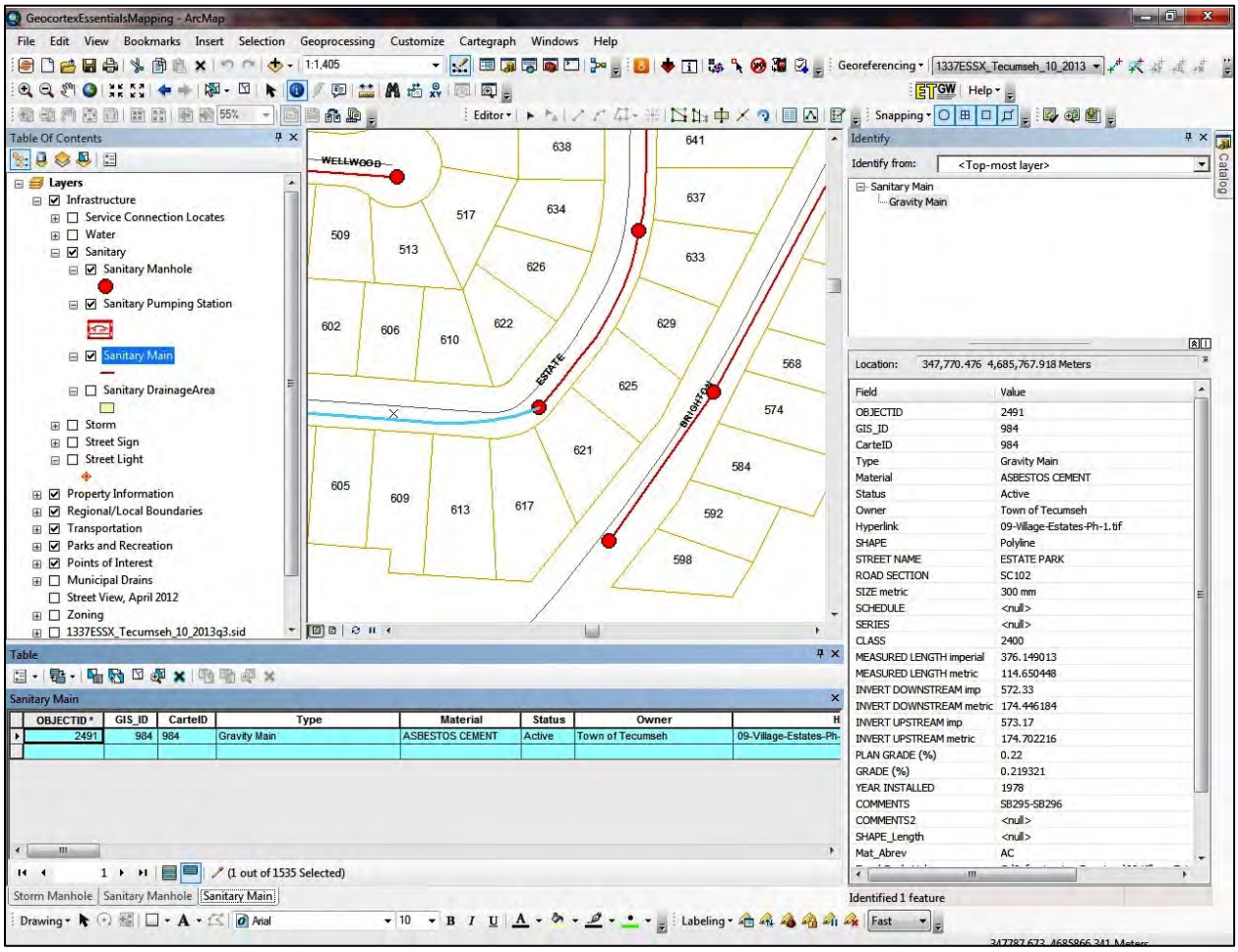


Figure 8-2: GIS screenshot of GIS ID # 2491 - Estate Park sanitary sewer segment

Please refer to Appendix T for a complete inventory of the Town's sanitary sewers, manholes and services assets.

Valuation

An inventory and historical cost valuation of the sanitary sewer system was completed in 2009 in order to comply with the Public Sector Accounting Board's requirements for the reporting of tangible capital assets. Historical costs were based on deflated replacement costs at the time. The expected useful lives for accounting amortization purposes are as follows:

Sanitary sewers - 65 years
Pumping station (PS) structure - 50 years
PS roof - 20 years
PS mechanical/electrical - 20 years
SCADA - 10 years.

Detailed asset accounting data is maintained in CityWide software. Each asset found in CityWide can be cross-referenced to a GIS ID. The database is updated annually prior to financial statement preparation.

As of the 2021 year end, sanitary sewer system asset accounting valuations are as follows:

	Sanitary Sewers	Sanitary Facilities	Total Sanitary
Historical Cost	$ 36,782,669	$ 3,409,928	$ 40,192,597
Accumulated Amortization	$ 11,755,417	$ 1,600,938	$ 13,356,355
Net Book Value	$ 25,027,252	$ 1,808,990	$ 26,836,242

Replacement costs were updated for the preparation of the Asset Management Plan. As shown in Appendix T, the total standalone replacement cost of sanitary sewers, forcemains, manholes and services is $160,723,100. Cost savings could be incurred if sanitary sewer replacements were combined with road work; resulting in a reduced replacement cost of $143,919,700. Details on assumptions and unit costs can also be found in Appendix T-1.

Total sanitary sewer replacement cost is $161 million!

Asset Age

Sanitary Sewers, Manholes, and Services:

The age of the sanitary sewer segments (sewers, manholes and services) can be found in the Town's GIS database.

From the following graph, it can be seen that 53% of the Town's sanitary sewers were installed in the 1970's. Relatively speaking, that means that over half of the Town sanitary piping system is between 43 and 52 years old. Traditionally, an expected lifespan of a sanitary sewer is anywhere from 50 -75 years depending on conditions. Conversely, this also highlights that 57% of the Town's sanitary sewer system is relatively 'new' with 34% of the system being installed since 1990.

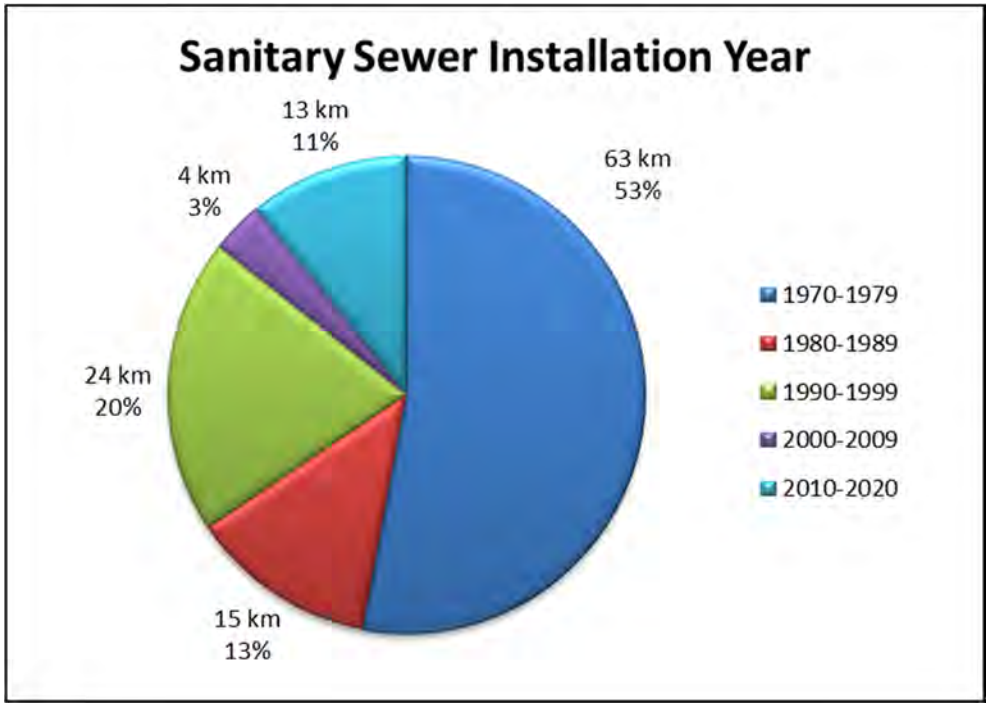


Figure 8-3: Sanitary Sewer installation year (as recorded in the GIS database)

The following graph shows the average age and remaining useful life by sanitary sewer material. Asbestos Cement (AC) sanitary sewers are the oldest with an average age of 47 years. Polyvinylchloride (PVC) and reinforced concrete (RC) sanitary sewers are the newest with over half of the asset lifecycle remaining.

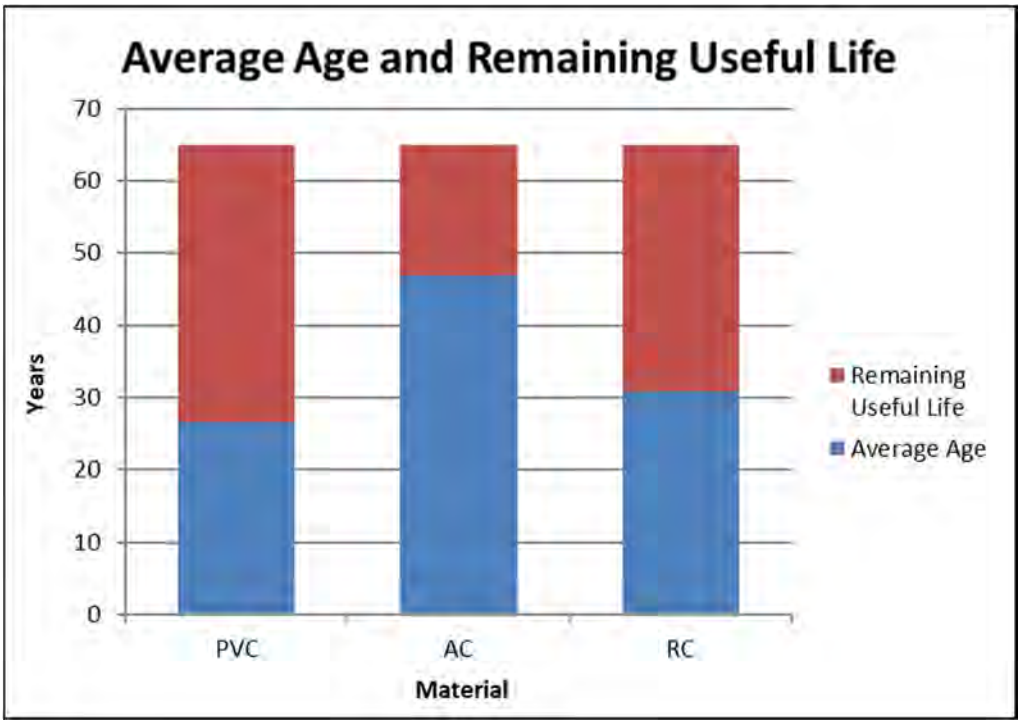


Figure 8-4: Average age by material type compared to remaining useful life

Sanitary Pumping Stations & Forcemains:

a) Cedarwood Pumping Station – Originally installed in 1974.
b) Lakewood Pumping Station – Constructed in 2015.
c) Sylvestre Pumping Station – Originally installed in 1995.
d) St. Alphonse Pumping Station – Originally installed in 1975. Reconstructed and upgraded in 2010.

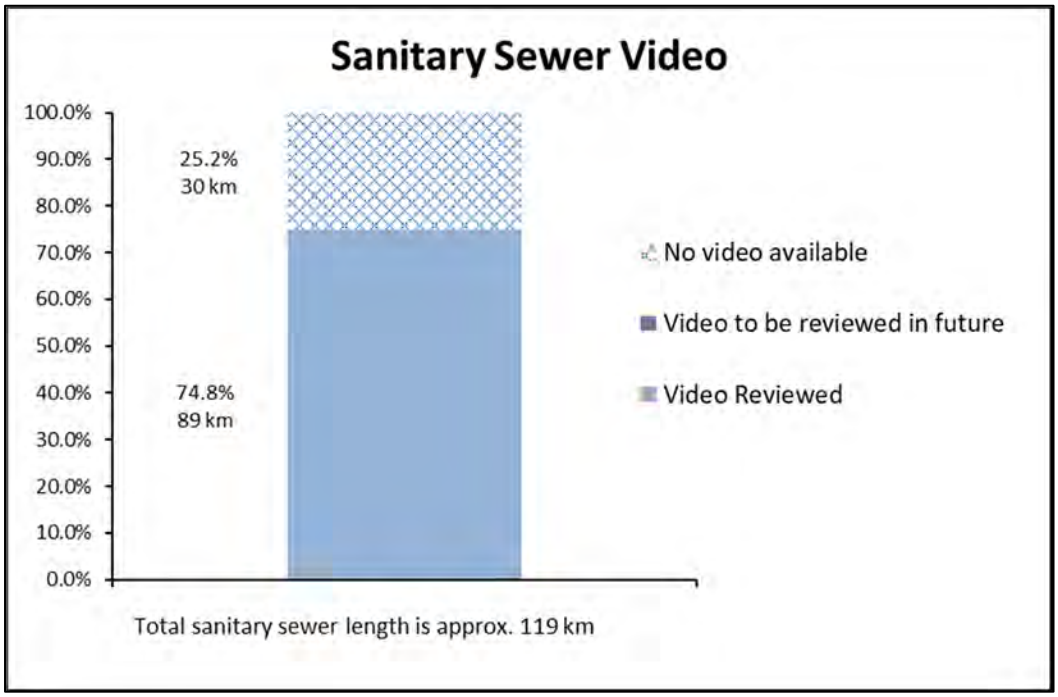
Metering Stations:

The five metering stations located within the Town have all been constructed or retrofitted into existing stations starting in 2010.

Asset Condition

Sanitary Sewers:

The Town has reviewed a representative amount of video collected on the sanitary sewer system and given it a Sewer Performance Grade (SPG) to assist in determining the condition of the sewers. The length of sewer video collected is approximately 89 km. The video collected is approximately 75% of the entire infrastructure network. This video was reviewed by a consultant and specialized repair contractor to determine defects within the system and repairs required. The Town has repaired 75% of the identified repairs within the system as of 2020.



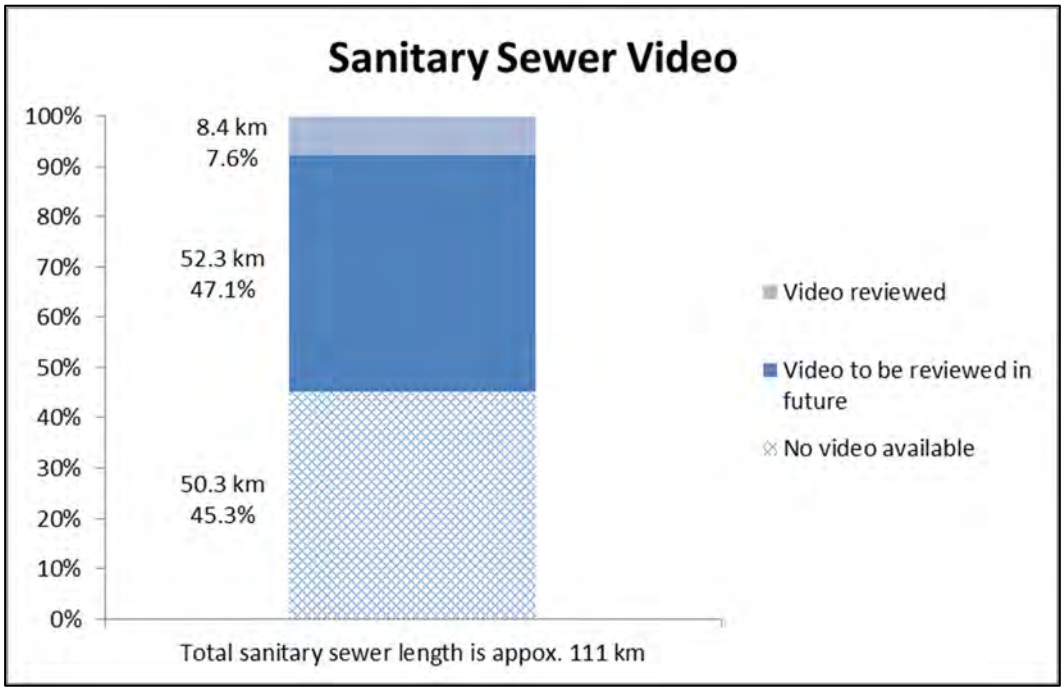


Figure 8-5: Sanitary sewer video sample size

The condition assessment of the sanitary sewers based on the review of these videos will be used to prorate the assessments over the entire collection system in order to arrive at an overall SPG ranking.

The Town of Tecumseh reviewed video data in order to assign grades to the sections of sanitary sewer within the Town. A representative sample was chosen with the results to be used to gauge the overall system. The sewer condition classification was undertaken using the Sewer Performance Grade, or SPG method of classification. This method is based on the Water Resource Centre (WRC) pipe condition classification method. It provides ratings for the sewer sections ranging from a SPG1 to a SPG 5.

Sewer Condition Assessment

SPG 1- No Defects
SPG 2- Minor Defects
SPG 3- Likely to Deteriorate
SPG 4- Likely to Collapse in Future
SPG 5- Collapse Imminent

Ratings for sewer sections are always based on the worst defect found in the section.

Overall, sewers installed since 1980 appears to have a SPG rating of 1 or 2 which is regarded as an above acceptable rating. The sewers installed in the 1970's had noticeable defects and an associated SPG rating of SPG 2 to SPG 3. Extrapolating the estimated costs of repair to achieve an acceptable rating of SPG 2 for the videos reviewed to the remaining sewer infrastructure installed in the 1970's results in an estimated cost of $2.2M. It should be noted that these repair amounts are estimated from the video available. They account for an SPG rating of the mainline sewer only. There exists the portion of all sanitary services that fall under the Town responsibility and they ultimately account for some remedial repair as well. For the sake of this project, the sanitary services PDC's were not reviewed because the available video is insufficient compared to main line sewer video.

The Town through grant funding undertook aggressive repair works within the last 4 years at an estimated cost of approximately $2.2M dollars and repaired 75% of identified deficiencies within the system.

As for an overall Rating of the sanitary collection system, it would be Administration's assessment that the system is at or about a SPG 2 for the sewers within the Towns boundaries. Ratings are based on the SPG ratings above as well as observational and collection staff experience.

Sanitary Manholes:

The conditions of the existing manholes have not yet been fully reviewed as part of the Asset Management Plan. Typically, precast concrete manholes have a life expectancy that surpasses the life of the adjacent sewers and services. Leaks and failures observed in manholes are usually at the point of connections and are repaired concurrently with other trenchless repairs being completed on the sewer trunk and services. At this time repairs to some manholes has been accomplished in this manner but not in an extensive manhole concentrated assessment or repair program.

Sanitary Services:

The conditions of the sanitary services were not fully reviewed as part of the Asset Management Plan. Typically, the services are not videoed unless they are part of the Town's Inflow and Infiltration (I&I) Program. Typically, the age, material and condition of the sewer trunk are key indicators that provide insight where potential issues may lie. During the 4 years of aggressive mainline sewer inspection and repair program service connections received a cursory review and identified some repairs required. As with manholes an extensive Town wide assessment of all service connections has not been completed.

Sanitary Pumping Stations & Metering Stations:

a) Cedarwood Pumping Station – Originally installed in 1974.
b) Lakewood Pumping Station – Construction completed in 2015.
c) Sylvestre Pumping Station – Originally installed in 1995.
d) St. Alphonse Pumping Station – Originally installed in 1975. The Town conducted facility upgrades and rebuilt the pumping station in 2010.

In 2016, the Town conducted an assessment of the sanitary metering and pumping stations to understand the condition and to effectively prioritize rehabilitation and replacement work in the future. The work conducted included a visual site inspection of all structures, identification of deficiencies, preparation of preliminary estimates, and identification of priority/suggested timing to address the noted deficiencies.

Rating methodologies were developed and applied to the conditions of the metering stations. The following tasks were completed in conducting the condition assessments:

- Creation of a catalogue of equipment, services and building components including mechanical, electrical, structural and architectural.
- Assessment of each component for replacement cost and life expectancy.
- Identification of any violations to existing codes.
- Categorizing required repairs and maintenance needs based on urgency.

Each condition rating was assigned condition indicators to assist in the consistent evaluation of assets. The condition ratings of asset components were used in determining an overall condition index, indicating the general condition of the asset as a

whole. The condition index was determined using a weighting of each asset component and associated condition rating.

Condition	Rating
Critical	5
Poor	4
Fair	3
Good	2
Very Good	1

Table 8-1: Sanitary Facility Condition Ratings

Determining a score for condition alone does not provide sufficient information to prioritize improvements. A poor condition rating on a less essential asset will not equate to an essential asset in need of imminent rehabilitation.

The risk drivers that affect the wastewater infrastructure include the percentage of system impacted, asset failure, environmental or social impacts, and population impacted. Each factor has been attributed a range of values to help describe the anticipated impacts and severity of each of the risk factors.

A composite risk value was determined using a formula derived to reflect the specific asset risks. Development of the formula considered the particular assets being evaluated, and each risk factor's interconnection and influence on the overall system.

Prioritized recommendations arising out of the facilities assessment are as follows:

Station Name	Risk Rating	Condition Rating	Combined Rating	Immediate Costs	Longer Term Costs	Spent to Date	Balance (2016$)	Balance (2021$)
Meter #1 - WP 01 - Cedarwood PS	N/A	1.9	1.9	$4,000	$0		$4,000	$5,000
Meter #2 - TSM 02 - CR22 at Shawnee Flume	N/A	1.8	1.8	$0	$0		$0	$0
Meter #3 - WP 03 - Lakewood PS	N/A	1.0	1.0	$0	$0		$0	$0
Meter #4 - TSM 04 - North Talbot Road Flume	N/A	1.9	1.9	$6,000	$0	$5,000	$1,000	$1,300
Meter #5 - TSM 05 - 8th Con Rd @ HWY401 Flume	N/A	2.2	2.2	$4,000	$0	$4,000	$0	$0
Totals for Sanitary Metering Stations				**$14,000**	**$0**	**$9,000**	**$5,000**	**$6,300**

Table 8-2: Sanitary Metering Stations Prioritized Recommendations

Station Name	Risk Rating	Condition Rating	Combined Rating	Immediate Costs	Longer Term Costs	Spent to Date	Balance (2016$)	Balance (2021$)
Cedarwood PS	11	2.7	13.7	$351,500	$370,000	$385,700	$335,800	$422,800
Lakewood Sanitary PS	10	1.1	11.1	$0	$0		$0	$0
Sylvestre PS	5	2.6	7.6	$12,500	$30,000	$10,500	$32,000	$40,300
St. Alphonse PS	3	1.8	4.8	$1,500	$0		$1,500	$1,900
Totals for Sanitary Pumping Stations				**$365,500**	**$400,000**	**$396,200**	**$369,300**	**$465,000**

Table 8-3: Sanitary Pumping Stations Prioritized Recommendations

Metering Stations:

Since 2010, these five stations have all been constructed or retrofitted into existing stations with the Town of Tecumseh and are all in good condition. OCWA performs annual calibrations on the flumes and magmeters.

Asset Management Policies

The Sanitary Sewer Collection System Condition Assessment Policy (Appendix U) discusses the review of camera inspection videos in order to assign an SPG. The Policy further designates an acceptable timeframe for the review of the sewer network.

The Data Verification Policy (Appendix E) provides a guideline for the review of data that is collected or provided to the Town.

8.2 Desired Levels of Service

With respect to the collection system and the current state of all pumping stations it would be conservatively described as acceptable. Currently, two PS are approximately 40+ years old and one other is in the 20-year timeframe. Two stations have been completely rehabilitated, which renews their useful life. Continued investment and vigorous Preventative Maintenance (PM) will keep these stations running for their useful lifespans.

With respect to the mainline collection system, the overall rating is appropriate for its age. An overall rating of SPG 3 is indicative of needed investment. That is shown in the suggested repair amounts listed previously. Continued investment in mainline sewer repairs will continue to keep the collection system at or above an acceptable range. The Town of Tecumseh has been focused in the short term on solving the Inflow & Infiltration problem which results in sewers being overtaxed due to storm water entering the sanitary system.

The Town applied for and received Government funding that was used to advance the rehabilitation of the sanitary sewers at an accelerated rate based on the amount of funding received. Work began in 2017 was completed at the end of 2019.

It is Administration's intent to ensure that the Town continue to maintain acceptable levels of service and this LOS can be qualified as;

- Yearly tenders to flush and camera inspect sanitary sewers. Goal of inspecting all sewers once within a 15-year time frame
- All SPG 5 defects scheduled for some kind of remedial attention within 6 months
- All SPG 4 defects scheduled to receive remedial attention within 2 years
- An overall average SPG 3 for the Towns collection system, based on current assessments
- A current plan to achieve a SPG 2 rating within a 5-year period, revised once per year
- Review of all facility assets with calibrations and reports every 5 years.

Sanitary Sewer Assessment: The sanitary sewer system continues to be monitored and assessed to determine opportunities for improvements to the system that could increase the level of service and reduce the risk of basement flooding. Sanitary modeling continues to be carried out to provide additional data and information on the performance of the system.

The collection system is maintained by Public Works staff by responding to public complaints.

8.3 Current Levels of Service

In addition to the Town's desired level of service, O. Reg 588/17 requires that Municipalities provide levels of service related to specific qualitative descriptions and technical metrics, described as Community Levels of Service and Technical Levels of Service, related to each core asset. For Sanitary assets, this includes a measurement of the percentage of properties within the municipality which are connected to the municipal sanitary system. Reliability is quantified by measuring the number of connection-day where sanitary backups are experienced and the number of effluent violations.

8.3.1 Community Levels of Service

The Town provides the Community Levels of Service (CLOS) summary as specified in O. Reg 588/17 in Table 8-4. This table will be further expanded in the future to provide a better quantified CLOS.

Service Attribute	Community Levels of Service
Scope	The Town of Tecumseh owns and operates approximately 119 km of sanitary sewer which generally service the urban areas of Town such as North Tecumseh, Tecumseh Hamlet, Oldcastle Hamlet, and St. Clair Beach. The system consists of four pumping stations, two metering stations and 3 flumes, with discharge into the Lou Romano Water Reclamation Plant and the Little River Pollution Control Plant for treatment in the City of Windsor.

Service Attribute	Community Levels of Service
Reliability	The Town of Tecumseh's sanitary sewer system does not contain any combined sewers within the municipalities boundaries. In the absence of combined sewers, sanitary sewer backups are experienced mostly due to stormwater inflow and infiltration (I&I) of the sanitary system during heavy rain events through maintenance hole covers, pipe and joint defects, poor connections, downspouts and foundation drains. The Town has recently experienced this in the last 10 years during a handful of rain events. The Town has commenced an extensive program to reduce I&I by prohibiting downspouts and drains to be connect to the sanitary system and completing repairs identified within the I&I study previously discussed. a combination of this and improvements to the stormwater drainage system through the Tecumseh Stormwater Master Plan will allow for the sanitary system to be more resilient to these events through an improved control of stormwater.

Table 8-4: Community Levels of Service

8.3.2 Technical Levels of Service

The Town provides the Technical Levels of Service (TLOS) summary as specified in O. Reg 588/17 in Table 8-5. These technical metrics will be expanded as part of future updates to the AMP.

Service Attribute	Performance Measure	Measure Type	Current Performance	Target
Scope	Percentage of properties connected to the municipal wastewater system.	O. Reg	90.6%	Target Not Set
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.	O. Reg	N/A	N/A
	The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.	O. Reg	21 to 8445 properties	Target Not Set
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.	O. Reg	0 to 8445 properties	0 to All Properties

Table 8-5: Technical Levels of Service

8.4 Lifecycle Activities

Sanitary assets include a range of different components including; local sewers; trunk sewers; access and sampling manholes; private drain connections; and pumping stations. Each asset is managed in a slightly different manner depending on the material, purpose, and lifecycle. The four categories of lifecycle activities to maintain levels of service of sanitary asset are:

- Routine Maintenance
- Renewal/Rehabilitation
- Replacement
- Disposal

Maintenance

Maintenance of sanitary assets, further outlined in the Asset Management Strategy section, are completed by Town staff and competent contractors as required. These activities are completed anywhere from daily, weekly, annually, or as needed based on operations of the water distribution system.

The risks associated with maintenance include service disruption and asset failure should maintenance not be identified, completed, or is completed at the incorrect time. Asset failure may result in service disruptions which decreases the level of service to residents and increases operational costs.

Renewal/Rehabilitation

Renewal and Rehabilitation activities, further outlined in the Asset Management Strategy section, are key to ensuring that sanitary assets do not experience failures.

Similar to that of Maintenance, the risks associated with renewal and rehabilitation are increased costs, asset failure, and decreased levels of service should renewal and rehabilitation not be identified, completed, or completed at the incorrect time. Not conducting necessary renewal work may lead to sanitary assets requiring replacements, which drastically increase costs and disrupt service.

Replacement

Replacement of sanitary assets, further outlined in the Asset Management Strategy section, is the most costly lifecycle activity to maintain sanitary services and the level of service to residents. Replacement is generally identified through review of asset life, condition, performance, and failures.

The risks associated with replacement include service disruption, increased maintenance costs, and decreased level of service should a replacement not be identified, completed, or completed

at the incorrect time. There exists a risk of increased cost should replacement be conducted earlier than required.

Disposal

Disposal of sanitary assets, further outlined in the Asset Management Strategy section, are generally completed during new installation of sewer main or pumping stations and their respective components.

The risks associated with disposal are quite low compared to other lifecycle activities as the Town does not receive much benefit or risk from completing or not completing disposal. Risks associated with disposal are increased construction costs for infrastructure should abandoned sewer mains not be identified in Town records or out in the field. The Town has an extensive GIS system and these risks are low.

Population Forecasts and Growth Assumptions

Population Forecasts

As discussed in section 2 of this plan, the 20-year population projection as included in the Town's Official Plan, is an increase of 6,880 people for a total population of 30,330 by the year 2040.

Water and Wastewater Master Plan

Municipalities can recognize the benefit of comprehensive long-range planning exercises that examine problems and solutions for an overall system of municipal services. Master Plans are not intended to address specific local problems or to plan for projects on a project-by-project basis. The Class Environmental Assessment process defines Master Plans as:

> *"Long range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. These plans examine an infrastructure system(s) or group of related projects in order to outline a framework for planning for subsequent project and/or developments."*

Since the completion of the 2008 Water and Wastewater Master Plan Update, further planning studies and discussion papers related to the preparation of the new Official Plan have been completed. In order to ensure that the Town implements the most cost-effective infrastructure servicing strategies required to support new growth and maintain a high level of service into the future, an update to the current Master Plan was completed in 2018 in accordance with the Class Environmental Assessment (EA) process for water and wastewater projects.

The purpose of the Master Plan Update was to re-examine water and wastewater infrastructure timing and costing requirements for the existing settlement areas in the Town of Tecumseh. The Master Plan builds on the original 2008 design criteria and used historical records and updated

information to develop projected flows, evaluate system capacities, determine future needs, and develop a scheduling and implementation plan.

The Master Plan included a recommended servicing strategy which includes several separate and distinct projects that will provide an ultimate consolidated servicing scheme to maximize the use of the existing infrastructure and provide capacity for new growth in designated growth areas of the Town. These projects are further detailed in section 7, 8, and 9 of the *2018 Water and Wastewater Master Plan Update*.

Sanitary Sewer Model Recalibration and Basement Flood Mitigation Study

The Town is currently undertaking a Sanitary Sewer Model Recalibration and Flood Mitigation Study, scheduled to be completed in the first quarter of 2023. This assessment and study will; provide updates to the Town's sanitary sewer model; determine if recent system improvements have improved the level of service of the existing sewers; and identify and evaluate solutions to reduce the risk and impacts of flooding.

Development

New local sewers, manholes, private drain connections, and pump stations will be constructed as part of proposed residential and industrial developments, which will eventually be assumed, owned and maintained by the Town. As these sanitary assets are constructed, they will be added to the Town's list of assets and included in future versions of the Asset Management Plan.

There are a number of current proposals, along with future opportunities for industrial development within the Oldcastle Hamlet Area. Required sanitary assets within these areas, as noted in Schedule B-2 of the Town's Official Plan, will be installed at the cost of the developer, which will in turn be assumed by the Town at the end of the maintenance period.

Trunk watermain installations or upgrades within this area will be funded through development charges identified in the Town's DC Study.

8.5 Asset Management Strategy

8.5.1 Asset Management Programs

The following provides an overview of the types of Asset Management programs conducted by the Town.

Maintenance

These maintenance activities will be undertaken by Public Works forces or competent contractors under the guidance of Public Works and are intended to find any deficiencies and or

issues at the onset in order to address them in an adequate timeframe and also limit the extent of remedial repairs.

MAINTENANCE

Performance	Program Descriptions	Frequency	Measures
Sewer Main Flushing	Mainline sewers flushed on an as needed basis through the course of the year. Manholes are inspected and sewer levels gauged in areas of known problems during periods of high flows. Sewer is flushed and cleared of all possible buildup. Annual tender with a goal of flushing every sewer in the Town in a fifteen year period is a goal to work towards. Budgetary constraints will be an issue.	As Needed	Less backups and claims
Video Inspection	Locations of suspected problems are investigated and video inspected on an as needed basis. All videos are loaded and filed in the GIS database and are accessed for review periodically. Again, an annual tender with a fifteen year goal is suggested.	As needed	Maintenance efforts can be concentrated for maximization
I&I Program	The Town has embarked on a ten year I&I Program to flush, camera and seal mainline sewers in defined areas annually. A budget of $150,000 was established to begin. Service laterals that are a cause of inflow and infiltration are also investigated and repaired through this program.	Annually	Reduction in unaccounted flow
Service Call Outs	Town staff is available to respond and attend to customer requests 24/7 on call coverage.	24 hrs/7 days	Number of calls
Monitoring	Public Works maintains SCADA on all sanitary pumping stations within the Town. This is accessed at the Town offices for review of the daily data to observe and evaluate any maintenance possibilities (i.e. high or low flows). These records are also used to gauge any success of any repairs completed that can be possibly measured. The Town also contracts AMG Environmental to provide flow monitoring service throughout the year. Town staff uses this technology to assess possible areas of issue and direct any rehabilitative work to that area.	Daily	Maintenance efforts can be concentrated for maximization
Sewer Pump Stations	OCWA operates and maintains the Town's sanitary PS and attends sites and maintains operational maintenance of the equipment such as: emergency generator testing; pump rotations; electrical and electronic inspections of the equipment; weekly station review and documentation.	Weekly	Fewer breakdowns and unexpected costs
PDC (Private Drain Connections) Inspections	The Town has been actively camera inspecting PDCs on an as requested basis. If any issues are found, they are directed to be repaired in one of two ways. If it is on the private side, the homeowner is requested to repair it. If it involves infiltration, it must be repaired and inspected by Town forces. If the repair is on the Town ROW, the repair is put into queue based on severity and either repaired by Town forces or contracted out for repair. PW has actively repaired approximately 3-10 PDCs each year for the last 3 years.	As Requested	Fewer unexpected future costs due to timely repair

Table 8-6: Maintenance Performance

Renewal/Rehabilitation

This strategy is intended to address issues of a significant proportion in order to extend the useful lifespan of the asset before its condition deteriorates to a degree such that the asset must be replaced. This strategy is used in sanitary sewers quite extensively due to the large costs and significant disruptions associated with a total replacement. Work such as this could be employed more than once during an asset's lifespan and extend it past the estimated lifespan if the work is performed within a reasonable timeframe.

RENEWAL/REHABILITATION

Performance	Program Descriptions	Frequency	Measures
Sewer Main	Mainline sewer identified through regular maintenance and inspection that still has some useful life left is considered for rehab or renewal operations. Lining and testing and sealing can rehab the pipe back to almost new characteristics.	As Identified	Extended useful life and delay of full cost replacement. Cost is usually less than replacement
Video Inspection	Locations of suspected problems are investigated and video inspected on an as needed basis. Locations identified for repair are accomplished through trenchless technologies (grouting, lining, sleeve).	As Identified	Upgrade of sewer condition assessment rating
I&I Program	The Town has embarked on a ten year I&I Program whereas we flush, camera and seal mainline sewers in defined areas annually. A budget of $150,000 was established to begin and it will escalate over the period. Service laterals that are a cause of inflow and infiltration are also investigated and repaired through this program.	Yearly	Reduction in treatment cost for non wastewater
Monitoring	Public Works maintains SCADA on all sanitary pumping stations within the Town. The Town also contracts AMG Environmental to provide flow monitoring service throughout the year. Town staff uses this technology to assess possible areas of issue and direct any rehabilitative work to that area. The SCADA system is annually tested and certified and remedial repairs addressed at that time.	24 hrs/7 days	Upgrade of sewer condition assessment rating
Sewer Pump Stations	OCWA operates and maintains the Towns sanitary PS and attends site and maintains operational maintenance of the equipment such as; emergency generator testing; pump rotations; electrical and electronic inspections of the equipment; weekly station review and documentation. When feasible, the Town incorporates rehab efforts to existing stations as part of larger Capital Projects.	Project Driven	Extended Useful life; reduce O&M Costs from OCWA
PDC (Private Drain Connections) Inspections	The Town has been actively camera inspecting PDC on an as requested basis. Defects in the PDC's sometimes can be relined using CIPP technology and the existing connection is rehabilitated and useful life restored. PW has actively repaired approximately 3-10 PDC each year for the last 3 years.	As Identified	Reduced claims for sewage backup

Table 8-7: Renewal/Rehabilitation Performance

Replacement

This strategy is employed when the asset has reached its useful lifespan and the costs associated with renewal/rehabilitation will approach the full replacement cost. This strategy is usually reserved for assets that have had very little maintenance work performed during its lifespan and for which remedial methods will not be adequate.

REPLACEMENT

Performance	Program Descriptions	Frequency	Measures
Sewer Main	Mainline sewers identified for replacement usually are done through larger capital works projects where the synergy with other infrastructure replacements can be realized. The Town is nearing completion of a Sanitary Sewer Model Update, which will also recommend the replacement of, or twinning of, sanitary sewers in key locations within the system to help alleviate the threat of basement flooding.	50-80 yrs	Renewed useful life
Video Inspection	Locations of suspected problems are investigated and video inspected on an as needed basis. All videos are loaded and filed in the GIS database and are accessed for review periodically. Again, an annual tender with a fifteen year goal is suggested. Upon review strategies are identified and replacement is an option if rehab cannot be accomplished.	As Needed	Reduced back up complaints
Sewer Pump Stations	OCWA operates and maintains the Town's sanitary PS and attends sites and maintains operational maintenance of the equipment such as: emergency generator testing; pump rotations; electrical and electronic inspections of the equipment; weekly station review and documentation. Replacement is considered when Rehab costs rise to a certain level. New technologies can be explored with possible lower future costs to be achieved due to replacement.	As Identified	Newer more efficient technology, lower O&M costs
PDC (Private Drain Connections) Inspections	If the repair is on the Town ROW, the repair is put into queue based on severity and either repaired by Town forces or contracted out for repair. PW has actively repaired approximately 3-10 PDCs each year for the last 3 years. If repair is not an option, then total replacement is completed.	As Identified	Fewer claims in future

Table 8-8: Replacement Performance

Disposal

This strategy is employed typically as part of larger infrastructure projects. The Town of Tecumseh achieves little to no value for disposal of any sanitary sewer collection system piping. There can be costs associated with disposal of any facility assets associated with sanitary sewer pumping stations although they are typically limited to residual scrap value.

DISPOSAL

Performance	Program Descriptions	Frequency	Measures
Sewer Main	Mainline sewer is removed through the replacement process. Usually the new sewer is placed where the existing sewer is located. The removed asset is disposed of at the Town's cost.	50-80 yrs	No recovery costs associated
Sewer Pump Stations	OCWA operates and maintains the Town's sanitary PS and attends sites and maintains operational maintenance of the equipment such as: emergency generator testing; pump rotations; electrical and electronic inspections of the equipment; weekly station review and documentation.	As Replaced	Equipment is identified for possible reuse or sale

Table 8-9: Disposal Performance

8.5.2 10 Year Plan

A detailed 10 Year Plan was generated for the sanitary sewer system that includes sewer replacements and reconstruction works. Please refer to Appendix V for detail by asset ID.

9. Financing Strategy

9.1. Background

The main sources of funding for infrastructure investment are the Town's general tax levy, the Town's water and wastewater rates and senior government grants.

General Tax Levy

Funds are allocated to Lifecycle (LC) reserves and New Infrastructure Levy (NIL) reserve from the general tax levy. The general tax levy supports all municipal services with the exclusion of water and wastewater services, which are supported by water and wastewater user rates.

Lifecycle Program

Allocations to Lifecycle reserves are based on the Town's Lifecycle Program, with the primary purpose to accumulate funds to be used for **capital asset replacement**. Annual requirements for each reserve were established in 2004 based on a study by a peer municipality. These amounts are adjusted for asset additions, deletions or for updated replacement costs. Lifecycle expenditures are approved by Council based on proposed works programs.

The table below shows the development of the program since inception.

Lifecycle	2005 Annual Requirement	LC Funding 2005	2005 Deficiency	2022 Annual Requirement	LC Funding 2022	2022 Deficiency
Arenas	80,000	80,000	-	220,000	170,000	50,000
Bridges and culverts	800,000	101,100	698,900	500,000	410,000	90,000
Buildings	150,000	150,000	-	230,000	205,000	25,000
Community Trails	7,700	7,700	-	120,000	70,000	50,000
Drains	40,000	40,000	-	100,000	100,000	-
Election	34,500	20,000	14,500	16,000	16,000	-
Fire apparatus	-	-	-	294,000	214,000	80,000
Fire equipment	-	-	-	90,000	75,000	15,000
Fleet	248,900	240,900	8,000	660,000	560,000	100,000
ITS infrastructure	134,000	134,000	-	190,000	173,000	17,000
New LC Issues	-	-	-	100,000	100,000	-
Outdoor pool	13,500	13,500	-	80,000	65,000	15,000
Park development & play equipment	370,000	270,000	100,000	500,000	390,000	110,000
Reforestation	4,600	4,600	-	30,000	30,000	-
Roads	4,300,000	2,047,900	2,252,100	4,160,000	4,160,000	-
Sidewalks	53,700	53,700	-	74,000	74,000	-
Storm sewers	170,300	157,300	13,000	2,000,000	1,252,700	747,300
Strategic Issues - one-time	7,700	7,700	-	50,000	50,000	-
Transit	-	-	-	100,000	100,000	-
Railroad Crossings	7,600	2,600	5,000	-		-
	6,422,500	3,331,000	3,091,500	9,514,000	8,214,700	1,299,300
Debt payments	-	-	-	1,505,800	1,505,800	-
Small equipment	-	-	-	150,000	150,000	-
Rehabilitation/renewal (OCIF)	-	-	-	2,321,955	2,321,955	-
New infrastructure levy	-	-	-	2,350,000	1,750,000	600,000
	-	-	-	6,327,755	5,727,755	600,000
Total	**6,422,500**	**3,331,000**	**3,091,500**	**15,841,755**	**13,942,455**	**1,899,300**

The 2022 budget includes an allocation of $5.9 million towards four Lifecycle reserves that support the Town's AMP. Projected net asset additions for the AMP planning period total $116 million; $59 million of which belongs to general tax rate supported services (the remaining $57 million relates to water and wastewater rate supported services). This translates into an increase of $0.7 million to current Lifecycle funding needed to cover the future replacement of AMP additions. Adherence to the Lifecycle Program would require an annual increase of approximately 1.5% for each year of the planning period.

Lifecycle Program - AMP	2005 Annual Requirement	LC Funding 2005	2005 Deficiency	2022 Annual Requirement	LC Funding 2022	2022 Deficiency
Bridges and culverts	800,000	101,100	698,900	500,000	410,000	90,000
Roads	4,300,000	2,047,900	2,252,100	4,160,000	4,160,000	-
Sidewalks	53,700	53,700	-	74,000	74,000	-
Storm sewers	170,300	157,300	13,000	2,000,000	1,252,700	747,300
	5,324,000	2,360,000	2,964,000	6,734,000	5,896,700	837,300
Debt payments	-	-	-	1,505,800	1,505,800	-
Small equipment	-	-	-	150,000	150,000	-
Rehabilitation/renewal (OCIF)	-	-	-	2,321,955	2,321,955	-
New infrastructure levy	-	-	-	2,350,000	1,750,000	600,000
	-	-	-	6,327,755	5,727,755	600,000
Total	**5,324,000**	**2,360,000**	**2,964,000**	**13,061,755**	**11,624,455**	**1,437,300**

Additional pressure on Lifecycle reserves and annual requirements comes from early replacement and/or enhancement of existing capital assets.

New Infrastructure Levy

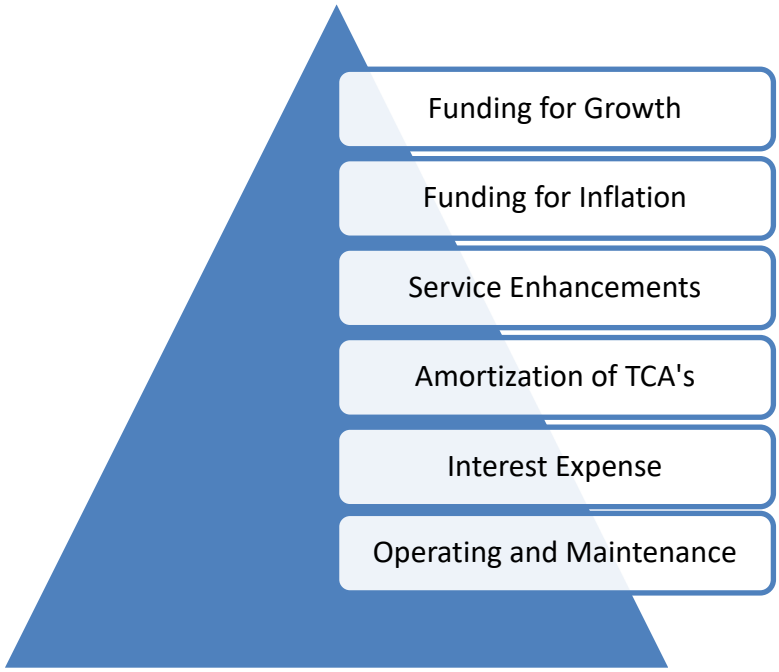
The New Infrastructure Levy (NIL) created in 2015 with the purpose of accumulating funds to be used for the funding requirements of **new capital assets**. The NIL was established in recognition of significant new capital infrastructure projects on the horizon at that time, some of which include Parks Master Plan, County Wide Active Transportation Study (CWATS), Fire Master Plan, and Development Charge (DC) Study growth projects - Town portion (i.e. costs which are typically associated with works that have some measurable benefit to existing development).

The 2022 budget includes an allocation of $1.75 million, with recommendations to increase this allocation over the next few years to reach the current annual requirement of $2.35 million. Notwithstanding, it is recognized that the NIL target level of $2.35 million is not sufficient to fully fund all new infrastructure projects, particularly considering the findings and recommendations from the Tecumseh and Oldcastle Storm Water Master Plans completed in 2020 and 2022 respectively.

The Infrastructure reserve balance as at December 2021 totals $10.5 million. These funds have been committed - $1 million towards trails with the remainder earmarked for Recreation projects. AMP v3 covers core infrastructure assets only, and therefore these assets and the corresponding infrastructure reserve funding will be integrated into future AMP updates.

As stated previously, new asset additions for general tax supported categories within this AMP total $59 million over the course of the 10-year planning period. Senior government grants and/or debt will be required to help finance the new assets identified within this AMP if they are to be constructed when planned.

The diagram below depicts best practice for asset management funding.



The Town's Lifecycle Program established in 2004, set annual requirement targets for asset categories that were intended to replace existing assets based on replacement costs. The annual requirement targets were reached with the adoption of the 2014 budget. As can be visualized with the diagram above, this accomplishment, although quite significant, was still lacking best practice as it failed to fund for service level enhancements and growth.

The establishment of the NIL in 2015 was intended to address funding for service level enhancements and growth. The initial NIL annual requirement was estimated at $1.3 million. Since that time, an allocation of $550,000 was added for Sports Plex and/or Sports Plex related amenities and $500,000 for other new infrastructure stemming from the 2019 DC Study Update, which brings the target to $2.35 million.

NIL Program	2015 Annual Requirement	NIL Funding 2015	2015 Deficiency	2022 Annual Requirement	NIL Funding 2022	2022 Deficiency
New Infrastructure Levy	1,300,000	200,000	1,100,000	2,350,000	1,750,000	600,000

The AMP will be used as one of the tools to assist in determining enhancements to the Lifecycle Plan beyond 2022.

Water and Wastewater User Rates

In 2015, a Water and Wastewater Rate Study was completed in-house to update rates to ensure full cost recovery of water and wastewater services. Full cost recovery is the generation of sufficient revenues to cover the cost of providing water and wastewater services which includes operations, capital works and the appropriate reserve contributions necessary for asset lifecycle replacement and growth. The Town follows the study recommendations when setting user rates.

The 2022 budget includes a transfer to capital reserves of $4.5 million from water and wastewater rates. Projected water and wastewater rate supported net asset additions for the AMP planning period total $57 million. This translates into an annual funding requirement of $5.3 million by the end of the planning period. Following the recommendations of the 2015 Water and Wastewater Rate Study, plus an annual increase of 1.5% for years 2025-2031 is necessary to reach the annual requirement by the end of the 10-year planning period.

Water and Wastewater Reserves

Wastewater expenditures have surpassed expected expenditures from previous studies while revenues through user rates have been less than expected due to various factors, including the advancement of the North Talbot Sanitary Sewer Connection project to take advantage of available grant funding, inflow and infiltration problems experienced by the Town and service level increases required for development. This resulted in strained reserves for Wastewater with insufficient funding available to support capital expenditures.

Historically, water reserves have faired better, with net expenditures falling below expectations of previous studies.

The net result is that Water reserves have been healthy and Wastewater reserves were underfunded.

To address this situation, Administration adjusted the user rates for water and wastewater in the 2014 budget. Water user rates were reduced by $0.165, while wastewater user rates were increased by $0.200 which shifted $0.5 million in funding from water to wastewater.

Further, the 2015 Water and Wastewater Rate Study highlighted the downward trend in water usage. This has caused issues with funding costs for these services as costs are not reduced proportionally with a reduction in usage. The Study recommended a greater increase to the fixed rate relative to the variable rate thereby ensuring a larger portion of the revenue stream is not dependent on volume variability.

Despite this shift in funding and the fact that user rates have increased annually based on the recommendations of previous Water and Wastewater Studies, both Water and Wastewater reserves continue to be underfunded based on the requirements of the AMP as noted above.

The AMP process has verified the need to review the assumptions and factors used in developing the Water and Wastewater Rate Study. This study is currently being updated. The study will again take into account an appropriate mix of debt, user charges, local improvement charges, development charges and developer contributions to support a stable long-term water and wastewater infrastructure system.

Senior Government Grants

Senior levels of government have acknowledged shared responsibility among the three levels of government for the care of municipal infrastructure assets and as such will be relied upon to financially support municipalities by way of grant programs for the foreseeable future. Announced grant funding applicable to the core infrastructure included in AMP v3 has been included as a funding source. A summary is shown below.

Known/Expected Senior Government grants							
	2022	**2023**	**2024**	**2025**	**2026**	**2027**	**2031**
CCBF*	1,178,738	1,178,738	1,178,738	1,178,738	1,178,738	1,178,738	1,178,738
CCBF* (from reserve fund)	4,625,631						
OCIF	2,321,955	1,161,000	1,161,000	1,161,000	1,161,000	-	-
OCIF (from reserve fund)	1,242,000						
DMAF	717,600	3,171,400	3,849,880	268,280	1,264,280	1,428,560	-
RSIP		1,027,000					
ICIP	-	-	-	2,566,550	-	-	-
Total Sr. Gov't grants	**10,085,924**	**6,538,138**	**6,189,618**	**5,174,568**	**3,604,018**	**2,607,298**	**1,178,738**
*Canada Community-Building Fund (CCBF) formerly known as Federal Gas Tax							

Senior levels of government have contributed $25.5 million towards Town infrastructure investments in the past decade, with an additional $5.9 million in uncommitted deferred grant revenue available (as of 2021 year-end) to be used towards capital works. Recent grant announcements total $15.7 million, which includes $10.7 million of DMAF grant funding for the Climate Change and Flooding Resiliency project.

The Town's Canada Community-Building Fund (CCBF - formerly Federal Gas Tax) allocation is included in the Lifecycle Roadways revenue mix and has enabled the Town to reach our Lifecycle Roadways annual requirement much sooner than were we to fund entirely on our own. Canada Community-Building Fund is assumed to be a perpetual source of funding and has been incorporated in the Town's Lifecycle Roadways program.

The Ontario Communities Infrastructure Fund (OCIF) grant program is expected to be a reliable source of funds to 2026. Town use of OCIF funds is determined on an annual basis and has previously been used for different asset categories. For AMP v3, OCIF funding for years 2022-2026 has been allocated to the Storm category, however, has not been designated to a certain project(s).

Two major factors allowing the Town to access these grants include: the current practice of having projects engineered and ready to go on short notice, and the fact that our lifecycle funding program allows us to provide the Town's share of funding required.

Support from senior levels of government can often be irregular with respect to timing, qualification, and amount. Long term planning will assist all three levels of government to optimally coordinate infrastructure investments. The Town will continue to urge senior levels of government to adopt a multi-year stable grant determination system to allow municipalities to be able to plan for government support with some degree of reliability.

Development Charges

Development charges (DC's) provide for the recovery of growth-related capital expenditures from new development. The *Development Charges Act* is the statutory basis to recover these charges.

AMP v3 covers core infrastructure, so categories that benefit from this revenue source are Roads, Water and Wastewater. Other DC services such as Recreation, Library and Fire will be incorporated into future AMPs.

On May 5, 2022, a Special Council Meeting was held where Public Works & Engineering Services presented their 2023 – 2031 Capital Plan in response to the direction received from Council at the March 29, 2022 Strategic Priorities Workshop. The Plan included an estimated $2 million general DCs and $28.9 million of DCs specific to the strategic growth areas.

These same estimates were used in the development of the AMP, however, were split between the various DC services. Affected asset categories and the estimated total DC revenue over the study period is as follows:

Roads	$	11,106,961
Water	$	3,066,460
Wastewater	$	9,777,297
AMP v3 total	**$**	**23,950,718**

Of the $24 million total estimated DC revenue, $22.5 million is specific to three development areas - Tecumseh Hamlet Secondary Plan Area, Manning Road Secondary Plan Area, and Oldcastle Hamlet. These DC figures are based on estimated DC fees that would be charged with the development of these areas, assuming construction of approximately 100 new residential homes per year as well as planned commercial/industrial development. Note that these assumptions are highly variable, and therefore risky. Actual results may vary widely.

Debt

The Town's 10-year Lifecycle Plan, initiated in 2005, incorporated long-term debt in its strategy to address its annual lifecycle funding deficit. The 10-year plan included increases to the general tax levy of 3.9% in 2005 and 2.9% in each of years 2006-2014, CCBF (Gas Tax) grant

funding allocated to support lifecycle, certain existing reserves drawn down over the 10-year period to help smooth tax increases and long-term debt incurred for Roads and Bridges to ensure full funding was available for those two services.

Borrowing funds to advance the timing of a project is also a funding option. Debt is ultimately repaid through general tax levy allocated funds, water and wastewater rate funds or, in some cases where allowed, senior government grants.

The use of debt is the least preferred financing option as the Town and its residents essentially forgo service benefits in lieu of interest charges.

Furthermore, municipalities are restricted to the amount of debt burden they can assume. The Town's 2021 year-end long-term debt obligation for general tax rate supported services is $12.2 million. The annual repayment limit is a Ministry formula which limits the amount of debt repayment a Municipality can commit to without requiring OMB approval. The limit is based on a maximum of 25% of municipal (own purposes) revenues based on the Financial Information Return and as adjusted by the Treasurer. The Town's current ratio of Net Debt Charges to Own Purposes Revenue is 5.1% (2020 FIR), which is considered moderate risk by the Ministry of Municipal Affairs and Housing.[1]

9.2. Projections

Projected reserve balances to 2031 are provided by asset type. A summary of all asset categories can be found at the end of this chapter.

Revenues:

Lifecycle contributions are based on 2022 Budget amounts for all categories except Water and Wastewater, i.e. annual allocations are held static at 2022 levels.

Water and Wastewater Lifecycle contributions are based on the 2015 Water and Wastewater Rate Study, which extends to 2024. Annual allocations for 2025-2031 are held static at 2024 levels.

For AMP purposes, debt has not been included as a funding source with the intention of showing a clear picture of the impact that planned capital works have on Town reserve balances.

Known grant funding for core infrastructure considered in this AMP has been incorporated into projections. This includes $5.9 million of deferred grants, which have been included but not allocated to a specific project.

[1] Per the Ministry of Municipal Affairs and Housing (MMAH) Financial Indicator Review, Net Debt Charges to Own Purposes Revenue ratio < 5% is considered Low risk, 5% - 10% is Moderate risk and >10% is High risk.

Development charges have been factored into estimates, consistent with Council's Strategic Priorities and the Public Works & Engineering Services 2023 – 2031 Capital Plan.

Similarly, the Part XII charge estimates found in the Public Works & Engineering Services 2023 – 2031 Capital Plan were used in this AMP update.

Expenditures:

Capital works over the 10-year planning period are in line with the Public Works & Engineering Services 2023 – 2031 Capital Plan as per direction received from Council at the 2022 Strategic Priorities Workshop. Condition assessments and studies were used to prioritize asset rehabilitation/reconstruction as applicable.

An annual inflationary factor of 2% has been applied to 2023-2031 expenditures.

The AMP deals with capital costs. The operating impact of capital is not factored into estimates.

Roadways

Roadways	2022	2023	2024	2025	2031
Reserve Beginning Balance	11,630,152	11,981,209	14,107,632	14,713,356	21,291,929
Lifecycle Contribution	3,779,773	3,779,773	3,779,773	3,779,773	3,121,489
CCBF (Gas Tax)	1,178,738	1,178,738	1,178,738	1,178,738	1,178,738
RSIP Grant	-	1,027,000	-	-	-
Other Contributions	1,569,200	-	-	-	-
Development Charges - General	66,957	66,957	66,957	66,957	66,957
Development Charges - Specific	-	773,866	773,866	773,866	2,435,727
Available Funds	18,224,820	18,807,543	19,906,967	20,512,690	28,094,840
Lifecycle Expenditure	5,247,700	3,975,400	4,469,100	4,301,600	3,866,400
Growth Expenditure	271,400	-	-	265,300	-
Debt Repayment	724,511	724,511	724,511	724,511	66,227
Total Expenditures	6,243,611	4,699,911	5,193,611	5,291,411	3,932,627
Reserve Ending Balance	**11,981,209**	**14,107,632**	**14,713,356**	**15,221,279**	**24,162,213**

Lifecycle Program		**Lifecycle and Growth**	
Lifecycle funding	4,687,204	Average annual funding	4,687,204
Average annual requirement	4,820,544	Average annual requirement	4,986,314
Annual surplus/(deficit)	-133,340	Annual surplus/(deficit)	-299,110

Major projects included in the plan under the Roadways category are: Tecumseh Road Improvements (2022) $2.5 million; Lesperance/VIA Rail Improvements (2023) $1.85 million; and Manning Road Phase 3 (2027) $6.97 million.

The majority of the increase to the reserve balance can be attributed to $11 million total estimated development charge revenue over the planning period.

Approximately $658,000 of annual Roadways debt payments will expire over the course of this 10-year plan. This debt was incurred to achieve target funding at the outset of the Lifecycle Program and was originally anticipated to be a temporary Lifecycle budget allocation. Electing to maintain this funding in the Lifecycle Program could be used to offset the projected funding deficits shown above.

Bridges

Bridges	2022	2023	2024	2025	2031
Reserve Beginning Balance	888,916	1,259,416	-72,284	263,816	353,916
Lifecycle contribution	494,852	494,852	494,852	494,852	414,364
Available Funds	1,383,768	1,754,268	422,568	758,668	768,280
Lifecycle expenditure	39,500	1,741,700	73,900	624,000	-
Growth expenditure	-	-	-	-	-
Debt repayment	84,852	84,852	84,852	84,852	4,364
Total expenditures	124,352	1,826,552	158,752	708,852	4,364
Reserve Ending Balance	**1,259,416**	**-72,284**	**263,816**	**49,816**	**763,916**

Lifecycle Program	
Lifecycle funding	453,585
Average annual requirement	466,085
Annual surplus/(deficit)	-12,500

Lifecycle and Growth	
Average annual funding	453,585
Average annual requirement	466,085
Annual surplus/(deficit)	-12,500

Capital works over the 10-year planning period are based on the recommendations found in the Bridge Needs Study and Culverts <3m Study.

The 2016 Culverts <3m Study, was the first study of its kind for the Town. This study resulted in an increase to the annual lifecycle requirement. Since then, the annual lifecycle contribution has been increased by $140,000.

Looking forward ten years, the average annual requirement is $466,085. Lifecycle funding over the planning period is $453,585 - a deficit of $12,500.

Approximately $80,000 of annual debt payments will expire over the course of this plan. At the onset of the Lifecycle program, debt was anticipated to be a temporary Lifecycle budget allocation (as reflected in the AMP). However, electing to maintain this funding for the Bridge Lifecycle Program could address the projected funding deficit in this category.

Stormwater

Stormwater	2022	2023	2024	2025	2031
Reserve Beginning Balance	295,379	5,733,465	2,287,365	-2,838,255	-16,767,073
Lifecycle Contribution	1,252,700	1,252,700	1,252,700	1,252,700	1,252,700
DMAF Grant	717,600	3,171,400	3,849,880	268,280	-
OCIF	2,321,955	1,161,000	1,161,000	1,161,000	-
Transfer from OCIF Reserve*	1,242,000	-	-	-	-
Transfer from CCBF Reserve*	4,625,631	-	-	-	-
Part XII Recoveries	-	-	-	-	2,905,031
Available Funds	10,455,265	11,318,565	8,550,945	-156,275	-12,609,342
Lifecycle expenditure	476,800	514,500	468,000	483,700	547,000
Growth/Recon. expenditure	4,245,000	8,516,700	10,921,200	670,700	2,576,900
Debt repayment	-	-	-	-	-
Total expenditures	4,721,800	9,031,200	11,389,200	1,154,400	3,123,900
Reserve Ending Balance	**5,733,465**	**2,287,365**	**-2,838,255**	**-1,310,675**	**-15,733,242**

*Note: Deferred CCBF (formerly Federal Gas Tax) and OCIF grants held in reserve funds are applied to the Storm category for illustrative, planning purposes. These funds have not been allocated to a specific project(s) at the time of publishing.

Lifecycle and Growth	
Average annual funding	4,066,805
Average annual requirement	6,256,430
Annual surplus/(deficit)	-2,189,625

Stormwater capital works expenditures total $62.6 million for the planning period, with $57.5 attributable to major reconstruction and growth projects.

Climate Change and Flooding Resiliency project costs total $26.8 million. Planned works include construction of a new consolidated Scully and St. Mark's Pump Station, a Riverside Drive Trunk Storm Sewer, decommissioning of the existing St. Mark's Storm Pump Station and construction of a new Peter J. Cecile Pump Station. DMAF grant funding of $10.7 million will help offset these costs.

Tecumseh Hamlet, Oldcastle Hamlet and Manning Road Secondary Plan Area works largely make up the balance. These projects are in line with Council Strategic Priorities reflected in the Public Works and Engineering Services 2023 – 2031 Capital Plan.

As shown above, these large strategic growth projects place a major strain on the Storm Lifecycle reserve, generating a deficit balance starting in 2024.

Support from senior levels of government is critical and grant funding opportunities will be pursued.

Water

Water	2022	2023	2024	2025	2031
Reserve Beginning Balance	13,623,040	13,887,813	11,823,566	11,434,085	6,764,596
Rate Study allocation	1,806,169	1,895,354	1,993,019	1,993,019	1,993,019
ICIP Grant	-	-	-	2,566,550	-
Development Charges - General	18,704	18,704	18,704	18,704	18,704
Development Charges - Specific	-	211,395	211,395	211,395	675,106
Available Funds	15,447,913	16,013,266	14,046,685	16,223,753	9,451,425
Lifecycle expenditure	20,000	1,012,100	1,207,300	4,545,500	1,220,100
Growth expenditure	1,540,100	3,177,600	1,405,300	3,661,200	4,266,500
Total expenditures	1,560,100	4,189,700	2,612,600	8,206,700	5,486,600
Reserve Ending Balance	**13,887,813**	**11,823,566**	**11,434,085**	**8,017,053**	**3,964,825**

Lifecycle and Growth	
Rate funding	2,271,214
Average annual requirement	3,493,690
Annual surplus/(deficit)	-1,222,476

Rate funding in future years is based on user rate increases recommended in the Town's 2015 Water and Wastewater Rate Study. The Study extends out to 2024. For the purposes of this AMP, the recommended study rates are incorporated in estimated funding for years 2022-2024 (Rate Study allocation). For years 2025-2031, the annual funding is held constant at the 2024 level.

Capital expenditures over the course of the planning period total $34.9 million, of which $20.0 million is for Growth projects. Development charge revenue is estimated at $3.1 million total. The disconnect between when services are need for growth, i.e. capital expenditures, and the collection of development charge revenue is evident in the reserve fund balance decline over the planning period. This gap is further reflected in the annual funding deficit of $1.2 million as shown above.

The Water and Wastewater Rate Study is currently being updated. The AMP highlights the need to review the assumptions and factors used in the development of this study. Determining an appropriate mix of debt, user charges, local improvement charges, development charges and developer contributions is required to ensure full cost recovery of the water system.

Wastewater

Wastewater	2022	2023	2024	2025	2031
Reserve Beginning Balance	3,448,396	5,710,994	5,797,097	5,150,194	-1,031,535
Rate Study allocation	2,362,670	2,556,072	2,758,067	2,758,067	2,758,067
Sr. Government Grants	-	-	-	-	-
Development Charges - General	60,188	60,188	60,188	60,188	60,188
Develoment Charges - Specific	-	668,343	668,343	668,343	2,159,191
Part XII Recoveries	-	-	-	300,000	350,000
Available Funds	5,871,254	8,995,597	9,283,694	8,936,792	4,295,911
Lifecycle expenditure	102,900	2,160,800	661,200	1,522,900	75,200
Servicing expenditure	-	193,800	1,461,600	-	924,200
Growth expenditure	-	843,900	2,010,700	8,981,000	2,629,200
Debt repayment	57,360	-	-	-	-
Total expenditures	160,260	3,198,500	4,133,500	10,503,900	3,628,600
Reserve Ending Balance	**5,710,994**	**5,797,097**	**5,150,194**	**-1,567,108**	**667,311**

Lifecycle and Growth	
Rate funding	3,896,058
Average annual requirement	4,174,166
Annual surplus/(deficit)	-278,108

Rate funding in future years is based on user rate increases recommended in the Town's 2015 Water and Wastewater Rate Study. The Study extends out to 2024. For the purposes of this AMP, the recommended study rates are incorporated in estimated funding for years 2022-2024 (Rate Study allocation). For years 2025-2031, the annual funding is held constant at the 2024 level.

Wastewater reserves have been strained for some time primarily due to the advancement of sanitary sewer connections in the Oldcastle area. Connections in Oldcastle will continue in a phased-manner throughout the 10-year planning period with an estimated cost of $4.6 million. Most of this expense will be eventually recovered through contributions of benefitting landowners.

The AMP allocates $31.9 million in costs attributable to growth over the 10-year planning period, whereas development charge revenue is estimated at $9.8 million total. As discussed previously, this timing disconnect puts a strain on the reserve fund balance. This gap is further reflected in the annual funding deficit of $0.3 million as shown above.

The Water and Wastewater Rate Study is currently being updated. The AMP highlights the need to review the assumptions and factors used in the development of this study. Determining an appropriate mix of debt, user charges, local improvement charges, development charges and developer contributions is required to ensure full cost recovery of the Wastewater system.

Summary – All Categories

Summary - All Categories	2022	2023	2024	2025	2031
Reserve beginning balance	29,885,883	38,572,897	33,943,376	28,723,195	10,611,833
Lifecycle Program	5,527,325	5,527,325	5,527,325	5,527,325	4,788,553
Water/Wastewater Rate Study	4,168,839	4,451,426	4,751,086	4,751,086	4,751,086
Senior Government Grants	10,085,924	6,538,138	6,189,618	5,174,568	1,178,738
Development Charges	145,849	1,799,453	1,799,453	1,799,453	5,415,874
Part XII Recoveries	-	-	-	300,000	3,255,031
Other Contributions	1,569,200	-	-	-	-
Annual contributions	21,497,137	18,316,342	18,267,482	17,552,432	19,389,282
Available funds	51,383,020	56,889,239	52,210,858	46,275,627	30,001,114
Lifecycle expenditure	5,886,900	9,404,500	6,879,500	11,477,700	5,708,700
Growth expenditure	6,056,500	12,732,000	15,798,800	13,578,200	10,396,800
Debt repayment	866,723	809,363	809,363	809,363	70,591
Annual expenditure	12,810,123	22,945,863	23,487,663	25,865,263	16,176,091
Reserve ending balance	**38,572,897**	**33,943,376**	**28,723,195**	**20,410,364**	**13,825,023**

Combined reserve balances for all categories are estimated to decline from $39.6 million in 2022 to $13.8 million by 2031. Bear in mind that this forecast model incorporates $24.0 million of Development Charge revenue and $12.7 million in Part XII recoveries. If these recoveries are delayed by only two years, the 2031 reserve ending balance would be in a deficit position.

Asset category specific funding	15,374,865
General Funding	586,763
Average annual requirement	19,210,915
Annual surplus/(deficit)	-3,249,287

Asset category specific funding for tax-supported categories includes lifecycle, and for rate-supported categories includes Rate Study allocations and property owner recoveries (Part XII and DC). One-time funding sources are excluded, with the exception of the DMAF and OCIF grants in the Storm category required to support significant capital works. Overall, the Town has an annual funding deficit of $3.2 million.

The following chart summarizes annual funding by asset category.

	Average Annual Funding				
	Avg Annual Requirement	General Tax & Rates	Grant Funding	Total	Surplus/ (Deficit)
Roadways	4,820,544	3,508,466	1,178,738	4,687,204	-133,340
Bridges & Culverts	466,085	453,585	-	453,585	-12,500
Stormwater	6,256,430	4,066,805	-	4,066,805	-2,189,625
Water	3,493,690	2,271,214	-	2,271,214	-1,222,476
Wastewater	4,174,166	3,896,058	-	3,896,058	-278,108
General Unallocated	-		586,763	586,763	586,763
Total	**19,210,915**	**14,196,127**	**1,765,501**	**15,961,628**	**-3,249,287**

Overall, the annual funding requirement for core infrastructure assets is approximately 83% achieved. This assumes that water and wastewater user rates will be adjusted in accordance with the 2015 Water and Wastewater Rate Study (to 2024). Please note that the annual funding requirement for tax-supported categories does not include growth projects, with Storm being the exception as there is no allocation for this category in the New Infrastructure Levy.

Approximately $739,000 of annual debt payments will expire over the course of this 10-year plan. This debt was incurred for the Roads and Bridges Lifecycle categories to achieve target funding for these two categories at the outset of the Lifecycle Program. Originally anticipated to be a temporary Lifecycle budget allocation, and reflected as such in this AMP, electing to maintain this funding in the Lifecycle Program is an additional funding source and could be used to help reduce the projected funding deficits in those two categories.

Long term debt can also be used strategically to spread costs over a longer timeframe to match costs with asset useful life. The use of debt is generally not a preferred option as it exposes the Town to interest rate risk and interest charges may jeopardize or limit future opportunities. Nonetheless, the Town's current debt burden is moderate. There is some room to incur debt as a tool to facilitate growth-related construction works.

Senior Government grant funding opportunities will be pursued. Any grant funding earned will help to either reduce increases to user rates and/or the general tax rate and/or improve the annual funding percentage.

10. Conclusion

The 10-year projected reserve balances that support infrastructure investment decrease significantly over the planning period as shown below.

Summary – All Categories

Summary - All Categories	2022	2023	2024	2025	2031
Reserve beginning balance	29,885,883	38,572,897	33,943,376	28,723,195	10,611,833
Lifecycle Program	5,527,325	5,527,325	5,527,325	5,527,325	4,788,553
Water/Wastewater Rate Study	4,168,839	4,451,426	4,751,086	4,751,086	4,751,086
Senior Government Grants	10,085,924	6,538,138	6,189,618	5,174,568	1,178,738
Development Charges	145,849	1,799,453	1,799,453	1,799,453	5,415,874
Part XII Recoveries	-	-	-	300,000	3,255,031
Other Contributions	1,569,200	-	-	-	-
Annual contributions	21,497,137	18,316,342	18,267,482	17,552,432	19,389,282
Available funds	51,383,020	56,889,239	52,210,858	46,275,627	30,001,114
Lifecycle expenditure	5,886,900	9,404,500	6,879,500	11,477,700	5,708,700
Growth expenditure	6,056,500	12,732,000	15,798,800	13,578,200	10,396,800
Debt repayment	866,723	809,363	809,363	809,363	70,591
Annual expenditure	12,810,123	22,945,863	23,487,663	25,865,263	16,176,091
Reserve ending balance	**38,572,897**	**33,943,376**	**28,723,195**	**20,410,364**	**13,825,023**

There are specific asset categories, Stormwater and Wastewater, that are not funded sufficiently over the term of the AMP. These two reserves will experience funding shortfalls over the course of the ten years.

With respect to the financing strategy, the Town has a sincere commitment to asset management. The Lifecycle Program demonstrates willingness to address funding requirements for the replacement of existing assets. Further, the special New Infrastructure Levy was established to begin to address the funding requirements for asset additions.

The Town will continue its commitment to the Lifecycle Program, where new assets initiate increases to lifecycle requirements. Federal Gas Tax funding is incorporated into the Lifecycle Program and is therefore a key funding component. The AMP will be used as one of the tools to assist in determining enhancements to the Lifecycle Plan beyond 2022.

The Water and Wastewater Rate Study is currently being updated. The AMP highlights the need to review the assumptions and factors used in the development of this study.

The Town employs asset management strategies for all infrastructure assets. These strategies incorporate industry best practices, recurring engineering studies, maintenance programs and

long term planning to ensure the right infrastructure investments are made at the right time providing residents with acceptable and sustainable levels of service.

Senior government financial support is an essential component of any municipality's AMP. However, government funding can often be irregular with respect to timing, qualification and amount. The Town will continue to advocate for a multi-year stable grant determination system to allow municipalities to be able to plan with some degree of reliability.

Appendices

The Corporation of the Town of Tecumseh

POLICY MANUAL

POLICY NUMBER: 82.1	**EFFECTIVE DATE: January 28, 2014**
SUPERCEDES: N/A	**APPROVAL: RCM-46/14**
SUBJECT: Roads Condition Assessment Policy	

PURPOSE:

1.1 The purpose of this policy is to provide a clear, consistent method for determining the condition rating of all roads within the Town of Tecumseh.

SCOPE:

2.1 The Town has an inventory of approximately 180 centerline-kilometers of roadway (from two to four lanes), consisting of varying materials such as asphalt, concrete, and tar and chip. All Town roads shall be assessed as outlined in this policy.

BACKGROUND:

3.1 Roads Needs Studies are used to assess the existing road system in the Town and to assist in preparing comprehensive plans for improving and maintaining the road systems. The Road Needs Study classifies the road inventory into three main categories:

Urban:	Roads having curb and gutter and storm sewer drainage
Semi-Urban:	Roads without curb and gutter in built-up urban areas
Rural:	Roads without curb and gutter outside built-up urban areas

The Roads Needs Study incorporates the use of pavement condition indices (PCI) in rating individual road segments.

3.2 The Town also uses in-house software which analyzes the Pavement Condition Index (PCI) to create asset management strategy scenarios. These ratings range from 0-100, where 0 is the worst rating possible and 100 is the best rating possible. These ratings are consistent with the rating system used in the traditional Road Needs Study.

PROCEDURE:

4.1 Acceptable levels of service (ALS) are service qualities for given activities approved by Council that balance desired service levels with cost and risk. ALS is often documented as commitments to carry out given action(s) within a specified time frame in response to asset condition data.

4.2 Roads Needs Studies shall be conducted within an approximate 3-5 year time frame, with no more than five years between studies.

4.3 The Director Public Works & Environmental Services shall ensure that the Town continues to maintain acceptable levels of service, which shall be qualified as:

- A PCI of 70 on average throughout the Town.
- Any road rated as a “Now” time of improvement (PCI of less than 50) in the current Roads Needs Study are slated for some form of work within a two year window.
- Any road rated as a “1-5 year” time of improvement (PCI 50-60) is addressed in some manner within the timeframe.
- All roads as rated are actively reviewed in conjunction with other infrastructure projects in order to achieve efficiencies of Town dollars.

4.4 Staff observations shall be reported and included in the annual review of the Town’s roads network.

4.5 Roads Needs Studies shall be awarded to consulting engineering firms who have a demonstrated ability to evaluate the local road network as well as a demonstrated ability to produce a report in an acceptable format.

RESPONSIBILITY:

5.1 The Director Public Works & Environmental Services shall be responsible for the implementation of the Roads Condition Assessment Policy.

5.2 The Manager Roads & Fleet and/or the Manager Engineering Services shall be responsible for the review and use of information gathered from condition assessments.

5.3 Administration, consisting of the Director Public Works & Environmental Services, the Director Financial Services/Treasurer, and the Manager Roads & Fleet and/or the Manager Engineering Services shall award the Roads Needs Study to a consulting engineering firm in a process consistent with the Town’s Purchasing Policy.

REFERENCE:

Purchasing By-law 2006-03, which includes the Purchasing Policy

The Corporation of the Town of Tecumseh

POLICY MANUAL

POLICY NUMBER: 82	**EFFECTIVE DATE: January 28, 2014**
SUPERCEDES: N/A	**APPROVAL: RCM-46/14**
SUBJECT: Data Verification Policy	

PURPOSE:

1.1 The purpose of this policy is to provide a guideline for the review of data that is collected or provided to the Town of Tecumseh for use in asset management.

SCOPE:

2.1 The policy is applicable to all data used by Town staff for asset management purposes.

PROCEDURE:

3.1 Identify the records to be reviewed.

3.2 Determine the location and source of the records. The data may be produced by more than one employee or may come from an external source such as a consultant. Data may be present in a number of formats. For example, engineering firms may submit a Needs Study electronically or provide hard copies.

3.3 Determine the criteria against which the data will be checked. For example: Will the data be tested for Reasonability? Accuracy? Completeness?

3.4 Determine an appropriate sample size keeping in mind the purpose of the data and the testing criteria identified in the previous step. For example, a reasonability test would have a smaller sample size than a check for completeness which might involve a review of the entire sample.

3.5 Once the testing criteria have been determined, complete the data review. For example, the verification of a Needs Study submitted by an engineering consultant might be checked for completeness by comparing the number of records in the Study to the number found in GIS. The same study may be checked for reasonability by comparing findings and recommendations to those in the previous study.

3.6 Once the data review has been completed, note and follow up on any inconsistencies to ensure the data is corrected.

RESPONSIBILITY:

4.1 Users of data shall be responsible to ensure that the data he/she is reporting on has been verified as per this policy.

Town of Tecumseh
Roads 10 Year Plan

Full Name	Road From	Road To	GIS Road ID	2019 PCI	Work Type	Year of Work	Costing	Subtotal by Year
Studies:								
Roads Needs Study					Engineering	2024	$ 90,000	$ 90,000
Roads Needs Study					Engineering	2029	$ 90,000	$ 90,000
							10 Year Total Studies	**$ 180,000**
Annual Project Contingency:								
Annual Project Contingency						2022	**$ 250,000**	**$ 250,000**
Annual Project Contingency						2023	**$ 250,000**	**$ 250,000**
Annual Project Contingency						2024	**$ 250,000**	**$ 250,000**
Annual Project Contingency						2025	**$ 250,000**	**$ 250,000**
Annual Project Contingency						2026	**$ 250,000**	**$ 250,000**
Annual Project Contingency						2027	**$ 250,000**	**$ 250,000**
Annual Project Contingency						2028	**$ 250,000**	**$ 250,000**
Annual Project Contingency						2029	**$ 250,000**	**$ 250,000**
Annual Project Contingency						2030	**$ 250,000**	**$ 250,000**
Annual Project Contingency						2031	**$ 250,000**	**$ 250,000**
							10 Year Total Project Contingency	**$ 2,500,000**
Rehabilitation:								
Verdant Crt	St Agnes Dr	St Agnes Dr	SS080	44	Resurfacing	2022	$ 10,100	
Piccadilly Ave	Trafalgar Crt	Oldcastle Rd	SS301	55	Resurfacing	2022	$ 25,200	
Piccadilly Ave	Trafalgar Crt	Trafalgar Crt	SS302	54	Resurfacing	2022	$ 27,200	
Trafalgar Crt	Piccadilly Ave	Piccadilly Ave	SS303	69	Resurfacing	2022	$ 64,300	
Riverside Dr	Arlington Blvd	Kensington Blvd	SC007	56	Resurfacing	2022	$ 92,400	
Poisson St	Reme St	Arbour St	T293	66	Resurfacing	2022	$ 29,300	
Poisson St	Tecumseh Rd	Reme St	T297	57	Resurfacing	2022	$ 42,800	
Green Valley Dr	St Gregorys Rd	Meadowland Cres	T259	67	Resurfacing	2022	$ 19,300	
Green Valley Dr	Brunelle Cres	St Gregorys Rd	T233	62	Resurfacing	2022	$ 31,300	
Green Valley Dr	Meadowland Cres	Meadowland Cres	T258	68	Resurfacing	2022	$ 21,400	
Green Valley Dr	Brunelle Cres	Brunelle Cres	T234	67	Resurfacing	2022	$ 57,400	
Maisonneuve St	St Anne St	Lesperance Rd	SS035	52	Resurfacing	2022	$ 30,300	
Intersection Rd	St Anne St	Lesperance Rd	SS033	60	Resurfacing	2022	$ 32,000	
Intersection Rd	Hebert St	St Anne St	SS028	63	Resurfacing	2022	$ 42,900	
Intersection Rd	Shawnee Rd	Hebert St	SS020	60	Resurfacing	2022	$ 28,100	$ 554,000
Dillon Dr	McColl Ave	Lacasse Blvd	T026	56	Resurfacing	2023	$ 21,100	
Dillon Dr	St Pierre St	McColl Ave	T025	70	Resurfacing	2023	$ 31,700	
Green Valley Dr	Amberly Cres	Brunelle Cres	T236	50	Resurfacing	2023	$ 13,500	
Cada Cres	St Gregorys Rd	Fairway Cres	SC018	56	Resurfacing	2023	$ 19,000	
Cada Cres	Fairway Cres	Gordon Ave	SC130	64	Resurfacing	2023	$ 20,400	
Cada Cres	Lenore Ave	Fairway Cres	SC019	61	Resurfacing	2023	$ 42,600	
Cada Cres	Gordon Ave	Lenore Ave	SC021	63	Resurfacing	2023	$ 58,900	

Town of Tecumseh
Roads 10 Year Plan

Full Name	Road From	Road To	GIS Road ID	2019 PCI	Work Type	Year of Work	Costing	Subtotal by Year
Maisonneuve St	Hebert St	St Anne St	SS030	68	Resurfacing	2023	$ 54,900	
Coronado Dr	Percy Pl	Keith Ave	T068	57	Resurfacing	2023	$ 20,300	
Percy Pl	Lacasse Blvd	Coronado Dr	T066	56	Resurfacing	2023	$ 25,600	
Dimu Dr	Emma Maria Cres	12th Con Rd	SS170	50	Resurfacing	2023	$ 25,000	
Dimu Dr	Emma Maria Cres	Emma Maria Cres	SS171	67	Resurfacing	2023	$ 38,600	
Malden Rd	Canada South Rlwy	Highway 3	SS344	72	Resurfacing	2023	$ 83,200	
Canterberry Crt	Estate Pk	Estate Pk	SC100	57	Resurfacing	2023	$ 16,000	
Estate Pk	Tecumseh Rd	Talthorpe Pl	SC106	69	Resurfacing	2023	$ 15,200	
Estate Pk	Lexham Gdn	Lexham Gdn	SC097	68	Resurfacing	2023	$ 83,200	
Estate Pk	Lexham Gdn	Canterberry Crt	SC099	72	Resurfacing	2023	$ 19,600	
Estate Pk	Canterberry Crt	Talthorpe Pl	SC101	68	Resurfacing	2023	$ 23,200	
Holmes Cres	Docherty Dr	Docherty Dr	SS139	66	Resurfacing	2023	$ 34,600	
Docherty Dr	Holmes Cres	Lesperance Rd	SS140	67	Resurfacing	2023	$ 18,000	
Docherty Dr	Holmes Cres	Shields St	SS138	68	Resurfacing	2023	$ 105,000	
Parkland Cres	Revland Dr	Woodbridge Dr	T229	80	Resurfacing	2023	$ 23,200	
Parkland Cres	Woodbridge Dr	Woodbridge Dr	T231	74	Resurfacing	2023	$ 34,800	
Pinewood Cres	Riverside Dr	Riverside Dr	T009	68	Resurfacing	2023	$ 37,300	
Hayes Ave	Edgewater Blvd	St Marks Rd	SC038	56	Resurfacing	2023	$ 22,900	
Hayes Ave	Grant Ave	Edgewater Blvd	SC037	80	Resurfacing	2023	$ 28,600	
Hayes Ave	Fairway Cres	Grant Ave	SC026	76	Resurfacing	2023	$ 46,700	
Arbour St	Lesperance Rd	Bedell St	T308	73	Resurfacing	2023	$ 57,800	
Arbour St	Bedell St	Lanoue St	T310	69	Resurfacing	2023	$ 55,000	
Lesperance Rd	McNorton St	St Jacques St	T211	80	Resurfacing	2023	$ 91,500	$ 1,167,400
Horwood Cres	Lacasse Blvd	Horwood Cres	T220	59	Resurfacing	2024	$ 24,900	
Horwood Cres	Horwood Cres	St Gregorys Rd	T221	69	Resurfacing	2024	$ 100,900	
Horwood Cres	Horwood Cres	St Gregorys Rd	T222	65	Resurfacing	2024	$ 75,000	
12th Concession Rd	Highway 401	County Rd 46	SS214	95	Resurfacing	2024	$ 143,600	
Brouillette Crt	Brouillette Crt	Brouillette Crt	T281	57	Resurfacing	2024	$ 12,400	
Brouillette Crt	Southfield Dr	Fieldcrest Ln	T278	86	Resurfacing	2024	$ 21,800	
Brouillette Crt	Fieldcrest Ln	Brouillette Crt	T280	84	Resurfacing	2024	$ 52,800	
Cedarwood Dr	Gauthier Dr	Lesperance Rd	T105	61	Resurfacing	2024	$ 76,600	
Centennial Dr	Riverside Dr	Dillon Dr	T037	67	Resurfacing	2024	$ 61,700	
Centennial Dr	Dillon Dr	Little River Blvd	T096	70	Resurfacing	2024	$ 74,300	
Dorset Pk	Collier Cres	Tecumseh Rd	SC093	69	Resurfacing	2024	$ 74,600	
Dorset Pk	Tecumseh Rd	Harbourne Cres	SC087	65	Resurfacing	2024	$ 65,100	
Dorset Pk	Harbourne Cres	Harbourne Cres	SC089	65	Resurfacing	2024	$ 21,200	
Dorset Pk	Collier Cres	Collier Cres	SC092	62	Resurfacing	2024	$ 22,200	
Dorset Pk	Harbourne Cres	Collier Cres	SC090	65	Resurfacing	2024	$ 23,000	
Collier Cres	Dorset Pk	Dorset Pk	SC091	69	Resurfacing	2024	$ 81,400	
Harbourne Cres	Dorset Pk	Dorset Pk	SC088	69	Resurfacing	2024	$ 72,600	

Town of Tecumseh
Roads 10 Year Plan

Full Name	Road From	Road To	GIS Road ID	2019 PCI	Work Type	Year of Work	Costing	Subtotal by Year
Kavanagh Dr	Mayrand Cres	Mayrand Cres	SS016	67	Resurfacing	2024	$ 24,000	
Kavanagh Dr	Mayrand Cres	Mayrand Cres	SS017	48	Resurfacing	2024	$ 23,600	
Kavanagh Dr	Mayrand Cres	Shawnee Rd	SS014	65	Resurfacing	2024	$ 30,200	
Mayrand Cres	Kavanagh Dr	Kavanagh Dr	SS015	62	Resurfacing	2024	$ 99,600	$ 1,181,500
Lacasse Blvd	Riverside Dr	Dillon Dr	T027	74	Resurfacing	2025	$ 46,800	
Lacasse Blvd	Dillon Dr	Percy Pl	T065	67	Resurfacing	2025	$ 26,300	
Lacasse Blvd	Percy Pl	Little River Blvd	T064	74	Resurfacing	2025	$ 61,000	
Lanoue St	Lanoue St	Arbour St	T316	71	Resurfacing	2025	$ 10,200	
Lanoue St	Heatherglen Cres	Cortina Cres	T328	79	Resurfacing	2025	$ 27,900	
Lanoue St	Lemire St	Heatherglen Cres	T326	71	Resurfacing	2025	$ 23,200	
Lanoue St	Heatherglen Cres	Manning Rd	T332	81	Resurfacing	2025	$ 63,300	
Lanoue St	Cortina Cres	Heatherglen Cres	T329	80	Resurfacing	2025	$ 24,700	
Lanoue St	Bedell St	Lanoue St	T315	66	Resurfacing	2025	$ 49,600	
Lanoue St	Lesperance Rd	Bedell St	T313	82	Resurfacing	2025	$ 54,400	
Lanoue St	Northfield Way	Lemire St	T325	76	Resurfacing	2025	$ 30,700	
Lanoue St	Ryegate Dr	Northfield Way	T317	70	Resurfacing	2025	$ 150,800	
Lanoue St	Arbour St	Ryegate Dr	T408	68	Resurfacing	2025	$ 55,000	
Desro Dr	Manning Rd	Manning Rd	SS100	63	Resurfacing	2025	$ 158,000	
Grace Rd	Little River Blvd	St Thomas St	T181	66	Resurfacing	2025	$ 68,600	
Grace Rd	Riverside Dr	Little River Blvd	T101	72	Resurfacing	2025	$ 137,100	
McCord Ln	Di Cocco Crt	McCord Ln	SS292	72	Resurfacing	2025	$ 18,000	
McCord Ln	Walker Rd	Di Cocco Crt	SS290	73	Resurfacing	2025	$ 67,800	
Jamsyl Dr	Sylvestre Dr	Manning Rd	SS097	75	Resurfacing	2025	$ 138,600	$ 1,212,000
Lexham Gdns	Tecumseh Rd	Estate Pk	SC096	70	Resurfacing	2026	$ 15,800	
Lexham Gdns	Estate Pk	Estate Pk	SC098	64	Resurfacing	2026	$ 39,200	
McNorton St	William St	Lacasse Blvd	T200	67	Resurfacing	2026	$ 38,000	
McNorton St	St Pierre St	William St	T198	82	Resurfacing	2026	$ 25,800	
Lemire St	Lanoue St	Northfield Way	T318	74	Resurfacing	2026	$ 29,600	
Lemire St	Northfield Way	Lanoue St	T319	73	Resurfacing	2026	$ 118,300	
Edgewater Blvd	Lenore Ave	St Gregorys Rd	SC035	71	Resurfacing	2026	$ 57,000	
Edgewater Blvd	Hayes Ave	Lenore Ave	SC036	66	Resurfacing	2026	$ 56,700	
Edgewater Blvd	Riverside Dr	Hayes Ave	SC039	72	Resurfacing	2018	$ 74,000	
Lenore Ave	Cada Cres	Edgewater Blvd	SC020	66	Resurfacing	2026	$ 29,300	
Lesperance Rd	Maisonneuve St	Intersection Rd	SS034	83	Resurfacing	2026	$ 70,500	
Lesperance Rd	Gouin St	Maisonneuve St	SS036	69	Resurfacing	2026	$ 72,700	
Lesperance Rd	Calvary Crt	Gouin St	SS038	66	Resurfacing	2026	$ 78,100	
Lesperance Rd	Lessard St	Calvary Crt	SS042	67	Resurfacing	2026	$ 34,600	
Lesperance Rd	West Lake Dr	Lessard St	SS044	66	Resurfacing	2026	$ 33,900	
Lesperance Rd	Highway 2	West Lake Dr	SS048	77	Resurfacing	2026	$ 34,200	
Lesperance Rd	North Pacific Ave	Canadian Pacific Railway	SS054	86	Resurfacing	2026	$ 13,800	

Town of Tecumseh
Roads 10 Year Plan

Full Name	Road From	Road To	GIS Road ID	2019 PCI	Work Type	Year of Work	Costing	Subtotal by Year
Lesperance Rd	Meconi Dr	North Pacific Ave	SS062	84	Resurfacing	2026	$ 28,800	
Lesperance Rd	Charlene Ln	Meconi Dr	SS076	73	Resurfacing	2026	$ 74,900	
Lesperance Rd	Intersection Rd	Charlene Ln	SS077	72	Resurfacing	2026	$ 15,100	
Lesperance Rd	Shields St	Wildberry Cres	SS135	79	Resurfacing	2026	$ 21,700	
Lesperance Rd	Docherty Dr	Shields St	SS141	85	Resurfacing	2026	$ 68,200	
Lesperance Rd	South Pacific Ave	Docherty Dr	SS142	86	Resurfacing	2026	$ 51,700	
Lessard St	Lesperance Rd	Lesperance Rd	SS043	71	Resurfacing	2026	$ 51,800	
Little River Blvd	Grace Rd	Manning Rd	T103	52	Resurfacing	2026	$ 28,200	
Little River Blvd	Donalda Crt	Grace Rd	T100	57	Resurfacing	2026	$ 35,800	
Little River Blvd	Windsor Border	Gauthier Dr	T048	70	Resurfacing	2026	$ 12,600	$ 1,210,300
Mulberry Dr	Windsor Border	Southfield Dr	T_SS001	68	Resurfacing	2027	$ 29,300	
Murray Cres	Shawnee Rd	North Pacific Ave	SS058	82	Resurfacing	2027	$ 123,900	
North Pacific Ave	Shawnee Rd	Murray Cres	SS059	82	Resurfacing	2027	$ 26,900	
North Pacific Ave	Murray Cres	St Anne St	SS057	73	Resurfacing	2027	$ 70,100	
North Pacific Ave	St Anne St	Lesperance Rd	SS055	69	Resurfacing	2027	$ 42,700	
Meadowland Cres	Green Valley Dr	Green Valley Dr	T257	77	Resurfacing	2027	$ 128,600	
Jacie Crt	Northfield Way	Northfield Way	T321	77	Resurfacing	2027	$ 42,900	
Northfield Way	Lanoue St	Jacie Crt	T320	73	Resurfacing	2027	$ 29,700	
Northfield Way	Shelley Crt	Lanoue St	T324	73	Resurfacing	2027	$ 87,400	
Northfield Way	Jacie Cres	Shelley Crt	T322	75	Resurfacing	2027	$ 24,700	
Revland Dr	St Thomas St	Parkland Cres	T228	82	Resurfacing	2027	$ 107,300	
Revland Dr	St Gregorys Rd	St Gregorys Rd	T226	80	Resurfacing	2027	$ 11,800	
Revland Dr	Parkland Cres	St Gregorys Rd	T227	79	Resurfacing	2027	$ 24,600	
Cortina Cres	Lanoue St	Heatherglen Cres	T330	81	Resurfacing	2027	$ 77,700	
Heatherglen Dr	Lanoue St	Cortina Cres	T327	79	Resurfacing	2027	$ 139,800	
Heatherglen Dr	Lanoue St	Cortina Cres	T331	85	Resurfacing	2027	$ 66,100	
Riverside Dr	Chene St	Lesperance Rd	T006	73	Resurfacing	2027	$ 30,100	
Riverside Dr	Winclare Dr	Catalina Cove	T003	78	Resurfacing	2027	$ 23,500	
Riverside Dr	Catalina Cove	Chene St	T005	80	Resurfacing	2027	$ 27,200	$ 1,114,300
Service Rd	Service Rd	County Rd 34	SS312	65	Resurfacing	2028	$ 72,500	
Shelley Crt	Northfield Way	Northfield Way	T323	71	Resurfacing	2028	$ 40,400	
Demarse Crt	Demarse Crt	Demarse Crt	T303	75	Resurfacing	2028	$ 22,200	
Demarse Crt	Renaud St	Demarse Crt	T301	85	Resurfacing	2028	$ 33,500	
Demarse Crt	Demarse Crt	Demarse Crt	T302	77	Resurfacing	2028	$ 23,900	
St Thomas St	Brenda Cres	Michael Dr	T163	65	Resurfacing	2028	$ 23,800	
St Thomas St	Revland Dr	Woodbridge Dr	T167	70	Resurfacing	2028	$ 24,900	
St Thomas St	Woodbridge Dr	Centennial Dr	T169	76	Resurfacing	2028	$ 26,300	
St Thomas St	Michael Dr	Revland Dr	T165	69	Resurfacing	2028	$ 24,400	
St Thomas St	Amberly Cres	Green Valley Dr	T179	74	Resurfacing	2028	$ 25,200	
St Thomas St	Grace Rd	Manning Rd	T182	60	Resurfacing	2028	$ 26,400	

Town of Tecumseh
Roads 10 Year Plan

Full Name	Road From	Road To	GIS Road ID	2019 PCI	Work Type	Year of Work	Costing	Subtotal by Year
St Thomas St	Green Valley Dr	Grace Rd	T180	64	Resurfacing	2028	$ 18,300	
Brenda Cres	St Thomas St	Clarice Ave	T203	66	Resurfacing	2028	$ 51,400	
Brenda Cres	Brenda Cres	St Thomas St	T160	69	Resurfacing	2028	$ 20,600	
Brenda Cres	Brenda Cres	Brenda Cres	T162	70	Resurfacing	2028	$ 49,200	
Brenda Cres	Brenda Cres	Brenda Cres	T161	73	Resurfacing	2028	$ 27,500	
Shiff Dr	County Rd 42	Cranbrook Cres	SS180	74	Resurfacing	2028	$ 14,200	
Green Valley Dr	St Thomas St	Amberly Cres	T238	67	Resurfacing	2028	$ 12,600	
St Gregorys Rd	Revland Dr	Green Valley Dr	T232	62	Resurfacing	2028	$ 92,200	
St Gregorys Rd	Michael Dr	Revland Dr	T225	63	Resurfacing	2028	$ 31,100	
St Gregorys Rd	Horwood Cres	Michael Dr	T223	72	Resurfacing	2028	$ 25,300	
St Gregorys Rd	Edgewater Blvd	St Marks Rd	SC040	70	Resurfacing	2028	$ 28,400	
St Gregorys Rd	St Marks Rd	Arlington Blvd	SC053	66	Resurfacing	2028	$ 38,600	
Michael Dr	Little River Blvd	St Thomas St	T164	63	Resurfacing	2028	$ 139,000	
Michael Dr	James Cres	Little River Blvd	T084	80	Resurfacing	2028	$ 22,200	
Michael Dr	Simard Cres	James Cres	T087	73	Resurfacing	2028	$ 23,500	
Michael Dr	Dillon Dr	Simard Cres	T089	69	Resurfacing	2028	$ 26,100	
Simard Cres	Michael Dr	Michael Dr	T088	68	Resurfacing	2028	$ 22,300	
James Cres	James Cres	James Cres	T086	75	Resurfacing	2028	$ 28,200	
James Cres	Michael Dr	James Cres	T085	67	Resurfacing	2028	$ 35,200	$ 1,049,400
Southwind Cres	Brighton Rd	Starwood Ln	SC127	67	Resurfacing	2029	$ 68,100	
St Thomas Cres	Appletree Cres	Lesperance Rd	T148	65	Resurfacing	2029	$ 106,700	
St Thomas Cres	Appletree Cres	Orchard Dr	T184	70	Resurfacing	2029	$ 23,500	
St Thomas Cres	Baillargeon Dr	McNorton St	T191	72	Resurfacing	2029	$ 19,900	
St Thomas Cres	Orchard Dr	Baillargeon Dr	T188	83	Resurfacing	2029	$ 23,800	
Starwood Ln	Brighton Rd	Southwind Cres	SC126	67	Resurfacing	2029	$ 98,600	
Strawberry Dr	Wildberry Cres	County Rd 42	SS146	63	Resurfacing	2029	$ 34,400	
Strawberry Dr	Wildberry Cres	Wildberry Cres	SS149	75	Resurfacing	2029	$ 54,800	
Strawberry Dr	Wildberry Cres	Strawberry Dr	SS147	66	Resurfacing	2029	$ 53,200	
Sylvestre Dr	Jamsyl Dr	Jamsyl Dr	SS098	74	Resurfacing	2029	$ 141,700	
Tecumseh Rd	Manning Rd	Dresden Pl	SC067	65	Resurfacing	2029	$ 48,400	
Tecumseh Rd	Dresden Pl	Regent Rd	SC068	84	Resurfacing	2029	$ 119,000	
Tecumseh Rd	Via Rail	Lacasse Blvd	T251	76	Resurfacing	2029	$ 22,900	
Blueberry Crt	Wildberry Cres	Wildberry Cres	SS151	75	Resurfacing	2029	$ 27,400	
Wildberry Cres	Lesperance Rd	Blueberry Crt	SS152	69	Resurfacing	2029	$ 37,200	
Wildberry Cres	Strawberry Dr	Strawberry Dr	SS148	66	Resurfacing	2029	$ 95,800	
Wildberry Cres	Blueberry Crt	Strawberry Dr	SS150	69	Resurfacing	2029	$ 34,000	
William St	Clapp St	St Thomas St	T153	64	Resurfacing	2029	$ 59,600	
William St	McNorton St	St Denis St	T216	75	Resurfacing	2029	$ 71,000	
William St	St Thomas St	McNorton St	T199	70	Resurfacing	2029	$ 82,100	$ 1,222,100
11th Concession Rd	S Talbot Rd	County Rd 8	SS373	72	Resurfacing	2030	$ 468,700	

Town of Tecumseh
Roads 10 Year Plan

Full Name	Road From	Road To	GIS Road ID	2019 PCI	Work Type	Year of Work	Costing	Subtotal by Year
12th Concession Rd	Dimu Dr	Baseline Rd	SS168	74	Resurfacing	2030	$ 376,500	
12th Concesson Rd	S Talbot Rd	County Rd 8	SS375	66	Resurfacing	2030	$ 333,000	$ 1,178,200
Bellaire Woods Dr	Malden Rd	Malden Rd	SS319	69	Resurfacing	2031	$ 41,700	
Chornoby Cres	Hebert St	West Lake Dr	SS047	83	Resurfacing	2031	$ 33,600	
Chornoby Cres	West Lake Dr	Calvary Crt	SS041	76	Resurfacing	2031	$ 132,400	
Calvary Crt	Chornoby Cres	Calvary Crt	SS429	69	Resurfacing	2031	$ 20,100	
Calvary Crt	Calvary Crt	Calvary Crt	SS428	73	Resurfacing	2031	$ 11,800	
Vickery Ln	Candlewood Dr	Candlewood Dr	SS084	84	Resurfacing	2031	$ 67,700	
Charlene Ln	Lesperance Rd	St Agnes Dr	SS078	80	Resurfacing	2031	$ 31,500	
St Agnes Dr	Verdant Crt	Charlene Ln	SS079	67	Resurfacing	2031	$ 50,000	
St Agnes Dr	Verdant Crt	Candlewood Dr	SS081	66	Resurfacing	2031	$ 35,400	
Candlewood Dr	Deslippe Dr	Vickery Ln	SS087	87	Resurfacing	2031	$ 46,500	
Candlewood Dr	St Agnes Dr	St Agnes Dr	SS082	87	Resurfacing	2031	$ 30,900	
Candlewood Dr	Lesperance Rd	Vickery Ln	SS085	68	Resurfacing	2031	$ 29,000	
Candlewood Dr	Vickery Ln	St Agnes Dr	SS083	89	Resurfacing	2031	$ 25,800	
Candlewood Dr	Vickery Ln	Deslippe Dr	SS086	88	Resurfacing	2031	$ 22,800	
Deslippe Dr	Gouin St	Candlewood Dr	SS088	80	Resurfacing	2031	$ 117,200	
Deslippe Dr	Gouin St	Gouin St	SS090	82	Resurfacing	2031	$ 24,300	
Gauthier Dr	Valente Crt	Evergreen Dr	T119	65	Resurfacing	2031	$ 35,200	
Gauthier Dr	Roxbury Cres	Valente Crt	T112	65	Resurfacing	2031	$ 24,800	
Gauthier Dr	Cedarwood Dr	Oliver Dr	T107	63	Resurfacing	2031	$ 29,900	
Gauthier Dr	Oliver Dr	Roxbury Cres	T110	66	Resurfacing	2031	$ 29,300	
Gauthier Dr	Evergreen Dr	Lesperance Rd	T122	64	Resurfacing	2031	$ 124,500	
Roxbury Cres	Gauthier Dr	Gauthier Dr	T111	61	Resurfacing	2031	$ 49,200	
9th Concession Rd	Snake Ln	County Rd 8	SS365	65	Resurfacing	2031	$ 133,700	
Green Crt	Shiff Dr	Shiff Dr	SS177	75	Resurfacing	2031	$ 34,700	$ 1,182,000
							10 Year Total Resurfacing	**$ 11,071,200**

Reconstruction:

PW Yard Expansion						2022	$ 50,000	
Tecumseh Road Improvements						2022		
Tecumseh Road	Regent Rd	Dorset Pk				2022		
Tecumseh Road	Dorset Pk	Arlington Blvd				2022	$ 2,500,000	
Tecumseh Road	Arlington Blvd	Dorset Pk				2022		
Tecumseh Road	Dorset Pk	Lexham Gdn				2022		
Tecumseh Road	Lexham Gdn	14194 Tecumseh Road				2022		
Manning Rd Phase 3					Engineering	2022	$ 30,000	
Scully & St. Mark's Storm PS/Riverside Drive						2022	$ 1,400,400	
Delduca Sanitary Sewer						2022	$ 5,000	
PJ Cecile Storm PS						2022	$ 42,500	$ 4,027,900
County Road 42 (Town	County Road 43	Lesperance Rd				2023	$ 12,550	

Town of Tecumseh
Roads 10 Year Plan

Full Name	Road From	Road To	GIS Road ID	2019 PCI	Work Type	Year of Work	Costing	Subtotal by Year
Lesperance/VIA Rail Improvements						2023	$ 1,850,000	
Scully & St. Mark's Storm PS/Riverside Drive						2023	$ 100,000	$ 1,962,550
CR46/Webster/Laval Sanitary Sewer						2024	$ 2,158,300	
PJ Cecile Storm PS						2024	$ 100,000	$ 2,258,300
Scully & St. Mark's Storm PS/Riverside Drive						2025	$ 1,900,000	$ 1,900,000
PJ Cecile Storm PS						2027	$ 230,000	
Manning Rd Phase 3					Reconstruction	2027	$ 6,970,000	
Ure Street Sanitary Sewer					Engineering	2027	$ 40,000	$ 7,240,000
Sylvestre Drive Sanitary Sewer						2029	$ 50,000	
Delduca Sanitary Sewer						2029	$ 1,527,300	
Ure Street Sanitary Sewer						2029	$ 632,500	$ 2,209,800
O'Neil Street Sanitary Sewer						2030	$ 46,300	$ 46,300
Sylvestre Drive Sanitary Sewer						2031	$ 1,120,500	$ 1,120,500
						10 Year Total Reconstruction		**$ 20,765,350**
						10 Year Grand Total		**$ 34,516,550**

Town of Tecumseh
Traffic Signals 10 Year Plan

Traffic Signal #	Traffic Intersection	Description of Work	Year	Cost	Subtotal by Year
	Tecumseh Rd E and Dorset Park Intersection	New Traffic Signals	2022	$ 271,400	$ 271,400
5	13465 Riverside Dr. Pedestrian Crossing	Signal heads	2023	$ 1,800	$ 1,800
2	Lesperance Rd and McNorton St Intersection	Signal heads, handhole, loop detector	2025	$ 21,800	
6	Manning Rd and St. Gregory's Rd Intersection	Loop detector	2025	$ 14,200	
7	Manning Rd at Green Valley Plaza Intersection	Signal heads, control cabinet	2025	$ 45,600	
8	Tecumseh Rd E and Manning Intersection	Signal heads, loop detector, control cabinet, UPS	2025	$ 84,700	
12	Tecumseh Rd E and Southfield Dr. Intersection	Loop detector	2025	$ 9,400	
DC-13	Street 'A' at CR19 (and little Baseline)	New Traffic Signal	2025	$ 250,000	$ 425,700
1	Lesperance Rd and Riverside Dr	Signal heads	2026	$ 4,100	
6	Manning Rd and St. Gregory's Rd Intersection	Signal heads, push button	2026	$ 38,100	
7	Manning Rd at Green Valley Plaza Intersection	Loop detector	2026	$ 69,200	
9	Tecumseh Rd E and Green Valley Dr. Intersection	Signal heads, push button, loop detector	2026	$ 47,100	
10	Tecumseh Rd E and Lacasse Blvd. Intersection	Loop detector	2026	$ 4,700	$ 163,200
1	Lesperance Rd and Riverside Dr	Push button, loop detector	2027	$ 20,100	
12	Tecumseh Rd E and Southfield Dr. Intersection	Signal heads, push button, control cabinet, wiring	2027	$ 124,800	
DC-14	Street 'B' at CR19	New Traffic Signal	2027	$ 250,000	
DC-15	Malden Road at CR19	New Traffic Signal	2027	$ 250,000	
DC-16	Collector Road at CR46 (UC 2 Lanes)	New Traffic Signal	2027	$ 250,000	$ 894,900
1	Lesperance Rd and Riverside Dr	Arms	2028	$ 11,800	$ 11,800
3	Tecumseh Rd E and Lesperance Rd Intersection	Loop detector	2029	$ 14,200	
4	Lesperance Rd and Arbour St Intersection	Loop detector	2029	$ 4,700	
10	Tecumseh Rd E and Lacasse Blvd. Intersection	Signal heads, control cabinet, UPS	2029	$ 55,700	$ 74,600
2	Lesperance Rd and McNorton St Intersection	Loop detector	2030	$ 7,100	
6	Manning Rd and St. Gregory's Rd Intersection	Loop detector	2030	$ 14,200	
7	Manning Rd at Green Valley Plaza Intersection	Poles, push button, handhole, wiring	2030	$ 110,200	
8	Tecumseh Rd E and Manning Intersection	Poles, push button, handhole, loop detector, wiring	2030	$ 134,600	
12	Tecumseh Rd E and Southfield Dr. Intersection	Loop detector	2030	$ 9,400	
DC-17	Oldcastle at 8th Concession Intersection (UC 2 Lanes)	New Traffic Signal	2030	$ 250,000	$ 525,500
6	Manning Rd and St. Gregory's Rd Intersection	Poles, handhole, control cabinet, wiring	2031	$ 124,300	
7	Manning Rd at Green Valley Plaza Intersection	Wiring	2031	$ 14,200	
9	Tecumseh Rd E and Green Valley Dr. Intersection	Poles, handhole, loop detector, control cabinet, wiring	2031	$ 121,200	
10	Tecumseh Rd E and Lacasse Blvd. Intersection	Loop detector	2031	$ 4,700	
11	Tecumseh Rd E and Shawnee Road Intersection	Loop detector	2031	$ 2,400	$ 266,800

10 Year Grand Total $ 2,635,700

The Corporation of the Town of Tecumseh

POLICY MANUAL

POLICY NUMBER: 82.2	**EFFECTIVE DATE: January 28, 2014**
SUPERCEDES: N/A	**APPROVAL: RCM-46/14**
SUBJECT: Bridge Condition Assessment Policy	

PURPOSE:

1.1 The purpose of this policy is to provide a clear, consistent method for determining the condition rating of all bridges within the Town of Tecumseh.

SCOPE:

2.1 The Town of Tecumseh has an inventory of fifteen (15) bridges and two large (2) culverts. All bridge and culvert structures having a clear span of 3.0 meters or more shall be inventoried and appraised in accordance with the requirements established in the Ontario Structure Inspection Manual (OSIM) in order to comply with current legislation, under the *Public Transportation and Highway Improvement Act*.

PROCEDURE:

3.1 Acceptable levels of service (ALS) are service qualities for given activities approved by Council that balance desired service levels with cost and risk. ALS is often documented as commitments to carry out given action(s) within a specified time frame in response to asset condition data.

3.2 The Town's ALS for Bridges can be qualified as:

- Any bridge or culvert rated as a "Now" time of improvement in the most recent Bridge Needs Study shall be slated for some form of work within a two year window.
- Any bridge or culvert rated as a "1-5 year" time of improvement shall be addressed in some manner within the timeframe.
- All bridges and culverts as rated shall be actively reviewed in conjunction with other infrastructure projects in order to achieve efficiencies of Town dollars.

3.2 The Director Public Works & Environmental Services shall ensure that the Town's program to maintain acceptable levels of service will include:

- The establishment of annual inspection and maintenance programs
- Renewal of the Bridge Needs Study on a two year basis in order to address the ALS.

3.3 Bridge Needs Studies shall be conducted using consulting engineering firms familiar with the Ontario Structural Inspection Manual (OSIM). These firms shall have specialized training in the analysis of structure deterioration. The assessment program shall utilize engineering expertise and follow guidelines set forth in the OSIM manual in order to arrive at condition assessments for all Town bridge and large culvert structures.

3.4 Bridge Needs Studies shall be awarded to consulting engineering firms that have a demonstrated ability to evaluate the local bridge network as well as a demonstrated ability to produce a report in an acceptable format.

3.5 Administration, consisting of the Director Public Works & Environmental Services, the Director Financial Services/Treasurer, and the Manager Roads & Fleet and/or the Manager Engineering Services shall award the Bridge Needs Study to a consulting engineering firm in a process consistent with the Town's Purchasing Policy.

RESPONSIBILITY:

4.1 The Director Public Works & Environmental Services shall be responsible for the implementation of the Bridge Condition Assessment Policy.

4.2 The Manager Roads & Fleet and/or the Manager Engineering Services shall be responsible for the review and use of information gathered from the condition assessments.

4.3 Administration, consisting of the Director Public Works & Environmental Services, the Director Financial Services/Treasurer, and the Manager Roads & Fleet and/or the Manager Engineering Services, shall assign urgent repairs identified in the condition assessments to contractors that have the capabilities and resources to carry out repairs within the above prescribed timeframes. Awarding of work shall be consistent with the Town's Purchasing Policy.

REFERENCE:

Purchasing By-law 2006-03, which includes the Purchasing Policy

Town of Tecumseh
Bridges & Large Culverts 10 Year Plan

Structure ID	Asset Description	Type	Year of Construction	Year of Last Rehab	Estimated Useful Life (Years)	Replacement Cost as of December 31, 2021	Year of Recommended Work	Work Recommended	Cost	Year of Recommended Work	Work Recommended	Cost
All	Bridge & Culvert Needs Study - renewed every two years						2022		$ 39,000	2024		$ 39,000
							2026		$ 39,000	2028		$ 39,000
							2030		$ 39,000			
1002	Pike Creek at Twelfth Concession bridge	Concrete Rigid Frame	1961	2016	50	$ 1,857,000						
1003	Pike Creek at Twelfth Concession bridge	Concrete Slab on Steel Girder	1965	2013	50	$ 1,542,000						
1004	Sullivan Drain at Twelfth Concession bridge	Concrete Rigid Frame	1965	2019	50	$ 755,000						
1005	Pike Creek at Baseline Road bridge	Concrete Slab on Steel Girder	1955	2021	50	$ 1,448,000						
1006	Sullivan Creek at Baseline Road bridge	Concrete Rigid Frame	2015		50	$ 944,000						
1009	Pike Creek at Malden Road bridge	Concrete Rigid Frame	2007		50	$ 787,000						
1010	West Townline Drain at Malden Road culvert	CSP arch	1995		25	$ 441,000	2025	roadside safety	$ 70,000	2027	rehabilitation	$ 146,000
1011	Malden Road Drain at South Talbot Road bridge	Concrete Rigid Frame	2007		50	$ 1,385,000						
1013	Merrick Creek at Eighth Concession bridge	Concrete Rigid Frame	1965	2020	50	$ 472,000						
1014	Townline Road Drain at Sixth Concession bridge	Concrete Rigid Frame	1955	2019	50	$ 661,000						
1015	Merrick Creek Drain at Sixth Concession bridge	Concrete Rigid Frame	2007		50	$ 944,000						
1016	Collins Drain at Outer Drive bridge	Concrete Rigid Frame	1975	2005	50	$ 1,259,000	2028	rehabilitation	$ 390,000			
1021	Pike Creek at Twelfth Concession culvert	CSP arch	1965		25	$ 252,000	2027	replacement	$ 252,000			
2001	Townline Road Drain at Eight Concession culvert	CSP arch	Unknown		25	$ 126,000						
1	Lakewood Park Pedestrian Birdge	Bowstring Pratt Truss	2016			$ 216,000						
2	Malden Road Pedestrian Bridge	Pratt Truss	2015			$ 85,000						
						$ 13,174,000			$ 829,000			$ 224,000

10 Year Grand Total $ 1,053,000

The Corporation of the Town of Tecumseh

POLICY MANUAL

POLICY NUMBER: 82.6	**EFFECTIVE DATE: January 1, 2017**
SUPERCEDES: N/A	**APPROVAL: RCM-XX/17**
SUBJECT: Culvert Condition Assessment Policy	

DRAFT

PURPOSE:

1.1 The purpose of this policy is to provide a clear, consistent method for determining the condition rating of all culverts (with spans less than 3.0m) within the Town of Tecumseh.

SCOPE:

2.1 The Town of Tecumseh has an inventory of seventy three (73) culverts (with spans less than 3.0m). All culvert structures having a clear span of less than 3.0 meters shall be inventoried and appraised in accordance with the requirements established in the Ontario Structure Inspection Manual (OSIM).

PROCEDURE:

3.1 Acceptable levels of service (ALS) are service qualities for given activities approved by Council that balance desired service levels with cost and risk. ALS is often documented as commitments to carry out given action(s) within a specified time frame in response to asset condition data.

3.2 The Town's ALS for Culverts can be qualified as:

- Any culvert rated as a "Now" time of improvement in the most recent Culvert Needs Study (Structures with Spans less than 3.0m) shall be slated for some form of work within a two year window.
- Any culvert rated as a "1-5 year" time of improvement shall be addressed in some manner within the timeframe.
- All culverts as rated shall be actively reviewed in conjunction with other infrastructure projects in order to achieve efficiencies of Town dollars.

3.2 The Director Public Works & Environmental Services shall ensure that the Town's program to maintain acceptable levels of service will include:

- The establishment of annual inspection and maintenance programs.
- Renewal of the Culvert Needs Study on a five year basis in order to address the ALS.

3.3 Culvert Needs Studies shall be conducted using consulting engineering firms familiar with the Ontario Structural Inspection Manual (OSIM). These firms shall have specialized training in the analysis of structure deterioration. The assessment program shall utilize engineering expertise and follow guidelines set forth in the OSIM manual in order to arrive at condition assessments for all Town culvert structures.

3.4 Culvert Needs Studies shall be awarded to consulting engineering firms that have a demonstrated ability to evaluate the local culvert network as well as a demonstrated ability to produce a report in an acceptable format.

3.5 Administration, consisting of the Director Public Works & Environmental Services, the Director Financial Services & Treasurer, and the Manager Roads & Fleet and/or the Manager Engineering Services shall award the Culvert Needs Study to a consulting engineering firm in a process consistent with the Town's Purchasing Policy.

RESPONSIBILITY:

4.1 The Director Public Works & Environmental Services shall be responsible for the implementation of the Culvert Condition Assessment Policy.

4.2 The Manager Roads & Fleet and/or the Manager Engineering Services shall be responsible for the review and use of information gathered from the condition assessments.

DRAFT

4.3 Administration, consisting of the Director Public Works & Environmental Services, the Director Financial Services & Treasurer, and the Manager Roads & Fleet and/or the Manager Engineering Services, shall assign urgent repairs identified in the condition assessments to contractors that have the capabilities and resources to carry out repairs within the above prescribed timeframes. Awarding of work shall be consistent with the Town's Purchasing Policy.

REFERENCE:

Purchasing By-law 2006-03, which includes the Purchasing Policy

DRAFT

Town of Tecumseh Culverts < 3m 10 Year Plan

Structure ID	Road Name	Location	Type	Construction Year	Estimated Useful Life	Length (M)	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Culvert Needs Study (Spans less than 3m)								$ 75,000				$ 75,000					$ 150,000
29	Moynahan St.	East of intersection with Hennin St.	Corrugated Steel Pipe	1975	25	18.56											$ -
60	Concession Rd. 10	0.80 km south from South Talbot Rd.	Corrugated Steel Pipe	1994	25	13.23											$ -
61	Concession Rd. 10	1.0 km south from South Talbot Rd.	Corrugated Steel Pipe	1994	25	11.30	$ 500										$ 500
45	South Talbot Rd.	At intersection with Walker Rd.	Concrete Box Culvert	2020	50	37.50											$ -
47	South Talbot Rd.	0.36 km east from County Rd. 9	Concrete Pipe	2019	50	19.64											$ -
67	Concession Rd. 11	1.0 km south from South Talbot Rd.	Corrugated Steel Pipe	2018	25	15.20											$ -
46	South Talbot Rd.	At intersection with Holden Rd.	Concrete Box Culvert	2019	50	22.42											$ -
42	Snake Lane Rd.	At intersection with South Talbot Rd.	Non-Rigid Open Footing Culvert	1965	50	9.42		$ 487,500									$ 487,500
48	Holden Rd.	1.35 km south from South Talbot Rd.	Non-Rigid Open Footing Culvert	1965	50	7.84			$ 32,000	$ 518,000							$ 550,000
53	Snake Lane Rd.	1.2 km south from South Talbot Rd.	Non-Rigid Open Footing Culvert	1960	50	8.13		$ 572,500									$ 572,500
7	Desro Dr.	At intersection with Manning Rd.	Corrugated Steel Pipe	1985	25	24.11											$ -
14	Intersection Rd.	At intersection with Banwell Rd.	Corrugated Steel Pipe	1990	25	31.28											$ -
30	Moynahan St.	0.10 km west from Hennin St.	Concrete Pipe	2019	50	12.20											$ -
54	Snake Lane Rd.	2.15 km south from South Talbot Rd.	Non-Rigid Open Footing Culvert	1965	50	8.82		$ 572,500									$ 572,500
8	Jamsyl Dr.	At intersection with Manning Rd.	Corrugated Steel Pipe	1985	25	29.29											$ -
9	Sylvestre Dr.	At intersection with Manning Rd.	Corrugated Steel Pipe	1990	25	23.32											$ -
28	Moynahan St.	West of intersection with Hennin St.	Corrugated Steel Pipe	1975	25	18.57											$ -
50	Concession Rd. 8	0.35 km south from South Talbot Rd.	Corrugated Steel Pipe	2005	25	16.44											$ -
55	Concession Rd. 9	0.90 km south from South Talbot Rd.	Corrugated Steel Pipe	2000	25	10.64											$ -
68	Concession Rd. 11	1.3 km south from South Talbot Rd.	Corrugated Steel Pipe	2005	25	15.00											$ -
69	Concession Rd. 11	At intersection with County Rd. 8	Corrugated Steel Pipe	1995	25	12.66											$ -
35	Rossi Dr.	0.30 km east from Outer Dr.	Corrugated Steel Pipe	2018	25	15.15											$ -
3	Burlington Rd.	At intersection with Arlington Blvd.	Concrete Pipe	1976	50	12.46											$ -
49	Concession Rd. 8	At intersection with South Talbot Rd.	Corrugated Steel Pipe	1985	25	17.84											$ -
56	Concession Rd. 9	1.75 km south from South Talbot Rd.	Corrugated Steel Pipe	1990	25	11.05											$ -
70	Concession Rd. 12	At intersection with South Talbot Rd.	Non-Rigid Open Footing Culvert	1965	50	10.84							$ 160,000				$ 160,000
10	Tecumseh Rd. E.	1.0 km east from Manning Rd.	Corrugated Steel Pipe	1986	25	12.28											$ -
52	Snake Lane Rd.	0.55 km south from South Talbot Rd.	Corrugated Steel Pipe	1980	25	11.14											$ -
62	Concession Rd. 10	1.8 km south from South Talbot Rd.	Corrugated Steel Pipe	2008	25	13.15											$ -
18	North Talbot Rd.	1.10 km east from Oldcastle Rd.	Corrugated Steel Pipe	2000	25	13.65											$ -
65	Concession Rd. 11	At intersection with South Talbot Rd.	Corrugated Steel Pipe	1995	25	16.42											$ -
16	Tecumseh Rd. E.	0.30 km east from Manning Rd.	Corrugated Steel Pipe	1986	25	16.18											$ -
41	Concession Rd. 9	At intersection with South Talbot Rd.	Corrugated Steel Pipe	1990	25	18.53											$ -
43	South Talbot Rd.	At intersection with Concession Rd. 8	Corrugated Steel Pipe	2000	25	15.85											$ -
51	Concession Rd. 8	2.50 km south from South Talbot Rd.	Non-Rigid Open Footing Culvert	1965	50	8.33								$ 150,000			$ 150,000
17	North Talbot Rd.	At transition from N. Talbot Rd. to Concession Rd. 9	Non-Rigid Open Footing Culvert	2000	50	10.12											$ -
1	Riverside Dr. E.	0.37 km west from Lesperance Rd	Concrete Box Culvert	1950	50	18.31											$ -
2	Warwick Rd.	0.10 north from Burlington Rd.	Corrugated Steel Pipe	1976	25	5.36											$ -
21	Concession Rd. 8	0.50 km north from North Talbot Rd.	Corrugated Steel Pipe	2018	25	13.84											$ -
25	O'Neil Dr.	North of intersection with Moynahan St.	Corrugated Steel Pipe	1975	25	25.48											$ -
26	O'Neil Dr.	South of intersection with Moynahan St.	Corrugated Steel Pipe	1970	25	25.57											$ -
27	Moynahan St.	0.12 km west from O'Neil Dr.	Corrugated Steel Pipe	1975	25	18.07											$ -
31	Picadilly Ave.	At intersection with Oldcastle Rd.	Corrugated Steel Pipe	2000	25	18.37											$ -
32	Oldcastle Rd.	1.10 km south from North Talbot Rd.	Corrugated Steel Pipe	1985	25	15.36											$ -
58	Concession Rd. 10	0.25 km south from South Talbot Rd.	Corrugated Steel Pipe	2009	25	14.16											$ -
59	Concession Rd. 10	0.65 km south from South Talbot Rd.	Corrugated Steel Pipe	2009	25	10.43											$ -
66	Concession Rd. 11	0.75 km south from South Talbot Rd.	Clay Pipe	2001	50	16.69											$ -
72	Concession Rd. 8	0.35 km north from North Talbot Rd.	Corrugated Steel Pipe	1991	25	19											$ -
19	North Talbot Rd.	0.60 km east from Oldcastle Rd.	Corrugated Steel Pipe	1999	25	20.49											$ -
40	South Talbot Rd.	0.10 km west from Concession Rd. 10	Non-Rigid Open Footing Culvert	1979	50	11.78											$ -
4	Hayes Ave.	East of intersection with Edgewater Blvd.	Corrugated Steel Pipe	1976	25	19.86											$ -
5	Hayes Ave.	West of intersection with Edgewater Blvd.	Concrete Pipe	1976	50	20.91											$ -
6	Lenor Ave.	At intersection with Edgewater Blvd.	Concrete Pipe	1976	50	45.96											$ -
13	Sylvestre Dr.	At exit from County Rd. 22	Corrugated Steel Pipe	2002	25	22.25											$ -
15	Estate Park	At intersection with Tecumseh Rd. E.	Concrete Pipe	1980	50	24.32											$ -
22	Ure St.	At intersection with North Talbot Rd.	Corrugated Steel Pipe	1990	25	23.92											$ -
23	Ure St.	0.30 km north from North Talbot Rd.	Corrugated Steel Pipe	1981	25	17.86											$ -
24	Delduca Dr.	West of intersection with Ure St.	Corrugated Steel Pipe	1981	25	14.92											$ -
33	McCord Lane	At intersection with Walker Rd.	Corrugated Steel Pipe Arch	1980	25	44.99											$ -
34	Pulleyblank	0.70 km from North Talbot Rd.	Corrugated Steel Pipe	1995	25	28.32							$ 108,500				$ 108,500
36	Blackacre Dr.	At intersection with Outer Dr.	Corrugated Steel Pipe Arch	1995	25	86.76											$ -
39	Concession Rd. 10	At intersection with South Talbot Rd.	Non-Rigid Open Footing Culvert	1965	50	8.17											$ -

Town of Tecumseh Culverts < 3m 10 Year Plan

Structure ID	Road Name	Location	Type	Construction Year	Estimated Useful Life	Length (M)	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
63	Concession Rd. 10	At intersection with County Rd. 8	Corrugated Steel Pipe Arch	1990	25	26.93											$ -
64	Malden Rd.	At intersection with County Rd. 8	Corrugated Steel Pipe	2002	25	26.68											$ -
71	Odessa Drive	At intersection with County Rd. 42	Corrugated Steel Pipe	1985	25	18.20											$ -
20	Oldcastle Rd.	At intersection with North Talbot Rd.	Corrugated Steel Pipe	2011	25	91.36											$ -
11.A	Manning Rd.	At intersection with St. Gregory's Rd.	Concrete Box Culvert	2004	50	30.39											$ -
11.B	Manning Rd.	At intersection with Tecumseh Rd. E.	Concrete Box Culvert	2004	50	19.20											$ -
11.C	Manning Rd.	At intersection with Lanoue St.	Concrete Box Culvert	1999	50	35.19											$ -
12	Riverside Dr. E.	At intersection with Manning Rd.	Concrete Box Culvert	2014	50	23.37											$ -
37	Outer Dr.	At intersection with Outer Dr. connector	Corrugated Steel Pipe	2005	25	40.22								$ 155,000			$ 155,000
38	Malden Rd.	At intersection with South Talbot Rd.	Corrugated Steel Pipe	2005	25	68.65											$ -
44	Sexton Side Rd.	At intersection with South Talbot Rd.	Corrugated Steel Pipe	1985	25	17.41											$ -
57	Concession Rd. 9	At intersection with County Rd. 8	Corrugated Steel Pipe	1995	25	25.22											$ -
73	Holden Rd.	South of intersection with South Talbot Rd	Polyvinyl Chloride	1998	100	18.4											$ -
74	Canada South Railway Dr	0.45 km West of Ruston Rd	Corrugated Steel Pipe	2018	25	10.00											$ -
							$ 500	**$ 1,707,500**	**$ 32,000**	**$ 518,000**	**$ -**	**$ 75,000**	**$ 268,500**	**$ 305,000**	**$ -**	**$ -**	**$ 2,906,500**

The Corporation of the Town of Tecumseh

POLICY MANUAL

POLICY NUMBER: 82.3	**EFFECTIVE DATE: January 28, 2014**
SUPERCEDES: N/A	**APPROVAL: RCM-46/14**
SUBJECT: Storm Sewer Collection System Condition Assessment Policy	

PURPOSE:

1.1 The purpose of this policy is to provide a clear, consistent method for determining the condition rating of the Town's storm sewer collection system.

SCOPE:

2.1 The storm sewer collection system, which consists of sewer gravity pipes, services, and eight pumping stations, shall be assessed as outlined in this policy.

BACKGROUND:

3.1 The Town's Geographic Information Systems (GIS) system maintains detailed information on the storm sewer assets. These storm sewers are split into segments, manhole to manhole, with each segment assigned a unique GIS ID.

3.2 Camera inspection videos are reviewed in order to assign a Sewer Performance Grade (SPG) to the viewed segments to assist in assessing the storm sewer condition. The SPG method of classification is based on the Water Resource centre (WRc) pipe condition classification method. It provides a rating for a sewer segment ranging from SPG 1 to SPG 5. Assessed ratings are always based on the worse defect found in the segment.

The SPG ratings are as follows:

- SPG 1- No Defects
- SPG 2- Minor Defects
- SPG 3- Likely to Deteriorate
- SPG 4- Likely to Collapse in Future
- SPG 5- Collapse Imminent

PROCEDURE:

4.1 The Town of Tecumseh will use video inspection methods to determine the condition of the storm sewers.

4.2 The Director Public Works & Environmental Services shall ensure that the Town continues to maintain acceptable levels of service, which shall be qualified as:

- All SPG 5 defects scheduled for some kind of remedial attention within 6 months.
- All SPG 4 defects scheduled to receive remedial attention within 2 years.
- Urgent needs identified in the full scope condition assessments of storm pumping stations shall have remedial works planned and carried out within 1 year.

4.3 The Director Public Works & Environmental Services shall ensure that the Town's program to maintain acceptable levels of service will include:

- Yearly tenders to flush and camera inspect storm sewers. Goal of inspecting all sewers once within a 20 year time frame.
- Yearly review of all facility assets with annual inspections and reports.
- Full scope condition assessments of storm pumping stations including structural, electrical and mechanical systems shall be performed. At no time shall 5 years pass since the last assessment.

RESPONSIBILITY:

5.1 The Director Public Works & Environmental Services shall be responsible for the implementation of the Storm Sewer Collection System Condition Assessment Policy.

5.2 The Manager Roads & Fleet and/or the Manager Engineering Services shall be responsible for review and use of the information gathered from the condition assessments.

5.3 Administration, consisting of the Director Public Works & Environmental Services, the Director Financial Services/Treasurer, and the Manager Roads & Fleet and/or the Manager Engineering Services, shall assign urgent repairs as identified in the condition assessments to contractors that have the capabilities and resources to carry out repairs

within the above prescribed timeframes. This awarding of work shall be in accordance with the Town's Purchasing Policy.

REFERENCE:

Purchasing By-law 2006-03, which includes the Purchasing Policy

Town of Tecumseh
Storm Sewer 10 Year Plan

GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length	Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
6452	MAIN	PVC	Town of Tecumseh	ST ALPHONSE	SOUTH PACIFIC	SHIELDS	89.8	$ 90	$ 8,100	2022	
3673	MAIN	PVC	Town of Tecumseh	HOLMES CRES	DOCHERTY DR	DOCHERTY DR	58.0	$ 90	$ 5,200	2022	
6346	MAIN	PVC	Town of Tecumseh	ST ALPHONSE ST	SOUTH PACIFIC AVE	SHIELDS ST	62.1	$ 90	$ 5,600	2022	
6455	MAIN	PVC	Town of Tecumseh	ST ALPHONSE ST			114.4	$ 90	$ 10,300	2022	
6397	MAIN	PVC	Town of Tecumseh	ST ALPHONSE ST			116.4	$ 90	$ 10,500	2022	
6398	MAIN	PVC	Town of Tecumseh	ST ALPHONSE ST			7.2	$ 90	$ 700	2022	
6479	MAIN	PVC	Town of Tecumseh				81.7	$ 90	$ 7,400	2022	
3882	MAIN	PVC	Town of Tecumseh	JILLIAN CRT	ST ALPHONSE ST	JILLIAN CRT	98.9	$ 90	$ 8,900	2022	
3876	MAIN	PVC	Town of Tecumseh	SYLVESTRE DR	COUNTY RD 22	SYLVESTERE DR	74.5	$ 90	$ 6,700	2022	
6420	MAIN	PVC	Town of Tecumseh	ST ALPHONSE ST			24.3	$ 90	$ 2,200	2022	
6457	MAIN	PVC	Town of Tecumseh	ST ALPHONSE ST			24.2	$ 90	$ 2,200	2022	
3674	MAIN	PVC	Town of Tecumseh	HOLMES CRES	DOCHERTY DR	DOCHERTY DR	48.3	$ 90	$ 4,300	2022	
3677	MAIN	PVC	Town of Tecumseh	HOLMES CRES	DOCHERTY DR	DOCHERTY DR	56.0	$ 90	$ 5,000	2022	
3815	MAIN	CONC	Town of Tecumseh	DOCHERTY DR	HOLMES CRES	SHIELDS RD	60.6	$ 90	$ 5,500	2022	
3881	MAIN	CONC	Town of Tecumseh	LE BOEUF AVE	ST ALPHONSE ST	COUNTY RD 42	123.3	$ 90	$ 11,100	2022	
6345	MAIN	CONC	Town of Tecumseh	ST ALPHONSE ST	SOUTH PACIFIC AVE	LESPERANCE RD	89.9	$ 90	$ 8,100	2022	
6445	MAIN	PVC	Town of Tecumseh	ST ALPHONSE ST			89.0	$ 90	$ 8,000	2022	
3657	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CANADIAN PACIFIC RAILWAY	SOUTH PACIFIC AVE	1.1	$ 90	$ 100	2022	
3812	MAIN	CONC	Town of Tecumseh	DOCHERTY DR	HOLMES CRES	SHIELDS RD	62.0	$ 90	$ 5,600	2022	
3818	MAIN	CONC	Town of Tecumseh	DOCHERTY DR	HOLMES CRES	SHIELDS RD	78.9	$ 90	$ 7,100	2022	
6491	MAIN	PVC	Town of Tecumseh	ST ALPHONSE ST			68.9	$ 90	$ 6,200	2022	
3888	MAIN	CONC	Town of Tecumseh	LE BOEUF AVE	ST ALPHONSE ST	COUNTY RD 42	70.8	$ 90	$ 6,400	2022	
3658	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CANADIAN PACIFIC RAILWAY	SOUTH PACIFIC AVE	19.1	$ 90	$ 1,700	2022	
3811	MAIN	CONC	Town of Tecumseh	DOCHERTY DR	HOLMES CRES	LESPERANCE RD	48.8	$ 90	$ 4,400	2022	
3710	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	SOUTH PACIFIC AVE	DOCHERTY DR	47.8	$ 90	$ 4,300	2022	
3712	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	SOUTH PACIFIC AVE	DOCHERTY DR	96.6	$ 90	$ 8,700	2022	
3717	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	SOUTH PACIFIC AVE	DOCHERTY DR	122.8	$ 90	$ 11,000	2022	
6411	MAIN	CONC	Town of Tecumseh	ST ALPHONSE ST			97.9	$ 90	$ 8,800	2022	
3821	MAIN	CONC	Town of Tecumseh	DOCHERTY DR	HOLMES CRES	SHIELDS RD	85.6	$ 90	$ 7,700	2022	
3824	MAIN	CSP	Town of Tecumseh	SHIELDS RD	DOCHERTY DR	LESPERANCE RD	100.3	$ 90	$ 9,000	2022	
6417	MAIN	CONC	Town of Tecumseh	ST ALPHONSE ST			54.0	$ 90	$ 4,900	2022	
6344	MAIN	CONC	Town of Tecumseh	SOUTH PACIFIC AVE	ST ALPHONSE ST	LESPERANCE RD	20.9	$ 110	$ 2,300	2022	
3606	MAIN	CSP	Town of Tecumseh	LESPERANCE RD	DOCHERTY DR	SHIELDS RD	74.2	$ 110	$ 8,200	2022	
3612	MAIN	CSP	Town of Tecumseh	LESPERANCE RD	DOCHERTY DR	SHIELDS RD	62.4	$ 110	$ 6,900	2022	
3648	MAIN	CSP	Town of Tecumseh	LESPERANCE RD	DOCHERTY DR	SHIELDS RD	84.6	$ 110	$ 9,300	2022	
3649	MAIN	CSP	Town of Tecumseh	LESPERANCE RD	DOCHERTY DR	SHIELDS RD	81.4	$ 110	$ 9,000	2022	
3653	MAIN	CSP	Town of Tecumseh	LESPERANCE RD	SHIELDS RD	WILDBERRY CRES	122.6	$ 110	$ 13,500	2022	
6189	MAIN	CONC	Town of Tecumseh	SOUTH PACIFIC AVE	ST ALPHONSE ST	LESPERANCE RD	34.6	$ 110	$ 3,800	2022	
3830	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	DOCHERTY DR	SHIELDS RD	36.5	$ 110	$ 4,000	2022	

Town of Tecumseh
Storm Sewer 10 Year Plan

GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
3834	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	DOCHERTY DR	SHIELDS RD	102.8		$ 110	$ 11,300	2022	
6418	MAIN	CONC	Town of Tecumseh	ST ALPHONSE ST			93.4		$ 110	$ 10,300	2022	
6482	MAIN	CONC	Town of Tecumseh	ST ALPHONSE ST			79.2		$ 110	$ 8,700	2022	
3660	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CANADIAN PACIFIC RAILWAY	SOUTH PACIFIC AVE	37.9		$ 110	$ 4,200	2022	
3725	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	DOCHERTY DR	SHIELDS RD	81.2		$ 110	$ 8,900	2022	
3671	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	WILDBERRY CRES	COUNTY RD 42	137.6		$ 110	$ 15,100	2022	
3842	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	DOCHERTY DR	SHIELDS RD	109.7		$ 110	$ 12,100	2022	
3680	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	WILDBERRY CRES	COUNTY RD 42	119.1		$ 110	$ 13,100	2022	
6421	MAIN	CONC	Town of Tecumseh	ST ALPHONSE ST			109.0		$ 110	$ 12,000	2022	
4435	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	WILDBERRY CRES	COUNTY RD 42	128.4		$ 110	$ 14,100	2022	
6433	MAIN	CONC	Town of Tecumseh	ST ALPHONSE ST			70.3		$ 110	$ 7,700	2022	
3603	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	WILDBERRY CRES	COUNTY RD 42	106.3		$ 130	$ 13,800	2022	
3605	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	WILDBERRY CRES	COUNTY RD 42	101.2		$ 130	$ 13,200	2022	
3604	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	WILDBERRY CRES	COUNTY RD 42	114.6		$ 130	$ 14,900	2022	
2039	MAIN	CONC	Town of Tecumseh	CEDAR CRES	ST MARK'S RD	ST MARK'S RD	48.5		$ 90	$ 4,400	2022	
2045	MAIN	CONC	Town of Tecumseh	WILLOW CRT	ST MARK'S RD	ST MARK'S RD	48.3		$ 90	$ 4,300	2022	
2046	MAIN	CONC	Town of Tecumseh	WILLOW CRT	ST MARK'S RD	ST MARK'S RD	11.0		$ 90	$ 1,000	2022	
2392	MAIN	CONC	Town of Tecumseh	HAYES AVE	GRANT AVE	EDGEWATER BLVD	259.2		$ 90	$ 23,300	2022	
2393	MAIN	CONC	Town of Tecumseh	HAYES AVE	GRANT AVE	EDGEWATER BLVD	351.7		$ 90	$ 31,700	2022	$ 476,800
1927	MAIN	PVC	Town of Tecumseh	ST GREGORY'S RD	ST MARK'S RD	ARLINGTON BLVD	38.9		$ 90	$ 3,500	2023	
1933	MAIN	PVC	Town of Tecumseh	ST GREGORY'S RD	EDGEWATER BLVD	ST MARK'S RD	90.3		$ 90	$ 8,100	2023	
2104	MAIN	CONC	Town of Tecumseh	HAYES AVE	EDGEWATER BLVD	ST MARK'S RD	37.7		$ 90	$ 3,400	2023	
3998	MAIN	CSP	Town of Tecumseh	RIVERSIDE DR E	GRANT AVE	EDGEWATER BLVD	46.9		$ 90	$ 4,200	2023	
2413	MAIN	PVC	Town of Tecumseh	ST GREGORY'S RD	ST MARK'S RD	ARLINGTON BLVD	57.9		$ 90	$ 5,200	2023	
2672	MAIN	PVC	Town of Tecumseh	RIVERSIDE DR E	CHRISTY LANE	GRANT AVE	91.8		$ 90	$ 8,300	2023	
2681	MAIN	CONC	Town of Tecumseh	RIVERSIDE DR E	CHRISTY LANE	GRANT AVE	99.2		$ 90	$ 8,900	2023	
2682	MAIN	CSP	Town of Tecumseh	CHRISTY LANE	RIVERSIDE DR E	RIVERSIDE DR E	143.0		$ 90	$ 12,900	2023	
2678	MAIN	CONC	Town of Tecumseh	RIVERSIDE DR E	CHRISTY LANE	GRANT AVE	72.3		$ 90	$ 6,500	2023	
2412	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	ST MARK'S RD	ARLINGTON BLVD	23.7		$ 90	$ 2,100	2023	
2673	MAIN	CONC	Town of Tecumseh	RIVERSIDE DR E	CHRISTY LANE	GRANT AVE	104.1		$ 90	$ 9,400	2023	
2389	MAIN	CONC	Town of Tecumseh	HAYES AVE	GRANT AVE	EDGEWATER BLVD	47.3		$ 90	$ 4,300	2023	
2411	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	CADA CRES	EDGEWATER BLVD	118.6		$ 90	$ 10,700	2023	
2674	MAIN	CONC	Town of Tecumseh	RIVERSIDE DR E	CHRISTY LANE	GRANT AVE	98.8		$ 90	$ 8,900	2023	
2675	MAIN	CONC	Town of Tecumseh	RIVERSIDE DR E	CHRISTY LANE	GRANT AVE	60.4		$ 90	$ 5,400	2023	
2961	MAIN	CONC	Town of Tecumseh	DAVID CRES	DAVID CRES	GRANT AVE	91.4		$ 110	$ 10,100	2023	
2406	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	ST MARK'S RD	ARLINGTON BLVD	65.9		$ 110	$ 7,300	2023	
2408	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	ST MARK'S RD	ARLINGTON BLVD	13.4		$ 110	$ 1,500	2023	
649	MAIN	CONC	Town of Tecumseh	CEDAR CRES	ST MARK'S RD	ST MARK'S RD	11.8		$ 110	$ 1,300	2023	

Town of Tecumseh
Storm Sewer 10 Year Plan

GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
2958	MAIN	CONC	Town of Tecumseh	DAVID CRES	DAVID CRES	GRANT AVE	91.1		$ 110	$ 10,000	2023	
2407	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	ST MARK'S RD	ARLINGTON BLVD	75.5		$ 110	$ 8,300	2023	
2276	MAIN	CONC	Town of Tecumseh	GRANT AVE	DAVID CRES	DAVID CRES	111.9		$ 150	$ 16,800	2023	
2953	MAIN	CONC	Town of Tecumseh	RIVERSIDE DR E	GRANT AVE	EDGEWATER BLVD	52.5		$ 150	$ 7,900	2023	
2954	MAIN	CONC	Town of Tecumseh	RIVERSIDE DR E	GRANT AVE	EDGEWATER BLVD	30.9		$ 150	$ 4,600	2023	
2955	MAIN	CONC	Town of Tecumseh	GRANT AVE	RIVERSIDE DR E	DAVID CRES	113.7		$ 150	$ 17,100	2023	
1507	MAIN	CONC	Town of Tecumseh	CLAPP ST	ST PIERRE ST	WILLIAM ST	19.0		$ 90	$ 1,700	2023	
453	MAIN	CONC	Town of Tecumseh	MCNORTON ST	ST PIERRE ST	WILLIAM ST	17.6		$ 90	$ 1,600	2023	
387	MAIN	CONC	Town of Tecumseh	ST DENIS ST	WILLIAM ST	LACASSE BLVD	21.5		$ 90	$ 1,900	2023	
420	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	CLAPP ST	ST THOMAS ST	122.4		$ 90	$ 11,000	2023	
440	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	WOOD ST	CLAPP ST	172.2		$ 90	$ 15,500	2023	
502	MAIN	CONC	Town of Tecumseh	MCNORTON ST	ST PIERRE ST	WILLIAM ST	26.4		$ 90	$ 2,400	2023	
6136	MAIN	CONC	Town of Tecumseh	MCNORTON ST	WILLIAM ST	LACASSE BLVD	78.6		$ 90	$ 7,100	2023	
402	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	WOOD ST	CLAPP ST	64.7		$ 90	$ 5,800	2023	
447	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	ST THOMAS ST	MCNORTON ST	109.7		$ 90	$ 9,900	2023	
450	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	ST THOMAS ST	MCNORTON ST	120.7		$ 90	$ 10,900	2023	
454	MAIN	CONC	Town of Tecumseh	MCNORTON ST	ST PIERRE ST	WILLIAM ST	19.3		$ 90	$ 1,700	2023	
547	MAIN	CONC	Town of Tecumseh	WILLIAM ST	CLAPP ST	ST THOMAS ST	106.7		$ 90	$ 9,600	2023	
1242	MAIN	CONC	Town of Tecumseh	CLAPP ST	WILLIAM ST	LABUTE ST	78.6		$ 90	$ 7,100	2023	
1508	MAIN	CONC	Town of Tecumseh	CLAPP ST	ST PIERRE ST	WILLIAM ST	56.0		$ 90	$ 5,000	2023	
503	MAIN	CONC	Town of Tecumseh	MCNORTON ST	WILLIAM ST	LACASSE BLVD	26.0		$ 90	$ 2,300	2023	
368	MAIN	CONC	Town of Tecumseh	WILLIAM ST	MCNORTON ST	ST DENIS ST	94.3		$ 90	$ 8,500	2023	
459	MAIN	CONC	Town of Tecumseh	MCNORTON ST	LESPERANCE RD	ST PIERRE ST	90.0		$ 90	$ 8,100	2023	
416	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	MCNORTON ST	ST DENIS ST	121.3		$ 90	$ 10,900	2023	
1031	MAIN	CONC	Town of Tecumseh	LABUTE ST	CLAPP ST	ST THOMAS ST	115.5		$ 90	$ 10,400	2023	
382	MAIN	CONC	Town of Tecumseh	WILLIAM ST	CLAPP ST	ST THOMAS ST	109.2		$ 90	$ 9,800	2023	
394	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	ST DENIS ST	TECUMSEH RD	133.8		$ 90	$ 12,000	2023	
415	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	MCNORTON ST	ST DENIS ST	89.8		$ 90	$ 8,100	2023	
437	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	WOOD ST	CLAPP ST	121.1		$ 90	$ 10,900	2023	
444	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	ST THOMAS ST	MCNORTON ST	98.9		$ 90	$ 8,900	2023	
1244	MAIN	CONC	Town of Tecumseh	CLAPP ST	MEANDER CRES	LACASSE BLVD	77.2		$ 90	$ 7,000	2023	
1245	MAIN	CONC	Town of Tecumseh	CLAPP ST	MEANDER CRES	LACASSE BLVD	24.6		$ 90	$ 2,200	2023	
365	MAIN	CONC	Town of Tecumseh	WILLIAM ST	MCNORTON ST	ST DENIS ST	88.0		$ 90	$ 7,900	2023	
1243	MAIN	CONC	Town of Tecumseh	CLAPP ST	WILLIAM ST	LABUTE ST	19.7		$ 90	$ 1,800	2023	
419	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	CLAPP ST	ST THOMAS ST	118.1		$ 90	$ 10,600	2023	
1034	MAIN	CONC	Town of Tecumseh	LABUTE ST	CLAPP ST	ST THOMAS ST	109.5		$ 90	$ 9,900	2023	
407	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	WOOD ST	CLAPP ST	112.3		$ 90	$ 10,100	2023	
510	MAIN	CONC	Town of Tecumseh	WILLIAM ST	MCNORTON ST	ST DENIS ST	87.4		$ 90	$ 7,900	2023	

Town of Tecumseh
Storm Sewer 10 Year Plan

GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
373	MAIN	CONC	Town of Tecumseh	WILLIAM ST	ST THOMAS ST	MCNORTON ST	114.2		$ 110	$ 12,600	2023	
423	MAIN	CONC	Town of Tecumseh	CLAPP ST	LESPERANCE RD	ST PIERRE ST	13.2		$ 110	$ 1,500	2023	
424	MAIN	CONC	Town of Tecumseh	CLAPP ST	LESPERANCE RD	ST PIERRE ST	79.1		$ 110	$ 8,700	2023	
431	MAIN	CONC	Town of Tecumseh	CLAPP ST	ST PIERRE ST	WILLIAM ST	14.8		$ 110	$ 1,600	2023	
432	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	WOOD ST	CLAPP ST	117.8		$ 110	$ 13,000	2023	
1221	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	CLAPP ST	ST THOMAS ST	109.8		$ 110	$ 12,100	2023	
1247	MAIN	CONC	Town of Tecumseh	CLAPP ST	MEANDER CRES	LACASSE BLVD	20.5		$ 110	$ 2,300	2023	
53	MAIN	CONC	Town of Tecumseh	CLAPP ST	LESPERANCE RD	ST PIERRE ST	10.2		$ 110	$ 1,100	2023	
460	MAIN	CONC	Town of Tecumseh	ST PIERRE ST	MCNORTON ST	ST DENIS ST	97.7		$ 110	$ 10,700	2023	
1217	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	CLAPP ST	ST THOMAS ST	51.8		$ 110	$ 5,700	2023	
1218	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	CLAPP ST	ST THOMAS ST	90.1		$ 110	$ 9,900	2023	$ 504,400
66	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	LESPERANCE RD	ST PIERRE ST	11.0		$ 110	$ 1,200	2024	
230	MAIN	CONC	Town of Tecumseh	MCNORTON ST	LESPERANCE RD	ST PIERRE ST	10.8		$ 110	$ 1,200	2024	
442	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	LESPERANCE RD	ST PIERRE ST	90.5		$ 110	$ 10,000	2024	
1240	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	HORWOOD CRES	ST DENIS ST	127.5		$ 110	$ 14,000	2024	
1246	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	CLAPP ST	ST THOMAS ST	12.7		$ 110	$ 1,400	2024	
376	MAIN	CONC	Town of Tecumseh	WILLIAM ST	ST THOMAS ST	MCNORTON ST	108.9		$ 110	$ 12,000	2024	
544	MAIN	CONC	Town of Tecumseh	WILLIAM ST	ST THOMAS ST	MCNORTON ST	113.0		$ 110	$ 12,400	2024	
535	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	WILLIAM ST	LABUTE ST	80.4		$ 110	$ 8,800	2024	
323	MAIN	CONC	Town of Tecumseh	ST DENIS ST	WILLIAM ST	LACASSE BLVD	88.4		$ 130	$ 11,500	2024	
383	MAIN	CONC	Town of Tecumseh	ST DENIS ST	WILLIAM ST	LACASSE BLVD	88.9		$ 130	$ 11,600	2024	
386	MAIN	CONC	Town of Tecumseh	ST DENIS ST	WILLIAM ST	LACASSE BLVD	8.0		$ 130	$ 1,000	2024	
532	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	LABUTE ST	LACASSE BLVD	81.2		$ 130	$ 10,600	2024	
1233	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	CLARICE AVE	MCNORTON ST	106.8		$ 130	$ 13,900	2024	
1236	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	MCNORTON ST	HORWOOD CRES	110.9		$ 130	$ 14,400	2024	
319	MAIN	CONC	Town of Tecumseh	ST DENIS ST	ST PIERRE ST	WILLIAM ST	42.5		$ 130	$ 5,500	2024	
389	MAIN	CONC	Town of Tecumseh	ST DENIS ST	WILLIAM ST	LACASSE BLVD	13.5		$ 130	$ 1,800	2024	
390	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	ST DENIS ST	TECUMSEH RD	82.0		$ 130	$ 10,700	2024	
314	MAIN	CONC	Town of Tecumseh	ST DENIS ST	LESPERANCE RD	ST PIERRE ST	148.4		$ 130	$ 19,300	2024	
1224	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	ST THOMAS ST	BALLARD ST	82.7		$ 150	$ 12,400	2024	
1227	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	BALLARD ST	CLARICE AVE	61.8		$ 150	$ 9,300	2024	
1230	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	CLARICE AVE	MCNORTON ST	96.7		$ 150	$ 14,500	2024	
1216	MAIN	CONC	Town of Tecumseh	LACASSE BLVD	ST THOMAS ST	BALLARD ST	14.8		$ 150	$ 2,200	2024	
2267	MAIN	CONC	Town of Tecumseh	DAVID CRES	JEFFREY PL	DAVID CRES	41.8		$ 90	$ 3,800	2024	
2823	MAIN	CONC	Town of Tecumseh	GORDON AVE	CADA CRES	FAIRWAY CRES	82.4		$ 90	$ 7,400	2024	
2962	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	JASON CRT	CADA CRES	83.6		$ 90	$ 7,500	2024	
2398	MAIN	CONC	Town of Tecumseh	FAIRWAY CRES	HAYES AVE	CADA CRES	28.0		$ 90	$ 2,500	2024	
2378	MAIN	CONC	Town of Tecumseh	DAVID CRES	JEFFREY PL	DAVID CRES	50.1		$ 90	$ 4,500	2024	

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GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
2098	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	JASON CRT	CADA CRES	118.0		$ 90	$ 10,600	2024	
2803	MAIN	CONC	Town of Tecumseh	FAIRWAY CRES	GORDON AVE	CADA CRES	92.3		$ 90	$ 8,300	2024	
2804	MAIN	CONC	Town of Tecumseh	FAIRWAY CRES	GORDON AVE	CADA CRES	87.1		$ 90	$ 7,800	2024	
2805	MAIN	CONC	Town of Tecumseh	GORDON AVE	CADA CRES	FAIRWAY CRES	69.5		$ 90	$ 6,300	2024	
2820	MAIN	CONC	Town of Tecumseh	GORDON AVE	CADA CRES	FAIRWAY CRES	90.0		$ 90	$ 8,100	2024	
2825	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	JASON CRT	CADA CRES	96.5		$ 90	$ 8,700	2024	
2964	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	JASON CRT	CADA CRES	24.5		$ 90	$ 2,200	2024	
2379	MAIN	CONC	Town of Tecumseh	JEFFREY PL	DAVID CRES	DAVID CRES	112.1		$ 90	$ 10,100	2024	
2385	MAIN	CONC	Town of Tecumseh	HAYES AVE	FAIRWAY CRES	GRANT AVE	110.4		$ 90	$ 9,900	2024	
2400	MAIN	CONC	Town of Tecumseh	FAIRWAY CRES	GORDON AVE	CADA CRES	93.6		$ 90	$ 8,400	2024	
2273	MAIN	CONC	Town of Tecumseh	DAVID CRES	JEFFREY PL	DAVID CRES	86.6		$ 90	$ 7,800	2024	
2810	MAIN	CONC	Town of Tecumseh	GORDON AVE	CADA CRES	FAIRWAY CRES	85.4		$ 90	$ 7,700	2024	
2284	MAIN	CONC	Town of Tecumseh	DAVID CRES	JEFFREY PL	GRANT AVE	81.8		$ 90	$ 7,400	2024	
2382	MAIN	CONC	Town of Tecumseh	HAYES AVE	FAIRWAY CRES	GRANT AVE	103.5		$ 90	$ 9,300	2024	
2799	MAIN	CONC	Town of Tecumseh	FAIRWAY CRES	GORDON AVE	CADA CRES	72.4		$ 90	$ 6,500	2024	
2800	MAIN	CONC	Town of Tecumseh	FAIRWAY CRES	GORDON AVE	CADA CRES	91.8		$ 90	$ 8,300	2024	
2270	MAIN	CONC	Town of Tecumseh	DAVID CRES	JEFFREY PL	DAVID CRES	88.9		$ 90	$ 8,000	2024	
2659	MAIN	CONC	Town of Tecumseh	CADA CRES	ST GREGORY'S RD	FAIRWAY CRES	41.4		$ 90	$ 3,700	2024	
2269	MAIN	CONC	Town of Tecumseh	DAVID CRES	JEFFREY PL	DAVID CRES	56.6		$ 90	$ 5,100	2024	
2285	MAIN	CONC	Town of Tecumseh	FAIRWAY CRES	GORDON AVE	CADA CRES	87.1		$ 90	$ 7,800	2024	
2396	MAIN	CONC	Town of Tecumseh	CADA CRES	FAIRWAY CRES	GORDON AVE	91.8		$ 90	$ 8,300	2024	
2657	MAIN	CONC	Town of Tecumseh	CADA CRES	ST GREGORY'S RD	FAIRWAY CRES	46.7		$ 90	$ 4,200	2024	
2099	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	JASON CRT	CADA CRES	3.3		$ 110	$ 400	2024	
2656	MAIN	CONC	Town of Tecumseh	CADA CRES	LENORE AVE	FAIRWAY CRES	87.0		$ 110	$ 9,600	2024	
2395	MAIN	CONC	Town of Tecumseh	CADA CRES	GORDON AVE	LENORE AVE	82.7		$ 110	$ 9,100	2024	
2653	MAIN	CONC	Town of Tecumseh	CADA CRES	LENORE AVE	FAIRWAY CRES	95.0		$ 110	$ 10,500	2024	
2450	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	JASON CRT	JASON CRT	77.7		$ 110	$ 8,600	2024	
2813	MAIN	CONC	Town of Tecumseh	CADA CRES	GORDON AVE	LENORE AVE	14.8		$ 110	$ 1,600	2024	
2814	MAIN	CONC	Town of Tecumseh	CADA CRES	GORDON AVE	LENORE AVE	91.1		$ 110	$ 10,000	2024	
2652	MAIN	CONC	Town of Tecumseh	CADA CRES	GORDON AVE	LENORE AVE	91.7		$ 110	$ 10,100	2024	$ 449,800
2446	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	JASON CRT	JASON CRT	124.1		$ 130	$ 16,100	2025	
2280	MAIN	CONC	Town of Tecumseh	GRANT AVE	DAVID CRES	HAYES AVE	107.0		$ 130	$ 13,900	2025	
2394	MAIN	CONC	Town of Tecumseh	CADA CRES	GORDON AVE	LENORE AVE	39.5		$ 130	$ 5,100	2025	
2283	MAIN	CONC	Town of Tecumseh	GRANT AVE	DAVID CRES	HAYES AVE	40.9		$ 130	$ 5,300	2025	
2444	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	VILLAGE GROVE DR	JASON CRT	125.9		$ 130	$ 16,400	2025	
2279	MAIN	CONC	Town of Tecumseh	GRANT AVE	DAVID CRES	DAVID CRES	63.7		$ 150	$ 9,500	2025	
2441	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	MANNING RD	VILLAGE GROVE DR	100.8		$ 150	$ 15,100	2025	
3287	MAIN	CONC	Town of Tecumseh	ST GREGORY'S RD	MANNING RD	VILLAGE GROVE DR	8.0		$ 150	$ 1,200	2025	

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GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
3286	MAIN	CONC	Town of Tecumseh	MANNING RD	VILLAGE GROVE DR	ST GREGORY'S RD	5.0		$ 150	$ 800	2025	
3285	MAIN	CONC	Town of Tecumseh	MANNING RD	VILLAGE GROVE DR	ST GREGORY'S RD	25.5		$ 150	$ 3,800	2025	
6527	MAIN	PE	Town of Tecumseh				6.1		$ 90	$ 500	2025	
129	MAIN	CONC	Town of Tecumseh	FIRST ST	LESPERANCE RD	LESPERANCE RD	35.9		$ 90	$ 3,200	2025	
130	MAIN	CONC	Town of Tecumseh	FIRST ST	LESPERANCE RD	LESPERANCE RD	16.2		$ 90	$ 1,500	2025	
244	MAIN	PVC	Town of Tecumseh	LACHANCE CRT	LESPERANCE RD	LESPERANCE RD	0.8		$ 90	$ 100	2025	
2684	MAIN	CONC	Town of Tecumseh	EVERGREEN DR	GAUTHIER DR	LESPERANCE RD	52.5		$ 90	$ 4,700	2025	
248	MAIN	PVC	Town of Tecumseh	LACHANCE CRT	LESPERANCE RD	LESPERANCE RD	123.2		$ 90	$ 11,100	2025	
322	MAIN	PVC	Town of Tecumseh	LACHANCE CRT	LESPERANCE RD	LESPERANCE RD	13.2		$ 90	$ 1,200	2025	
87	MAIN	CONC	Town of Tecumseh	ST JACQUES ST	LARAMIE ST	LESPERANCE RD	16.5		$ 90	$ 1,500	2025	
100	MAIN	PVC	Town of Tecumseh	ST JACQUES ST	LARAMIE ST	LESPERANCE RD	112.4		$ 90	$ 10,100	2025	
113	MAIN	PVC	Town of Tecumseh	LANOUE ST	LESPERANCE RD	BEDELL ST	72.5		$ 90	$ 6,500	2025	
311	MAIN	STEEL	Town of Tecumseh	ST DENIS ST	LESPERANCE RD	ST PIERRE ST	7.2		$ 90	$ 600	2025	
1313	MAIN	CONC	Town of Tecumseh	ST JACQUES ST	LARAMIE ST	LESPERANCE RD	50.2		$ 90	$ 4,500	2025	
2685	MAIN	CONC	Town of Tecumseh	EVERGREEN DR	GAUTHIER DR	LESPERANCE RD	107.4		$ 90	$ 9,700	2025	
2690	MAIN	CONC	Town of Tecumseh	EVERGREEN DR	GAUTHIER DR	LESPERANCE RD	98.4		$ 90	$ 8,900	2025	
2693	MAIN	CONC	Town of Tecumseh	EVERGREEN DR	GAUTHIER DR	LESPERANCE RD	5.8		$ 90	$ 500	2025	
4425	MAIN	PVC	Town of Tecumseh	LANOUE ST	LESPERANCE RD	BEDELL ST	8.7		$ 90	$ 800	2025	
4426	MAIN	CONC	Town of Tecumseh	ST JACQUES ST	LARAMIE ST	LESPERANCE RD	8.2		$ 90	$ 700	2025	
49	MAIN	CONC	Town of Tecumseh	EVERGREEN DR	GAUTHIER DR	LESPERANCE RD	9.0		$ 90	$ 800	2025	
86	MAIN	CONC	Town of Tecumseh	ST JACQUES ST	LARAMIE ST	LESPERANCE RD	50.9		$ 90	$ 4,600	2025	
131	MAIN	CONC	Town of Tecumseh	FIRST ST	LESPERANCE RD	LESPERANCE RD	0.6		$ 110	$ 100	2025	
134	MAIN	CONC	Town of Tecumseh	FIRST ST	LESPERANCE RD	LESPERANCE RD	15.9		$ 110	$ 1,700	2025	
169	MAIN	CONC	Town of Tecumseh	ARBOUR ST	LESPERANCE RD	BEDELL ST	6.0		$ 110	$ 700	2025	
279	MAIN	CONC	Town of Tecumseh	ST ANNE BLVD	TECUMSEH RD	REME ST	14.3		$ 110	$ 1,600	2025	
180	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	RENAUD ST	HIGHWAY 2	3.4		$ 110	$ 400	2025	
284	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	RENAUD ST	HIGHWAY 2	79.4		$ 110	$ 8,700	2025	
294	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	RENAUD ST	HIGHWAY 2	43.9		$ 110	$ 4,800	2025	
56	MAIN	CONC	Town of Tecumseh	PAPINEAU CRT	LESPERANCE RD	LESPERANCE RD	7.5		$ 110	$ 800	2025	
77	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	MCNORTON ST	ST JACQUES ST	80.0		$ 110	$ 8,800	2025	
78	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	MCNORTON ST	ST JACQUES ST	40.5		$ 110	$ 4,500	2025	
175	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	ARBOUR ST	RENAUD ST	117.6		$ 110	$ 12,900	2025	
1294	MAIN	CONC	Town of Tecumseh	PAPINEAU CRT	LESPERANCE RD	LESPERANCE RD	143.1		$ 110	$ 15,700	2025	
1299	MAIN	CONC	Town of Tecumseh	PAPINEAU CRT	LESPERANCE RD	LESPERANCE RD	7.0		$ 110	$ 800	2025	
1300	MAIN	CONC	Town of Tecumseh	PAPINEAU CRT	LESPERANCE RD	LESPERANCE RD	76.3		$ 110	$ 8,400	2025	
1311	MAIN	CONC	Town of Tecumseh	VALENTE CRT	VALENTE CRT	VALENTE CRT	60.7		$ 110	$ 6,700	2025	
1674	MAIN	CONC	Town of Tecumseh	VALENTE CRT	VALENTE CRT	VALENTE CRT	65.9		$ 110	$ 7,200	2025	
1678	MAIN	CONC	Town of Tecumseh	VALENTE CRT	VALENTE CRT	VALENTE CRT	108.4		$ 110	$ 11,900	2025	

Town of Tecumseh
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GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
1682	MAIN	CONC	Town of Tecumseh	VALENTE CRT	VALENTE CRT	VALENTE CRT	41.0		$ 110	$ 4,500	2025	
1679	MAIN	CONC	Town of Tecumseh	VALENTE CRT	VALENTE CRT	TECUMSEH RD	65.1		$ 110	$ 7,200	2025	
280	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	RENAUD ST	HIGHWAY 2	52.8		$ 110	$ 5,800	2025	
135	MAIN	CONC	Town of Tecumseh	FIRST ST	LESPERANCE RD	LESPERANCE RD	7.3		$ 130	$ 900	2025	
312	MAIN	CONC	Town of Tecumseh	ST DENIS ST	LESPERANCE RD	ST PIERRE ST	11.9		$ 130	$ 1,600	2025	
1310	MAIN	CONC	Town of Tecumseh	VALENTE CRT	VALENTE CRT	VALENTE CRT	44.8		$ 130	$ 5,800	2025	
3071	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	HIGHWAY 2	WEST LAKE DR	70.2		$ 130	$ 9,100	2025	
171	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	LANOUE ST	ARBOUR ST	114.3		$ 130	$ 14,900	2025	
201	MAIN	CONC	Town of Tecumseh	VALENTE CRT	VALENTE CRT	VALENTE CRT	8.6		$ 130	$ 1,100	2025	
202	MAIN	CONC	Town of Tecumseh	VALENTE CRT	VALENTE CRT	VALENTE CRT	8.6		$ 130	$ 1,100	2025	
76	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	MCNORTON ST	ST JACQUES ST	252.3		$ 170	$ 42,900	2025	
228	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	MCNORTON ST	ST JACQUES ST	164.9		$ 170	$ 28,000	2025	
50	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	EVERGREEN DR	CLAPP ST	147.6		$ 170	$ 25,100	2025	
59	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	GAUTHIER DR	ST THOMAS ST	162.1		$ 170	$ 27,600	2025	
67	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	ST THOMAS ST	ORCHARD DR	152.0		$ 170	$ 25,800	2025	$ 455,800
73	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	BAILLARGEON DR	MCNORTON ST	154.8		$ 170	$ 26,300	2026	
195	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	OLIVER DR	VALENTE CRT	196.6		$ 170	$ 33,400	2026	
205	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	VALENTE CRT	EVERGREEN DR	152.0		$ 170	$ 25,800	2026	
6287	MAIN	PVC	Town of Tecumseh	REME ST	POISSON ST	ST ANNE BLVD	42.5		$ 90	$ 3,800	2026	
6285	MAIN	PVC	Town of Tecumseh	REME ST	POISSON ST	ST ANNE BLVD	24.3		$ 90	$ 2,200	2026	
4387	MAIN	PVC	Town of Tecumseh	RENAUD ST	ST ANNE BLVD	LESPERANCE RD	84.8		$ 90	$ 7,600	2026	
4390	MAIN	PVC	Town of Tecumseh	ST ANNE BLVD	ARBOUR ST	RENAUD ST	77.3		$ 90	$ 7,000	2026	
158	MAIN	PVC	Town of Tecumseh	BEDELL ST	ARBOUR ST	RENAUD ST	90.7		$ 90	$ 8,200	2026	
300	MAIN	PVC	Town of Tecumseh	LANOUE ST	BEDELL ST	LANOUE ST	8.6		$ 90	$ 800	2026	
301	MAIN	CONC	Town of Tecumseh	LANOUE ST	BEDELL ST	LANOUE ST	34.5		$ 90	$ 3,100	2026	
307	MAIN	CONC	Town of Tecumseh	LANOUE ST	BEDELL ST	LANOUE ST	57.0		$ 90	$ 5,100	2026	
1015	MAIN	CONC	Town of Tecumseh	POISSON ST	TECUMSEH RD	REME ST	39.4		$ 90	$ 3,500	2026	
1024	MAIN	PVC	Town of Tecumseh	POISSON ST	REME ST	ARBOUR ST	106.8		$ 90	$ 9,600	2026	
1258	MAIN	CONC	Town of Tecumseh	POISSON ST	ST ANNE BLVD	ST ANNE BLVD	120.0		$ 90	$ 10,800	2026	
1265	MAIN	CONC	Town of Tecumseh	ARBOUR ST	POISSON ST	ST ANNE BLVD	12.4		$ 90	$ 1,100	2026	
1459	MAIN	PVC	Town of Tecumseh	ST ANNE BLVD	REME ST	ARBOUR ST	79.7		$ 90	$ 7,200	2026	
4392	MAIN	PVC	Town of Tecumseh	ST ANNE BLVD	ARBOUR ST	RENAUD ST	31.7		$ 90	$ 2,900	2026	
4406	MAIN	PVC	Town of Tecumseh	LANOUE ST	BEDELL ST	LANOUE ST	111.8		$ 90	$ 10,100	2026	
4412	MAIN	PVC	Town of Tecumseh	LANOUE ST	BEDELL ST	LANOUE ST	3.2		$ 90	$ 300	2026	
4413	MAIN	PVC	Town of Tecumseh	LANOUE ST	BEDELL ST	LANOUE ST	7.8		$ 90	$ 700	2026	
4415	MAIN	PVC	Town of Tecumseh	LANOUE ST	LESPERANCE RD	BEDELL ST	95.3		$ 90	$ 8,600	2026	
4417	MAIN	CONC	Town of Tecumseh	LANOUE ST	BEDELL ST	LANOUE ST	51.0		$ 90	$ 4,600	2026	
4416	MAIN	CONC	Town of Tecumseh	LANOUE ST	BEDELL ST	LANOUE ST	34.2		$ 90	$ 3,100	2026	

Town of Tecumseh
Storm Sewer 10 Year Plan

GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
1021	MAIN	PVC	Town of Tecumseh	POISSON ST	TECUMSEH RD	REME ST	88.9		$ 90	$ 8,000	2026	
1251	MAIN	CONC	Town of Tecumseh	POISSON ST	ST ANNE BLVD	ST ANNE BLVD	124.8		$ 90	$ 11,200	2026	
1264	MAIN	CONC	Town of Tecumseh	ARBOUR ST	POISSON ST	ST ANNE BLVD	66.5		$ 90	$ 6,000	2026	
1270	MAIN	CONC	Town of Tecumseh	ARBOUR ST	ST ANNE BLVD	LESPERANCE RD	104.2		$ 90	$ 9,400	2026	
1456	MAIN	PVC	Town of Tecumseh	ST ANNE BLVD	TECUMSEH RD	REME ST	99.7		$ 90	$ 9,000	2026	
298	MAIN	PVC	Town of Tecumseh	LANOUE ST	BEDELL ST	LANOUE ST	51.9		$ 90	$ 4,700	2026	
278	MAIN	CONC	Town of Tecumseh	TECUMSEH RD	BEDELL ST	VIA RAIL	59.5		$ 90	$ 5,400	2026	
1263	MAIN	CONC	Town of Tecumseh	ARBOUR ST	POISSON ST	ST ANNE BLVD	92.0		$ 90	$ 8,300	2026	
105	MAIN	CONC	Town of Tecumseh	ARBOUR ST	BEDELL ST	LANOUE ST	141.0		$ 90	$ 12,700	2026	
259	MAIN	CONC	Town of Tecumseh	RENAUD ST	BEDELL ST	BEDELL ST	110.8		$ 90	$ 10,000	2026	
1016	MAIN	CONC	Town of Tecumseh	POISSON ST	TECUMSEH RD	REME ST	53.4		$ 90	$ 4,800	2026	
1129	MAIN	CONC	Town of Tecumseh	TECUMSEH RD	WINDSOR	SOUTHFIELD DR	62.7		$ 90	$ 5,600	2026	
4405	MAIN	PVC	Town of Tecumseh	BEDELL ST	LANOUE ST	ARBOUR ST	111.5		$ 90	$ 10,000	2026	
1271	MAIN	CONC	Town of Tecumseh	ST ANNE BLVD	TECUMSEH RD	REME ST	24.3		$ 90	$ 2,200	2026	
1451	MAIN	CONC	Town of Tecumseh	ST ANNE BLVD	TECUMSEH RD	REME ST	54.0		$ 90	$ 4,900	2026	
147	MAIN	CONC	Town of Tecumseh	ARBOUR ST	BEDELL ST	LANOUE ST	11.2		$ 90	$ 1,000	2026	
1014	MAIN	CONC	Town of Tecumseh	POISSON ST	TECUMSEH RD	REME ST	24.2		$ 90	$ 2,200	2026	
1266	MAIN	CONC	Town of Tecumseh	ARBOUR ST	POISSON ST	ST ANNE BLVD	94.0		$ 90	$ 8,500	2026	
1268	MAIN	CONC	Town of Tecumseh	ARBOUR ST	ST ANNE BLVD	LESPERANCE RD	121.6		$ 90	$ 10,900	2026	
148	MAIN	CONC	Town of Tecumseh	ARBOUR ST	LESPERANCE RD	BEDELL ST	120.5		$ 110	$ 13,300	2026	
253	MAIN	CONC	Town of Tecumseh	RENAUD ST	LESPERANCE RD	DEMARSE CRT	100.4		$ 110	$ 11,000	2026	
256	MAIN	CONC	Town of Tecumseh	RENAUD ST	LESPERANCE RD	DEMARSE CRT	43.7		$ 110	$ 4,800	2026	
1126	MAIN	CONC	Town of Tecumseh	TECUMSEH RD	WINDSOR	SOUTHFIELD DR	14.3		$ 110	$ 1,600	2026	
4404	MAIN	CONC	Town of Tecumseh	BEDELL ST	TECUMSEH RD	LANOUE ST	9.1		$ 110	$ 1,000	2026	
277	MAIN	CONC	Town of Tecumseh	BEDELL ST	TECUMSEH RD	LANOUE ST	80.0		$ 110	$ 8,800	2026	
864	MAIN	CONC	Town of Tecumseh	TECUMSEH RD	SOUTHFIELD DR	SHAWNEE RD	40.0		$ 110	$ 4,400	2026	
329	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	RENAUD ST	HIGHWAY 2	163.2		$ 110	$ 18,000	2026	
333	MAIN	CONC	Town of Tecumseh	RENAUD ST	LESPERANCE RD	DEMARSE CRT	76.5		$ 110	$ 8,400	2026	
142	MAIN	CONC	Town of Tecumseh	ARBOUR ST	LESPERANCE RD	BEDELL ST	26.0		$ 110	$ 2,900	2026	
141	MAIN	CONC	Town of Tecumseh	ARBOUR ST	LESPERANCE RD	BEDELL ST	70.4		$ 110	$ 7,700	2026	
1125	MAIN	CONC	Town of Tecumseh	TECUMSEH RD	WINDSOR	SOUTHFIELD DR	89.0		$ 110	$ 9,800	2026	
276	MAIN	CONC	Town of Tecumseh	BEDELL ST	TECUMSEH RD	LANOUE ST	20.8		$ 110	$ 2,300	2026	
168	MAIN	CONC	Town of Tecumseh	ARBOUR ST	ST ANNE BLVD	LESPERANCE RD	17.7		$ 110	$ 1,900	2026	
1121	MAIN	CONC	Town of Tecumseh	TECUMSEH RD	SOUTHFIELD DR	SHAWNEE RD	87.7		$ 110	$ 9,700	2026	
1090	MAIN	CONC	Town of Tecumseh	TECUMSEH RD	SOUTHFIELD DR	SHAWNEE RD	69.6		$ 150	$ 10,400	2026	
1089	MAIN	CONC	Town of Tecumseh	TECUMSEH RD	SOUTHFIELD DR	SHAWNEE RD	58.7		$ 150	$ 8,800	2026	
863	MAIN	CONC	Town of Tecumseh	TECUMSEH RD	SOUTHFIELD DR	SHAWNEE RD	91.7		$ 150	$ 13,700	2026	
1434	MAIN	CONC	Town of Tecumseh	LITTLE RIVER BLVD	WOODBRIDGE DR	CENTENNIAL DR	1.1		$ 90	$ 100	2026	

Town of Tecumseh
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GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
1355	MAIN	CONC	Town of Tecumseh	DILLON DR	WOODBRIDGE DR	CENTENNIAL DR	31.0		$ 90	$ 2,800	2026	$ 462,000
2609	MAIN	CONC	Town of Tecumseh	LITTLE RIVER BLVD	REVLAND DR	WOODBRIDGE DR	48.9		$ 90	$ 4,400	2027	
1397	MAIN	CONC	Town of Tecumseh	GRACE RD	LITTLE RIVER BLVD	ST THOMAS ST	138.8		$ 90	$ 12,500	2027	
1400	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	GRACE RD	MANNING RD	86.3		$ 90	$ 7,800	2027	
1401	MAIN	CONC	Town of Tecumseh	GRACE RD	LITTLE RIVER BLVD	ST THOMAS ST	63.6		$ 90	$ 5,700	2027	
1407	MAIN	CONC	Town of Tecumseh	GRACE RD	LITTLE RIVER BLVD	ST THOMAS ST	129.8		$ 90	$ 11,700	2027	
2643	MAIN	CONC	Town of Tecumseh	AMBERLY CRES	ST THOMAS ST	GREEN VALLEY DR	34.2		$ 90	$ 3,100	2027	
2650	MAIN	CONC	Town of Tecumseh	RIDEAU PL	ST THOMAS ST	ST THOMAS ST	76.3		$ 90	$ 6,900	2027	
2023	MAIN	CONC	Town of Tecumseh	LITTLE RIVER BLVD	DONALDA CRT	GRACE RD	88.4		$ 90	$ 8,000	2027	
1402	MAIN	CONC	Town of Tecumseh	GRACE RD	LITTLE RIVER BLVD	ST THOMAS ST	136.8		$ 90	$ 12,300	2027	
1445	MAIN	CONC	Town of Tecumseh	DILLON DR	MICHAEL DR	WOODBRIDGE DR	48.7		$ 90	$ 4,400	2027	
1446	MAIN	CONC	Town of Tecumseh	DILLON DR	MICHAEL DR	WOODBRIDGE DR	62.9		$ 90	$ 5,700	2027	
2030	MAIN	CONC	Town of Tecumseh	LITTLE RIVER BLVD	CENTENNIAL DR	DILLON DR	118.4		$ 90	$ 10,700	2027	
2606	MAIN	CONC	Town of Tecumseh	PAISLEY CIR	ST THOMAS ST	ST THOMAS ST	66.6		$ 90	$ 6,000	2027	
2644	MAIN	CONC	Town of Tecumseh	AMBERLY CRES	ST THOMAS ST	GREEN VALLEY DR	109.4		$ 90	$ 9,800	2027	
1796	MAIN	CONC	Town of Tecumseh	CENTENNIAL DR	LITTLE RIVER BLVD	ST THOMAS ST	109.9		$ 90	$ 9,900	2027	
1799	MAIN	CONC	Town of Tecumseh	CENTENNIAL DR	LITTLE RIVER BLVD	ST THOMAS ST	117.3		$ 90	$ 10,600	2027	
1803	MAIN	CONC	Town of Tecumseh	LITTLE RIVER BLVD	DONALDA CRT	GRACE RD	81.7		$ 90	$ 7,400	2027	
1370	MAIN	CONC	Town of Tecumseh	WOODBRIDGE DR	LITTLE RIVER BLVD	ST THOMAS ST	88.0		$ 90	$ 7,900	2027	
2589	MAIN	CONC	Town of Tecumseh	VERONICA CRT	DILLON DR	DILLON DR	98.9		$ 90	$ 8,900	2027	
1444	MAIN	CONC	Town of Tecumseh	WOODBRIDGE DR	DILLON DR	LITTLE RIVER BLVD	40.8		$ 90	$ 3,700	2027	
2640	MAIN	CONC	Town of Tecumseh	AMBERLY CRES	ST THOMAS ST	GREEN VALLEY DR	17.1		$ 90	$ 1,500	2027	
2641	MAIN	CONC	Town of Tecumseh	AMBERLY CRES	ST THOMAS ST	GREEN VALLEY DR	75.5		$ 90	$ 6,800	2027	
2647	MAIN	CONC	Town of Tecumseh	AMBERLY CRES	ST THOMAS ST	GREEN VALLEY DR	69.1		$ 90	$ 6,200	2027	
2717	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	CENTENNIAL DR	DILLON DR	41.7		$ 90	$ 3,700	2027	
2720	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	CENTENNIAL DR	DILLON DR	18.2		$ 90	$ 1,600	2027	
2721	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	CENTENNIAL DR	DILLON DR	43.0		$ 90	$ 3,900	2027	
1795	MAIN	CONC	Town of Tecumseh	CENTENNIAL DR	LITTLE RIVER BLVD	ST THOMAS ST	116.0		$ 90	$ 10,400	2027	
639	MAIN	CONC	Town of Tecumseh	GRACE RD	RIVERSIDE DR E	LITTLE RIVER BLVD	4.2		$ 90	$ 400	2027	
1367	MAIN	CONC	Town of Tecumseh	WOODBRIDGE DR	LITTLE RIVER BLVD	ST THOMAS ST	110.7		$ 90	$ 10,000	2027	
1396	MAIN	CONC	Town of Tecumseh	GRACE RD	LITTLE RIVER BLVD	ST THOMAS ST	126.5		$ 90	$ 11,400	2027	
1441	MAIN	CONC	Town of Tecumseh	WOODBRIDGE DR	DILLON DR	LITTLE RIVER BLVD	119.4		$ 90	$ 10,700	2027	
2637	MAIN	CONC	Town of Tecumseh	AMBERLY CRES	ST THOMAS ST	GREEN VALLEY DR	100.1		$ 90	$ 9,000	2027	
1800	MAIN	CONC	Town of Tecumseh	LITTLE RIVER BLVD	DILLON DR	DONALDA CRT	107.6		$ 90	$ 9,700	2027	
1363	MAIN	CONC	Town of Tecumseh	WOODBRIDGE DR	LITTLE RIVER BLVD	ST THOMAS ST	28.5		$ 110	$ 3,100	2027	
1435	MAIN	CONC	Town of Tecumseh	WOODBRIDGE DR	DILLON DR	LITTLE RIVER BLVD	28.9		$ 110	$ 3,200	2027	
1436	MAIN	CONC	Town of Tecumseh	WOODBRIDGE DR	DILLON DR	LITTLE RIVER BLVD	106.4		$ 110	$ 11,700	2027	
2630	MAIN	CONC	Town of Tecumseh	AMBERLY CRES	ST THOMAS ST	GREEN VALLEY DR	77.4		$ 110	$ 8,500	2027	

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GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
2633	MAIN	CONC	Town of Tecumseh	AMBERLY CRES	ST THOMAS ST	GREEN VALLEY DR	60.2		$ 110	$ 6,600	2027	
2634	MAIN	CONC	Town of Tecumseh	AMBERLY CRES	ST THOMAS ST	GREEN VALLEY DR	99.0		$ 110	$ 10,900	2027	
1364	MAIN	CONC	Town of Tecumseh	WOODBRIDGE DR	LITTLE RIVER BLVD	ST THOMAS ST	99.9		$ 110	$ 11,000	2027	
2611	MAIN	CONC	Town of Tecumseh	LITTLE RIVER BLVD	WOODBRIDGE DR	WOODBRIDGE DR	62.1		$ 110	$ 6,800	2027	
2612	MAIN	CONC	Town of Tecumseh	LITTLE RIVER BLVD	WOODBRIDGE DR	CENTENNIAL DR	13.5		$ 110	$ 1,500	2027	
1359	MAIN	STEEL	Town of Tecumseh	WOODBRIDGE DR	LITTLE RIVER BLVD	ST THOMAS ST	75.2		$ 150	$ 11,300	2027	
1360	MAIN	CONC	Town of Tecumseh	WOODBRIDGE DR	LITTLE RIVER BLVD	ST THOMAS ST	40.4		$ 150	$ 6,100	2027	
1450	MAIN	CONC	Town of Tecumseh	GREEN VALLEY DR	AMBERLY CRES	BRUNELLE CRES	38.4		$ 150	$ 5,800	2027	
2723	MAIN	STEEL	Town of Tecumseh	LITTLE RIVER BLVD	WOODBRIDGE DR	CENTENNIAL DR	11.2		$ 150	$ 1,700	2027	
2724	MAIN	STEEL	Town of Tecumseh	LITTLE RIVER BLVD	WOODBRIDGE DR	CENTENNIAL DR	57.7		$ 150	$ 8,700	2027	
2035	MAIN	CONC	Town of Tecumseh	DILLON DR	LITTLE RIVER BLVD	VERONICA CRT	92.0		$ 150	$ 13,800	2027	
2586	MAIN	CONC	Town of Tecumseh	DILLON DR	VERONICA CRT	ST THOMAS ST	67.9		$ 150	$ 10,200	2027	
2595	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	RIDEAU PL	AMBERLY CRES	90.2		$ 150	$ 13,500	2027	
2600	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	AMBERLY CRES	GREEN VALLEY DR	77.3		$ 150	$ 11,600	2027	
2603	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	AMBERLY CRES	GREEN VALLEY DR	30.7		$ 150	$ 4,600	2027	
2037	MAIN	CONC	Town of Tecumseh	DILLON DR	LITTLE RIVER BLVD	VERONICA CRT	76.7		$ 150	$ 11,500	2027	
2592	MAIN	CONC	Town of Tecumseh	ST THOMAS ST	DILLON DR	RIDEAU PL	74.5		$ 150	$ 11,200	2027	
1449	MAIN	CONC	Town of Tecumseh	GREEN VALLEY DR	ST THOMAS ST	AMBERLY CRES	63.5		$ 150	$ 9,500	2027	
4499	MAIN	PVC	Town of Tecumseh	LESPERANCE RD	HIGHWAY 2	WEST LAKE DR	16.9		$ 90	$ 1,500	2027	
2	MAIN	PVC	Town of Tecumseh	ST AGNES DR	VERDANT CRT	CANDLEWOOD DR	38.8		$ 90	$ 3,500	2027	
3205	MAIN	CONC	Town of Tecumseh	CANDLEWOOD DR	VICKERY LANE	DESLIPPE DR	76.6		$ 90	$ 6,900	2027	
3474	MAIN	CONC	Town of Tecumseh	MAISONNEUVE ST	CORBI LANE	SHAWNEE RD	94.7		$ 90	$ 8,500	2027	
3619	MAIN	PVC	Town of Tecumseh	GOUIN ST	CORBI LANE	SHAWNEE RD	15.9		$ 90	$ 1,400	2027	$ 447,300
3459	MAIN	CONC	Town of Tecumseh	KAVANAGH DR	MAYRAND CRES	MAYRAND CRES	50.4		$ 90	$ 4,500	2028	
6137	MAIN	PVC	Town of Tecumseh	GOUIN ST	CORBI LANE	SHAWNEE RD	240.9		$ 90	$ 21,700	2028	
3462	MAIN	CONC	Town of Tecumseh	MAYRAND CRES	KAVANAGH DR	KAVANAGH DR	67.6		$ 90	$ 6,100	2028	
3469	MAIN	CSP	Town of Tecumseh	CORBI LANE	MAISONNEUVE ST	MAISONNEUVE ST	69.5		$ 90	$ 6,300	2028	
3554	MAIN	CONC	Town of Tecumseh	MAYRAND CRES	KAVANAGH DR	KAVANAGH DR	133.3		$ 90	$ 12,000	2028	
3458	MAIN	CONC	Town of Tecumseh	MAYRAND CRES	KAVANAGH DR	KAVANAGH DR	25.4		$ 90	$ 2,300	2028	
6	MAIN	PVC	Town of Tecumseh	CANDLEWOOD DR	ST AGNES DR	ST AGNES DR	70.4		$ 90	$ 6,300	2028	
2748	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CALVARY CRT	GOUIN ST	92.1		$ 90	$ 8,300	2028	
3237	MAIN	CONC	Town of Tecumseh	CALVARY CRT	CHORNOBY CRES	CALVARY CRT	115.8		$ 90	$ 10,400	2028	
3463	MAIN	CONC	Town of Tecumseh	MAYRAND CRES	KAVANAGH DR	KAVANAGH DR	75.9		$ 90	$ 6,800	2028	
3466	MAIN	CSP	Town of Tecumseh	CORBI LANE	MAISONNEUVE ST	MAISONNEUVE ST	48.1		$ 90	$ 4,300	2028	
3530	MAIN	CONC	Town of Tecumseh	HEBERT ST	WEST LAKE DR	CHORNOBY CRES	122.0		$ 90	$ 11,000	2028	
3533	MAIN	CONC	Town of Tecumseh	HEBERT ST	WEST LAKE DR	CHORNOBY CRES	35.3		$ 90	$ 3,200	2028	
3004	MAIN	RCONC	Town of Tecumseh	LESPERANCE RD	LESSARD ST	CALVARY CRT	105.3		$ 90	$ 9,500	2028	
3549	MAIN	CONC	Town of Tecumseh	MAYRAND CRES	KAVANAGH DR	KAVANAGH DR	72.0		$ 90	$ 6,500	2028	

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GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
3234	MAIN	CONC	Town of Tecumseh	CALVARY CRT	CHORNOBY CRES	CALVARY CRT	80.9		$ 90	$ 7,300	2028	
3003	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	LESSARD ST	CALVARY CRT	44.9		$ 90	$ 4,000	2028	
3210	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CALVARY CRT	GOUIN ST	132.7		$ 90	$ 11,900	2028	
3464	MAIN	CONC	Town of Tecumseh	CORBI LANE	MAISONNEUVE ST	MAISONNEUVE ST	38.1		$ 90	$ 3,400	2028	
3465	MAIN	CSP	Town of Tecumseh	CORBI LANE	MAISONNEUVE ST	MAISONNEUVE ST	78.7		$ 90	$ 7,100	2028	
3527	MAIN	CONC	Town of Tecumseh	HEBERT ST	WEST LAKE DR	GOUIN ST	119.2		$ 90	$ 10,700	2028	
2736	MAIN	RCONC	Town of Tecumseh	CALVARY CRT	CALVARY CRT	CALVARY CRT	120.9		$ 110	$ 13,300	2028	
2752	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CALVARY CRT	GOUIN ST	108.7		$ 110	$ 12,000	2028	
3068	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	WEST LAKE DR	LESSARD ST	80.7		$ 110	$ 8,900	2028	
3069	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	WEST LAKE DR	LESSARD ST	51.5		$ 110	$ 5,700	2028	
3111	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	GOUIN ST	MAISONNEUVE ST	144.2		$ 110	$ 15,900	2028	
3524	MAIN	CONC	Town of Tecumseh	HEBERT ST	WEST LAKE DR	GOUIN ST	115.7		$ 110	$ 12,700	2028	
3566	MAIN	CONC	Town of Tecumseh	CORBI LANE	GOUIN ST	MAISONNEUVE ST	80.5		$ 110	$ 8,900	2028	
3457	MAIN	CONC	Town of Tecumseh	MAYRAND CRES	KAVANAGH DR	KAVANAGH DR	55.7		$ 110	$ 6,100	2028	
2742	MAIN	RCONC	Town of Tecumseh	CALVARY CRT	CHORNOBY CRES	CALVARY CRT	56.9		$ 110	$ 6,300	2028	
3110	MAIN	CONC	Town of Tecumseh	CANDLEWOOD DR	LESPERANCE RD	VICKERY LANE	11.9		$ 110	$ 1,300	2028	
2204	MAIN	CONC	Town of Tecumseh	WESTLAKE DR	CHORNOBY CRES	LESPERANCE RD	78.7		$ 110	$ 8,700	2028	
2207	MAIN	CONC	Town of Tecumseh	WESTLAKE DR	CHORNOBY CRES	LESPERANCE RD	4.6		$ 110	$ 500	2028	
2208	MAIN	CONC	Town of Tecumseh	WESTLAKE DR	CHORNOBY CRES	LESPERANCE RD	99.2		$ 110	$ 10,900	2028	
2997	MAIN	CONC	Town of Tecumseh	LESSARD ST	LESPERANCE RD	LESPERANCE RD	86.0		$ 110	$ 9,500	2028	
3000	MAIN	CONC	Town of Tecumseh	LESSARD ST	LESPERANCE RD	LESPERANCE RD	77.0		$ 110	$ 8,500	2028	
3567	MAIN	CONC	Town of Tecumseh	CORBI LANE	GOUIN ST	MAISONNEUVE ST	122.7		$ 110	$ 13,500	2028	
3070	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	HIGHWAY 2	WEST LAKE DR	114.1		$ 110	$ 12,600	2028	
2753	MAIN	CONC	Town of Tecumseh	CANDLEWOOD DR	VICKERY LANE	ST AGNES DR	108.5		$ 110	$ 11,900	2028	
3579	MAIN	RCONC	Town of Tecumseh	DESLIPPE DR	GOUIN ST	CANDLEWOOD DR	56.6		$ 110	$ 6,200	2028	
3580	MAIN	RCONC	Town of Tecumseh	DESLIPPE DR	GOUIN ST	CANDLEWOOD DR	85.2		$ 110	$ 9,400	2028	
3585	MAIN	RCONC	Town of Tecumseh	DESLIPPE DR	GOUIN ST	CANDLEWOOD DR	86.1		$ 110	$ 9,500	2028	
3588	MAIN	RCONC	Town of Tecumseh	DESLIPPE DR	GOUIN ST	CANDLEWOOD DR	82.7		$ 110	$ 9,100	2028	
3591	MAIN	RCONC	Town of Tecumseh	DESLIPPE DR	GOUIN ST	GOUIN ST	70.3		$ 110	$ 7,700	2028	
3416	MAIN	RCONC	Town of Tecumseh	DESLIPPE DR	GOUIN ST	CANDLEWOOD DR	102.6		$ 110	$ 11,300	2028	
1	MAIN	RCONC	Town of Tecumseh	CANDLEWOOD DR	DESLIPPE DR	VICKERY LANE	112.8		$ 130	$ 14,700	2028	
2209	MAIN	CONC	Town of Tecumseh	WESTLAKE DR	CHORNOBY CRES	LESPERANCE RD	50.8		$ 130	$ 6,600	2028	
2211	MAIN	CONC	Town of Tecumseh	CHORNOBY CRES	HEBERT ST	WEST LAKE DR	63.2		$ 130	$ 8,200	2028	
2212	MAIN	CONC	Town of Tecumseh	CHORNOBY CRES	WEST LAKE DR	CALVARY CRT	110.6		$ 130	$ 14,400	2028	
2217	MAIN	CONC	Town of Tecumseh	CHORNOBY CRES	WEST LAKE DR	CALVARY CRT	113.2		$ 130	$ 14,700	2028	
3202	MAIN	CONC	Town of Tecumseh	CANDLEWOOD DR	LESPERANCE RD	VICKERY LANE	84.3		$ 130	$ 11,000	2028	$ 453,600
3208	MAIN	CONC	Town of Tecumseh	VICKERY LANE	CANDLEWOOD DR	CANDLEWOOD DR	113.2		$ 130	$ 14,700	2029	
3209	MAIN	RCONC	Town of Tecumseh	CANDLEWOOD DR	VICKERY LANE	ST AGNES DR	87.1		$ 130	$ 11,300	2029	

Town of Tecumseh
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GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
3224	MAIN	CONC	Town of Tecumseh	VICKERY LANE	CANDLEWOOD DR	CANDLEWOOD DR	134.2		$ 130	$ 17,500	2029	
3518	MAIN	CONC	Town of Tecumseh	HEBERT ST	WEST LAKE DR	GOUIN ST	120.9		$ 130	$ 15,700	2029	
3521	MAIN	CONC	Town of Tecumseh	HEBERT ST	WEST LAKE DR	GOUIN ST	118.0		$ 130	$ 15,300	2029	
3630	MAIN	CONC	Town of Tecumseh	HEBERT ST	WEST LAKE DR	GOUIN ST	95.1		$ 130	$ 12,400	2029	
2988	MAIN	CONC	Town of Tecumseh	CHORNOBY CRES	WEST LAKE DR	CALVARY CRT	116.4		$ 130	$ 15,100	2029	
2991	MAIN	CONC	Town of Tecumseh	CHORNOBY CRES	WEST LAKE DR	CALVARY CRT	79.2		$ 130	$ 10,300	2029	
2994	MAIN	CONC	Town of Tecumseh	CHORNOBY CRES	WEST LAKE DR	CALVARY CRT	37.5		$ 130	$ 4,900	2029	
3560	MAIN	CONC	Town of Tecumseh	CORBI LANE	GOUIN ST	MAISONNEUVE ST	106.1		$ 130	$ 13,800	2029	
3563	MAIN	CONC	Town of Tecumseh	CORBI LANE	GOUIN ST	MAISONNEUVE ST	30.7		$ 130	$ 4,000	2029	
3415	MAIN	RCONC	Town of Tecumseh	CANDLEWOOD DR	DESLIPPE DR	VICKERY LANE	46.1		$ 130	$ 6,000	2029	
3557	MAIN	CONC	Town of Tecumseh	CORBI LANE	GOUIN ST	MAISONNEUVE ST	93.1		$ 150	$ 14,000	2029	
3	MAIN	RCONC	Town of Tecumseh	CANDLEWOOD DR	ST AGNES DR	ST AGNES DR	40.7		$ 150	$ 6,100	2029	
5	MAIN	RCONC	Town of Tecumseh	CANDLEWOOD DR	ST AGNES DR	ST AGNES DR	59.9		$ 150	$ 9,000	2029	
3616	MAIN	CONC	Town of Tecumseh	GOUIN ST	CORBI LANE	SHAWNEE RD	52.1		$ 170	$ 8,900	2029	
3617	MAIN	CONC	Town of Tecumseh	GOUIN ST	CORBI LANE	SHAWNEE RD	63.4		$ 170	$ 10,800	2029	
1065	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	LITTLE RIVER BLVD	CEDARWOOD DR	49.8		$ 90	$ 4,500	2029	
2683	MAIN	CONC	Town of Tecumseh	EVERGREEN DR	GAUTHIER DR	LESPERANCE RD	4.1		$ 90	$ 400	2029	
1884	MAIN	CONC	Town of Tecumseh	EVERGREEN DR	GAUTHIER DR	LESPERANCE RD	37.4		$ 90	$ 3,400	2029	
1885	MAIN	CONC	Town of Tecumseh	EVERGREEN DR	GAUTHIER DR	LESPERANCE RD	14.4		$ 90	$ 1,300	2029	
695	MAIN	PVC	Town of Tecumseh	CATALINA COVE	RIVERSIDE DR E	RIVERSIDE DR E	92.9		$ 90	$ 8,400	2029	
698	MAIN	PVC	Town of Tecumseh	WINCLARE DR	RIVERSIDE DR E	RIVERSIDE DR E	96.9		$ 90	$ 8,700	2029	
747	MAIN	CONC	Town of Tecumseh	KENNEY CRT	DILLON DR	DILLON DR	98.5		$ 90	$ 8,900	2029	
877	MAIN	CONC	Town of Tecumseh	SOMERVILLE ST	DILLON DR	LITTLE RIVER BLVD	104.2		$ 90	$ 9,400	2029	
884	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	DILLON DR	LITTLE RIVER BLVD	120.2		$ 90	$ 10,800	2029	
1064	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	LITTLE RIVER BLVD	CEDARWOOD DR	76.1		$ 90	$ 6,800	2029	
753	MAIN	CONC	Town of Tecumseh	KENNEY CRT	DILLON DR	DILLON DR	76.8		$ 90	$ 6,900	2029	
761	MAIN	CONC	Town of Tecumseh	SOMERVILLE ST	DILLON DR	LITTLE RIVER BLVD	111.2		$ 90	$ 10,000	2029	
765	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	DILLON DR	LITTLE RIVER BLVD	130.0		$ 90	$ 11,700	2029	
743	MAIN	CONC	Town of Tecumseh	DILLON DR	KENNEY CRT	KENNEY CRT	82.0		$ 110	$ 9,000	2029	
870	MAIN	CONC	Town of Tecumseh	LITTLE RIVER BLVD	GAUTHIER DR	SOMERVILLE ST	71.4		$ 110	$ 7,800	2029	
754	MAIN	CONC	Town of Tecumseh	KENNEY CRT	DILLON DR	DILLON DR	111.0		$ 110	$ 12,200	2029	
1084	MAIN	CONC	Town of Tecumseh	MCNORTON ST	LARAMIE ST	LESPERANCE RD	114.9		$ 110	$ 12,600	2029	
603	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	EVERGREEN DR	LESPERANCE RD	98.5		$ 110	$ 10,800	2029	
918	MAIN	CONC	Town of Tecumseh	ST THOMAS CRES	APPLETREE CRES	LESPERANCE RD	88.6		$ 110	$ 9,800	2029	
1318	MAIN	CONC	Town of Tecumseh	ST THOMAS CRES	APPLETREE CRES	ORCHARD DR	68.0		$ 110	$ 7,500	2029	
1325	MAIN	CONC	Town of Tecumseh	APPLETREE CRES	ST THOMAS CRES	ORCHARD DR	76.1		$ 110	$ 8,400	2029	
1691	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	OLIVER DR	ROXBURY CRES	56.7		$ 110	$ 6,200	2029	
1692	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	ROXBURY CRES	VALENTE CRT	31.4		$ 110	$ 3,500	2029	

Town of Tecumseh
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GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
1875	MAIN	CONC	Town of Tecumseh	ROXBURY CRES	GAUTHIER DR	GAUTHIER DR	107.0		$ 110	$ 11,800	2029	
1872	MAIN	CONC	Town of Tecumseh	ROXBURY CRES	GAUTHIER DR	GAUTHIER DR	96.0		$ 110	$ 10,600	2029	
229	MAIN	CONC	Town of Tecumseh	MCNORTON ST	LARAMIE ST	LESPERANCE RD	7.5		$ 110	$ 800	2029	
915	MAIN	CONC	Town of Tecumseh	ST THOMAS CRES	APPLETREE CRES	LESPERANCE RD	102.9		$ 110	$ 11,300	2029	
1332	MAIN	CONC	Town of Tecumseh	ST THOMAS CRES	ORCHARD DR	BAILLARGEON DR	80.5		$ 110	$ 8,900	2029	
1337	MAIN	CONC	Town of Tecumseh	ST THOMAS CRES	BAILLARGEON DR	MCNORTON ST	66.6		$ 110	$ 7,300	2029	
1685	MAIN	CONC	Town of Tecumseh	VALENTE CRT	VALENTE CRT	VALENTE CRT	47.0		$ 110	$ 5,200	2029	
1686	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	ROXBURY CRES	VALENTE CRT	50.0		$ 110	$ 5,500	2029	
1759	MAIN	CONC	Town of Tecumseh	BAILLARGEON DR	ST THOMAS CRES	LESPERANCE RD	73.0		$ 110	$ 8,000	2029	
1764	MAIN	CONC	Town of Tecumseh	BAILLARGEON DR	ST THOMAS CRES	LESPERANCE RD	122.0		$ 110	$ 13,400	2029	
1879	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	VALENTE CRT	EVERGREEN DR	92.7		$ 110	$ 10,200	2029	
1882	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	VALENTE CRT	EVERGREEN DR	36.7		$ 110	$ 4,000	2029	$ 465,800
2694	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	EVERGREEN DR	LESPERANCE RD	101.0		$ 110	$ 11,100	2030	
2699	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	EVERGREEN DR	LESPERANCE RD	97.6		$ 110	$ 10,700	2030	
1082	MAIN	CONC	Town of Tecumseh	MCNORTON ST	LARAMIE ST	LESPERANCE RD	31.7		$ 110	$ 3,500	2030	
1306	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	EVERGREEN DR	LESPERANCE RD	91.2		$ 110	$ 10,000	2030	
1326	MAIN	CONC	Town of Tecumseh	APPLETREE CRES	ST THOMAS CRES	ORCHARD DR	86.8		$ 110	$ 9,500	2030	
1329	MAIN	CONC	Town of Tecumseh	APPLETREE CRES	ST THOMAS CRES	ORCHARD DR	90.6		$ 110	$ 10,000	2030	
60	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	EVERGREEN DR	LESPERANCE RD	6.7		$ 130	$ 900	2030	
72	MAIN	CONC	Town of Tecumseh	ORCHARD DR	APPLETREE CRES	LESPERANCE RD	7.2		$ 130	$ 900	2030	
223	MAIN	CONC	Town of Tecumseh	BAILLARGEON DR	ST THOMAS CRES	LESPERANCE RD	7.1		$ 130	$ 900	2030	
905	MAIN	CONC	Town of Tecumseh	ST THOMAS CRES	APPLETREE CRES	LESPERANCE RD	63.5		$ 130	$ 8,300	2030	
910	MAIN	CONC	Town of Tecumseh	ST THOMAS CRES	APPLETREE CRES	LESPERANCE RD	118.8		$ 130	$ 15,400	2030	
1079	MAIN	CONC	Town of Tecumseh	BAILLARGEON DR	ST THOMAS CRES	LESPERANCE RD	77.3		$ 130	$ 10,000	2030	
1748	MAIN	CONC	Town of Tecumseh	ORCHARD DR	ST THOMAS CRES	APPLETREE CRES	119.4		$ 130	$ 15,500	2030	
1756	MAIN	CONC	Town of Tecumseh	ORCHARD DR	APPLETREE CRES	LESPERANCE RD	93.1		$ 130	$ 12,100	2030	
1878	MAIN	CONC	Town of Tecumseh	ROXBURY CRES	GAUTHIER DR	GAUTHIER DR	101.7		$ 130	$ 13,200	2030	
65	MAIN	CONC	Town of Tecumseh	ST THOMAS CRES	APPLETREE CRES	LESPERANCE RD	6.8		$ 130	$ 900	2030	
198	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	OLIVER DR	VALENTE CRT	8.7		$ 130	$ 1,100	2030	
1751	MAIN	CONC	Town of Tecumseh	ORCHARD DR	ST THOMAS CRES	APPLETREE CRES	106.8		$ 130	$ 13,900	2030	
1303	MAIN	CONC	Town of Tecumseh	GAUTHIER DR	EVERGREEN DR	LESPERANCE RD	96.9		$ 130	$ 12,600	2030	
906	MAIN	CONC	Town of Tecumseh	ST THOMAS CRES	APPLETREE CRES	LESPERANCE RD	41.1		$ 130	$ 5,300	2030	
3086	MAIN	PVC	Town of Tecumseh	TECUMSEH RD	MANNING RD	DRESDEN PL	65.1		$ 90	$ 5,900	2030	
3087	MAIN	PVC	Town of Tecumseh	TECUMSEH RD	MANNING RD	DRESDEN PL	36.7		$ 90	$ 3,300	2030	
3077	MAIN	PVC	Town of Tecumseh	TECUMSEH RD	MANNING RD	DRESDEN PL	57.5		$ 90	$ 5,200	2030	
4251	MAIN	STEEL	Town of Tecumseh	MANNING RD	TECUMSEH RD	VIA RAIL	11.8		$ 90	$ 1,100	2030	
4249	MAIN	PE	Town of Tecumseh	MANNING RD	TECUMSEH RD	VIA RAIL	77.0		$ 90	$ 6,900	2030	
3084	MAIN	PVC	Town of Tecumseh	TECUMSEH RD	MANNING RD	DRESDEN PL	77.9		$ 90	$ 7,000	2030	

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GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
4250	MAIN	STEEL	Town of Tecumseh	MANNING RD	TECUMSEH RD	VIA RAIL	50.3		$ 90	$ 4,500	2030	
3076	MAIN	PVC	Town of Tecumseh	MANNING RD	ST GREGORY'S RD	TECUMSEH RD	22.0		$ 90	$ 2,000	2030	
2311	MAIN	CONC	Town of Tecumseh	REGENT RD	DRESDEN PL	DRESDEN PL	39.4		$ 90	$ 3,600	2030	
1961	MAIN	CONC	Town of Tecumseh	ROSTREVOR CRT	DRESDEN PL	DRESDEN PL	92.5		$ 90	$ 8,300	2030	
2314	MAIN	CONC	Town of Tecumseh	REGENT RD	TECUMSEH RD	DRESDEN PL	53.1		$ 90	$ 4,800	2030	
2475	MAIN	CONC	Town of Tecumseh	OAKFIELD CRT	DRESDEN PL	DRESDEN PL	62.1		$ 90	$ 5,600	2030	
2472	MAIN	CONC	Town of Tecumseh	CAMBRIDGE CRT	DRESDEN PL	DRESDEN PL	68.6		$ 90	$ 6,200	2030	
1972	MAIN	CONC	Town of Tecumseh	BIRKDALE CRT	DRESDEN PL	DRESDEN PL	74.9		$ 90	$ 6,700	2030	
1975	MAIN	CONC	Town of Tecumseh	CUMBERLAND CRT	DRESDEN PL	DRESDEN PL	73.2		$ 90	$ 6,600	2030	
615	MAIN	CONC	Town of Tecumseh	COVE DR	BRIGHTON RD	COVE DR	78.8		$ 90	$ 7,100	2030	
1978	MAIN	CONC	Town of Tecumseh	DRESDEN PL	TECUMSEH RD	OAKFIELD CRT	89.1		$ 90	$ 8,000	2030	
3096	MAIN	PVC	Town of Tecumseh	MANNING RD	ST GREGORY'S RD	TECUMSEH RD	1.5		$ 90	$ 100	2030	
2469	MAIN	CONC	Town of Tecumseh	DRESDEN PL	TECUMSEH RD	OAKFIELD CRT	94.8		$ 90	$ 8,500	2030	
612	MAIN	CONC	Town of Tecumseh	COVE DR	BRIGHTON RD	COVE DR	50.8		$ 90	$ 4,600	2030	
613	MAIN	CONC	Town of Tecumseh	COVE DR	BRIGHTON RD	COVE DR	61.8		$ 90	$ 5,600	2030	
2301	MAIN	CONC	Town of Tecumseh	DRESDEN PL	REGENT RD	REGENT RD	83.6		$ 90	$ 7,500	2030	
605	MAIN	CONC	Town of Tecumseh	COVE DR	BRIGHTON RD	COVE DR	59.8		$ 110	$ 6,600	2030	
608	MAIN	CONC	Town of Tecumseh	COVE DR	BRIGHTON RD	COVE DR	70.6		$ 110	$ 7,800	2030	
1971	MAIN	CONC	Town of Tecumseh	DRESDEN PL	CAMBRIDGE CRT	CUMBERLAND CRT	86.3		$ 110	$ 9,500	2030	
1981	MAIN	CONC	Town of Tecumseh	DRESDEN PL	OAKFIELD CRT	CAMBRIDGE CRT	94.4		$ 110	$ 10,400	2030	
4248	MAIN	CONC	Town of Tecumseh	MANNING RD	TECUMSEH RD	VIA RAIL	20.6		$ 110	$ 2,300	2030	
2552	MAIN	RCONC	Town of Tecumseh	MANNING RD	TECUMSEH RD	VIA RAIL	8.5		$ 110	$ 900	2030	
1965	MAIN	CONC	Town of Tecumseh	DRESDEN PL	CUMBERLAND CRT	BIRKDALE CRT	82.8		$ 110	$ 9,100	2030	
1968	MAIN	CONC	Town of Tecumseh	DRESDEN PL	BIRKDALE CRT	ROSTREVOR CRT	88.0		$ 110	$ 9,700	2030	
2303	MAIN	CONC	Town of Tecumseh	DRESDEN PL	REGENT RD	REGENT RD	94.4		$ 110	$ 10,400	2030	
2307	MAIN	CONC	Town of Tecumseh	DRESDEN PL	REGENT RD	REGENT RD	80.5		$ 110	$ 8,900	2030	
2308	MAIN	CONC	Town of Tecumseh	DRESDEN PL	ROSTREVOR CRT	REGENT RD	95.2		$ 110	$ 10,500	2030	
2553	MAIN	STEEL	Town of Tecumseh	MANNING RD	TECUMSEH RD	VIA RAIL	7.9		$ 130	$ 1,000	2030	
2129	MAIN	CONC	Town of Tecumseh	DORSET PARK	COLLIER CRES	TECUMSEH RD	97.9		$ 150	$ 14,700	2030	
3137	MAIN	CONC	Town of Tecumseh	CHARLENE LANE	LESPERANCE RD	ST AGNES DR	50.8		$ 90	$ 4,600	2030	
3306	MAIN	CONC	Town of Tecumseh	ST MARTIN CRES	ROXANNE DR	ROXANNE DR	64.1		$ 90	$ 5,800	2030	
3309	MAIN	CONC	Town of Tecumseh	ST MARTIN CRES	ROXANNE DR	ROXANNE DR	77.2		$ 90	$ 6,900	2030	
3368	MAIN	CONC	Town of Tecumseh	FUNARO CRES	FUNARO CRES	FUNARO CRES	58.0		$ 90	$ 5,200	2030	
3752	MAIN	CONC	Town of Tecumseh	NORTH PACIFIC AVE	MURRAY CRES	ST ANNE ST	82.1		$ 90	$ 7,400	2030	
3229	MAIN	CONC	Town of Tecumseh	VERDANT CRT	ST AGNES DR	ST AGNES DR	53.9		$ 90	$ 4,800	2030	
3230	MAIN	CONC	Town of Tecumseh	VERDANT CRT	ST AGNES DR	ST AGNES DR	5.8		$ 90	$ 500	2030	
3231	MAIN	CONC	Town of Tecumseh	ST AGNES DR	VERDANT CRT	CANDLEWOOD DR	38.3		$ 90	$ 3,500	2030	
3403	MAIN	CONC	Town of Tecumseh	MECONI DR	LESPERANCE RD	ROXANNE CRES	62.2		$ 90	$ 5,600	2030	

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GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
3390	MAIN	CONC	Town of Tecumseh	EUGENI ST	CHARLENE LANE	CHARLENE LANE	83.7		$ 90	$ 7,500	2030	
3335	MAIN	CONC	Town of Tecumseh	CHARLENE LANE	EUGENI ST	MECONI DR	84.0		$ 90	$ 7,600	2030	
3389	MAIN	CONC	Town of Tecumseh	EUGENI ST	CHARLENE LANE	CHARLENE LANE	82.9		$ 90	$ 7,500	2030	
3394	MAIN	CONC	Town of Tecumseh	MECONI DR	ROXANNE CRES	CHARLENE LANE	125.7		$ 90	$ 11,300	2030	
3397	MAIN	CONC	Town of Tecumseh	MECONI DR	ROXANNE CRES	CHARLENE LANE	51.5		$ 90	$ 4,600	2030	$ 469,500
3750	MAIN	CONC	Town of Tecumseh	NORTH PACIFIC AVE	MURRAY CRES	ST ANNE ST	7.5		$ 90	$ 700	2031	
3751	MAIN	CONC	Town of Tecumseh	NORTH PACIFIC AVE	MURRAY CRES	ST ANNE ST	55.3		$ 90	$ 5,000	2031	
3754	MAIN	CONC	Town of Tecumseh	MURRAY CRES	SHAWNEE RD	NORTH PACIFIC AVE	103.0		$ 90	$ 9,300	2031	
3141	MAIN	CONC	Town of Tecumseh	ST MARTIN CRES	ROXANNE DR	ROXANNE DR	64.3		$ 90	$ 5,800	2031	
3398	MAIN	CONC	Town of Tecumseh	MECONI DR	LESPERANCE RD	ROXANNE CRES	92.8		$ 90	$ 8,400	2031	
3126	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	MECONI DR	NORTH PACIFIC AVE	74.1		$ 90	$ 6,700	2031	
3303	MAIN	CONC	Town of Tecumseh	ST MARTIN CRES	ROXANNE DR	ROXANNE DR	73.5		$ 90	$ 6,600	2031	
3363	MAIN	CONC	Town of Tecumseh	FUNARO CRES	FUNARO CRES	FUNARO CRES	103.9		$ 90	$ 9,300	2031	
3365	MAIN	CONC	Town of Tecumseh	FUNARO CRES	FUNARO CRES	FUNARO CRES	53.9		$ 90	$ 4,900	2031	
3372	MAIN	CONC	Town of Tecumseh	FUNARO CRES	FUNARO CRES	FUNARO CRES	118.9		$ 90	$ 10,700	2031	
3378	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CHARLENE LANE	MECONI DR	135.7		$ 90	$ 12,200	2031	
3662	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	NORTH PACIFIC AVE	CANADIAN PACIFIC RAILWAY	5.1		$ 90	$ 500	2031	
3790	MAIN	CONC	Town of Tecumseh	NORTH PACIFIC AVE	MURRAY CRES	ST ANNE ST	40.1		$ 90	$ 3,600	2031	
3757	MAIN	CONC	Town of Tecumseh	MURRAY CRES	SHAWNEE RD	NORTH PACIFIC AVE	115.4		$ 90	$ 10,400	2031	
3373	MAIN	CONC	Town of Tecumseh	FUNARO CRES	MECONI DR	FUNARO CRES	66.9		$ 90	$ 6,000	2031	
3393	MAIN	CONC	Town of Tecumseh	EUGENI ST	CHARLENE LANE	CHARLENE LANE	74.0		$ 90	$ 6,700	2031	
3130	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	MECONI DR	NORTH PACIFIC AVE	70.2		$ 90	$ 6,300	2031	
3352	MAIN	CONC	Town of Tecumseh	FUNARO CRES	FUNARO CRES	FUNARO CRES	113.5		$ 90	$ 10,200	2031	
3358	MAIN	CONC	Town of Tecumseh	FUNARO CRES	FUNARO CRES	FUNARO CRES	88.5		$ 90	$ 8,000	2031	
3364	MAIN	CONC	Town of Tecumseh	FUNARO CRES	FUNARO CRES	FUNARO CRES	125.1		$ 90	$ 11,300	2031	
3788	MAIN	CONC	Town of Tecumseh	NORTH PACIFIC AVE	SHAWNEE RD	MURRAY CRES	99.3		$ 90	$ 8,900	2031	
3330	MAIN	CONC	Town of Tecumseh	CHARLENE LANE	EUGENI ST	EUGENI ST	69.1		$ 90	$ 6,200	2031	
3331	MAIN	CONC	Town of Tecumseh	CHARLENE LANE	EUGENI ST	EUGENI ST	87.6		$ 90	$ 7,900	2031	
3763	MAIN	CONC	Town of Tecumseh	MURRAY CRES	SHAWNEE RD	NORTH PACIFIC AVE	107.2		$ 90	$ 9,600	2031	
3760	MAIN	CONC	Town of Tecumseh	MURRAY CRES	SHAWNEE RD	NORTH PACIFIC AVE	105.1		$ 90	$ 9,500	2031	
3336	MAIN	CONC	Town of Tecumseh	EUGENI ST	CHARLENE LANE	CHARLENE LANE	83.2		$ 90	$ 7,500	2031	
3381	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CHARLENE LANE	MECONI DR	106.9		$ 90	$ 9,600	2031	
3120	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CHARLENE LANE	MECONI DR	108.5		$ 110	$ 11,900	2031	
3172	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	INTERSECTION RD	CHARLENE LANE	102.5		$ 110	$ 11,300	2031	
3312	MAIN	CONC	Town of Tecumseh	ROXANNE CRES	ST MARTIN CRES	MECONI DR	92.9		$ 110	$ 10,200	2031	
3344	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CHARLENE LANE	MECONI DR	83.5		$ 110	$ 9,200	2031	
3355	MAIN	CONC	Town of Tecumseh	FUNARO CRES	FUNARO CRES	FUNARO CRES	65.4		$ 110	$ 7,200	2031	
3661	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	NORTH PACIFIC AVE	CANADIAN PACIFIC RAILWAY	32.4		$ 110	$ 3,600	2031	

Town of Tecumseh
Storm Sewer 10 Year Plan

GIS ID	Pipe	Material	Owner	Road Name	From Road	To Road	Length		Cost/metre to flush, video, repair main	Segment Costs	Year	Subtotal by Year
3347	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	MECONI DR	NORTH PACIFIC AVE	131.9		$ 110	$ 14,500	2031	
3351	MAIN	CONC	Town of Tecumseh	FUNARO CRES	FUNARO CRES	FUNARO CRES	48.6		$ 110	$ 5,300	2031	
3782	MAIN	CONC	Town of Tecumseh	SHAWNEE RD	MURRAY CRES	NORTH PACIFIC AVE	166.0		$ 110	$ 18,300	2031	
3288	MAIN	CONC	Town of Tecumseh	CHARLENE LANE	ST AGNES DR	EUGENI ST	53.2		$ 110	$ 5,900	2031	
3291	MAIN	CONC	Town of Tecumseh	ST AGNES DR	VERDANT CRT	CHARLENE LANE	51.5		$ 110	$ 5,700	2031	
3292	MAIN	CONC	Town of Tecumseh	ST AGNES DR	VERDANT CRT	CHARLENE LANE	51.6		$ 110	$ 5,700	2031	
3295	MAIN	CONC	Town of Tecumseh	ST AGNES DR	VERDANT CRT	CHARLENE LANE	64.1		$ 110	$ 7,100	2031	
3300	MAIN	CONC	Town of Tecumseh	ST AGNES DR	VERDANT CRT	CHARLENE LANE	48.9		$ 110	$ 5,400	2031	
3301	MAIN	CONC	Town of Tecumseh	CHARLENE LANE	ST AGNES DR	EUGENI ST	104.6		$ 110	$ 11,500	2031	
3317	MAIN	CONC	Town of Tecumseh	ROXANNE CRES	ST MARTIN CRES	ST MARTIN CRES	70.7		$ 110	$ 7,800	2031	
3318	MAIN	CONC	Town of Tecumseh	ROXANNE CRES	ST MARTIN CRES	ST MARTIN CRES	70.5		$ 110	$ 7,800	2031	
3321	MAIN	CONC	Town of Tecumseh	CHARLENE LANE	ST AGNES DR	EUGENI ST	118.8		$ 110	$ 13,100	2031	
3342	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CHARLENE LANE	MECONI DR	122.5		$ 110	$ 13,500	2031	
3343	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CHARLENE LANE	MECONI DR	117.5		$ 110	$ 12,900	2031	
3327	MAIN	CONC	Town of Tecumseh	CHARLENE LANE	ST AGNES DR	EUGENI ST	96.9		$ 110	$ 10,700	2031	
3140	MAIN	CONC	Town of Tecumseh	CHARLENE LANE	ST AGNES DR	EUGENI ST	53.3		$ 110	$ 5,900	2031	
3341	MAIN	CONC	Town of Tecumseh	LESPERANCE RD	CHARLENE LANE	MECONI DR	120.3		$ 110	$ 13,200	2031	
3778	MAIN	CONC	Town of Tecumseh	SHAWNEE RD	MURRAY CRES	NORTH PACIFIC AVE	166.8		$ 110	$ 18,300	2031	
3296	MAIN	CONC	Town of Tecumseh	ST AGNES DR	VERDANT CRT	CHARLENE LANE	63.9		$ 110	$ 7,000	2031	
3299	MAIN	CONC	Town of Tecumseh	ST AGNES DR	VERDANT CRT	CHARLENE LANE	48.8		$ 110	$ 5,400	2031	
3302	MAIN	CONC	Town of Tecumseh	ST MARTIN CRES	ROXANNE DR	ROXANNE DR	6.8		$ 110	$ 800	2031	
3324	MAIN	CONC	Town of Tecumseh	CHARLENE LANE	ST AGNES DR	EUGENI ST	61.1		$ 110	$ 6,700	2031	$ 457,700

10 Year Total Rehabilitation $ 4,642,700

Town of Tecumseh
Storm Facilities 10 Year Plan

Asset Name	Asset Type	Description	Location	In-Service Year	Estimated Useful Life	Replacement Cost as of Dec. 31 2021	Year of Estimated Work	Cost
Brighton Rd Pump Station	Pump Station	Structure	Brighton Rd	2010	50	$ 4,026,000		
Brighton Rd Pump Station	Pump Station	Mechanical	Brighton Rd	2010	20	$ 876,000		
Brighton Rd Pump Station	Pump Station	SCADA	Brighton Rd	2010	25	$ 134,000		
East St. Louis Pump Station	Pump Station	Structure	Riverside Drive east of Centennial Drive	1981	50	$ 3,717,000		
East St. Louis Pump Station	Pump Station	Mechanical/Electrical	Riverside Drive east of Centennial Drive	1981	20	$ 1,696,000		
Edgewater (Scully) Pump Station	Pump Station	Structure	Intersection of Riverside Drive and Edgewater Blvd	1978	50	$ 3,927,000	2022-2025	$ 17,050,000
Edgewater (Scully) Pump Station	Pump Station	Mechanical/Electrical	Intersection of Riverside Drive and Edgewater Blvd	1978	20	$ 2,368,000		
St. Marks Pump Station	Pump Station	Structure	Intersection of St. Mark's and Riverside Drive	1960/1988	50	$ 613,000		
St. Marks Pump Station	Pump Station	Mechanical	Intersection of St. Mark's and Riverside Drive	1960/1988	20	$ 646,000		
Kensington (PJ Cecile) Pump Station	Pump Station	Structure	Intersection of Riverside Drive and Kensington Blvd	1978	50	$ 2,042,000	2022-2027	$ 9,700,000
Kensington (PJ Cecile) Pump Station	Pump Station	Mechanical/Electrical	Intersection of Riverside Drive and Kensington Blvd	1978	20	$ 1,105,000		
West St. Louis Pump Station	Pump Station	Structure	Riverside Drive between Centennial Dr and Barry Ave	1991	50	$ 2,589,000		
West St. Louis Pump Station	Pump Station	Mechanical	Riverside Drive between Centennial Dr and Barry Ave	1991	20	$ 1,440,000		
Lesperance Pump Station	Pump Station	Structure	Intersection of Lesperance Road and Riverside Drive	1957/1977/1988/2002	50	$ 4,799,000		
Lesperance Pump Station	Pump Station	Mechanical	Intersection of Lesperance Road and Riverside Drive	1988/2002	20	$ 1,747,000		
Manning Rd. ETLD Storm Pump Station	Pump Station	Structure	Intersection of Manning Road and Riverside Drive	2015	50	$ 4,751,000		
Manning Rd. ETLD Storm Pump Station	Pump Station	Mechanical	Intersection of Manning Road and Riverside Drive	2015	20	$ 3,785,000		
Manning Rd. ETLD Storm Pump Station	Pump Station	SCADA	Intersection of Manning Road and Riverside Drive	2015	25	$ 277,000		
Other:								

[1] Dates subject to change based on final Storm Drainage Master Plan report.

Total **$ 40,538,000** **$ 26,750,000**

The Corporation of the Town of Tecumseh

POLICY MANUAL

POLICY NUMBER: 82.4	**EFFECTIVE DATE: January 28, 2014**
SUPERCEDES: N/A	**APPROVAL: RCM-46/14**
SUBJECT: Water Distribution System Condition Assessment Policy	

PURPOSE:

1.1 The purpose of this policy is to provide a clear, consistent method for determining the condition rating of the Town's water distribution system.

SCOPE:

2.1 The water distribution system, which consists of watermains, services, fire hydrants, autoflushers, metering chambers and a water tower, shall be assessed as outlined in this policy.

BACKGROUND:

3.1 The Town of Tecumseh uses a straight line, age-based method to assign asset condition for watermain infrastructure. The rationale behind this is that cast iron and ductile iron pipes, which are the oldest, have the highest frequency of watermain breaks.

The watermain asset condition grade is determined using the following formula:

Condition = Service Life Remaining / Useful Life

The condition grades are then grouped as follows:

Condition	Grade Range
Critical	0 - 20
Poor	21 – 40
Fair	41 – 60
Good	61 – 80
Excellent	81 – 100

For the condition assessment process, grouping the assets assists in the prioritization of watermain replacements.

PROCEDURE:

4.1 Watermain breaks shall be documented and filed. During watermain repairs, the Water Operator shall examine the external condition and if possible the internal condition of the watermain and shall note the condition on the repair sheet. Excessive watermain breaks, over 7 within 1km length of watermain, shall be noted and reviewed for possible replacement by the Manager Water & Wastewater and/or Manager Engineering Services.

4.2 Water quality shall be measured weekly by Town Water Operators and water quality concerns from water customers shall be documented and reviewed weekly. Poor water quality (discoloured water or low chlorine residuals) shall be used to measure the internal quality of the watermain. Water quality shall be measured with equipment that gives a value (#) of chlorine residual (free chlorine left in the water) in parts per million (ppm). Ministry of the Environment (MOE) minimum standards are set at 0.20 ppm. Chlorine residual reads of less than 0.05 ppm shall be reported to the local health unit. Water quality indicators shall also be used to assist in determining the life of the watermain.

4.3 Every fire hydrant shall be operated and inspected at least 3 times a year and painted every 4 years. Fire hydrants that become too costly to repair or maintain shall be replaced.

4.4 A Town Water Operator shall conduct an internal and external visual inspection of the water tower weekly. In addition, the water tower shall be inspected by a qualified contractor every 5 years as per AWWA recommendations. These inspection reports and recommendations shall be reviewed to determine how to protect and extend the life of this asset.

4.5 Boundary Water Meters shall be inspected twice a year by a qualified contractor. Recommendations shall be submitted in a report to the Manager Water & Wastewater. In addition, the Manager Water & Wastewater and/or designate shall review data from

the 24/7 computer monitoring system built into each station that might affect the life of this asset.

4.6 The Town of Tecumseh shall, within the asset condition assessment policy, implement the aforementioned inspection methods to assist determining asset conditions.

4.7 The Director Public Works & Environmental Services shall ensure that the Town continues to maintain acceptable levels of service, which shall be qualified as:

- Watermain flow test result greater than 1,000 gallons per minute (GPM)
- Less than 3 watermain breaks per km
- Meet or exceed the MOE minimum standard for water quality of 0.20 ppm chlorine residual.

4.8 The Director Public Works & Environmental Services shall ensure that the Town's program to maintain acceptable levels of service will include:

- Watermain flow tests performed every 5 years
- Fire hydrant inspection 3 times/year; painting every 4 years
- Water tower inspections every 5 years
- Boundary water meter inspections twice/year.

RESPONSIBILITY:

5.1 The Director Public Works & Environmental Services shall be responsible for the implementation of the Water Distribution System Condition Assessment Policy.

5.2 The Manager Water & Wastewater and/or Manager Engineering Services shall be responsible for review and use of the information gathered from the condition assessments.

5.3 Administration, consisting of the Director Public Works & Environmental Services, the Director Financial Services/Treasurer, and the Manager Water & Wastewater and/or the Manager Engineering Services, shall assign urgent repairs as identified in the condition assessments to contractors that have the capabilities and resources to carry out repairs within the above prescribed timeframes. This awarding of work shall be in accordance with the Town's Purchasing Policy.

REFERENCE:

Purchasing By-law 2006-03, which includes the Purchasing Policy

Town of Tecumseh
Watermain 10 Year Plan

Street Name	Road From	Road To	GIS ID	Material	MainType	Road Section	Year	Size (mm)	Length (m)	Age-Based Condition Rating	Condition	Description of Work	Cost	Year	Subtotal by Year
Master Plan															
Water & Wastewater Master Plan Update												Engineering	$ 100,000	2030	$ 100,000
														10 Year Total Master Plan	**$ 100,000**
Rehabilitation															
Watermain Anode Protection Program - Inspection/Replacement												Rehabilitation	$ 20,000	2022	$ 20,000
														10 Year Total Rehabilitation	**$ 20,000**
Replacement															
Arbour St	St Anne Blvd	Lesperance Rd	589	CI	DistMain	T294	1955	150	133.3	-2%	Critical	Replacement	$ 11,100	2023	
Argent St	St Thomas St	Ballard St	891	CI	DistMain	T206	1955	150	84.7	-2%	Critical	Replacement	$ 45,200	2023	
Ballard St	Lacasse Blvd	Argent St	890	CI	DistMain	T205	1955	150	242.7	-2%	Critical	Replacement	$ 120,700	2023	
Barry Ave	Riverside Dr E	Dillon Dr	731	CI	DistMain	T033	1955	150	103.6	-2%	Critical	Replacement	$ 54,700	2023	
Dillon Dr	Kenney Crt	Kenney Crt	616	CI	Trunk	T017	1964	400	197.9	13%	Critical	Replacement	$ 212,900	2023	
Dillon Dr	Kenney Crt	Chene St	606	CI	Trunk	T019	1964	400	54.9	13%	Critical	Replacement	$ 55,000	2023	
Dillon Dr	Chene St	Lesperance Rd	425	CI	Trunk	T021	1964	400	3.4	13%	Critical	Replacement	$ 3,500	2023	
Dillon Dr	Chene St	Lesperance Rd	607	CI	Trunk	T021	1964	400	111.8	13%	Critical	Replacement	$ 123,500	2023	
Dillon Dr	Coronado Dr	Burdick Cres	724	CI	DistMain	T030	1955	150	98.1	-2%	Critical	Replacement	$ 57,300	2023	
Dillon Dr	Burdick Cres	Keith Ave	725	CI	DistMain	T031	1955	150	249.5	-2%	Critical	Replacement	$ 153,900	2023	
Evergreen Dr	Gauthier Dr	Lesperance Rd	697	CI	DistMain	T120	1966	150	72.6	17%	Critical	Replacement	$ 51,100	2023	
Evergreen Dr	Gauthier Dr	Lesperance Rd	698	CI	DistMain	T120	1966	150	184.0	17%	Critical	Replacement	$ 103,400	2023	$ 992,300
Gouin St	St Anne St	Lesperance Rd	1275	CI	DistMain	SS037	1962	150	124.3	10%	Critical	Replacement	$ 64,800	2024	
Hayes Ave	Edgewater Blvd	St Mark's Rd	1057	CI	DistMain	SC038	1955	150	124.2	-2%	Critical	Replacement	$ 61,800	2024	
Lesperance Rd	Highway 2	West Lake Dr	1156	CI	DistMain	SS048	1960	150	7.3	7%	Critical	Replacement	$ 3,800	2024	
Lesperance Rd	Highway 2	West Lake Dr	1745	CI	DistMain	SS048	1960	150	5.9	7%	Critical	Replacement	$ 3,000	2024	
Lesperance Rd	Highway 2	West Lake Dr	1746	CI	DistMain	SS048	1960	150	4.4	7%	Critical	Replacement	$ 2,200	2024	
Lesperance Rd	Renaud St	Highway 2	645	CI	DistMain	T299	1960	150	107.1	7%	Critical	Replacement	$ 68,100	2024	
Shawnee Rd	Maisonneuve St	Intersection Rd	1410	CI	DistMain	SS007	1955	150	366.9	-2%	Critical	Replacement	$ 197,400	2024	
Shawnee Rd	Gouin St	Maisonneuve St	1409	CI	DistMain	SS011	1955	150	314.5	-2%	Critical	Replacement	$ 177,300	2024	
Shawnee Rd	Kavanagh Dr	Gouin St	1408	CI	DistMain	SS013	1955	150	270.8	-2%	Critical	Replacement	$ 146,600	2024	
Shawnee Rd	West Lake Dr	Kavanagh Dr	1407	CI	DistMain	SS018	1955	150	279.6	-2%	Critical	Replacement	$ 148,000	2024	
Shawnee Rd	Highway 2	West Lake Dr	1406	CI	DistMain	SS019	1955	150	192.6	-2%	Critical	Replacement	$ 95,800	2024	
Shawnee Rd	Highway 2	West Lake Dr	1406	CI	DistMain	SS019	1955	150	192.6	-2%	Critical	Replacement	$ 95,800	2024	
Shawnee Rd	Highway 2	West Lake Dr	1406	CI	DistMain	SS019	1955	150	192.6	-2%	Critical	Replacement	$ 95,800	2024	$ 1,160,400
Arlington Blvd	Burlington Rd	St Gregory's Rd	1029	CI	DistMain	SC056	1955	150	113.2	-2%	Critical	Replacement	$ 59,300	2025	
Centennial Dr	Riverside Dr E	Dillon Dr	766	DI	DistMain	T037	1973	150		28%	Poor	Replacement		2025	
Centennial Dr	Riverside Dr E	Dillon Dr	768	DI	DistMain	T037	1973	150		28%	Poor	Replacement		2025	
Centennial Dr	Dillon Dr	Little River Blvd	767	DI	DistMain	T096	1973	150		28%	Poor	Replacement		2025	
Centennial Dr	Dillon Dr	Little River Blvd	819	DI	Trunk	T096	1975	300		32%	Poor	Replacement		2025	
Centennial Dr	Dillon Dr	Little River Blvd	820	DI	Trunk	T096	1975	300		32%	Poor	Replacement		2025	
Centennial Dr	Little River Blvd	St Thomas St	764	Di	DistMain	T170	1975	150		32%	Poor	Replacement		2025	
Centennial Dr	Little River Blvd	St Thomas St	765	DI	DistMain	T170	1973	150		28%	Poor	Replacement	$ 3,500,000	2025	
Woodridge Dr	Dillon Dr	Little River Blvd	754	DI	DistMain	T093	1975	150		32%	Poor	Replacement		2025	
Woodridge Dr	Dillon Dr	Little River Blvd	769	DI	DistMain	T093	1975	150		32%	Poor	Replacement		2025	
Woodridge Dr	Little River Blvd	St Thomas St	783	DI	DistMain	T168	1975	150		32%	Poor	Replacement		2025	
Little River Blvd	Woodbridge Dr	Woodbridge Dr	823	PVC	Trunk	T094	1975	300		32%	Poor	Replacement		2025	
Little River Blvd	Woodbridge Dr	Centennial Dr	824	PVC	Trunk	T095	1975	300		32%	Poor	Replacement		2025	
St Thomas St	Woodbridge Dr	Centennial Dr	851	DI	DistMain	T169	1975	150		32%	Poor	Replacement		2025	
Arlington Blvd	Hayes Ave	Burlington Rd	1028	CI	DistMain	SC065	1955	150	347.1	-2%	Critical	Replacement	$ 154,400	2025	

Town of Tecumseh
Watermain 10 Year Plan

Street Name	Road From	Road To	GIS ID	Material	MainType	Road Section	Year	Size (mm)	Length (m)	Age-Based Condition Rating	Condition	Description of Work	Cost	Year	Subtotal by Year
Arlington Blvd	Riverside Dr E	Hayes Ave	1027	CI	DistMain	SC066	1955	150	332.4	-2%	Critical	Replacement	$ 165,300	2025	
Arlington Blvd	St Gregory's Rd	Tecumseh Rd	1030	CI	DistMain	SC085	1955	150	261.0	-2%	Critical	Replacement	$ 135,800	2025	
Arlington Blvd	St Gregory's Rd	Tecumseh Rd	2713	CI	DistMain	SC085	1955	150	116.1	-2%	Critical	Replacement	$ 52,300	2025	
St Denis St	Lesperance Rd	St Pierre St	715	CI	DistMain	T213	1960	150	90.5	7%	Critical	Replacement	$ 51,000	2025	
St Denis St	St Pierre St	William St	716	CI	DistMain	T215	1960	150	140.0	7%	Critical	Replacement	$ 72,500	2025	
St Denis St	William St	Lacasse Blvd	714	CI	DistMain	T217	1960	150	137.4	7%	Critical	Replacement	$ 86,400	2025	
Tecumseh Rd	Tecumseh Rd	Lanoue St	571	DI	DistMain	T312	1980	150	12.5	40%	Fair	Replacement	$ 6,300	2025	$ 4,283,300
St Pierre St	Riverside Dr E	Dillon Dr	622	CI	DistMain	T024	1955	150	261.1	-2%	Critical	Replacement	$ 177,600	2026	
St Pierre St	Clapp St	St Thomas St	539	CI	DistMain	T151	1960	150	246.5	7%	Critical	Replacement	$ 161,500	2026	
St Pierre St	St Thomas St	McNorton St	540	CI	DistMain	T197	1960	150	304.4	7%	Critical	Replacement	$ 226,000	2026	
St Pierre St	McNorton St	St Denis St	541	CI	DistMain	T214	1960	150	339.9	7%	Critical	Replacement	$ 237,800	2026	$ 802,900
Tecumseh Rd	Dresden Pl	Regent Rd	952	CI	DistMain	SC068	1955	250	436.8	-2%	Critical	Replacement	$ 274,100	2027	
Olympia Dr	Astor Cres	Walker Rd	1466	DI	DistMain	SS286	1978	200	242.6	53%	Fair	Replacement	$ 142,900	2027	
Olympia Dr	Solar Cres	Astor Cres	1468	DI	DistMain	SS288	1978	200	157.4	53%	Fair	Replacement	$ 95,700	2027	
Solar Cres	Olympia Dr	Solar Cres	1469	DI	DistMain	SS289	1978	200	115.6	53%	Fair	Replacement	$ 77,100	2027	
Astor Cres	Olympia Dr	Olympia Dr	1467	DI	DistMain	SS287	1978	200	126.9	53%	Fair	Replacement	$ 81,600	2027	$ 671,400
Astor Cres	Olympia Dr	Olympia Dr	1467	DI	DistMain	SS287	1978	200	126.9	37%	Poor	Replacement	$ 81,600	2028	
Olympia Dr	Astor Cres	Walker Rd	1466	DI	DistMain	SS286	1978	200	242.6	37%	Poor	Replacement	$ 142,900	2028	
Olympia Dr	Solar Cres	Astor Cres	1468	DI	DistMain	SS288	1978	200	157.4	37%	Poor	Replacement	$ 95,700	2028	
Solar Cres	Olympia Dr	Solar Cres	1469	DI	DistMain	SS289	1978	200	115.6	37%	Poor	Replacement	$ 77,100	2028	
St Anne St	Intersection Rd	North Pacific Ave	1236	CI	DistMain	SS056	1962	150	527.1	10%	Critical	Replacement	$ 273,700	2028	
William St	Clapp St	St Thomas St	548	CI	DistMain	T153	1960	150	222.4	7%	Critical	Replacement	$ 155,500	2028	
William St	St Thomas St	McNorton St	549	CI	DistMain	T199	1960	150	333.5	7%	Critical	Replacement	$ 219,600	2028	
William St	McNorton St	St Denis St	547	CI	DistMain	T216	1960	150	153.3	7%	Critical	Replacement	$ 100,100	2028	
William St	McNorton St	St Denis St	2775	CI	DistMain	T216	1960	150	65.2	7%	Critical	Replacement	$ 44,400	2028	
William St	McNorton St	St Denis St	2776	CI	DistMain	T216	1960	150	75.4	7%	Critical	Replacement	$ 43,500	2028	
William St	St Thomas St	McNorton St	1711	CI	DistMain	T199	2005	150	4.9	82%	Excellent	Replacement	$ 2,500	2028	
Willow Crt	St Mark's Rd	St Mark's Rd	1951	CI	DistMain	SC044	1956	100	3.3	0%	Critical	Replacement	$ 1,500	2028	$ 1,238,100
Burlington Rd	Arlington Blvd	Warwick Rd	1035	CI	DistMain	SC057	1955	150	154.6	-2%	Critical	Replacement	$ 76,900	2029	
Burlington Rd	Warwick Rd	Clovelly Rd	1036	CI	DistMain	SC059	1955	150	217.8	-2%	Critical	Replacement	$ 118,400	2029	
Clapp St	Lesperance Rd	St Pierre St	543	CI	DistMain	T127	1968	200	91.2	20%	Poor	Replacement	$ 53,800	2029	
Clapp St	St Pierre St	William St	544	CI	DistMain	T128	1968	150	102.9	20%	Poor	Replacement	$ 57,200	2029	
Clapp St	William St	Labute St	545	CI	DistMain	T130	1968	150	83.2	20%	Poor	Replacement	$ 59,400	2029	
Clapp St	Meander Cres	Lacasse Blvd	546	CI	DistMain	T132	1968	150	80.4	20%	Poor	Replacement	$ 55,300	2029	
Derby Rd	Tecumseh Rd	Brighton Rd	1151	CI	DistMain	SC107	1972	150	2.1	27%	Poor	Replacement	$ 4,100	2029	
Dillon Dr	St Pierre St	McColl Ave	720	CI	DistMain	T025	1976	150	132.5	33%	Poor	Replacement	$ 74,900	2029	
Dillon Dr	McColl Ave	Lacasse Blvd	108	CI	DistMain	T026	1976	150	14.1	33%	Poor	Replacement	$ 7,100	2029	
Dillon Dr	McColl Ave	Lacasse Blvd	721	CI	DistMain	T026	1976	150	95.9	33%	Poor	Replacement	$ 53,700	2029	
Dillon Dr	Lacasse Blvd	Coronado Dr	722	CI	DistMain	T028	1976	150	153.7	33%	Poor	Replacement	$ 88,500	2029	
Kensington Blvd	Arlington Blvd	Clovelly Rd	1031	CI	DistMain	SC054	1955	150	472.9	-2%	Critical	Replacement	$ 237,400	2029	
Kensington Blvd	Riverside Dr E	Clovelly Rd	1032	CI	DistMain	SC055	1955	150	59.1	24%	Poor	Replacement	$ 32,400	2029	
Kensington Blvd	Riverside Dr E	Clovelly Rd	1033	CI	DistMain	SC055	1955	150	290.9	-2%	Critical	Replacement	$ 147,800	2029	$ 1,066,900
Clovelly Rd	Essex Rd	Kensington Blvd	1034	CI	DistMain	SC060	1955	150	37.4	-2%	Critical	Replacement	$ 14,300	2030	
Essex Rd	Rutland Rd	Clovelly Rd	1119	CI	DistMain	SC061	1955	150	129.3	-2%	Critical	Replacement	$ 65,300	2030	
Labute St	Clapp St	St Thomas St	542	CI	DistMain	T155	1971	150	115.1	25%	Poor	Replacement	$ 99,100	2030	
Labute St	Clapp St	St Thomas St	2035	CI	DistMain	T155	1971	150	123.3	25%	Poor	Replacement	$ 103,200	2030	
Lesperance Rd	Dillon Dr	Little River Blvd	277	CI	DistMain	T056	1972	150	125.5	27%	Poor	Replacement	$ 71,400	2030	
Lesperance Rd	Cedarwood Dr	Oliver Dr	279	CI	DistMain	T109	1972	150	55.5	27%	Poor	Replacement	$ 30,600	2030	

Town of Tecumseh
Watermain 10 Year Plan

Street Name	Road From	Road To	GIS ID	Material	MainType	Road Section	Year	Size (mm)	Length (m)	Age-Based Condition Rating	Condition	Description of Work	Cost	Year	Subtotal by Year
Lesperance Rd	Cedarwood Dr	Oliver Dr	394	CI	DistMain	T109	1972	150	303.6	27%	Poor	Replacement	$ 177,900	2030	
Rutland Rd	Clovelly Rd	Essex Rd	1064	CI	DistMain	SC063	1955	150	260.6	-2%	Critical	Replacement	$ 133,900	2030	
Rutland Rd	Clovelly Rd	Essex Rd	2069	CI	DistMain	SC063	1955	150	82.1	-2%	Critical	Replacement	$ 41,300	2030	$ 737,000
Clovelly Rd	Rutland Rd	Essex Rd	1063	CI	DistMain	SC062	1955	150	272.7	-2%	Critical	Replacement	$ 139,300	2031	
Clovelly Rd	Arlington Blvd	Rutland Rd	1118	CI	DistMain	SC064	1955	150	163.9	-2%	Critical	Replacement	$ 81,500	2031	
Clovelly Rd	Arlington Blvd	Rutland Rd	2710	CI	DistMain	SC064	1955	150	57.5	-2%	Critical	Replacement	$ 28,600	2031	
St Anne St	Maisonneuve St	Intersection Rd	1277	CI	DistMain	SS029	1962	150	334.8	10%	Critical	Replacement	$ 179,300	2031	
St Anne St	Gouin St	Maisonneuve St	1276	CI	DistMain	SS031	1962	150	344.4	10%	Critical	Replacement	$ 171,200	2031	
St Pierre St	Little River Blvd	Wood St	623	CI	DistMain	T059	1978	150	120.0	37%	Poor	Replacement	$ 74,700	2031	
St Pierre St	Dillon Dr	Little River Blvd	283	CI	DistMain	T060	1978	150	242.7	37%	Poor	Replacement	$ 156,100	2031	
Warwick Rd	Clovelly Rd	Burlington Rd	1042	CI	DistMain	SC058	1955	150	420.2	-2%	Critical	Replacement	$ 190,200	2031	$ 1,020,900
														10 Year Total Replacement	**$ 11,973,200**
Growth															
CR42/CR43 Construction												Growth	$ 1,372,100	2022	
Tecumseh Hamlet SPA & EA												Growth	$ 98,000	2022	
North Tecumseh Water Distribution Model												Growth	$ 70,000	2022	$ 1,540,100
West Tecumseh Trunk Watermain (W-1)												Growth	$ 200,000	2023	
Delduca Drive Sanitary Sewer (LRPCP)												Growth	$ 25,250	2023	
Trunk Watermain on Manning Road from CR22 to CP Railway (W-2B)												Growth	$ 760,000	2023	
Tecumseh Hamlet Local Sanitary & Water												Growth	$ 1,000,000	2023	
CR42/CR43 Construction												Growth	$ 390,000	2023	
Banwell Watermain-Intersection to South of CPR												Growth	$ 740,000	2023	$ 3,115,250
CR46/Webster/Laval Sanitary Sewer (LRPCP)												Growth	$ 1,350,700	2024	$ 1,350,700
Tecumseh Hamlet Local Sanitary & Water												Growth	$ 900,000	2025	
West Tecumseh Trunk Watermain (W-1)												Growth	$ 2,550,000	2025	$ 3,450,000
CR19 Watermain (W-2B & W-5A)												Growth	$ 150,000	2028	
West Tecumseh Trunk from CP Railway to CR42 (W-4)												Growth	$ 200,000	2028	$ 350,000
MRSPA Watermain (W-2A)												Growth	$ 150,000	2029	
CR46 Watermain (W-11)												Growth	$ 150,000	2029	$ 300,000
West Tecumseh Trunk from CP Railway to CR42 (W-4)												Growth	$ 2,800,000	2030	
CR19 Watermain (W-2B & W-5A)												Growth	$ 1,580,000	2030	$ 4,380,000
CR46 Watermain (W-11)												Growth	$ 1,850,000	2031	
MRSPA Watermain (W-2A)												Growth	$ 410,000	2031	
North Talbot Road Trunk Watermain (W-12B)												Growth	$ 1,310,000	2031	$ 3,570,000
														10 Year Total Growth	**$ 18,056,050**
														10 Year Grand Total	**$ 30,149,250**

Town of Tecumseh
Water Facilities 10 Year Plan

Asset Name	Asset ID	Description	Location	In-Service Year	Estimated Useful Life	Replacement Cost as of Dec 31, 2021	Year of Recommended Work	Cost
Dillon Dr Metering Facility	MCT-1	300 mm Metering Facility (boundary meter)	12030 Dillon Dr	2006	50	$ 138,000	2030	$ 25,000
Dillon Dr Metering Facility	MCT-1	Metering Facility SCADA	12030 Dillon Dr	2006	25	$ 94,000	2030	$ 94,000
McNorton St Metering Facility	MCT-2	200 mm Metering Facility (boundary meter)	12010 McNorton St.	2007	50	$ 210,000	2030	$ 38,000
McNorton St Metering Facility	MCT-2	Metering Facility SCADA	12010 McNorton St.	2007	25	$ 94,000	2030	$ 94,000
Tecumseh Rd Metering Facility	MCT-3	350 mm Metering Facility (boundary meter)	11805 Tecumseh Rd. E.	2006	50	$ 151,000	2030	$ 30,000
Tecumseh Rd Metering Facility	MCT-3	Metering Facility SCADA	11805 Tecumseh Rd. E.	2006	25	$ 94,000	2030	$ 94,000
County Rd 22 Metering Facility	MCT-4	500 mm Metering Facility (boundary meter)	11807 Mulberry Dr.	2006	50	$ 176,000	2030	$ 35,000
County Rd 22 Metering Facility	MCT-4	Metering Facility SCADA	11807 Mulberry Dr.	2006	25	$ 94,000	2030	$ 94,000
County Rd 42 Metering Facility	MCT-6	150 mm Metering Facility (boundary meter)	10005 County Road 42	2008	50	$ 210,000	2030	$ 42,000
County Rd 42 Metering Facility	MCT-6	Metering Facility SCADA	10005 County Road 42	2008	25	$ 94,000	2030	$ 94,000
Baseline Rd Metering Facility	MCT-7	150 mm Metering Facility (boundary meter)	9150 Baseline	2008	50	$ 210,000	2030	$ 42,000
Baseline Rd Metering Facility	MCT-7	Metering Facility SCADA	9150 Baseline	2008	25	$ 94,000	2030	$ 94,000
8th Concession Metering Facility	MCT-8	150 mm Metering Facility (boundary meter)	4970 8th Concession Road	2008	50	$ 210,000	2030	$ 42,000
8th Concession Metering Facility	MCT-8	Metering Facility SCADA	4970 8th Concession Road	2008	25	$ 94,000	2030	$ 94,000
County Rd 46 Metering Facility	MCT-9	200 mm Metering Facility (boundary meter)	3525 County Road 46	2007	50	$ 210,000	2030	$ 42,000
County Rd 46 Metering Facility	MCT-9	Metering Facility SCADA	3525 County Road 46	2007	25	$ 94,000	2030	$ 94,000
Walker Rd Metering Facility	MCT-10	200 mm Metering Facility (boundary meter)	4850 Walker Road	2008	50	$ 138,000	2030	$ 28,000
Walker Rd Metering Facility	MCT-10	Metering Facility SCADA	4850 Walker Road	2008	25	$ 94,000	2030	$ 94,000
North Talbot Rd Metering Facility	MCT-11	200 mm Metering Facility (boundary meter)	1730 North Talbot Road	2008	50	$ 210,000	2030	$ 42,000
North Talbot Rd Metering Facility	MCT-11	Metering Facility SCADA	1730 North Talbot Road	2008	25	$ 94,000	2030	$ 94,000
Talbot Rd Metering Facility	MCT-12	150 mm Metering Facility (boundary meter)	4800 County Road 9	2014	50	$ 210,000	2030	$ 42,000
Talbot Rd Metering Facility	MCT-12	Metering Facility SCADA	4800 County Road 9	2014	25	$ 94,000	2030	$ 94,000
Water Tower		Water Tower Structure	N/S Tecumseh Rd. E.	1992	50	$ 5,162,000	-	$ -
Water Tower		Water Tower SCADA	N/S Tecumseh Rd. E.	2007	10	$ 94,000	2030	$ 94,000
						$ 8,608,000		**$ 1,536,000**

The Corporation of the Town of Tecumseh

POLICY MANUAL

POLICY NUMBER: 82.5	**EFFECTIVE DATE: January 28, 2014**
SUPERCEDES: N/A	**APPROVAL: RCM-46/14**
SUBJECT: Sanitary Sewer Collection System Condition Assessment Policy	

PURPOSE:

1.1 The purpose of this policy is to provide a clear, consistent method for determining the condition rating of the Town's sanitary sewer collection system.

SCOPE:

2.1 The sanitary collection system, which consists of sewer gravity pipes, services, pumping stations, forcemains, and metering stations shall be assessed as outlined in this policy.

BACKGROUND:

3.1 The Town of Tecumseh maintains detailed information on the sanitary sewer assets in the Geographic Information Systems (GIS) system. Sanitary sewers are split into segments, manhole to manhole, with each segment assigned a unique GIS ID.

3.2 Camera inspection videos are reviewed in order to assign a Sewer Performance Grade (SPG) to the viewed segments to assist in assessing the sanitary sewer condition. The SPG method of classification is based on the Water Resource centre (WRc) pipe condition classification method. It provides a rating for a sewer segment ranging from SPG 1 to SPG 5. Assessed ratings are always based on the worse defect found in the segment. A segment with the rating SPG 3 or higher is indicative of needed investment and should be identified and appropriately scheduled for major reconstruction or rehabilitation.

The SPG ratings are as follows:

- SPG 1- No Defects
- SPG 2- Minor Defects
- SPG 3- Likely to Deteriorate
- SPG 4- Likely to Collapse in Future
- SPG 5- Collapse Imminent

PROCEDURE:

4.1 The Town of Tecumseh will use video inspection methods to determine the condition of the sanitary sewers.

4.2 The Director Public Works & Environmental Services shall ensure that the Town continues to maintain acceptable levels of service, which shall be qualified as:

- All SPG 5 defects scheduled for some kind of remedial attention within 6 months.
- All SPG 4 defects scheduled to receive remedial attention within 2 years.
- Goal to achieve an overall SPG 2 rating.

4.3 The Director Public Works & Environmental Services shall ensure that the Town's program to maintain acceptable levels of service will include:

- Yearly tenders to flush and camera inspect sanitary sewers. Goal of inspecting all sewers once within a 15 year time frame.
- Continued investment in the I&I Program as detailed in the ten year plan implemented in 2010.
- Yearly review of all facility assets with annual calibrations and reports.
- Sanitary modeling to provide additional data and information on the performance of the system.
- Full scope condition assessments of the sanitary pumping stations including structural, electrical and mechanical systems shall be performed and remedial works planned and carried out with respect to any urgent needs identified. At no time shall 5 years pass since the last assessment.

4.4 Urgent repairs identified in the condition assessments shall be assigned to contractors that have the capabilities and resources to carry out repairs within the above prescribed timeframes.

RESPONSIBILITY:

5.1 The Director Public works & Environmental Services shall be responsible for the implementation of the Sanitary Sewer Collection System Condition Assessment Policy.

5.2 The Manager Water & Wastewater and/or the Manager Engineering Services shall be responsible for review and use of the information gathered from the condition assessments.

5.3 Administration, consisting of the Director Public Works & Environmental Services, the Director Financial Services/Treasurer, and the Manager Water & Wastewater and/or the Manager Engineering Services, shall assign urgent repairs as identified in the condition assessments to contractors that have the capabilities and resources to carry out repairs within the above prescribed timeframes. This awarding of work shall be in accordance with the Town's Purchasing Policy.

REFERENCE:

Purchasing By-law 2006-03, which includes the Purchasing Policy

Town of Tecumseh
Sanitary Sewer 10 Year Plan

Project/Road	From	To	Project Description	Year	Cost	Subtotal
Master Plan						
Water & Wastewater Master Plan Update			Engineering	2030	$ 100,000	$ 100,000
					10 Year Total Master Plan	**$ 100,000**
Rehabilitation						
SCADA Software/Server/Nodes Update				2022	$ 20,000	$ 20,000
Manhole Restoration Program				2023	$ 50,000	$ 50,000
					10 Year Total Rehabilitation	**$ 70,000**
Replacement						
CR42	Lesperance	CR19	Reconstruction	2022	$ 62,900	$ 62,900
Riverside Drive	Kensington	Pentilly	Reconstruction	2023	$ 1,627,200	
CR42 CR19 Roundabout			Reconstruction	2023	$ 23,700	
Intersection Road	11921 Intersection	St Anne Street	Engineering only	2023	$ 80,000	$ 1,730,900
Intersection Road	11922 Intersection	St Anne Street	Reconstruction	2025	$ 1,050,000	$ 1,050,000
					10 Year Total Replacement	**$ 2,843,800**
Servicing						
Delduca Drive	Entire Length		Engineering only	2023	$ 190,000	$ 190,000
CR46	8th Concession	Hwy 401	8th Con Servicing	2024		
Webster Drive	CR46	end of Cul-de-sac	8th Con Servicing	2024	$ 1,404,800	
Laval Sanitary Branch	CR46	end of Cul-de-sac	8th Con Servicing	2024		$ 1,404,800
Ure	Delduca Drive	North Talbot Road	Engineering only	2027	$ 110,000	$ 110,000
Ure	Delduca Drive	North Talbot Road	8th Con Servicing	2029	$ 403,200	
Sylvestre Drive Sanitary Extension			Engineering only	2029	$ 100,000	
Delduca Drive	Entire Length		8th Con Servicing	2029	$ 1,011,100	$ 1,514,300
O'Neil	Delduca Drive	North Talbot Road	Engineering only	2030	$ 150,000	$ 150,000
Sylvestre Drive Sanitary Extension	Manning	Westerly 375m	Sylvestre Servicing	2031	$ 773,300	$ 773,300
					10 Year Total Servicing	**$ 4,142,400**

Town of Tecumseh
Sanitary Sewer 10 Year Plan

Project/Road	From	To	Project Description	Year	Cost	Subtotal
Growth						
Riverside Drive In-line Storage Trunk Sanitary			Engineering	2023	$ 123,400	
Tecumseh Hamlet Local Sanitary			Engineering	2023	$ 100,000	
Diversion Sanitary Sewers (WW-2)			Engineering	2023	$ 84,000	
West Tecumseh Trunk Sanitary (WW-1)	CR22	CP Railway		2023	$ 520,000	$ 827,400
Riverside Drive In-line Storage Trunk Sanitary				2024	$ 1,932,600	$ 1,932,600
West Tecumseh Trunk Sanitary (WW-1)	CR22	CP Railway		2025	$ 6,513,000	
Tecumseh Hamlet Local Sanitary				2025	$ 900,000	
Diversion Sanitary Sewers (WW-2)				2025	$ 1,050,000	$ 8,463,000
MRSPA Sanitary Sewer (WW-12 & WW-13)				2026	$ 1,000,000	$ 1,000,000
MRSPA Sanitary Sewer (WW-12 & WW-13)				2028	$ 1,490,000	
CR42 (WW-8a)	CR43	Shields	Engineering only	2028	$ 200,000	
CR46 (WW-16A & WW-16B)	8th Concession	limits of Oldcastle Hamlet	Engineering only	2028	$ 150,000	
West Tecumseh Trunk Sewer (WW-6)			Engineering	2028	$ 200,000	$ 2,040,000
CR42 (WW-7)	Lesperance	Shields	Engineering only	2029	$ 300,000	$ 300,000
CR46 (WW-16A & WW-16B)	8th Concession	limits of Oldcastle Hamlet	8th Con Trunk Sewer	2030	$ 3,710,000	
West Tecumseh Trunk Sewer (WW-6)				2030	$ 4,600,000	
CR42 (WW-8a)	CR43	Shields	Reconstruction	2030	$ 2,200,000	$ 10,510,000
CR42 (WW-7)	Lesperance	Shields	Reconstruction	2031	$ 2,200,000	$ 2,200,000
					10 Year Total Growth	**$ 27,273,000**
					10 Year Grand Total	**$ 34,429,200**

Town of Tecumseh
Sanitary Sewer Facilities 10 Year Plan

Asset Name	Asset ID	Component	Location	In-Service Year	Estimated Useful Life	Risk Rating	Condition Rating		Combined Rating	Replacement Cost	Year of Recommended Work	Cost	Year of Recommended Work	Cost	Year of Recommended Work	Cost
SCADA Software/Server/Nodes Update											2022	$ 20,000				
Portable Generator		Mechanical/Electrical									2026	$ 100,000				
MRSPA Sanitary Lift Station (WW-13)											2028	$ 214,000				
MRSPA Sanitary Lift Station (WW-13)											2028	$ 919,000				
Cedarwood Pump Station		Structure	Gauthier Drive	1972	50	11	2.7	Good	13.7	$ 1,800,000	2028	$ 62,900				
Cedarwood Pump Station		Mechanical/Electrical	Gauthier Drive	1986	20					$ 990,000	2023	$ 30,000	2025	$ 385,000		
Cedarwood Pump Station		SCADA	Gauthier Drive	2010	25					$ 210,000						
Lakewood Pump Station		Structure	Lakewood Park South	2015	50	10	1.1	Very Good	11.1	$ 800,000	2023	$ 70,000	2030	$ 125,900		
Lakewood Pump Station		Mechanical/Electrical	Lakewood Park South	2015	20					$ 1,014,000						
Lakewood Pump Station		SCADA	Lakewood Park South	2015	25					$ 186,000						
St. Alphonse Pump Station		Structure	St. Alphonse/CR 42	1973	50	3	1.8	Very Good	4.8	$ 325,000	2030	$ 94,400				
St. Alphonse Pump Station		Mechanical/Electrical	St. Alphonse/CR 42	2011	20					$ 375,000						
Sylvestre Pump Station		Structure	Sylvestre Drive	1996	50	5	2.6	Good	7.6	$ 280,000	2023	$ 90,000	2023	$ 147,500	2024	$ 635,500
Sylvestre Pump Station		Mechanical/Electrical	Sylvestre Drive	1996	20					$ 320,000	2026	$ 30,000	2027	$ 30,000		
Cedarwood Metering Station	WP 01	Structure	Access off Rendezvous Drive	1972	50	N/A	1.9	Very Good	1.9	$ 75,000						
County Road 22 Flume	TSM 02	Structure	County Road 22	2010	50	N/A	1.8	Very Good	1.8	$ 75,000	2029	$ 62,900				
County Road 22 Flume	TSM 02	SCADA Equipment	County Road 22	2010	25					$ 81,000						
Lakewood Metering Station	WP 03	Structure	Lakewood Park South	2015	50	N/A	1.0	Very Good	1.0	$ 75,000						
North Talbot Rd Flume	TSM 04	Structure	North Talbot Rd	2012	50	N/A	1.9	Very Good	1.9	$ 75,000	2030	$ 62,900				
North Talbot Rd Flume	TSM 04	SCADA Equipment	North Talbot Rd	2012	25					$ 81,000						
8th Concession Rd Flume	TSM 05	Structure	8th Concession Rd at Hwy 401	2013	50	N/A	2.2	Good	2.2	$ 110,000	2031	$ 62,900				
8th Concession Rd Flume	TSM 05	SCADA Equipment	8th Concession Rd at Hwy 401	2013	25					$ 120,000						
									Total	**$ 6,992,000**		**$ 1,819,000**		**$ 688,400**		**$ 635,500**

10 Year Grand Total **$ 3,142,900**