Municipality Of Chatham-Kent

Finance, Budget, Information Technology & Transformation

And

Infrastructure and Engineering Services

To: Mayor and Members of Council

From: Gord Quinton, MBA, CPA, CGA
Chief Financial Officer / Treasurer /
GM, Finance, Budget, Information Technology & Transformation

Chris Thibert, P. Eng
Director, Engineering Services

Date: June 6, 2022

Subject: 2022 Asset Management Plan Update

Recommendations

It is recommended that:

1. The Core Infrastructure Asset Management Plan 2022 be approved and submitted to the Province of Ontario and posted to the public via the Chatham-Kent Website prior to the July 1, 2022 regulatory deadline. Core Services are defined as follows:

    a. Road networks
    b. Bridges & Culverts
    c. Storm networks
    d. Water
    e. Wastewater

2. 1.5% tax equivalent for lifecycle infrastructure funding, be approved and referred to the 2023 Budget process for implementation.

3. Construction inflation increase of 6% on lifecycle infrastructure funding, be approved and referred to the 2023 Budget process for implementation.

4. Council continue to work with the Municipal Finance Officers' Association (MFOA), Association of Municipalities Ontario (AMO), Federation of Canadian Municipalities (FCM) and Senior Levels of Government to encourage the implementation of long-term, sustainable infrastructure programs that will lessen the financial burden of asset management on municipalities.

5. Administration issue a Request for Proposal (RFP) for consulting services with respect to the remaining 2023–2025 requirements of Regulation 588/17 with costs funded from current Lifecycle Reserves and cost shared with the Public Utilities Commission (PUC). Administration to report to the 2023 Budget Process the Base Budget staffing (Finance, GIS, Engineering, PUC) and computer software funding needed to meet the mandatory regulation requirements.

Background

At the June 24, 2019 Council meeting, Council approved the Asset Management Policy (Attachment A) that guides staff in meeting all statutory requirements and alignment with the Strategic Objectives of Council.

Provincial Regulation O. Reg 588/17 Asset Management Planning for Municipal Infrastructure guides staff in fully developing Chatham-Kent's Asset Management Plan (AMP) to a fully functional and guiding document. Provincial Regulation O. Reg 193/21 in response to Covid-19, pushed the 2021, 2023 and 2024 deadlines back one year. This report addresses the enhanced AMP for Core Infrastructure Assets now due to the Province by July 1, 2022.

Comments

The Core Infrastructure Asset Management Plan 2022 (Addendum attached) is aligned with the Asset Management Plan Policy approved by Council in 2019, incorporates the key principles and strategic directions that enhance asset management plan practices, and ensures that asset management plan activities are continuously improved and integrated across the organization. The asset management plans in this report are based on the work used to develop the annual Capital Budget and plan for the core infrastructure asset groups managed by municipal staff and the Public Utilities Commission (PUC). The PUC reviewed their portions of this report at their June 16, 2022 Commission meeting.

Asset Management Plans (AMP) integrate planning, finance, budget, engineering, and operations throughout the organization that manage physical assets, to realize value from assets, reduce risk and provide expected levels of service to the community in a socially, environmentally and economically sustainable manner. Effective asset management requires an overarching framework to establish and guide its practice so that asset management becomes central to strategic, financial and operational decision making at all levels of the organization, including Council funding decisions.

As the Chatham-Kent AMP is maturing, it becomes the foundation that supports an integrated approach to ensuring the sustainability of assets and related services, optimizes infrastructure investment decisions, and supports reliable service delivery. The AMP provides an inventory by asset category, asset conditions, service levels and asset lifecycle activities and cost required to maintain current service levels. The AMP also identifies the impacts of growth including costs to accommodate demand and the operating costs required to maintain current service levels in accordance with the first-

phase requirements of O. Reg 588/17. Council will be asked to approve Development Charges at the July 11 and August 8 Council meetings to fund the Capital funding required by growth; however, to be specific, there are lifecycle funding aspects to growth that need to be increased in the Budget to reflect the growth in our communities.

Requirements

The Regulations facilitate asset management best practices throughout the municipal sector, provide a degree of consistency to asset management plans, and leverage asset management planning to optimize infrastructure investment decisions. Compliance to the Regulations are required for all municipalities in Ontario to receive the Canada Community Building Fund (CCBF)(formerly Federal Gas Tax), the Ontario Community Infrastructure Fund (OCIF) or any one-time grants for infrastructure investments from upper level governments. Chatham-Kent relies on this funding for approximately $20 million of average annual upper level grants.

The requirements of the O. Reg 588/17 were phased in as follows with amendments as filed under O. Reg 193/21.

1. July 1, 2019: Every municipality in Ontario must have a strategic asset management policy approved by Council. The policy is to be reviewed, and if necessary updated, at least every five years.
2. July 1, 2022: Every municipality in Ontario must have approved asset management plans for core infrastructure assets (Roads, Bridges and Culverts, Storm water, Water and Wastewater) at the current level of service.
3. July 1, 2024: Every municipality in Ontario must have approved asset management plans for all infrastructure assets at the current levels of service.
4. July 1, 2025: Every municipality in Ontario must have approved asset management plans that must include proposed levels of service for each category of infrastructure assets.

The Regulation defines detailed information requirements for each phase. Additionally, the Regulations require that the strategic asset management policy and AMPs be approved by a resolution passed by Council and made available via the municipality's website and available to persons that request a copy.

Corporate AMP Policy and Framework

The Corporate AMP and Framework are intended to promote a consistent and integrated approach to asset management of municipal infrastructure, facilitate logical and evidence-based decision making for the management of infrastructure assets, and support the delivery of sustainable community services now and in the future, through the adoption of appropriate asset management practices.

The Corporate Asset Management Framework (illustrated in Figure 1) represents the integrated relationship between elements of an effective asset management system, and provides a structure for standardization and consistency of asset management practices and plans across the organization. It integrates land use, service and master

planning to ensure that multi-year service plans account for the capital assets required to support existing service levels and delivery, increased service demands and to address projected growth. It also illustrates the interaction of key strategies of asset management planning that includes all states of the asset lifecycle, levels of service, risk and financial management.

Figure 1: Corporate Asset Management Framework

This framework is used to guide development and implementation of the Core Infrastructure Asset Management Plans included in this report and it is intended to endure long term for asset sustainability, demonstrate a commitment to good stewardship and support improved accountability and transparency to the community.

Core Infrastructure Asset Management Plan

The legislation requires Chatham-Kent to provide to the Province asset management plans for core assets by July 1, 2022. The legislation requires similar action to be taken for all assets, such as parks, recreation asset, IT assets, housing assets, fire, police, etc. to be included in future asset management plans by July 2024.

The long-term outcome is to ensure the sustainability of assets and related services, optimize infrastructure investment decisions and support reliable service delivery.

The Core Services AMP included in the addendum seeks to inform Council and residents on the current condition of assets, quantify the current replacement value, and provide a 10-year forecast of lifecycle activities and costs to maintain current service levels. The regulatory requirements include:

1. Introduction – Overview including asset information, network extent, definition and basic information
2. Asset Inventory – Categorization of assets in further detail including asset inventory by category
3. Asset Valuation – Valuation of assets at replacement
4. Average Asset Age – Information on the average asset age by category
5. Asset Condition – Examines the asset condition based on the information currently available and details approached used for condition assessment
6. Levels of Service – Provides qualitative descriptions in terms of scope and/or reliability and quality of current community levels of service, as well as technical metrics for current technical levels of service by asset category
7. Lifecycle Activities – Describes lifecycle of assets and provides a future outlook and options to maintain the current levels of services
8. Lifecycle Costs and Risk – Provides lifecycle costs for activities that can be undertaken at lowest cost to maintain the assets at current levels of service over the 10 year time frame, and also highlights the risks associated with assets failing to meeting current levels of service
9. Impact and Response to Growth – Identifies the impact of a growing population and employment forecast including estimated expenditures and significant operating costs related to new construction

2022 Financial Update

The annual requirements of funding Chatham-Kent's AMP fully has increased from $95 million in 2017 to $124 million in 2022 through more exact condition ratings, increasingly accurate inventories, new assets from growth and high levels of construction inflation. Funding for Chatham-Kent's AMP has only risen from $48 million in 2017 to $62 million in 2022, due to an increase in municipal budgets and increased permanent funding from CCBF and OCIF. To put it another way, Chatham-Kent funded the AMP at 50% in 2017 and now funds the AMP at 50% in 2022, despite $14M of additional funding over the last five budgets. The status quo funding percentage and increase in Chatham-Kent's Infrastructure Gap to $62 million makes sense for three reasons; first, we have only added inflation to our current funding level, not to the overall requirements, thus the gap increases; second, the Budget Committee often reduced or cut the suggested Lifecycle inflation at the annual budget deliberations; little divestment has occurred over the last five years which was a requirement of the 2017 AMP Council resolution.

Table 1 below demonstrates the increase in asset valuation over the last five years. The increase in Transit was due to the change of Chatham-Kent now owning transit fleet. Chatham-Kent replacement value of assets has risen from $4.5 billion to $6.2 billion.

Table 1: Total Asset Value			
	Review Date	2017 Asset Valuation	2022 Asset Valuation
Road Networks	2022	$ 1,052,293,428	$ 2,265,757,552
Storm Networks	2022	$ 1,916,955,071	$ 2,002,515,859
Bridges & Culverts	2022	$ 1,022,220,000	$ 1,284,620,000
Facilities & Structures	2017	$ 360,638,340	$ 466,889,117
Rolling Stock	2017	$ 66,835,600	$ 86,526,614
Land Improvements	2017	$ 44,300,748	$ 57,352,574
Machinery & Equipment	2017	$ 16,970,725	$ 21,970,617
Municipal Airport	2017	$ 2,907,684	$ 3,764,342
Transit	2022	$ 2,415,640	$ 7,046,643
Total		$ 4,485,537,236	$ 6,196,443,318

Table 2 below demonstrates the increase in annual requirements over the last five years.

Table 2: Annual Requirements			
		2017	2022
	Review Date	Annual Lifecycle Requirements	Annual Lifecycle Requirements
Road Networks	2022	$ 30,677,000	$ 39,715,016
Storm Networks	2022	$ 18,660,000	$ 24,157,584
Bridges & Culverts	2022	$ 20,295,000	$ 26,274,285
Facilities & Structures	2017	$ 7,279,000	$ 9,423,529
Other Capital Projects	2017	$ 5,957,000	$ 7,712,043
Rolling Stock	2017	$ 5,132,000	$ 6,643,983
Land Improvements	2017	$ 1,786,000	$ 2,312,189
Machinery & Equipment	2017	$ 3,303,000	$ 4,276,125
Housing	2017	$ 2,232,000	$ 2,889,589
Municipal Airport	2017	$ 97,000	$ 125,578
Transit	2022	$ 89,000	$ 643,448
Total		$ 95,507,000	$ 124,173,369

Budget Requirements

The 2017 AMP report suggested a 20-year phase in to full funding, a 1.4% of tax revenues increase each year, and a full indexation to the capital inflation index for each year's budgets. Unfortunately, the recommendation approved by Council did not reflect these recommendations. Instead, Council directed a 1% increase to tax revenues each year and left the decision-making on inflation to the annual budget process. While there has been a great increase in annual funding since 2017, in reality the Infrastructure Gap has still risen, that is, Chatham-Kent still has at least 20–30 years of tax increases to become fully funded.

A key aspect of the Council approved 2017 plan was to divest in core assets and increase efficiencies to find the 0.4% savings. Little divestment has occurred and Council has clearly indicated that there is little public will to close roads and bridges, the most expensive assets we have; therefore, for AMP purposes, it is understood by staff that only modest savings could be achieved through future consolidation of municipal buildings as they reach the end of life.

As for inflation on our lifecycle plan, it was reported to Council at the 2022 budget that the five-year average construction inflation was 5.3%. During 2022, we are experiencing even higher inflation. Paving contracts increased 30%, which ultimately means that without increased funding our roads will fall in greater disrepair.

Therefore, as we have continued to fall behind in closing the infrastructure gap, a more aggressive resolution of Council is sought in recommendations two and three. We are recommending a base budget increase for infrastructure of 1.5% of tax revenues. For 2023 budget, early calculations indicate 1% of taxes to be $1,758,000. This will mean that we would raise taxes by approximately $2,637,000 under recommendation two. In addition, recommendation three would require the budget committee to increase taxes to fully cover the actual inflation increases to our current lifecycle budget based on the five-year average of 6%. As we have a Capital Budget of $62M, 6% would require $3,720,000 of new taxes. In total for the 2023 budget, this would mean an additional $6,357,000 of new taxation or an approximate 3.62% tax increase for Capital. Please keep in mind the 6% inflation recommendation is only on the current AMP funding. As we are only 43% funded the Infrastructure Gap will still likely increase as inflation on the unfunded portion rises, unless significant new upper level government funding is committed.

Lobbying Efforts

Chatham-Kent staff and Council have long advocated for increased levels and new sources of funding for asset management; however, recent construction inflation levels and the requirements of municipal councils to fund social and health programs have caused a catastrophic strain on property tax payers in Ontario. Like most large municipalities across Ontario, Chatham-Kent will require additional long-term annual predictable funding from senior levels of government to complement municipal resources.

Administration recommends that the following lobbying points continue to be actioned on:

1. Permanent doubling of the Canada Community Building Fund (formerly Federal Gas Tax)
2. Implementation of the Provincially planned increases of $200 million a year for the next four years to the Ontario Community Infrastructure Fund (OCIF) and a removal of any cap to funding (Chatham-Kent, Thunder Bay and Greater Sudbury were capped at $10 million for 2022)

3. A future share of HST – over the next decade, the implementation of one percent of HST be directed to municipal governments for incremental AMP funding

The three points above are all continued stable predictable funding mechanisms. While there are opportunities for one-time funding announcements related to climate change, Covid-19 recovery and community building, what is ultimately required is predictable inflation adjusted permanent annual funding, in alignment with the current situation facing all Ontario municipalities.

Next Steps

To meet the future requirements of O. Reg 588/17 and to better communicate the need for ongoing additional funding for assets and obtain direction for future levels of service, Administration is recommending further investments in AMP tools and operational support. Chatham-Kent is transforming its Capital financial management practices and undertaking a series of modernization initiatives that will address governance, asset management, capital planning and program delivery to allow for a single view of assets across the municipality's divisions, including PUC, and better inform long-term investment strategies.

Further reporting on Asset Management to Council include:

1. July 1, 2024 – all owners of assets will be required to submit their respective asset management plans for Council approval and submission to the Province and public posting
2. July 1, 2025 – also identify the proposed service levels and asset performance that will result in asset investments as well as the financial strategies to fund those asset investments

In order to achieve the timelines legislated, Administration is recommending that a Request for Proposal (RFP) for a consultant-led but staff-completed action plan be released prior to the 2023 Budget process, to outline the steps and needs to achieve these aggressive deadlines. Additional software is needed that integrates with the JDE financial system to track our assets and better inform Council and the public. The service level requirements also requires a great deal of community consultation and training of the next Council. The RFP would lead the process in 2023–2025 of both software selection and training of staff on future resilient processes and procedure. Staffing levels required in Finance, GIS, Engineering, and PUC are being reviewed.

Areas of Strategic Focus and Critical Success Factors

The recommendations in this report supports the following areas of strategic focus:

☐ Economic Prosperity:

Chatham-Kent is an innovative and thriving community with a diversified economy

☐ A Healthy and Safe Community:

Chatham-Kent is a healthy and safe community with sustainable population growth

☐ People and Culture:

Chatham-Kent is recognized as a culturally vibrant, dynamic, and creative community

☐ Environmental Sustainability:

Chatham-Kent is a community that is environmentally sustainable and promotes stewardship of our natural resources

The recommendations in this report supports the following critical success factors:

☒ Financial Sustainability:

The Corporation of the Municipality of Chatham-Kent is financially sustainable

☒ Open, Transparent and Effective Governance:

The Corporation of the Municipality of Chatham-Kent is open, transparent and effectively governed with efficient and bold, visionary leadership

☐ Has the potential to support all areas of strategic focus & critical success factors

☐ Neutral issues (does not support negatively or positively)

Consultation

Engineering, PUC, Financial Services and Operational divisions were consulted on the contents of this report.

Community input is integral to the ongoing success of the AMP and the development of the additional target levels of service in 2024–2025; therefore, public and stakeholder engagement will continue as Chatham-Kent moves forward in our steps to meet Provincial regulations. New services levels will be defined and will align with associated financial strategies.

Financial Implications

Adoption of the recommendations in this report does not result in an immediate financial implication; however, compliance with the legislative requirements of O. Reg 588/17 does result in the need for additional investments at future Budget deliberations in resources corporately to establish an organization-wide practice of integrated asset management.

While it is true that all municipalities in Ontario have underfunded AMPs, Chatham-Kent residents need to be included in the process of deciding what level of underfunding is acceptable to their community, and understand the consequence of not fully funding their AMP.

The recommendations in the report are to include a 1.5% tax equivalent for lifecycle infrastructure funding and 6% construction inflation (based on the five-year average) on current AMP funding, in developing the 2023 Budget. Direction on both these aspects is considered Council Direction to the next Council's first budget.

The next term of Council will be highly involved in the future requirements of O. Reg 588/17 and the next phases of the AMP development that may have additional financial implications to the 2024–2027 Multi-Year budget.

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Attachments: Chatham-Kent Asset Management Policy
Core Infrastructure Asset Management Plan - Addendum

Asset Management Policy

1.0 POLICY STATEMENT AND PURPOSE

Chatham-Kent is committed to providing service to residents in a fiscally responsible manner that supports a healthy and vibrant community. The Municipality will adopt a sustainable approach to asset management, ensuring that the asset base is not increased without considering the impact on the ability of the Municipality to fund future maintenance and rehabilitation.

The purpose of this policy is to establish consistent standards and guidelines for management of the Municipality's assets, applying sound technical, social and economic principles that consider present and future needs of users and the service expected from the assets. This means leveraging the lowest total lifecycle costs of ownership with regard to the service levels that best meet the needs of the community, while being cognizant of the risk of failure that is acceptable if any consideration is considered with the levels of service.

2.0 OBJECTIVES OF ASSET MANAGEMENT

The primary objectives for asset management are to meet all legislative requirements and align with all other policies and plans of the Municipality.

Adherence to Statutory Requirements and Strategic Alignment

It shall be the Municipality's practice to ensure that all statutory requirements are being met and the policy aligns to the strategic objectives of the Municipality.

The Strategic Asset Management Policy must meet the Provincial expectations of Provincial regulation O. Reg 588/17 Asset Management Planning for Municipal Infrastructure.

There are a number of requirements from this regulation with specific timetables associated with the requirements.

July 1, 2019 - All municipalities are required to prepare and publish a strategic asset management policy

July 1, 2021 – All municipalities are required to develop enhanced asset management plans covering core infrastructure assets

July 1, 2023 – All municipalities are required to expand enhanced asset management plans to cover all infrastructure assets

July 1, 2024 – Expand asset management plans to provide further details for all infrastructure assets

This policy is to meet the first requirement of July 1, 2019. Significant work has been completed with the Asset Management Plan 2017 that will aid in completion of the additional requirements. Upon completion of all steps, there will be an update required every 5 years thereafter, to ensure

that all condition data, levels of service, risk of failure, annual requirements for lifecycle and annual funding are all updated to ensure maximum asset management.

There are 12 requirements of this regulation that are grouped into the following 3 categories of Statement, Process and Commitment.

1. Strategic Alignment – The Asset Management Plan 2017 works in harmony with the CKPlan 2035, which highlights Council's strategic objectives of Economic Prosperity, Healthy and Safe Community, People and Culture and Environmental Sustainability.

   The AMP is also supported by various corporate policies: Debt Policy, Reserve Management and the Budget Policy.

2. Budgeting – Council approved the Asset Management Plan 2017, which was provided to the Province. It includes a financing plan that included an increase of 1% of taxes each year for 20 years, along with taking expired debt payments and applying them as an increase to fund the annual requirements of the AMP. It also includes annual inflation being applied to fund the requirements.

3. Continuous Improvement – Administration continue to improve both the integrity of the data, by doing condition assessment of all asset categories and also improve the assets included in the inventory, to ensure adequate financing and asset management is being applied to all significant assets held by the Municipality.

4. Guiding Principles

a) Many of the asset categories have long-term master plans in place, which assist in determining the priority of lifecycle maintenance on those assets. One section of the asset management plan is dedicated to funding the annual requirements and has a 20-year financing plan, to achieve adequate funding for the annual lifecycle requirements on the various asset categories.

b) The planning and financing are coordinated in the Asset Management Plan, where there is a balance of affordability, while also annually increasing the funding for the required annual lifecycle maintenance to achieve the required level of funding for maintaining the assets at the desired service levels, while also mitigating the risks of failure. The balance between years and saving for specific projects is accomplished through using Lifecycle Reserves.

c) Priorities of the infrastructure work is completed in each category's master plans, significant work has been done on updating the plans with current condition assessment data and continues to be updated with new Lifecycle data.

d) Infrastructure planning and investment is focused on the continued provision of core public services, such as roads, bridges, water, wastewater and social housing.

e) Infrastructure planning and investment is prioritized to promote economic competitiveness, productivity, job creation and training opportunities.

f) Infrastructure planning and investment is prioritized to ensure the protection of the health and safety of workers involved in the construction and maintenance of infrastructure assets.

g) The Municipality has approved a research and development position that will foster innovation by creating opportunities to make use of innovative technologies, services and practices, particularly where doing so would utilize technology, techniques and practices developed in Ontario.

h) The Municipality's infrastructure planning and investment is based upon the Asset Management Plan 2017 and future plan updates. The data is based upon condition assessment data as much as possible, with updates occurring regularly. This data is approved by Council, provided to the Province and resides on the municipal website.

i) Chatham-Kent constantly monitors established plans or strategies in Ontario that are related to the infrastructure investment related to the Planning Act and for investments related to the water sustainability plans under the Water Opportunities Act, 2010.

j) Infrastructure planning and investment will promote accessibility for persons with disabilities.

k) Chatham-Kent has instituted new resources to ensure that all investments maintain ecological and biological diversity and that infrastructure design considers the effects of climate change.

l) Infrastructure planning and investment will endeavour to make use of acceptable recycled aggregates.

m) In Chatham-Kent, infrastructure is inextricably linked to the economic, social and environmental advancement of the community. The desire is to improve the assets in public spaces for uses by the community and infrastructure for economic drivers. Significant funds are spent locally each year, further driving the economy with local jobs and training opportunities throughout the community.

In addition, Chatham-Kent has the following overarching principles in their Asset Management Plan

- Holistic – Asset management must be cross-disciplinary, total value focused
- Systematic – Rigorously applied in a structured management system
- Systemic – Looking at assets in their systems context, again for net, total value
- Risk-based – Incorporating risk appropriately into all decision-making
- Optimal – Seeking the best compromise between conflicting objectives, such as costs versus performance versus risks etc.
- Sustainable – Plans must deliver optimal asset lifecycles, ongoing systems performance, environmental and other long-term consequences
- Integrated – At the heart of good asset management lies the need to be joined-up. The total jigsaw puzzle needs to work as a whole – and this is not just the sum of the parts

5. Climate Change – In Chatham-Kent's Long-Term Strategic Plan CKPlan 2035, one of the four strategic focuses is the Environment. In support of that area of focus, Chatham-Kent has completed changes in the Official Plan regarding climate change and has completed a Community Energy Plan (CEP) and a community-wide greenhouse gas inventory, emissions reduction targets or a strategy/plan to reduce emissions.

   Chatham-Kent is currently engaged in a Lake Erie Shoreline Management Plan, participating as a partner in the "Adapting to the Future Storm and Ice Regime in the Great Lakes". The study is related to climate change and the effects on infrastructure near the lake.

   In 2019, Chatham-Kent hired two positions. One Environmental Scientist and one Environmental Planner. These positions will directly affect the asset management planning for impacts on the environment.

   Specifically the roles will have responsibilities to:

   - Manage and provide environmental advice, strategies and recommendations from a technical and implementation perspective with respect to long range policy planning initiatives and collaborate with internal departments and external agencies/stakeholders on projects with environmental implementation components, such as climate change mitigation and adaptation, energy planning, natural heritage planning, official plan reviews, source water protection, watershed and subwatershed studies, servicing and stormwater masterplans and environmental assessments.

   - Ensuring compliance with all applicable laws and regulatory agencies. They will also be engaged in the operational component of providing direction to Drainage, Engineering, Public Works, Fire and Emergency Services, Planning, Recreation and Parks for prevention, mitigation and cleanup. These positions will be the first point of contact in reporting and dealing with regulatory agencies, such as the Ministry of the Environment, Conservation and Parks during emergencies, thereby providing a consistent and compliant direction.

6. Budgeting – Chatham-Kent Public Utilities Commission (CK PUC) prepares water and wastewater financial plans as part of the five submission requirements for the purposes of obtaining a municipal drinking water licence as per the *Safe Drinking Water Act, 2002*. The financial plan requires an in-depth analysis of capital and operating needs, a review of current and future demand verses supply, and consideration of available funding sources. This detailed financial planning and forecasting in regards to CK PUC's water and wastewater systems meets the reporting requirements for a financial plan as defined by *Ontario Regulation 453/07*. CK PUC prepares a water and wastewater financial plan that forecasts for a period on six (6) years.

   CK PUC financial plan is prepared in order to achieve financial sustainability and undertake an assessment of the full cost of providing water and wastewater services.

7. Community Planning – Chatham-Kent's Asset Management Plan takes into consideration our Official Plan, which is in alignment with the Planning Act, which would encompass any Provincial Plans that the Municipality would be required to be compliant with. Both the Official Plan and the Asset Management Plan will undergo regular updates, to ensure compliancy, updated information and updated planning.

8. Capitalization Thresholds – Synchronization between the Asset Management Policy and the Tangible Capital Asset Policy is critical to success of both and important to ensure that accounting for assets is aligned with the Asset Management Policy.

   The Tangible Capital Asset Policy (TCA) provides detailed guidelines for the accounting and recording of all tangible capital assets in the financial records and financial statements of the Municipality of Chatham-Kent.

   Guidelines are provided to ensure:

   - All TCA's are recorded appropriately and accurately
   - Accountability is maintained for government-owned TCA
   - Efficient and effective use of assets
   - Appropriate information is gathered and maintained to prepare financial statements and to satisfy audit requirements
   - Information is available for future needs planning and support measuring the cost of programs and services
   - Consistent accounting of TCA's across the organization

   The TCA Policy includes guidelines on Capitalization, which includes information on the cost elements to be included, the initial value of existing assets, the useful life expectancy of assets, capitalization thresholds and information on repair and maintenance expenditures. There is also information on Additions and Betterments, Disposals and Write-Downs, Amortization and Work in Progress.

   Capitalization thresholds relate to the minimum dollar amount that will determine which tangible capital assets will be capitalized and amortized and which will be treated as a current year maintenance expense.

   The size of the threshold is determined by the type of asset and the complexity involved in managing subsequent additions or deletions. The cost of acquiring and maintaining the information and the need for accurate presentation of information for decision-making is also considered when determining the minimum threshold levels.

   All tangible capital assets that do not meet the capitalization threshold parameters will be expensed in the year of acquisition and charged against the operating budget of the unit acquiring the asset.

   Tangible capital assets that are pooled assets must meet the threshold criteria as a single group asset to be considered for capitalization and amortization.

   The TCA Policy provides significant asset breakdown within all of the major asset categories. The major categories are as follows:

Land and Land Improvements
Buildings and Building Renovations
Machinery and Equipment
Other
Vehicles
Infrastructure

Categories are broken down by between 3 and 32 different assets within each major category. Each asset is broken down by its useful life, whether it is a single, pooled or component asset and what the minimum dollar amount for new replacement or betterment is for accounting for the items as a TCA. This aligns with the asset values, lifecycle costs and estimated budget needed on an annual basis in the Asset Management Plan.

The vast majority of thresholds are $15,000, with the replacement values having a threshold higher than the betterments on certain assets. The long-term plan would be to move all assets that are made up of various components, to become a list of smaller assets that make up the components of the previous single asset.

9. Stakeholder Engagement – Chatham-Kent is a single tier Municipality so does not need to coordinate with an upper tier. The Municipality does work with neighbouring communities on assets that may be part of connecting roads or bridges. Chatham-Kent has completed boundary agreements with neighbouring municipalities, so that each road or bridge has been identified to be maintained, repaired and liability by one of the municipalities linked by the assets and these costs and liabilities will be approximately equal between the two municipalities. No invoicing will occur except under extenuating circumstances. New construction costs would be split by the municipalities.

10. Governance – The General Manager of Infrastructure and Engineering Services and the General Manager of Finance, Budget and Information Technology Services hold joint responsibility for the Asset Management Plan and Policy. They jointly completed the 2017 Asset Management Plan, with financing plans and presented the plan to Chatham-Kent Municipal Council, who endorsed the plan. This plan was sent to the Province of Ontario for information and compliance purposes.

    Future updates to the Asset Management Plan adhering to Provincial regulation O. Reg 588/17 Asset Management Planning for Municipal Infrastructure will be completed by the two General Managers jointly and will be presented to Municipal Council.

11. Governance – Chatham-Kent Municipal Council has two significant roles in Asset Management for the Municipality.

a) The review and approval of Asset Management Plans – Administration will periodically complete updates of the Asset Management Plan for all municipal assets, complete with Condition Data, Financial Data, Infrastructure Report Cards, detailing the state of local infrastructure, the levels of service for the assets, risk of failure and all pertinent asset management strategies and financing strategies. Council will review the data and approve the plan for action.

b) The second area of involvement for Municipal Council is during the annual budget process. Administration will present an overview of infrastructure and include the annual approved amount of increased financing of the Asset Management Plan, detailing the annual requirements for lifecycle maintenance for the asset classes, the recommended increase in funding, categories that have the largest deficit to the requirements and the impacts the deficit may have. Council has the opportunity to amend the recommendations during the budget process and recommend funding to specific categories

12. Stakeholder Engagement – Annually within our budget process, we have a survey available for the residents of the Municipality to complete, where they can provide their thoughts on levels of service on our municipal infrastructure. Also during our budget process, we have 5 budget open houses in various wards of the Municipality. During these open houses, we provide a presentation, that includes an overview of the asset management plan and the plans current status, including annual requirements and annual funding levels, and which asset categories have deficits. These sessions have an opportunity for questions or comments during the meetings. All comments and questions are noted and presented to Council for feedback.

    These opportunities provide Municipal Council and administration with significant feedback on our levels of services for our assets and provides Council with information to take to the budget process and determine if there needs to be any additional funds, or amendments to the plan, based upon the feedback from the residents within the community.

    During our long-term strategic planning for CKPlan 2035, Council and administration had a significant amount of opportunities for the citizens to provide input into the long-term plans for Chatham-Kent. This includes many segments of the plan that are related to service levels and the direction that the citizens want the community to go. Infrastructure is a major component of this, both ensuring that existing assets are maintained, but also for any new growth related assets that the community desires.

REPORTING REQUIREMENTS

The Municipality will be responsible for the following reports:

Annual Audited Financial Statements

Each year the Municipality completes is audited Financial Statements, which include a statement of financial position, financial activities and changes in fund balances. There is both summary and detailed information about our tangible capital assets in the financial statements. The Net book value of our assets and a detailed schedule to the statements, providing information on the original costs, annual amount of acquisition, disposals and amortization, by major asset category.

Statutory and Periodic Updates of the Asset Management Plan

The Municipality will complete updates of the Asset Management Plan to meet compliance with current Ontario legislation. This includes the following date and updates.

July 1, 2021 – All municipalities are required to develop enhanced asset management plans covering core infrastructure assets

July 1, 2023 – All municipalities are required to expand enhanced asset management plans to cover all infrastructure assets

July 1, 2024 – Expand asset management plans to provide further details for all infrastructure assets.

Additionally the Municipality will update asset management plans every 5 years, including the lifecycle financing plans for Council to review and approve and then the plan is provided to the Province.

Annual Budget

A major component of the budget is the review of our infrastructure and our Asset Management Plan. Each year administration presents an update of our Lifecycle requirements for our assets; at what level we are funding our requirements and recommendations in the budget to follow the financing plan within the Asset Management Plan.

During the budget, Council also gives consideration to asset categories that have the largest deficits and determine whether additional funding should be allocated to these categories.

GLOSSARY OF TERMS

Asset:	Item, thing or entity that has potential or actual value to an organization. Value can be tangible or intangible, financial or non-financial and includes consideration of risks and liabilities.
Asset Management:	Coordinate activity of an organization to realize value from assets. Realization of value will normally involve an appropriate balancing of costs, performance and risks, opportunities and performance benefits.
Asset Management Plan:	Documented information that specifies the activities, resources and timelines required for an individual asset or grouping of assets, to achieve the organization's asset management objectives.
Levels of Service:	Parameters or a combination of parameters, which reflect social, political, environmental and economic outcomes that an organization delivers from their assets.

	Example – Transportation (Roads) – level of service is indicated by different road pavement conditions according to pavement condition index
Lifecycle:	Phases involved in the management of an asset.
Lifecycle Data:	Includes cost, performance and risk data collected and managed through business processes required to help make well informed, evidence-based decisions in all phases of an asset's life cycle.
Lifecycle Reserves:	Lifecycle reserves are established whenever municipal council, local board and other entity wishes to earmark revenues to finance lifecycle maintenance for municipal assets. This ensures that the funds are available as required to ensure the optimal maintenance on the assets at the appropriate time, to reduce costs by having available funds without requiring debt financing, maximizing the life of the assets.
Municipality:	Refers to the Municipality of Chatham-Kent, its Boards and Subsidiaries.
Tangible Capital Asset:	Per the Municipality's Tangible Capital Asset (TCA) Policy, TCA's are non-financial assets, having physical substance that are acquired, constructed or developed, including land, land improvements, roads, bridges, buildings, vehicles, equipment, water mains, sewer mains and capital assets acquired by capital lease or through donation.

Municipality of Chatham-Kent

Core Infrastructure Asset Management Plan

ADDENDUM

June 2022

Table of Contents

Introduction

The Core Infrastructure Asset Management Plan Addendum, June 2022, is a document to be read in conjunction with the 2017 Asset Management Plan that was completed with the assistance of Public Sector Digest Inc. and dated February 2018. This document included updated data in response to O. Reg 588/17 and O. Reg 193/21 that was due to the Province before July 1, 2022.

The Average Annual Investment requirement for tax funded categories in 2022 is $124 million. Annual revenue currently allocated to these assets for capital purposes is $62 million, leaving an annual deficit of $62 million. To put it another way, these infrastructure categories are currently funded at 50% of their long term requirements.

Population, Housing and Growth Estimates Updated in 2021

At the December 6, 2021 Council Meeting, an Update on Chatham-Kent's Growth Strategy and Preliminary Growth Forecasts prepared by Watson & Associates Economists Ltd. was received by Council.

Summary of Findings

- Chatham-Kent total permanent population is forecast to increase from 104,800 in 2016 to 122,200 by 2051, representing an increase of 17,400 persons.
- Permanent housing growth is forecast to average 280 new units annually between 2016 to 2051. Comparatively, this represents faster growth than the historical average (75 units annually) achieved between 2001 to 2016.
- The total number of jobs within Chatham-Kent is forecast to increase from 39,500 in 2016 to 46,200 in 2051, with most job growth concentrated in commercial and industrial sectors.

Road Network

Asset Portfolio: Quantity, Useful Life and Replacement Cost

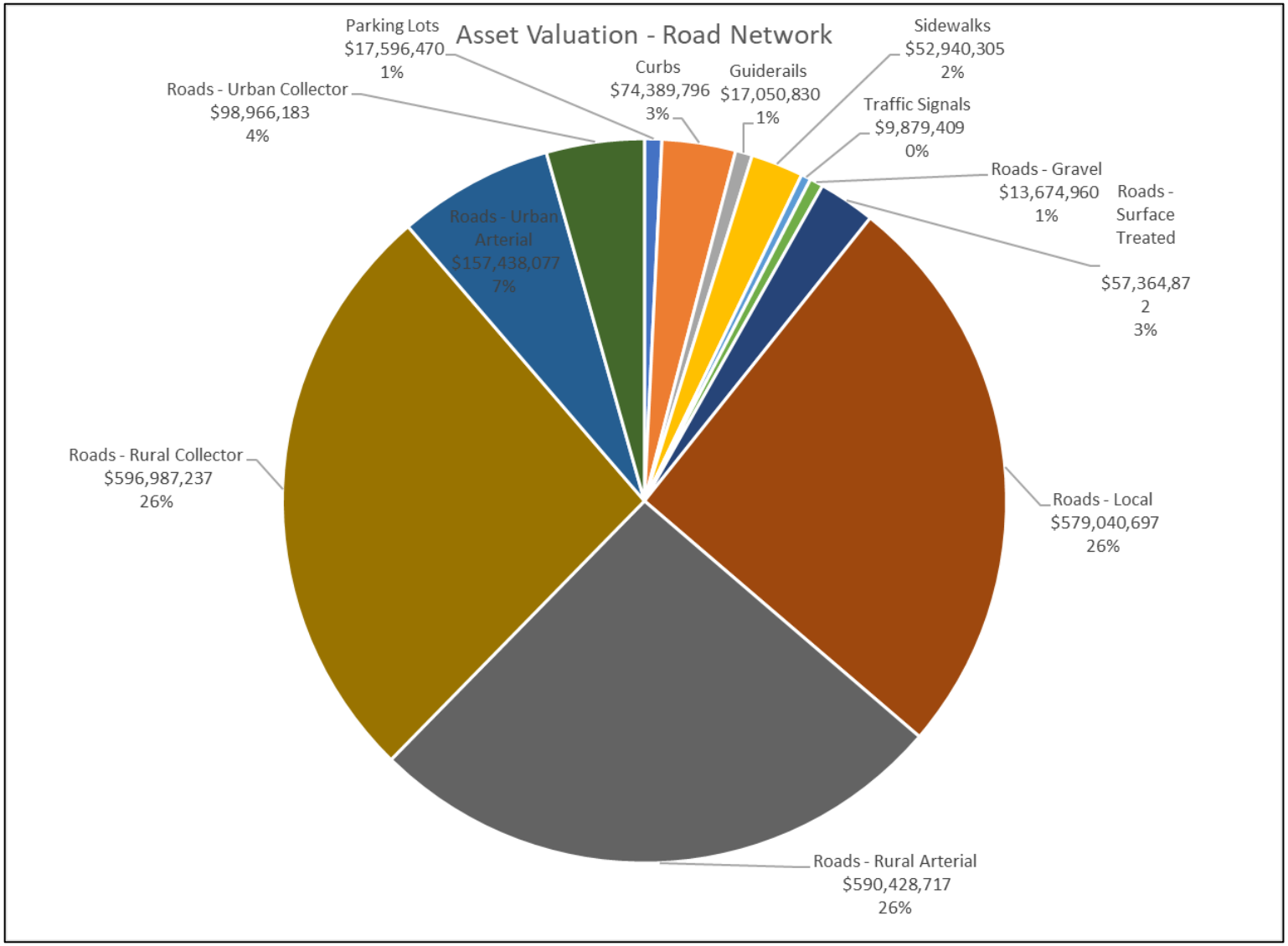
Table 5 illustrates key asset attributes for the municipality's road network, including quantities of various assets, their useful life, their replacement cost, and the valuation method by which the replacement costs were derived. In total, the municipality's roads assets are valued at $2.26 billion based on 2022 replacement costs. The useful life indicated for each asset type below was assigned by the municipality.

Table 5 Key Asset Attributes – Road Network

Asset Type	Asset Component	Quantity	Useful Life (Years)	2022 Unit Replacement Cost	2022 Overall Replacement Cost
Road Network	Parking Lots	234,619.60m2	20	$75/m2	$17,596,470
	Curbs	572,229.20m2	60	$130/m2	$74,389,796
	Guiderails	42,415m2	30	$402/m2	$17,050,830
	Sidewalks	557,266.37m2	40	$95/m2	$52,940,305
	Traffic Signals	127 units	17 - 28	$2,980 - $154,650/unit	$9,879,409
	Roads - Gravel	11,395,800m2	3	$1.20/m2	$13,674,960
	Roads - Surface Treated	1,434,121.81m2	18	$34.80/m2	$57,364,872
	Roads - Local	3,735,746.43m2	88	$155/m2	$579,040,697
	Roads - Rural Arterial	3,373,878.38m2	33	$175/m2	$590,428,717
	Roads - Rural Collector	3,411,355.64m2	38	$175/m2	$596,987,237
	Roads - Urban Arterial	1,015,729.53m2	28	$155/m2	$157,438,077
	Roads - Urban Collector	638,491.50m2	33	$155/m2	$98,966,183
				Total	$2,265,757,552

Note: gravel roads are shown in the table above and Figure 11 to highlight the total valuation of owned assets. These assets are not included within the remaining figures in this section as they are perpetually maintained. A new layer of gravel is applied on all gravel road sections every three years.

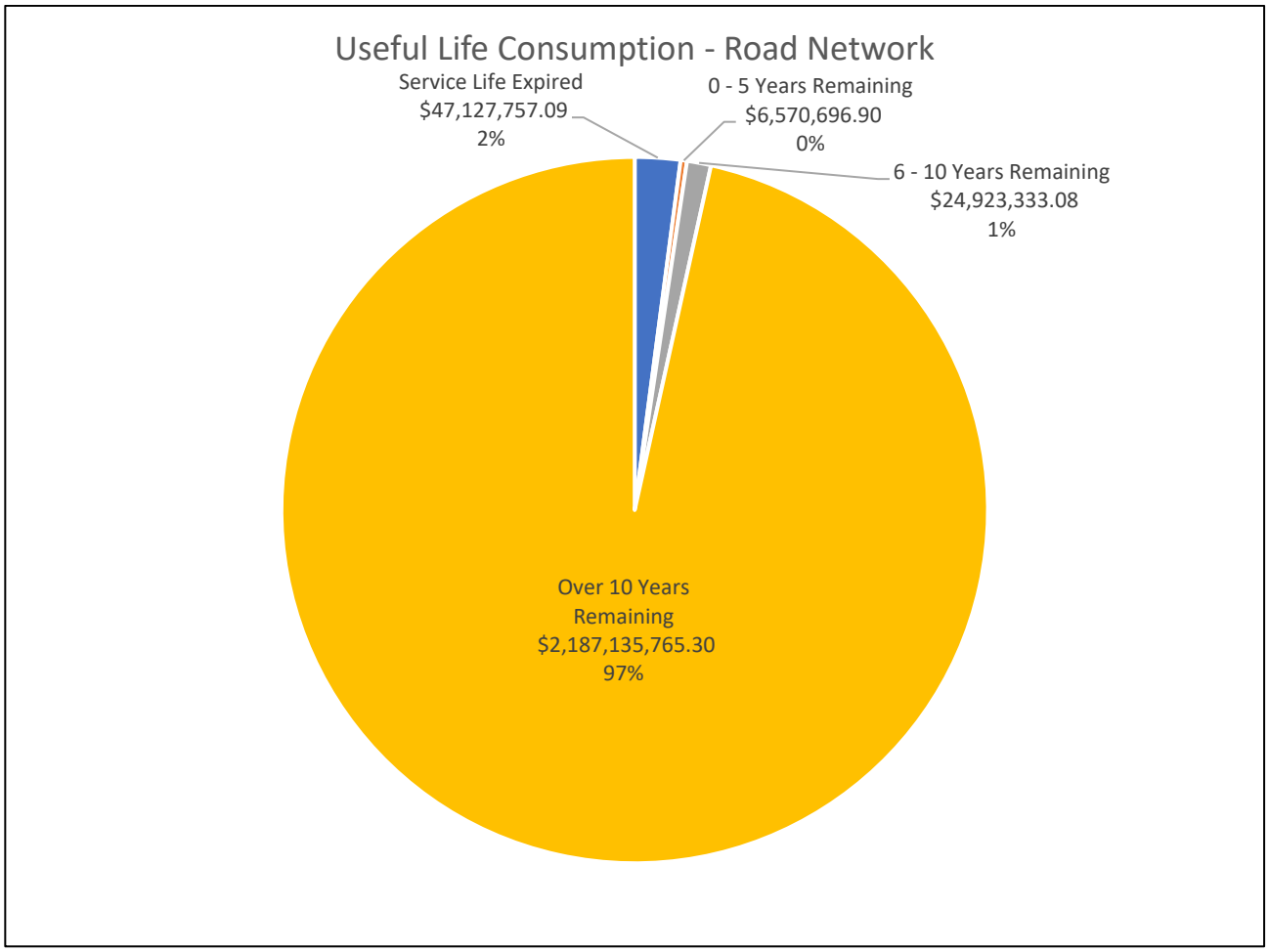
Figure 11 Asset Valuation – Road Network



Useful Life Consumption

In conjunction with historical spending patterns and observed condition data, understanding the consumption rate of assets based on industry established useful life standards provides a more complete profile of the state of a community's infrastructure. Figure 13 illustrates the useful life consumption levels as of 2022 for the municipality's road network.

Figure 13 Useful Life Consumption - Road Network

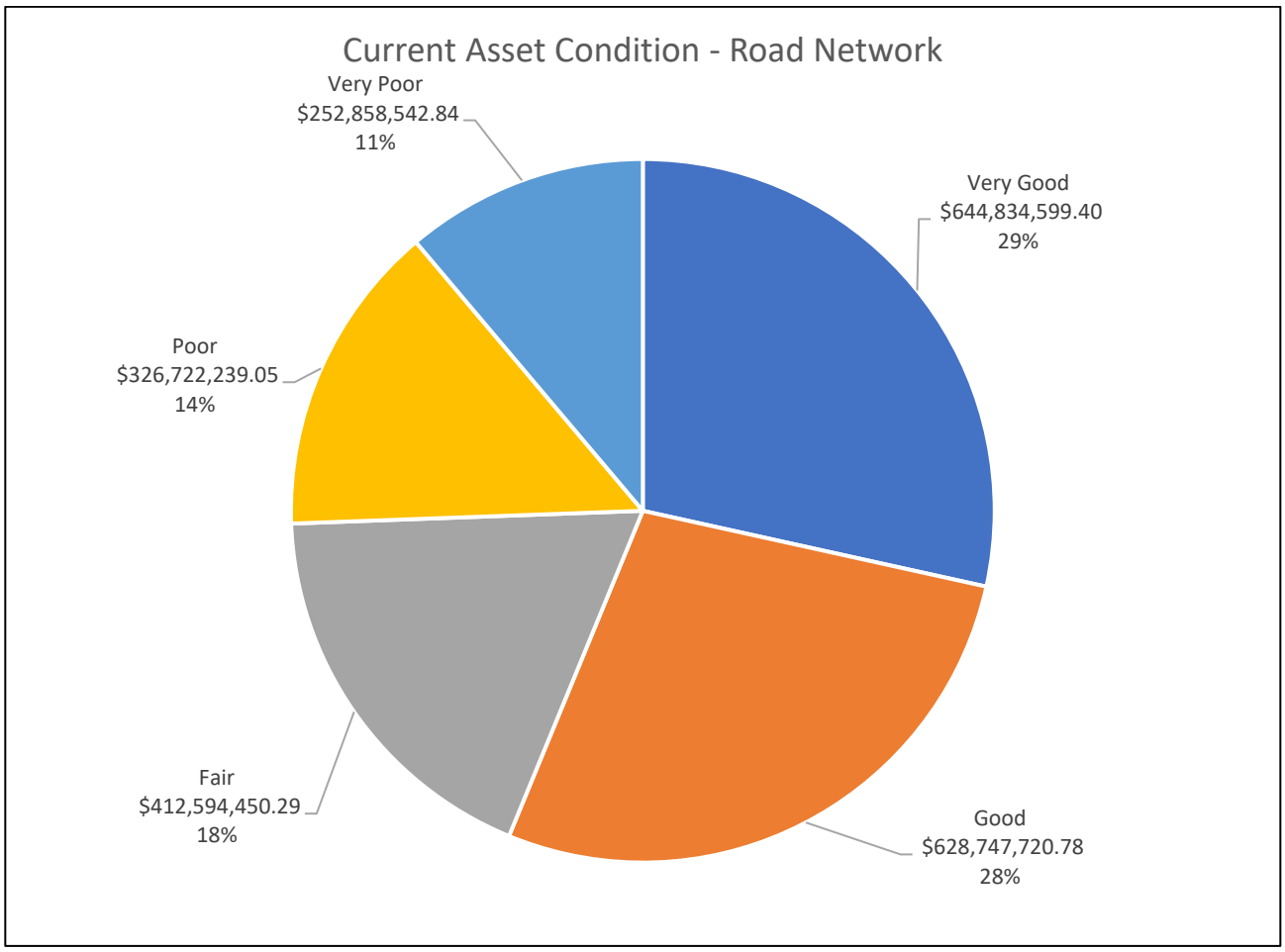


While almost all of the municipality's road network has at least 10 years of useful life remaining, 2%, with a valuation of $47 million, remain in operation beyond their useful life. An additional $6.5 million will reach the end of their useful life within the next five years.

Current Asset Condition

Using replacement cost, in this section we summarize the condition of the municipality's road network as of 2022. By default, we rely on observed field data as provided by the municipality. In the absence of such information, age-based data is used as a proxy. The municipality has provided condition data for 100% of the road network except for curbs and traffic signals.

Figure 14 Asset Condition – Road Network (Primarily Assessed)



Based primarily on assessed condition data, 57% of assets, with a valuation of $1.27 billion are in good to very good condition; 25% are in poor to very poor condition.

Community Levels of Service

SCOPE

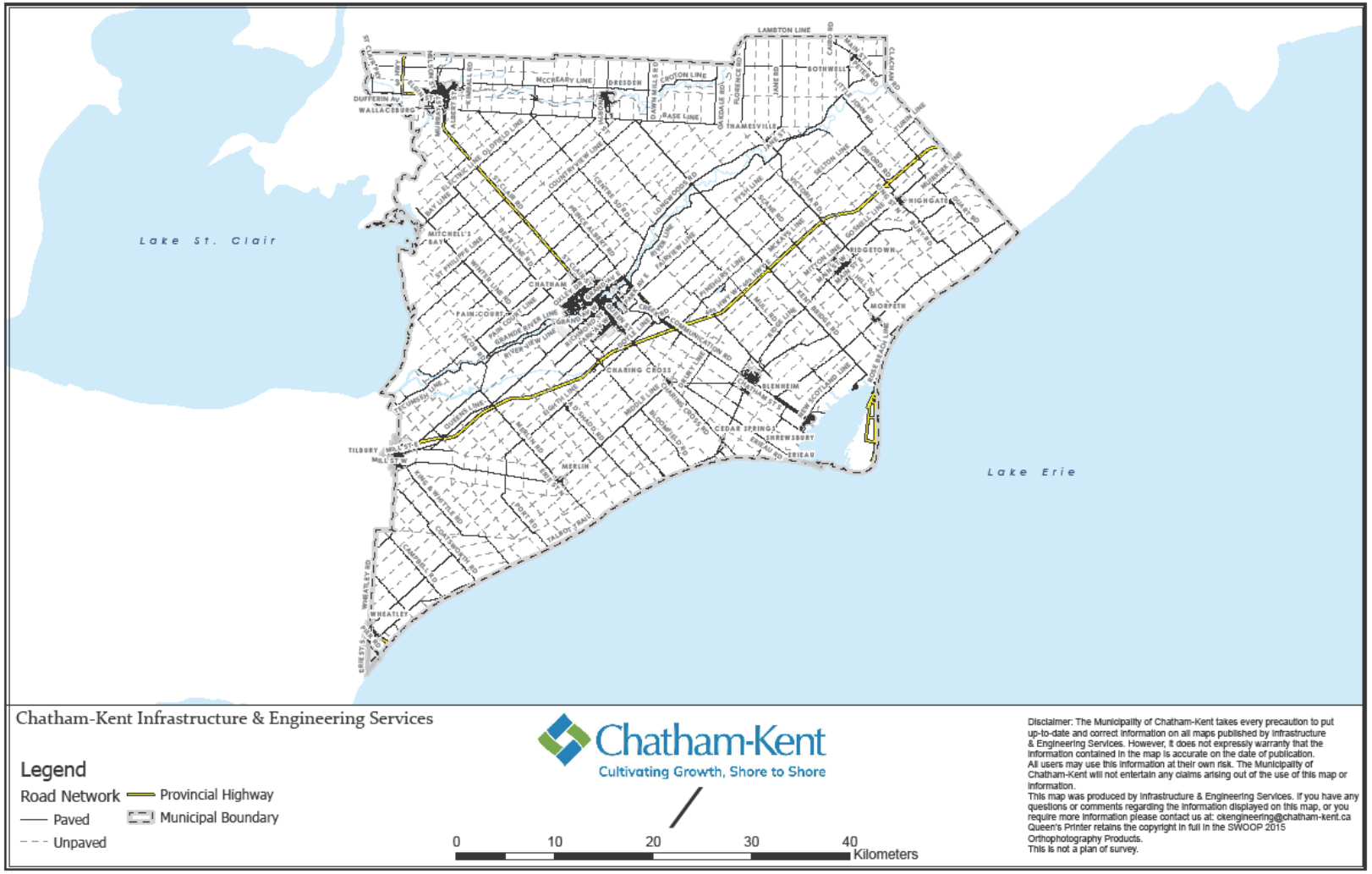
Transportation infrastructure is such a crucial part of daily life that it is often taken for granted. When somebody leaves their home, they use a transportation service. Good roads and structures promote business, create employment, provide social opportunities, create markets, and save lives. When transportation infrastructure is deficient, congestion escalates the frequency of accidents, wear and tear on vehicles worsens, emergency response deteriorates, the environment is negatively impacted, business suffers and opportunities are lost.

The importance of efficient transportation is essential to building a strong economy and improving the quality of life for our citizens. The Municipality contributes to the local economy and quality of life by supporting the safe and efficient movement of people and goods using transportation infrastructure, while managing the growing cost of transportation.

Traffic assets are used to support reliable, efficient, and safe transportation through pedestrian/vehicular traffic control, appropriate lighting, signage, and pavement markings.

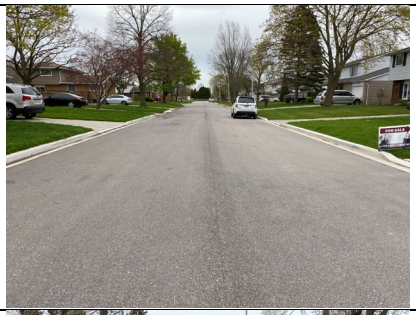
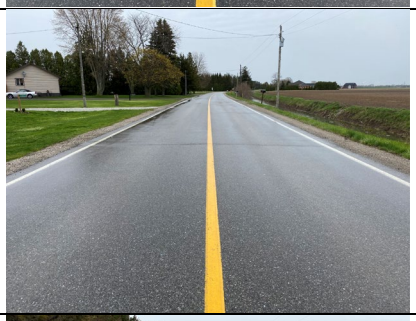
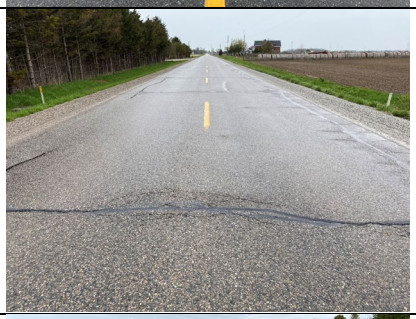
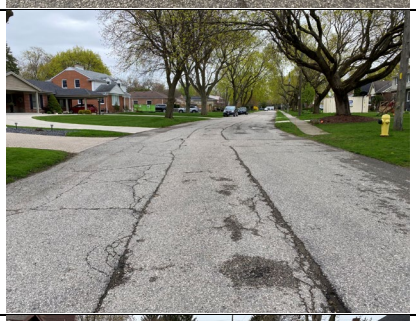
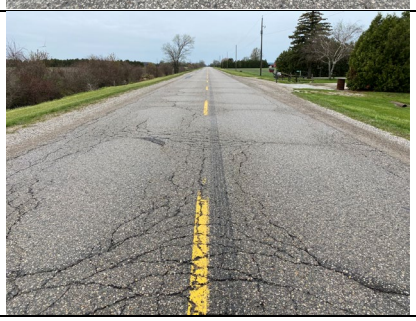
The Municipality of Chatham-Kent operates and maintains roadways, bridges and traffic infrastructure, thus enabling safe and effective travel. The Municipalities Infrastructure & Engineering Department is responsible for planning and operating this critical infrastructure. In addition, the Municipality owns and maintains different types of cycling facilities whether they are shared, designated or separated facilities.

Figure: Chatham-Kent Road Network



QUALITY

Road class pavement condition levels.

Condition (PCI)	Urban Example	Rural Example
Very Good (85 – 100)		
Good (70 – 84)		
Fair (55 – 69)		
Poor (40 – 54)		
Very Poor (0 – 39)		

Technical Levels of Service

SCOPE

- **Number of lane-kilometres of each of arterial roads, collector roads and local roads as a proportion of square kilometres of land area of the municipality.**

Road Class	Lane Kilometers	Lane KM / Municipality Square KM
Local Roads	979	0.398
Collector Roads	1056.3	0.430
Arterial Roads	1164.6	0.474

QUALITY

- **For paved roads in the municipality, the average pavement condition index value.**
  - Paved Roads Condition – 62 PCI
- **For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor).**
  - Gravel Roads Condition – Fair
    Justification: Gravel roads in Chatham-Kent are resurfaced every 3 years. It is assumed that roads that have been resurfaced in the last year are in “good” condition, roads that were resurfaced the previous year are in “fair” condition and roads resurfaced two years prior are in “poor” condition; therefore, the overall condition of the gravel road network in Chatham-Kent is considered fair.

LIFECYCLE ACTIVITIES NEEDED TO MAINTAIN CURRENT LEVELS OF SERVICE

Activity	Planned Action	Specific Risks
Non-Infrastructure Solutions	- Public involvement such as “Adopt a Road” and spring cleanup - Public transit and/or active transportation incentives - Divest roadways	- Streetscaping elements can increase maintenance cost and redirect investments into the core infrastructure - Current CK Transit may not be able to support increased ridership
Maintenance Activities	- Increase size of various maintenance contracts to further extend the lifecycle of recently rehabilitated roads - Increase inspection frequency of road network - Line marking reapplied more frequently before they fade - Routine maintenance required to meet Provincial Minimum Maintenance Standards - Identify roads in need of maintenance prior to rehabilitation and prioritize based on available budget	- Maintenance activities in general redirect limited budget from the more costly rehabilitation requirements of infrastructure that is in the poor to very poor category - Incorrectly planned maintenance can lead to premature asset failure - Premature maintenance activities may not extend lifecycle of asset as intended
Renewal/Rehab Activities	- Explore and trial innovative technologies - Time rehabilitations of road infrastructure properly to realize remaining lifecycle while rehabilitating them before replacement is the preferred alternative - Identify roads in need of rehabilitation prior to replacement and prioritize based on available budget	- Innovative technologies that do not perform as expected result in further costs and staff efforts - Rehabilitation on roads that required a reconstruction may lead to premature failure
Replacement/Construction Activities	- Ensure the proper replacement methods are being used to ensure that the lifecycle of large investments is realized - Identify roads in need of full reconstruction and prioritize as budget is available	- Reconstruction projects are more complex and require signification pre-planning, co-ordination and staff resources - Larger potential for cost overruns

Bridges & Culverts

Asset Portfolio: Quantity, Useful Life and Replacement Cost

Table 6 illustrates key asset attributes for the municipality's bridges & culverts, including quantities of various assets, their useful life, their replacement cost, and the valuation method by which the replacement costs were derived. In total, the municipality's bridges & culverts assets are valued at $1.28 billion based on 2022 replacement costs. The useful life indicated for each asset type below was assigned by the municipality.

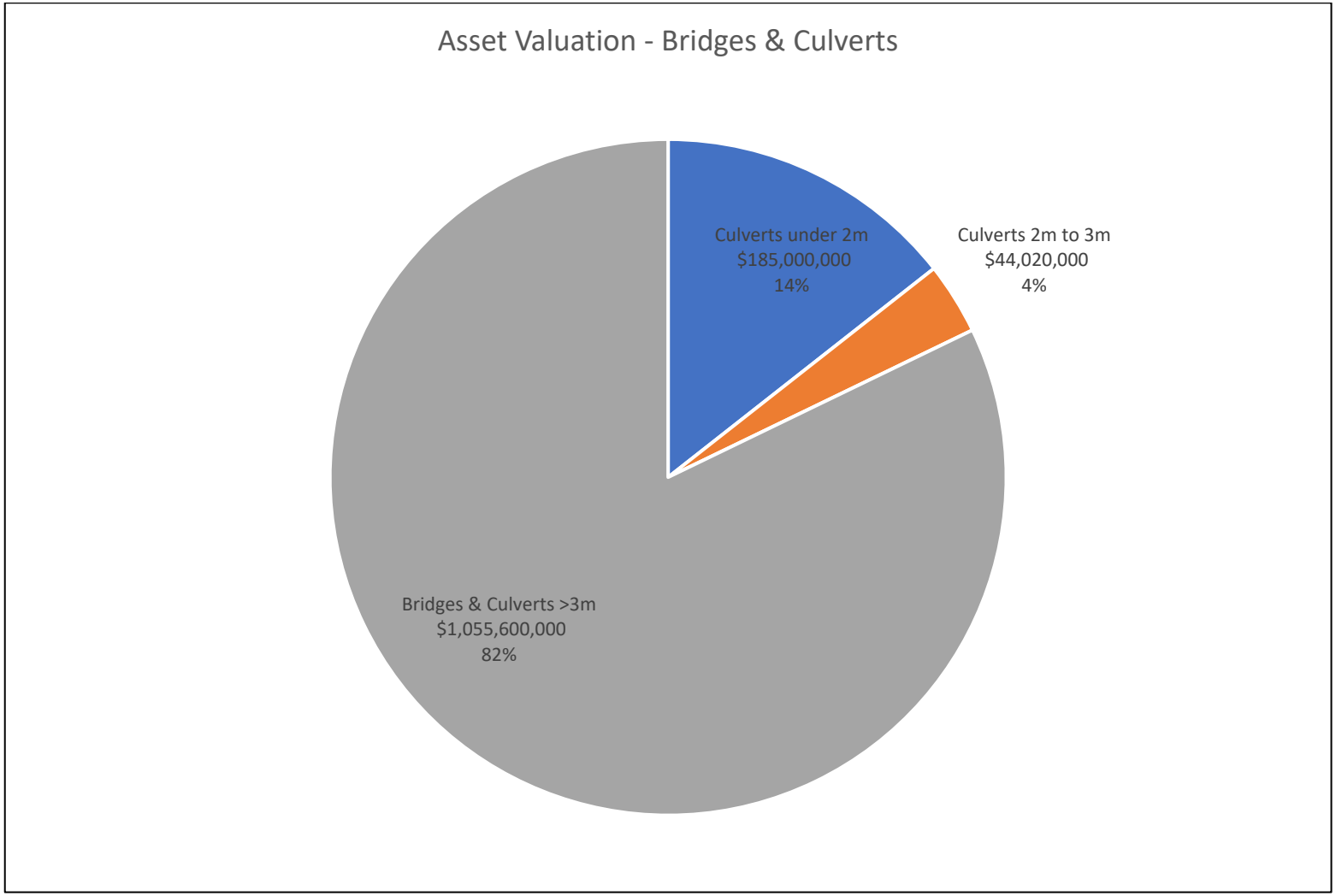
Table 6 Key Asset Attributes – Bridges & Culverts

Asset Type	Asset Component	Quantity	Useful Life (Years)	2022 Unit Replacement Cost	2022 Overall Replacement Cost
Bridges & Culverts	Culverts under 2m	18,500 units	50	$10,000/unit	$185,000,000
	Culverts 2m to 3m	142 units	50	$310,000/unit	$44,020,000
	Bridges & Culverts >3m	754 units	75	$1,400,000/unit	$1,055,600,000
				Total	$1,284,620,000

Note[1]: culverts under 2m and culverts 2m to 3m are shown in the table above and Figure 16 to highlight the total valuation of owned assets. These assets are not included within the remaining figures in this section, as they do not have sufficient data. However, these assets are accounted for within the annual requirements and financial strategy.

Note[2]: the 75-year useful life for bridges & culverts >3m includes at least one rehabilitation per bridge and regular annual maintenance.

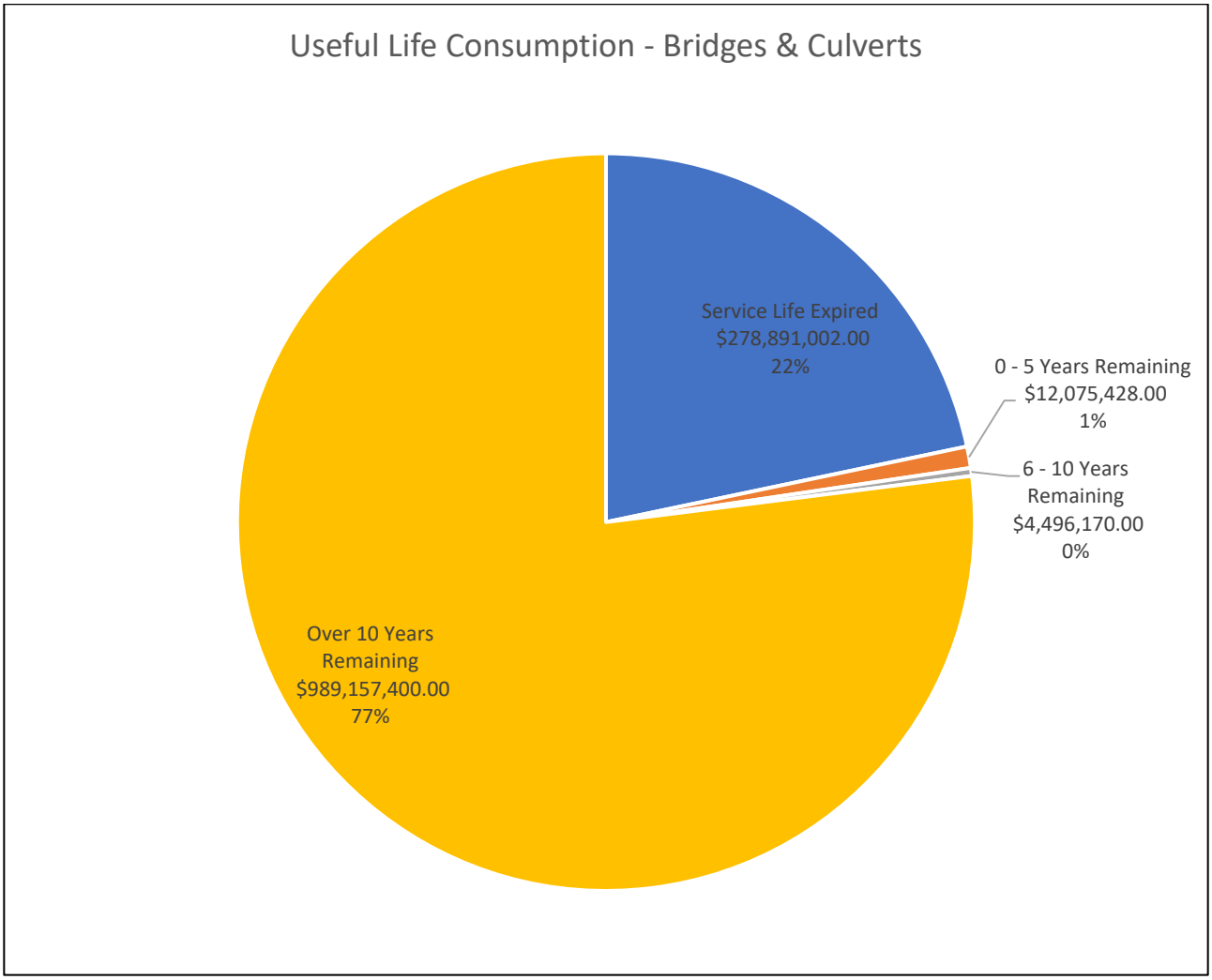
Figure 16 Asset Valuation – Bridges & Culverts



Useful Life Consumption

In conjunction with historical spending patterns and observed condition data, understanding the consumption rate of assets based on industry established useful life standards provides a more complete profile of the state of a community's infrastructure. Figure 18 illustrates the useful life consumption levels as of 2022 for the municipality's bridges & culverts.

Figure 18 Useful Life Consumption – Bridges & Culverts

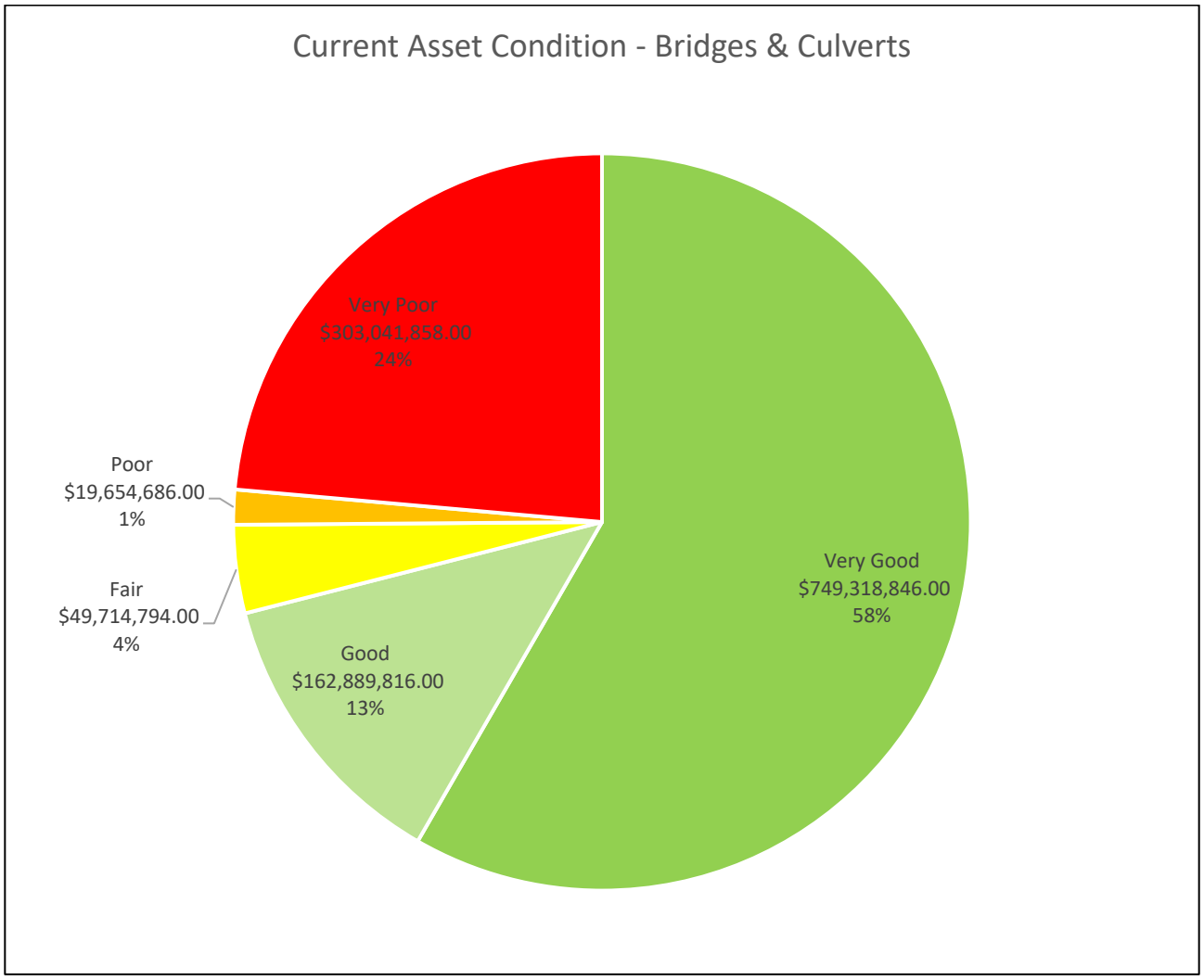


77% of the assets have at least 10 years of useful life remaining while 1%, with a valuation of $12 million, will expire in the next five years.

Current Asset Condition

Using replacement cost, in this section we summarize the condition of the municipality's bridges & culverts as of 2022. By default, we rely on observed field data adapted from OSIM inspections as provided by the municipality. In the absence of such information, age-based data is used as a proxy. All assets are based on assessed condition data.

Figure 19 Asset Condition – Bridges & Culverts (Assessed)



Assessed condition data indicates that while 71% of the municipality's bridges & culverts are in good to very good condition, 25%, with a valuation of $322 million, are in poor to very poor condition.

Community Levels of Service

SCOPE

Bridges and culverts are a critical component of the municipal transportation network. The number of Municipal Drains and waterways in the Municipality requires an extensive inventory of bridges and culvert to ensure safe vehicular and pedestrian traffic. Maintaining these structures is critical to ensure a strong local economy and safe movement of citizens.

The municipality is required to complete biennial inspections of all bridge and culvert structures over 3m in span according to the Ontario Structure Inspection Manual. Each structure is inspected by an engineer and any maintenance, rehabilitation or replacement requirements are provided to the municipality.

QUALITY

Bridge & Culvert Class Condition Levels.

Condition (BCI)	Bridge Example	Culvert Example
Very Good (85 – 100)		
Good (70 – 84)		
Fair (60 – 69)		
Poor (50 – 59)		
Very Poor (0 – 49)		

Technical Levels of Service

SCOPE

- **Percentage of bridges in the municipality with loading or dimensional restrictions.**
  - Percentage of Load Posted Bridges – 1.5%

QUALITY

1. **For bridges in the municipality, the average bridge condition index value.**
   - Average BCI – 73.3 (Good)
2. **For structural culverts in the municipality, the average bridge condition index value.**
   - Average BCI – 60.9 (Fair)

LIFECYCLE ACTIVITIES NEEDED TO MAINTAIN CURRENT LEVELS OF SERVICE

Activity	Planned Action	Specific Risks
Non-Infrastructure Solutions	- Divest bridges	- Reduced overall road network connectivity - Divesting of structures still requires initial investment to remove structure and make changes to surrounding area
Maintenance Activities	- Increase size of maintenance contracts to further extend lifecycle of structures - Identify bridges in need of maintenance prior to rehabilitation and prioritize based on budget	- Maintenance activities in general redirect limited budget from the more costly rehabilitation requirements of infrastructure that is in the poor to very poor category - Premature maintenance activities may not extend lifecycle of asset as intended
Renewal/Rehab Activities	- Explore and trial innovative technologies - Time rehabilitations of bridges and culverts properly to realize remaining lifecycle while rehabilitation them before replacement is the preferred alternative - Identify bridges in need to rehabilitation prior to replacement and prioritize based on available budget	- Innovative technologies that do not perform as expected result in further costs, staff efforts and potential damage to existing bridge components - Poor selection of rehabilitation projects may lead to new infrastructure being placed on existing infrastructure with limited remaining service life
Replacement/Construction Activities	- Ensure the proper replacement methods are being used to ensure that the lifecycle of large investments is realized - Identify bridges in need for full reconstruction and prioritize as budget is available	- Full reconstruction projects are more complex and require signification pre-planning, co-ordination and staff resources - Longer duration of detours required for these projects - Larger potential for cost overruns

Storm Network

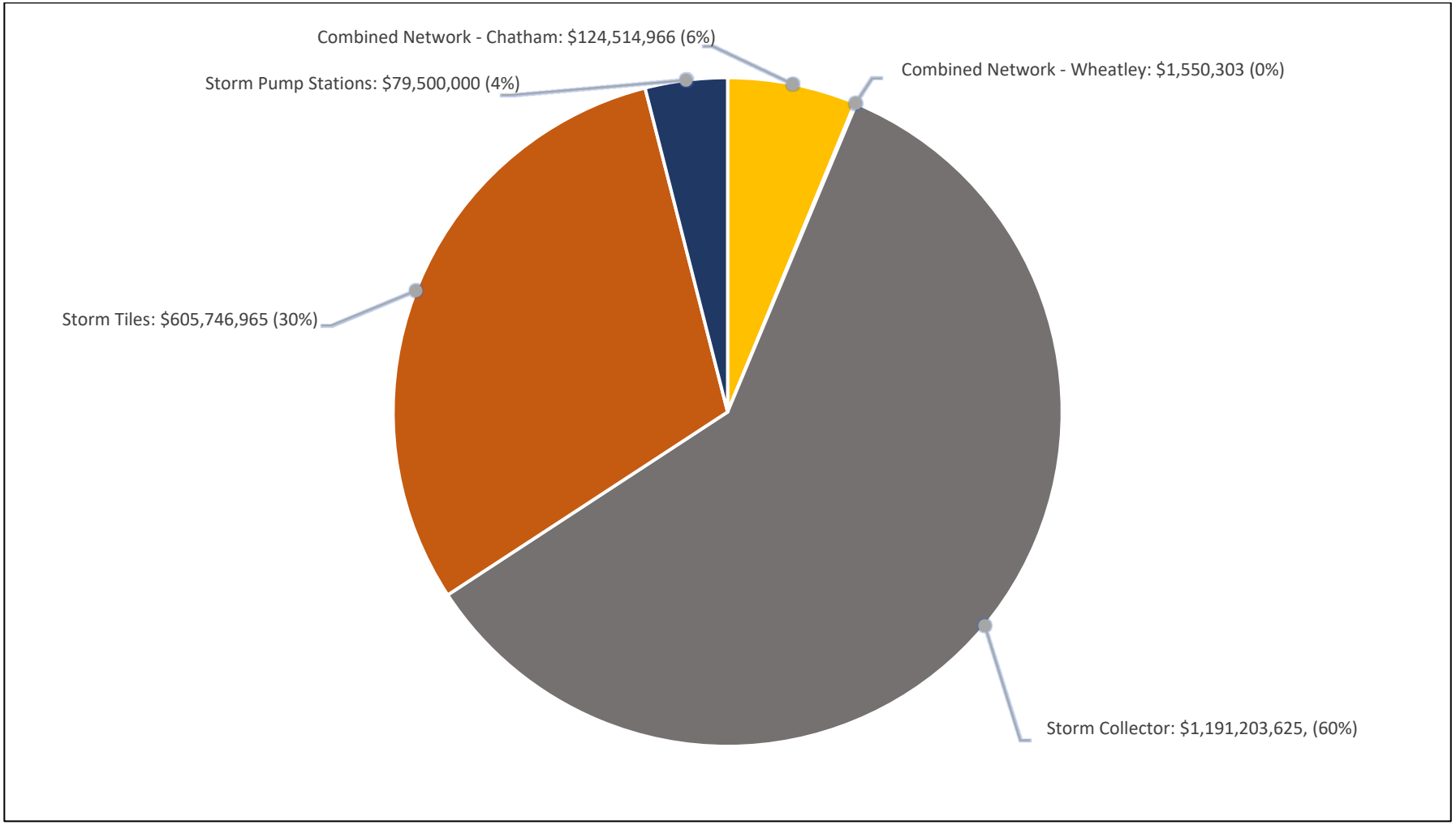
Asset Portfolio: Quantity, Useful Life and Replacement Cost

Table 9 illustrates key asset attributes for the municipality's storm network, including quantities of various assets, their useful life, their replacement cost, and the valuation method by which the replacement costs were derived. In total, the municipality's storm network assets are valued at $2 billion based on 2022 replacement costs. The useful life indicated for each asset type below was assigned by the municipality.

Table 9 Asset Inventory – Storm Network

Asset Type	Asset Component	Quantity	Useful Life in Years	2022 Unit Replacement Cost	2022 Replacement Cost
Storm Network	Combined Network – Chatham (under 500mm)	48,041.06m	100	$2,471.35/m	$118,726,274
	Combined Network – Chatham (500mm-1000mm)	784.85m	100	$2,471.35/m	$1,939,639
	Combined Network – Chatham (over 1000mm)	106.90m	100	$2,471.35/m	$264,187
	Combined Network – Chatham (unknown diameter)	1,450.57m	100	$2,471.35/m	$3,584,866
	Combined Network – Wheatley (200mm)	18.52m	100	$2,471.35/m	$45,769
	Combined Network – Wheatley (750mm)	94.38m	100	$2,471.35/m	$233,246
	Combined Network – Wheatley (800mm)	514.41m	100	$2,471.35/m	$1,271,287
	Storm Collector (under 500mm)	253,613.66m	100	$2,740.50/m	$695,028,235
	Storm Collector (500mm-1000mm)	124,074.76m	100	$2,740.50/m	$340,026,880
	Storm Collector (over 1000mm)	38,392.47m	100	$2,740.50/m	$105,214,564
	Storm Collector (unknown diameter)	18,585.64m	100	$2,740.50/m	$50,933,946
	Storm Tiles	364,907.81m	100	$1,660.00/m	$605,746,965
	Storm Pump Stations	30 units	40	$2,650,000/unit	$79,500,000
				Total	$2,002,515,859

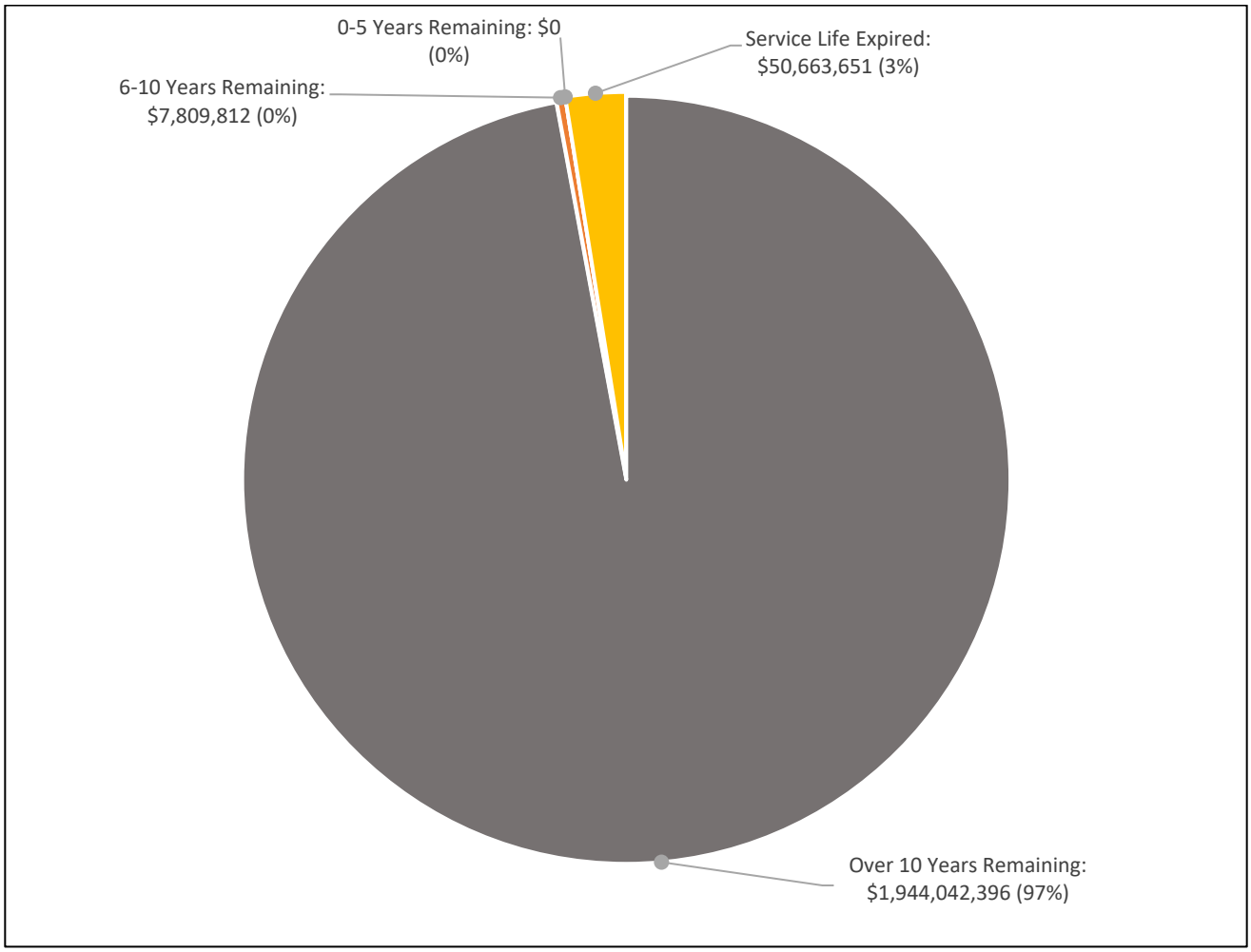
Figure 31 Asset Valuation – Storm Network



Useful Life Consumption

In conjunction with historical spending patterns and observed condition data, understanding the consumption rate of assets based on industry established useful life standards provides a more complete profile of the state of a community's infrastructure. Figure 33 illustrates the useful life consumption levels as of 2022 for the municipality's storm assets.

Figure 33 Useful Life Consumption – Storm Network

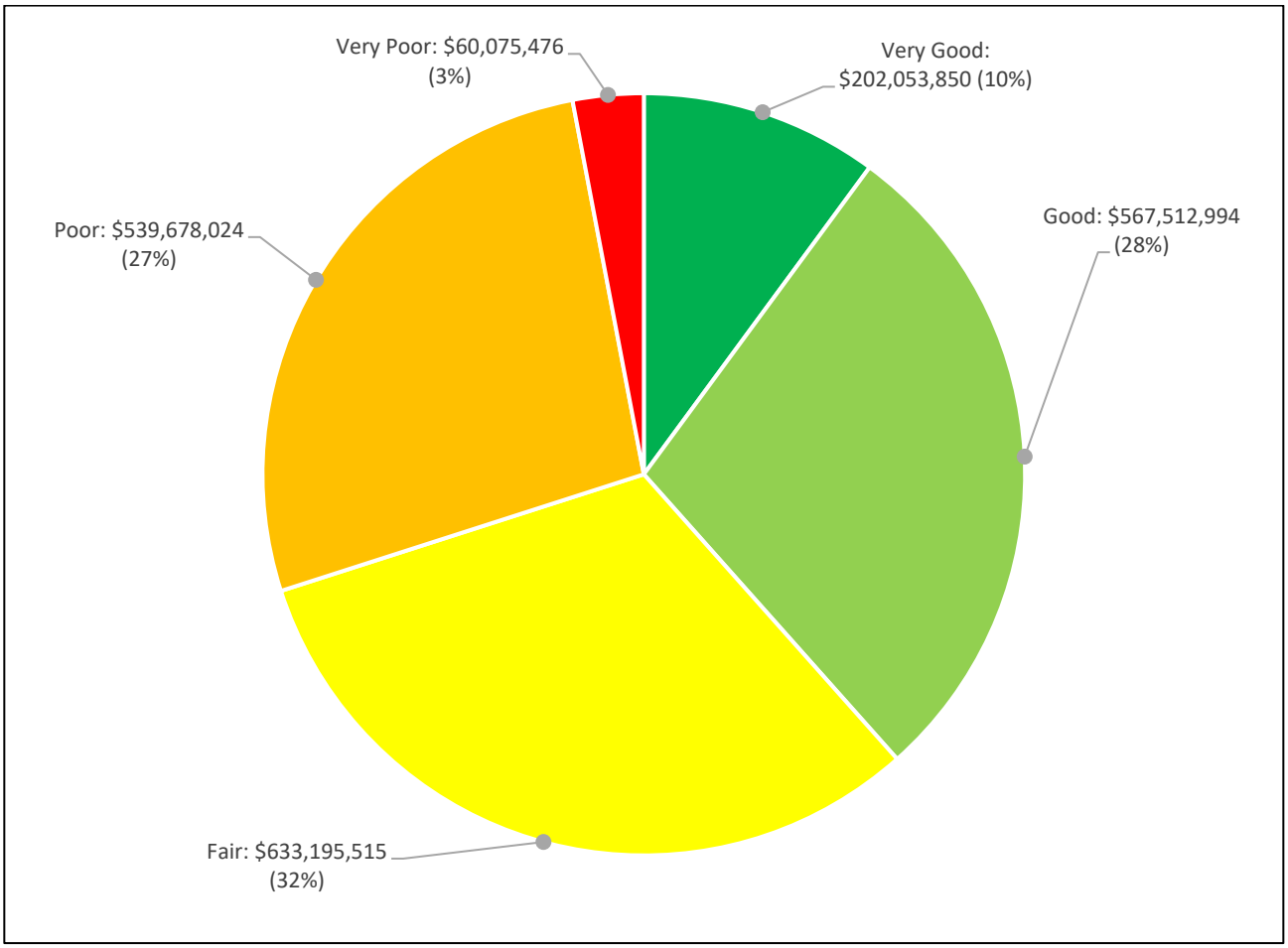


97% of the assets have at least 10 years of useful life remaining while 3%, with a valuation of $50 million, remain in operation beyond their useful life.

Current Asset Condition

Using replacement cost, in this section we summarize the condition of the municipality's storm services. By default, we rely on observed field data as provided by the municipality. In the absence of such information, age-based data is used as a proxy. The municipality has not provided condition data for its storm network assets.

Figure 34 Asset Condition – Storm Network (Age-based)



Based on age data, 30% of the storm network assets with a valuation of $599 million are in poor to very poor condition.

Community Levels of Service

The Municipalities Infrastructure and Engineering Services department oversees the maintenance of urban storm water collection and management systems for 13 communities, making up the entire Municipality. Storm water management consists of catch basins, PDC's, storm sewers, storm water management facilities, water quality units, and storm pump stations.

Most storm water systems within the Municipality were designed to handle the 1 in 5-year storm event at the time of construction. Storm intensities and frequencies have changed significantly over the years, making the current capacity limitations of storm systems throughout the Municipality unknown.

Many existing developed areas are not designed to handle extreme events such as the 1 in 100-year storm event. In these rain events, the storm sewers surcharge and roads flood begin to flood. Overland conveyance does not exist in all existing subdivisions; however, in many instances the right-of-way is able to contain these surcharges without flooding private property.

Chatham-Kent Engineering has begun completing Stormwater Master Plan Studies in the different communities to understand the shortfalls and to prioritize reconstruction projects. These Master Plan Studies will provide a guide for many years to come, with the goal of bringing the entire Municipality up to current standards and reduce impacts to private properties (ex. flooding).

New developments require their own storm water management facilities to be constructed, or alternatively to be directed into a regional storm water management facility. Sewers are required to be designed to the 1 in 5-year post development design storm, with overland conveyance of events up to the 1 in 100-year storm event being conveyed to the SWM facility.

Figure: Five Year Storm Map

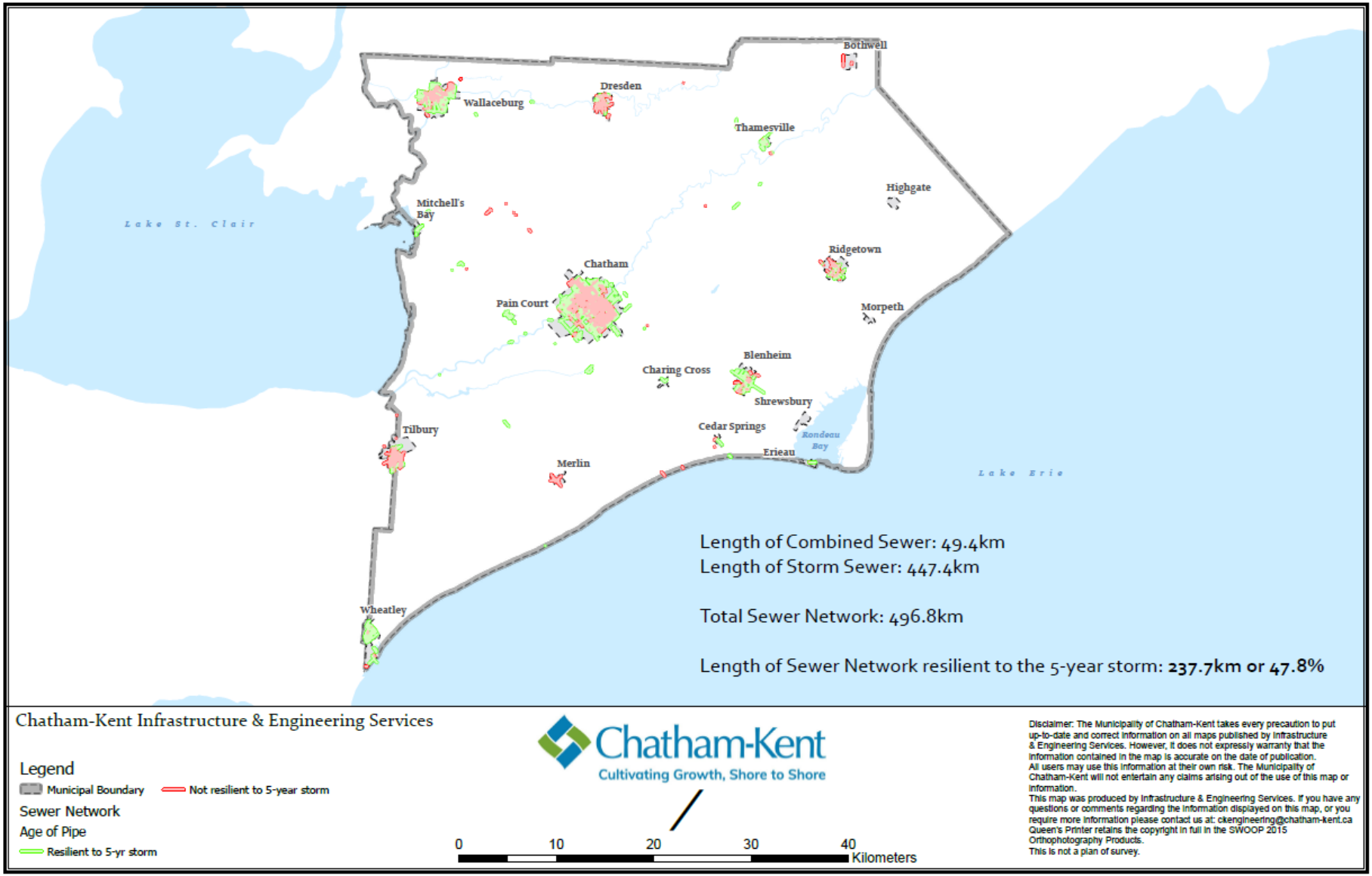
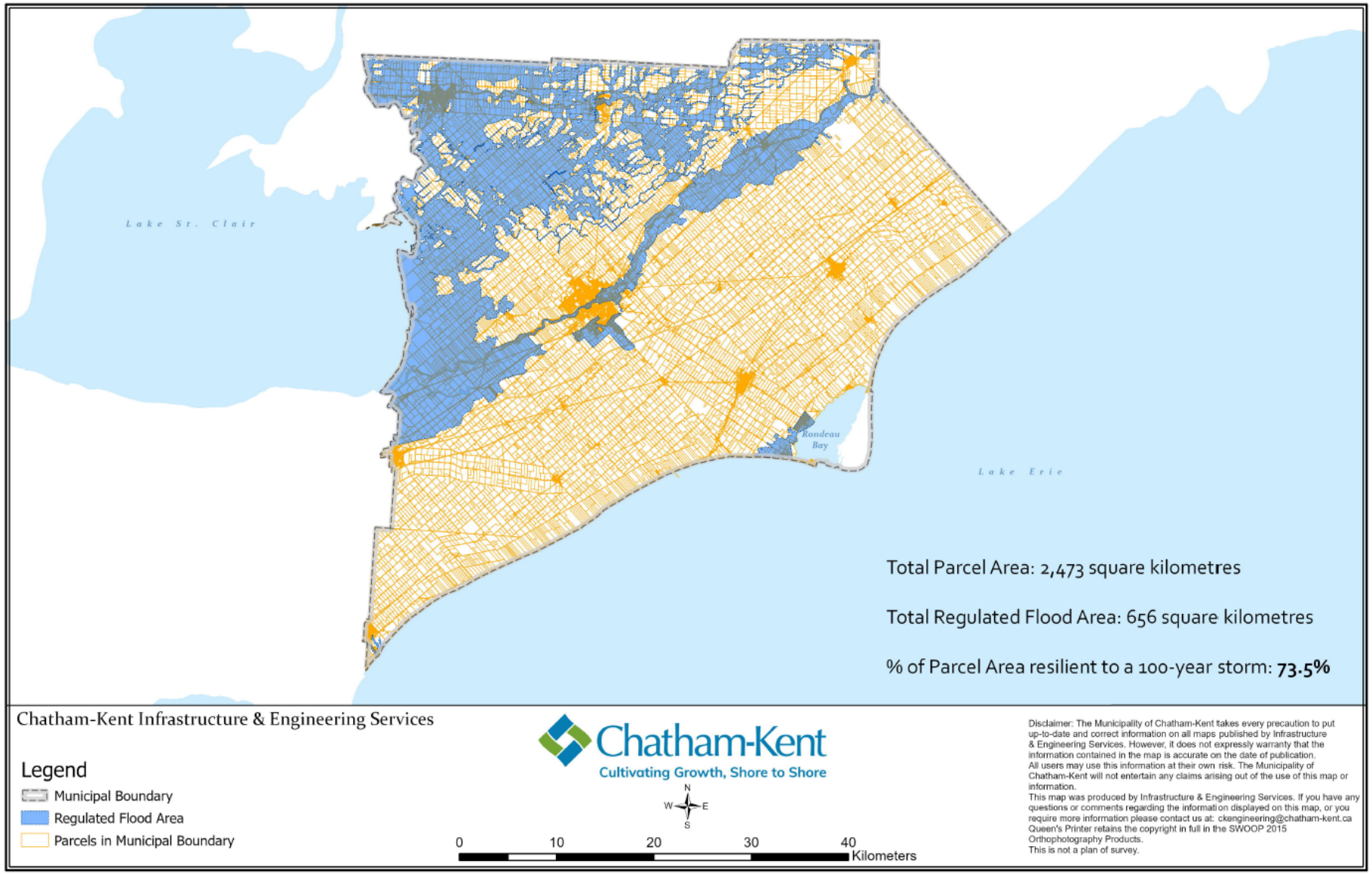


Figure: 100-Year Storm Map



LIFECYCLE ACTIVITIES NEEDED TO MAINTAIN CURRENT LEVELS OF SERVICE

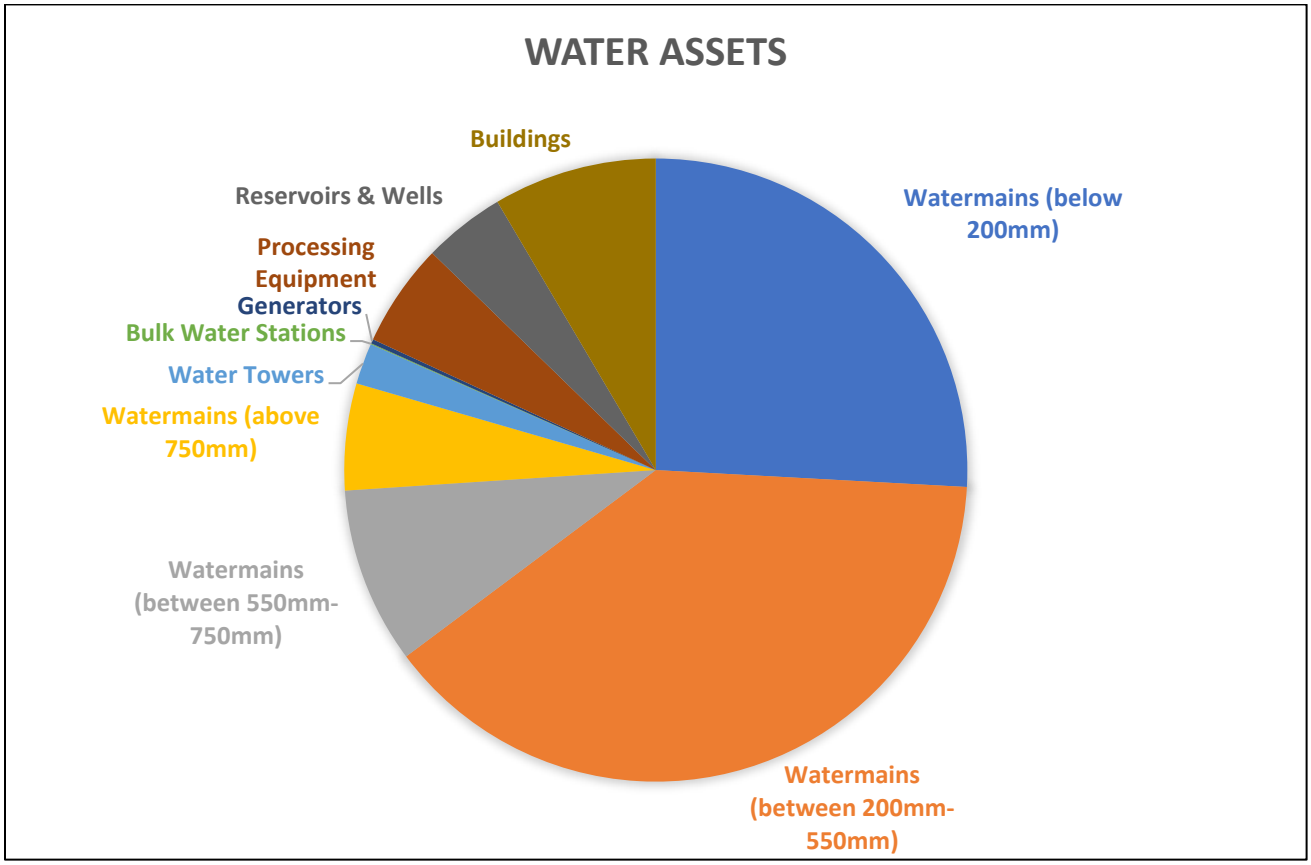
Activity	Planned Action	Specific Risks
Non-Infrastructure Solutions	Improve water quality through by-laws	- Additional street sweeping requires higher staffing levels or reduced LOS in other areas - Master Plan studies are time consuming and result in large projects
	Increase street sweeping activities	
	Downspout disconnection programs	
	Stormwater Master Plan Studies	
Maintenance Activities	Regular flushing and cleaning	- If not planned properly, maintenance can lead to asset failure, and additional costs with no benefit - Additional maintenance would require higher staffing levels
	CCTV program and inspections	
	Sewer condition ratings	
	Promote Low Impact Development practices	
	SWM facility maintenance	
Renewal/Rehab Activities	Pipe relining	- Incorrect assumptions on existing condition of sewers - Many renewal process are relatively new
	Joint sealing	
	Flushing and cleaning	
	Spot repairs where required	
Replacement/Construction Activities	Open-cut replacement	- Reconstruction projects are costly and complex - Without pipe rating information and CCTV programs, reconstruction projects can be incorrectly chosen
	Pipe bursting	
	Horizontal directional drilling	
	Storm sewer upsizing where required	
	Construction of regional ponds	

Water & Wastewater

Asset Portfolio: Quantity, Useful Life and Replacement Cost

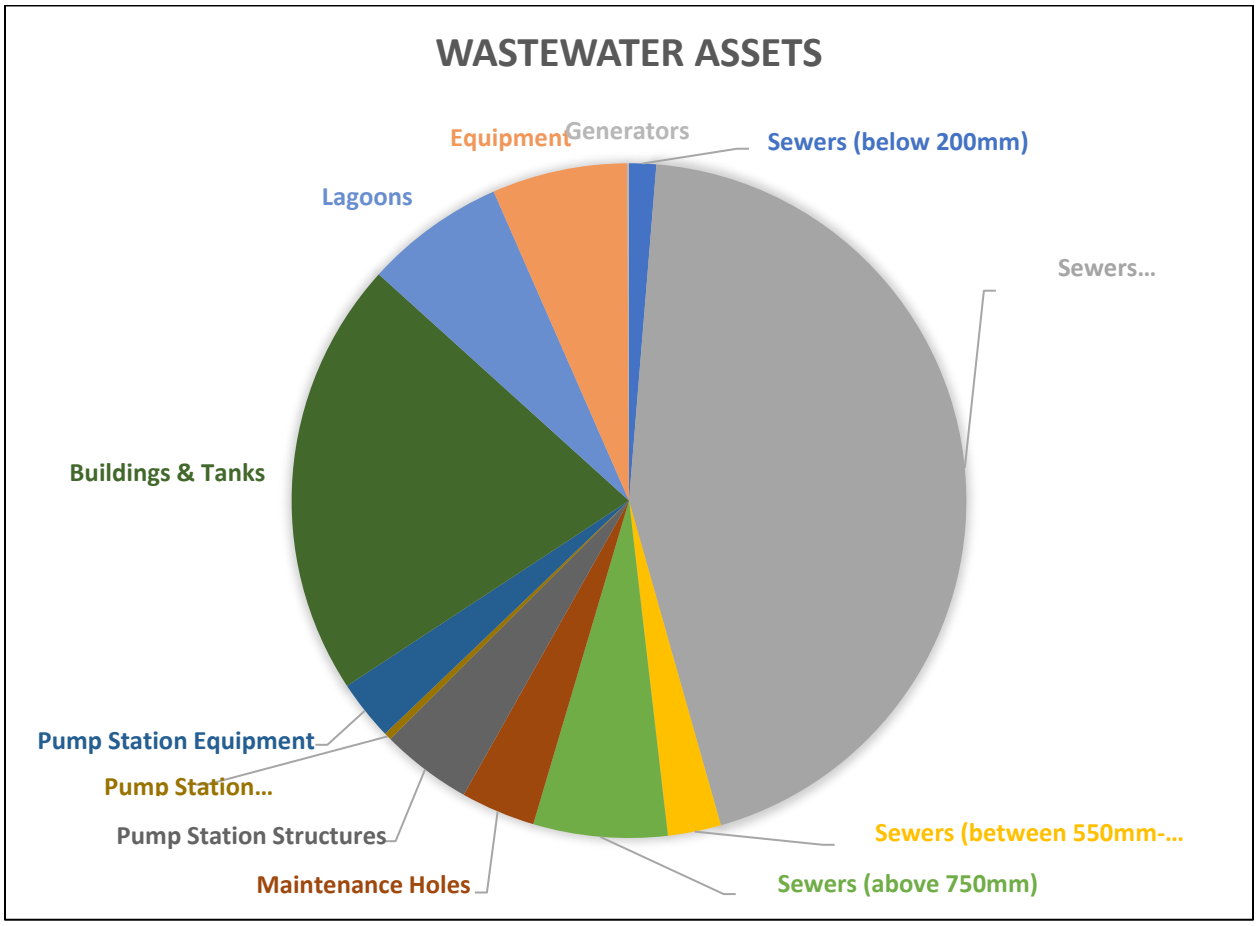
WATER ASSETS

Asset Type	Asset Component	Quantity	Useful Life in Years	2022 Replacement Cost	Asset Criticality
Water Distribution Network	Watermains (below 200mm)	961,097 m	50	$435,053,627.90	Low
	Watermains (between 200mm-550mm)	610,894 m	50	$654,799,676.18	Low
	Watermains (between 550mm-750mm)	64,128 m	50	$153,972,270.59	Moderate
	Watermains (above 750mm)	25,914 m	50	$93,177,003.08	Moderate
	Water Towers	14	40	$35,829,262.27	Moderate
	Bulk Water Stations	12	20	$803,188.21	Low
Water Facility	Generators	12	20	$3,758,034.69	Moderate
	Processing Equipment	23	20	$90,381,867.79	High
	Reservoirs & Wells	12	40	$71,411,078.13	High
	Buildings	27	40	$142,829,476.10	High
Total				**$1,682,015,484.93**	



WASTEWATER ASSETS

Asset Type	Asset Component	Quantity	Useful Life in Years	2022 Replacement Cost	Asset Criticality
Wastewater & Combined Sewer Collection	Sewers (below 200mm)	26,427 m	50	$15,258,172.11	Low
	Sewers (between 200mm-550mm)	494,470 m	50	$522,034,533.70	Low
	Sewers (between 550mm-750mm)	12,112 m	50	$30,044,097.85	Low
	Sewers (above 750mm)	21,388 m	50	$75,645,094.25	Moderate
	Maintenance Holes	6447	40	$42,048,923.40	Low
	Pump Station Structures	44	40	$51,382,289.76	High
	Pump Station Generators	35	20	$4,166,120.71	Moderate
	Pump Station Equipment	61	20	$33,978,595.51	High
Wastewater Facility	Buildings & Tanks	52	40	$246,844,292.62	High
	Lagoons	13	20	$79,267,602.03	Low
	Equipment	33	20	$76,375,814.44	High
	Generators	6	20	$1,013,502.83	Moderate
Total				**$1,178,059,039.21**	



Current Asset Condition & Useful Life Consumption

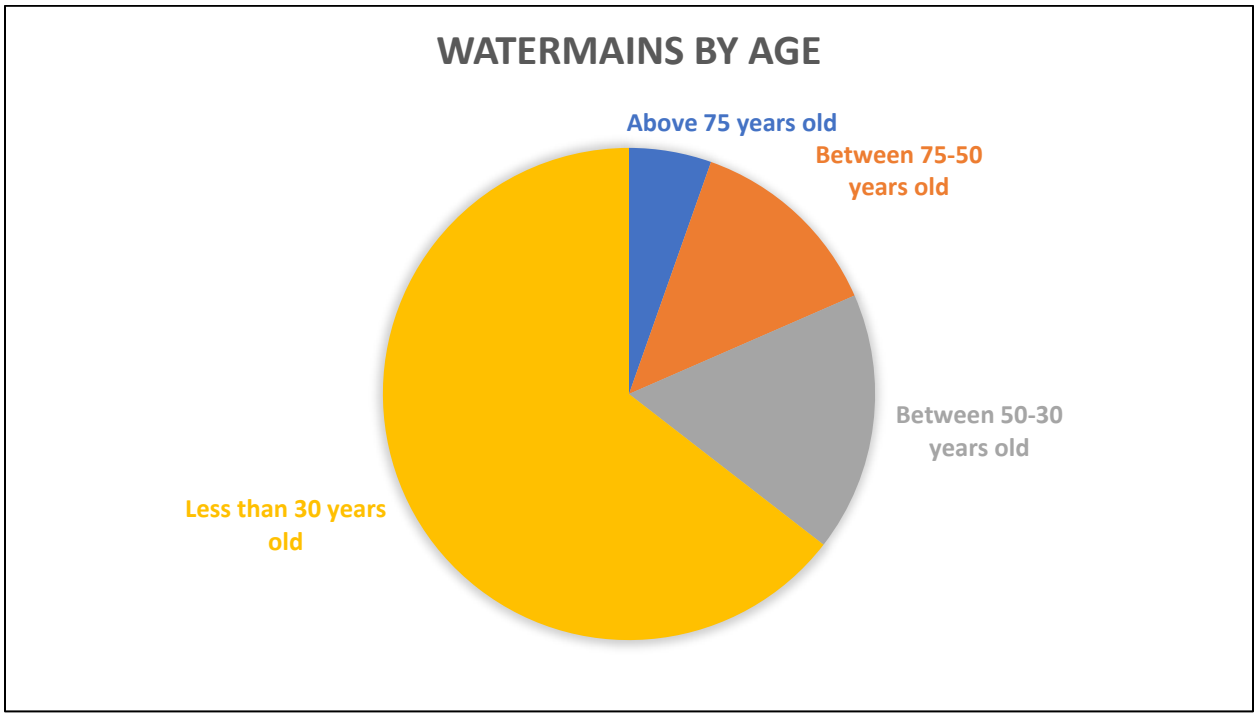
Inspection and Maintenance Program

A specialized contractor inspects all water towers every 3 years. One tower is selected for rehabilitation on 2-year increments. The selection priority is based on the recommendations from the inspections.

Consultants complete condition assessments of the water and wastewater facilities. Facility priority selection is based on age, performance and upgrade plans. The consultants assess the facilities' condition and replacement value. Each facility component is grouped in either civil, architectural, structure, electrical, mechanical, process equipment, or generators. When required, designs for rehabilitation are tendered separately.

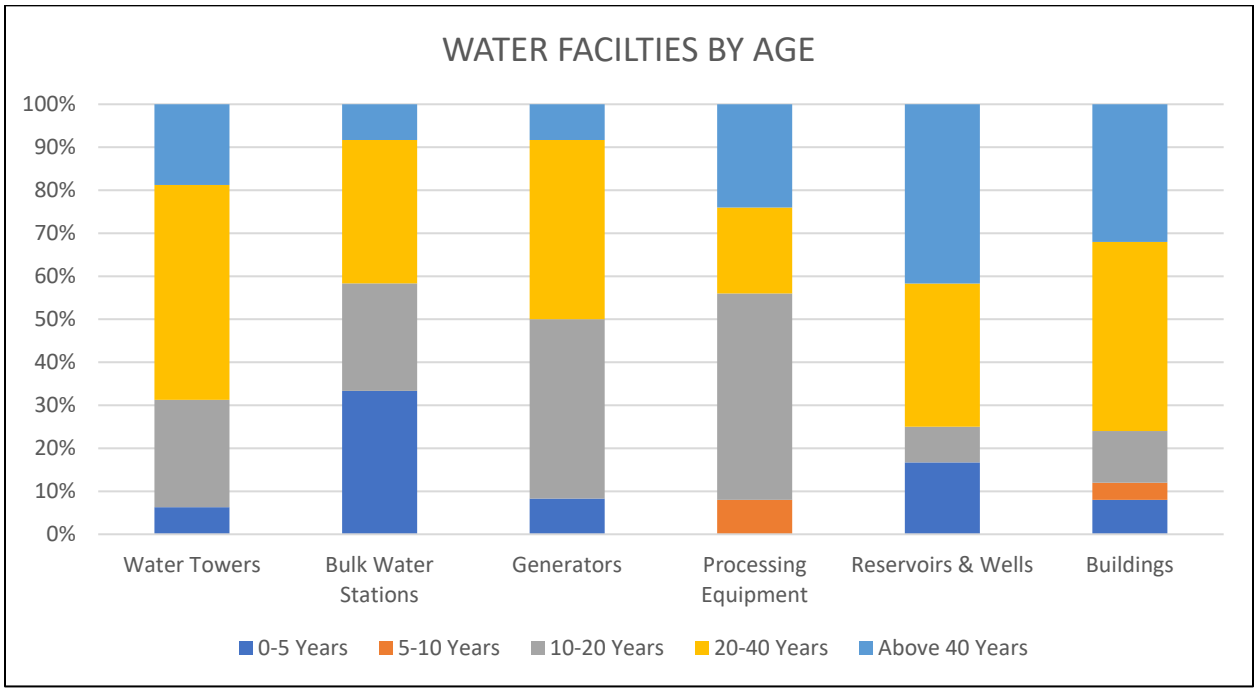
Underground infrastructure rehabilitation and maintenances is based on complaints and failure frequency. Regular prioritization reviews are conducted between the Public Works, Public Utilities Commission and Engineering departments.

Watermains by Age		
Age	**Length (m)**	**Percentage**
Above 75 years old	89,985	5.41
Between 75-50 years old	216,777	13.04
Between 50-30 years old	283,248	17.04
Less than 30 years old	1,072,231	64.51
Total	**1,662,241**	**100.00**

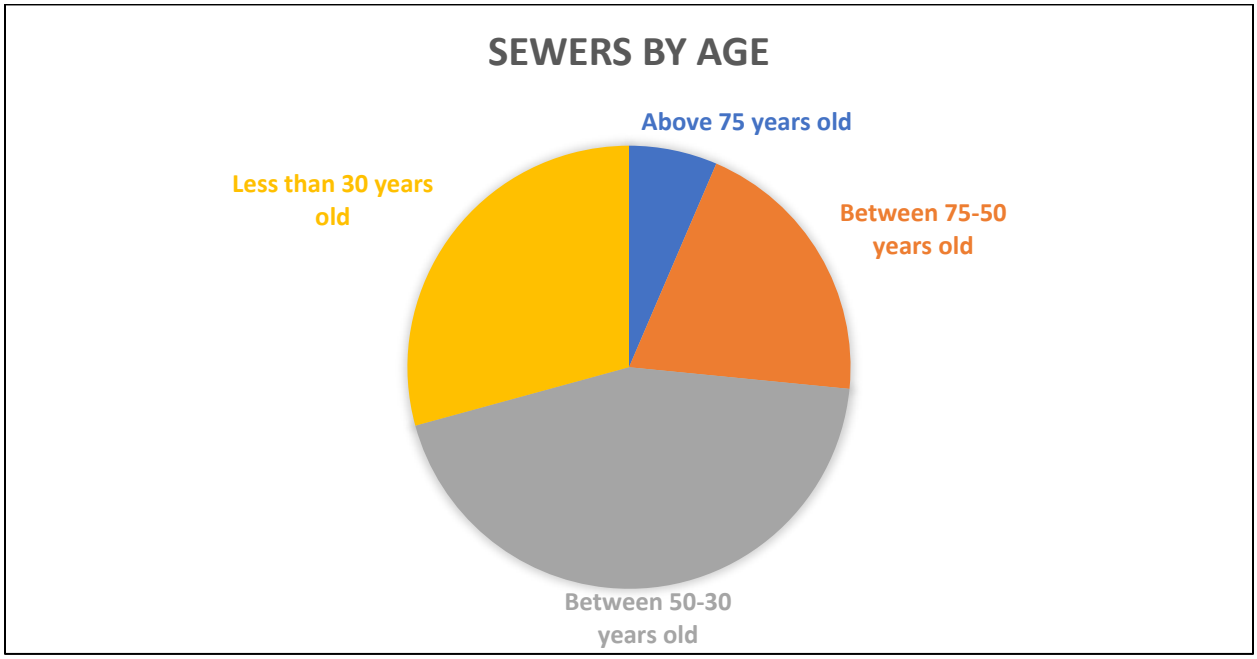


Watermains by Material		
Age	**Length (m)**	**Percentage**
Conc./Asb. Cement	115,572	6.95
Iron/Steel/Copper	325,542	19.58
PVC/HDPE/PE	1,187,191	71.42
Unknown	33,936	2.04
Total	**1,662,241**	**100.00**

Water Facilities Age						
Type	**Useful Life**	**0-5 Years**	**5-10 Years**	**10-20 Years**	**20-40 Years**	**Above 40 Years**
Water Towers	40	6.3%	0.0%	25.0%	50.0%	18.8%
Bulk Water Stations	20	33.3%	0.0%	25.0%	33.3%	8.3%
Generators	20	8.3%	0.0%	41.7%	41.7%	8.3%
Processing Equipment	20	0.0%	8.0%	48.0%	20.0%	24.0%
Reservoirs & Wells	40	16.7%	0.0%	8.3%	33.3%	41.7%
Buildings	40	8.0%	4.0%	12.0%	44.0%	32.0%

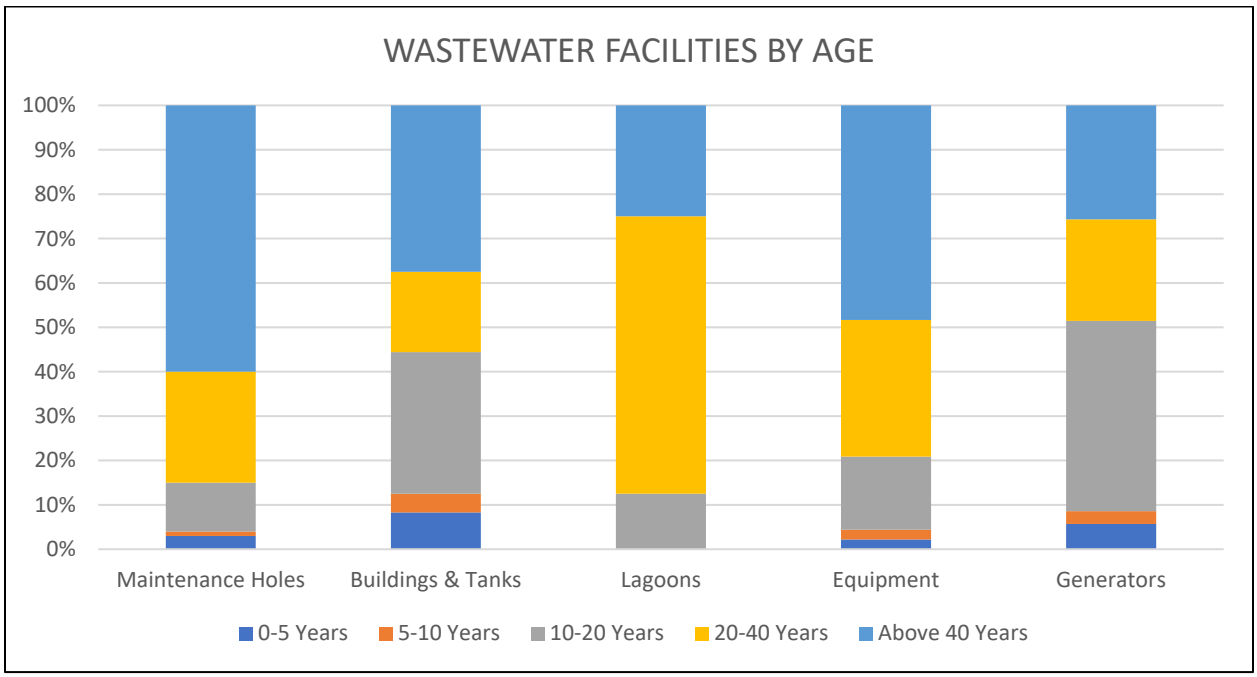


Sewers by Age		
Age	**Length (m)**	**Percentage**
Above 75 years old	35,717	6.45
Between 75-50 years old	111,711	20.11
Between 50-30 years old	244,868	44.19
Less than 30 years old	162,117	29.25
Total	**554,414**	**100.00**



Sewers by Material		
Age	**Length (m)**	**Percentage**
Conc./Asb. Cement/Brick/Clay	183497.65	33.1
Iron	2205.25	0.40
PVC/HDPE	187068.83	33.74
Unknown	181641.98	32.76
Total	**554,413.72**	**100.00**

Wastewater Facilities Age						
Type	**Useful Life**	**0-5 Years**	**5-10 Years**	**10-20 Years**	**20-40 Years**	**Above 40 Years**
Maintenance Holes	40	3.0%	1.0%	11.0%	25.0%	60.0%
Buildings & Tanks	40	8.3%	4.2%	31.9%	18.1%	37.5%
Lagoons	20	0.0%	0.0%	12.5%	62.5%	25.0%
Equipment	20	2.2%	2.2%	16.5%	30.8%	48.4%
Generators	20	5.7%	2.9%	42.9%	22.9%	25.7%



Community Levels of Service

Water Assets

Chatham-Kent (CK) currently has approximately 33,300 in service and 2,200 inactive water accounts. Other properties are on private systems. The Bothwell community is supplied from the Elgin and Middlesex Counties. The population of Chatham-Kent is approximately 106,620. Based on 2.3 average household size, approximately 72% of houses in Chatham-Kent are connected to the municipal water service.

Boil Water Advisory - Response

In the CK Public Utilities Commission (PUC) personnel, receiving an adverse condition notification must immediately notify the Manager, Compliance and Quality Standards. If the Manager is unavailable, notification shall be made to the ORO and the Backflow Prevention / Compliance Officer. Manager, Compliance and Quality Standards, or designate, must notify the CK PHU (Public Health Unit) Inspector verbally immediately. The Health Inspector will give instructions. The CK PHU will issue a 'Water Advisory' for a specified water system or specified households, and will make media notifications if required. CK Public Works (PW) will be responsible for providing addresses of affected residences and for the delivery of these letters. After CK PW has exhausted their resources, they shall contact CK PUC and ask for assistance. Manager, Compliance and Quality Standards or designate, will send an email to 'WATERINFO' to notify that the 'Water Advisory' has been issued. Manager, Compliance and Quality Standards, or designate, will notify SAC verbally of the 'Water Advisory.' Within 24 hours, email the Notice of Adverse Test Results, section 2(a) to SAC and the PHU. Manager, Compliance and Quality Standards, or designate, will notify the ORO, Area Manager, and the Manager of the affected CK PW area, as required. CK PUC will re-sample and take other corrective actions as directed by the CK PHU then send results to the CK PHU to update the Water Advisory Hotline. CK PHU will notify the CK PUC in writing when the 'Water Advisory' has been rescinded. CK PHU will issue notification to the residents on the Water Advisory Hotline stating that the 'Water Advisory' has been rescinded. Manager, Compliance and Quality Standards or designate, will send an email to 'WATERINFO' to notify that the 'Water Advisory' has been rescinded.

Wastewater Assets

During rain events, stormwater can enter into the sanitary sewer by combined sewers and residential connections. Residents that have combined drainage resulting in directing storm drains and sump pumps into sanitary drains. Overflow into streets and backup into homes can happen when storm/sanitary flows exceed sewer carrying capacities or when pumps experience a power outage or failure.

Sanitary sewers and wetwells are designed with redundancy to be oversized for future increase in capacity and to temporarily retain wastewater including any infiltration.

Wastewater treatment plants process the sewage by removing solids and sludge, aeration, chemicals treatment and disinfection of the effluent prior to discharge into the adjacent bodies of water. Sludge is dewatered then retreated. Sewage treatment plants effluent meets the current provincial and federal loading and concentration limits listed in the ECA and other applicable regulations.

BOIL WATER ADVISORIES (BWA)

2017 Boil Water Advisories

- 1 BWA in the South Drinking Water System affected 12,108 addresses due to a loss in distribution system pressure, AWQI issued on August 4 and resolved on August 8

2018 Boil Water Advisories

- 1 BWA in the Chatham Drinking Water system affected 80 addresses due to a water main break, AWQI issued on March 29 and resolved on April 3
- 1 BWA in the Chatham Drinking Water system affected 1 address due to a water main break, AWQI issued on October 11 and resolved on October 16
- 1 BWA in the North Kent (Chatham) Drinking Water system affected 30 addresses due to a water main break, AWQI issued on December 7 and resolved on December 10

2019 Boil Water Advisories

- 1 BWA in the Chatham Drinking Water system affected 30 addresses due to a water main break, AWQI issued on July 11 and resolved on July 15

2020 Boil Water Advisories

- 1 BWA in the Wheatley Drinking Water System affected 10,400 addresses due to high EC, TC & HPC sample results, AWQI issued on January 7 and resolved on January 13
- 1 BWA in the Chatham Drinking Water system affected 10 addresses due to a water main break, AWQI issued on December 1 and resolved on December 4

2021 Boil Water Advisories

- 1 BWA in the Leamington Drinking Water System (Wheatley) affected 63 addresses due to high TC sample results, AWQI issued on June 16 and resolved on June 21

2022 Boil Water Advisories

- None to date

# of BWA for the South Drinking Water System (2017 to 2022)
1 – 12,108 affected addresses total from 2017 to 2022

# of BWA for the Chatham Drinking Water System (2017 to 2022)
5 – 121 affected addresses total from 2017 to 2022

# of BWA for the Wheatley Drinking Water System (2017 to 2022)
2 – 10,463 affected addresses total from 2017 to 2022

MAIN BREAKS & REPAIRS

Public Works	Chatham Crew	Chatham Township Crew	Chatham Township Crew	North Kent Crew	North Kent Crew	Wallaceburg Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew		
System	Chatham	Dresden	Chatham	Bothwell	Thamesville	Wallaceburg	Ridgetown	Merlin	Blenheim	Erieau	Shrewsbury	Tilbury	Wheatley	Total	2017
	52	5	1	1	1	28	11	7	21	1	2	12	3	145	

Public Works	Chatham Crew	Chatham Township Crew	Chatham Township Crew	North Kent Crew	North Kent Crew	Wallaceburg Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew		
System	Chatham	Dresden	Chatham	Bothwell	Thamesville	Wallaceburg	Ridgetown	Merlin	Blenheim	Erieau	Shrewsbury	Tilbury	Wheatley	Total	2018
	63	8	0	9	2	39	10	3	14	5	3	20	7	183	

Public Works	Chatham Crew	Chatham Township Crew	Chatham Township Crew	North Kent Crew	North Kent Crew	Wallaceburg Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew		
System	Chatham	Dresden	Chatham	Bothwell	Thamesville	Wallaceburg	Ridgetown	Merlin	Blenheim	Erieau	Shrewsbury	Tilbury	Wheatley	Total	2019
	104	20	1	2	0	46	11	1	50	7	6	46	15	309	

Public Works	Chatham Crew	Chatham Township Crew	Chatham Township Crew	North Kent Crew	North Kent Crew	Wallaceburg Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew		
System	Chatham	Dresden	Chatham	Bothwell	Thamesville	Wallaceburg	Ridgetown	Merlin	Blenheim	Erieau	Shrewsbury	Tilbury	Wheatley	Total	2020
	88	17	1	2	1	49	14	11	33	5	3	16	6	246	

Public Works	Chatham Crew	Chatham Township Crew	Chatham Township Crew	North Kent Crew	North Kent Crew	Wallaceburg Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew		
System	Chatham	Dresden	Chatham	Bothwell	Thamesville	Wallaceburg	Ridgetown	Merlin	Blenheim	Erieau	Shrewsbury	Tilbury	Wheatley	Total	2021
	113	20	1	0	2	43	13	6	14	2	4	22	7	247	

Public Works	Chatham Crew	Chatham Township Crew	Chatham Township Crew	North Kent Crew	North Kent Crew	Wallaceburg Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew	South Crew		2022 (as of Apr 1)
System	Chatham	Dresden	Chatham	Bothwell	Thamesville	Wallaceburg	Ridgetown	Merlin	Blenheim	Erieau	Shrewsbury	Tilbury	Wheatley	Total	
	38	3	1			12	4	4	7	1	1	2	1	74	

Figure: Chatham-Kent Public Utility Commission Water Service Area Boundaries

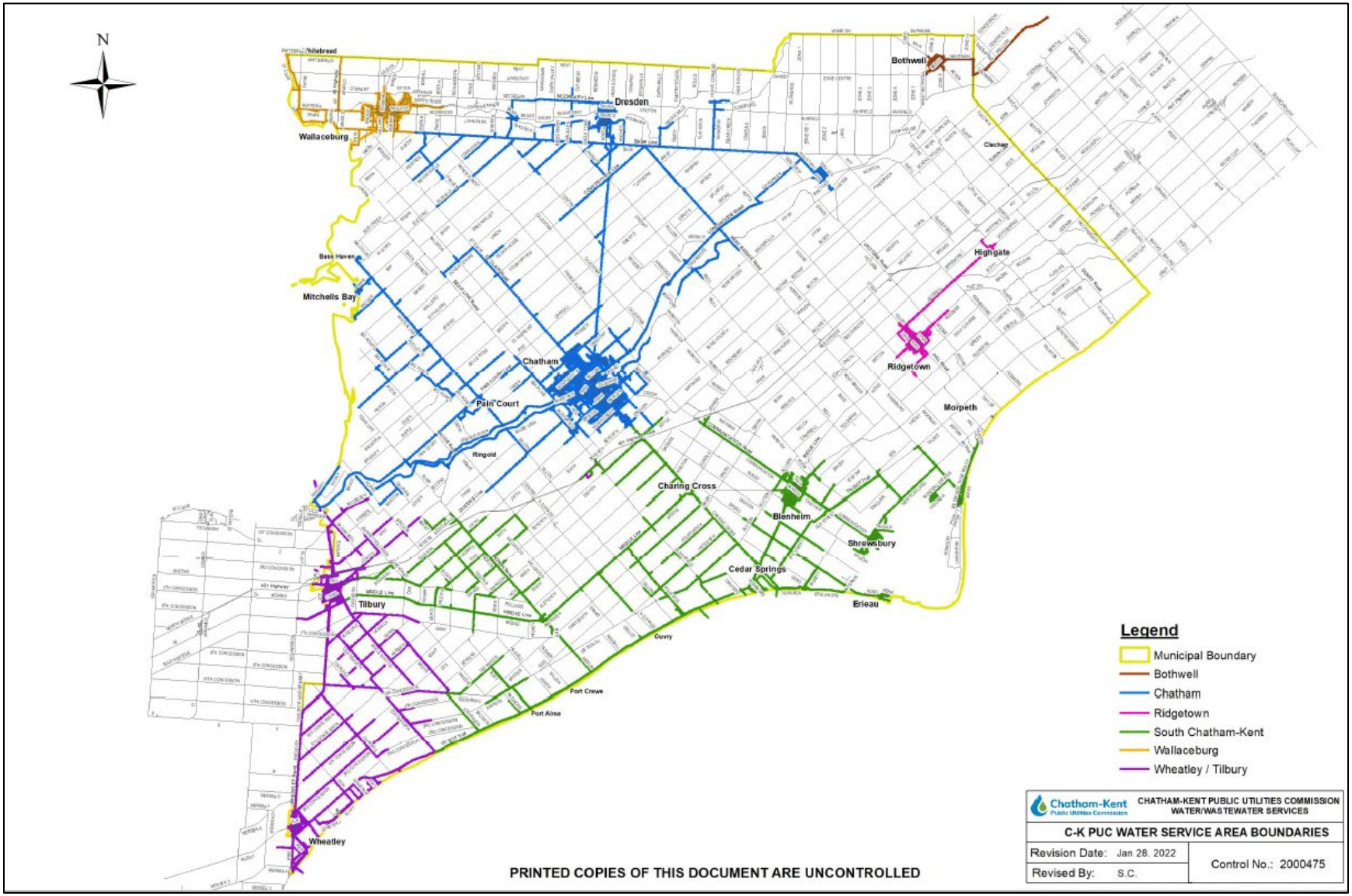


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Blenheim)

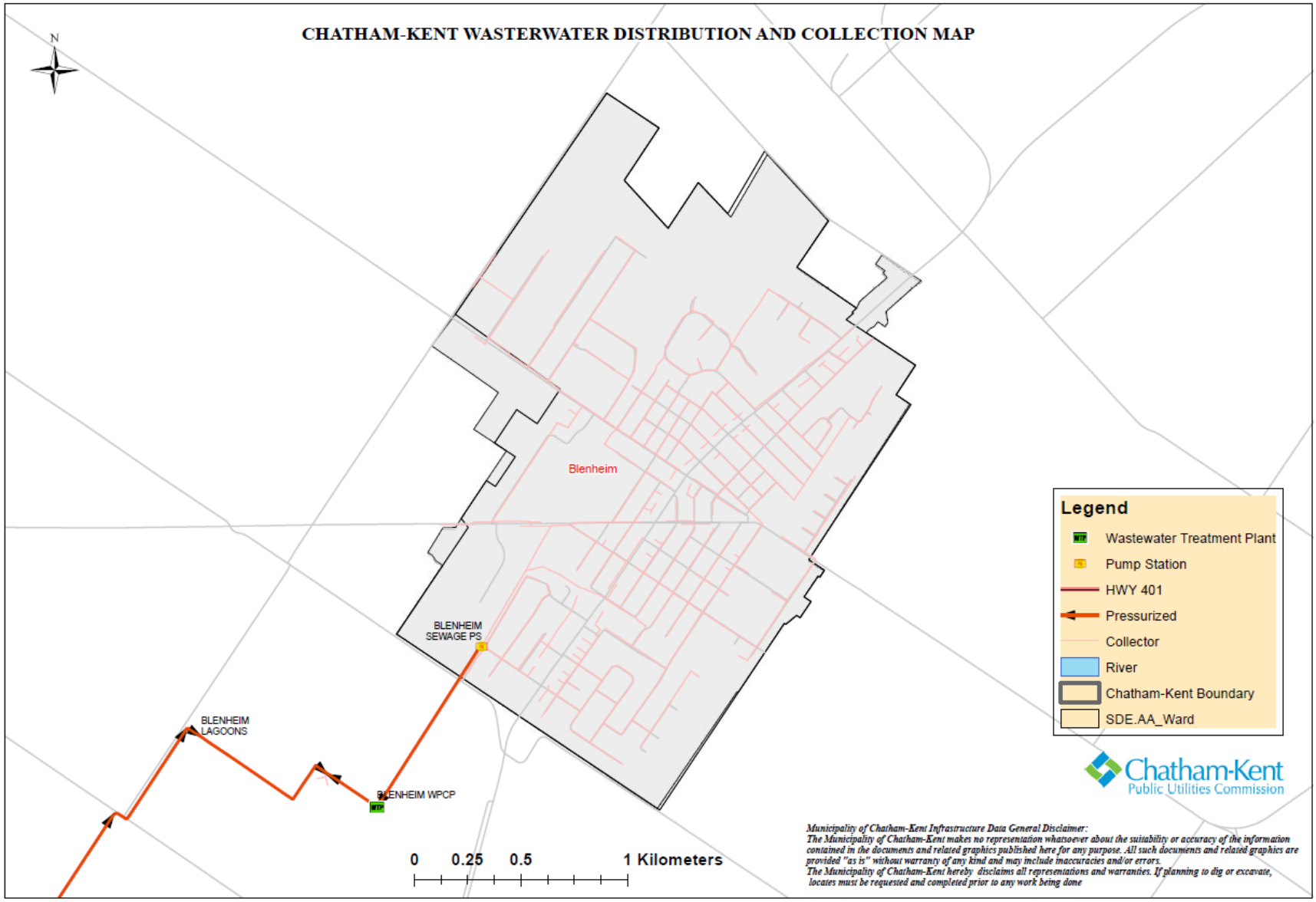


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Chatham)

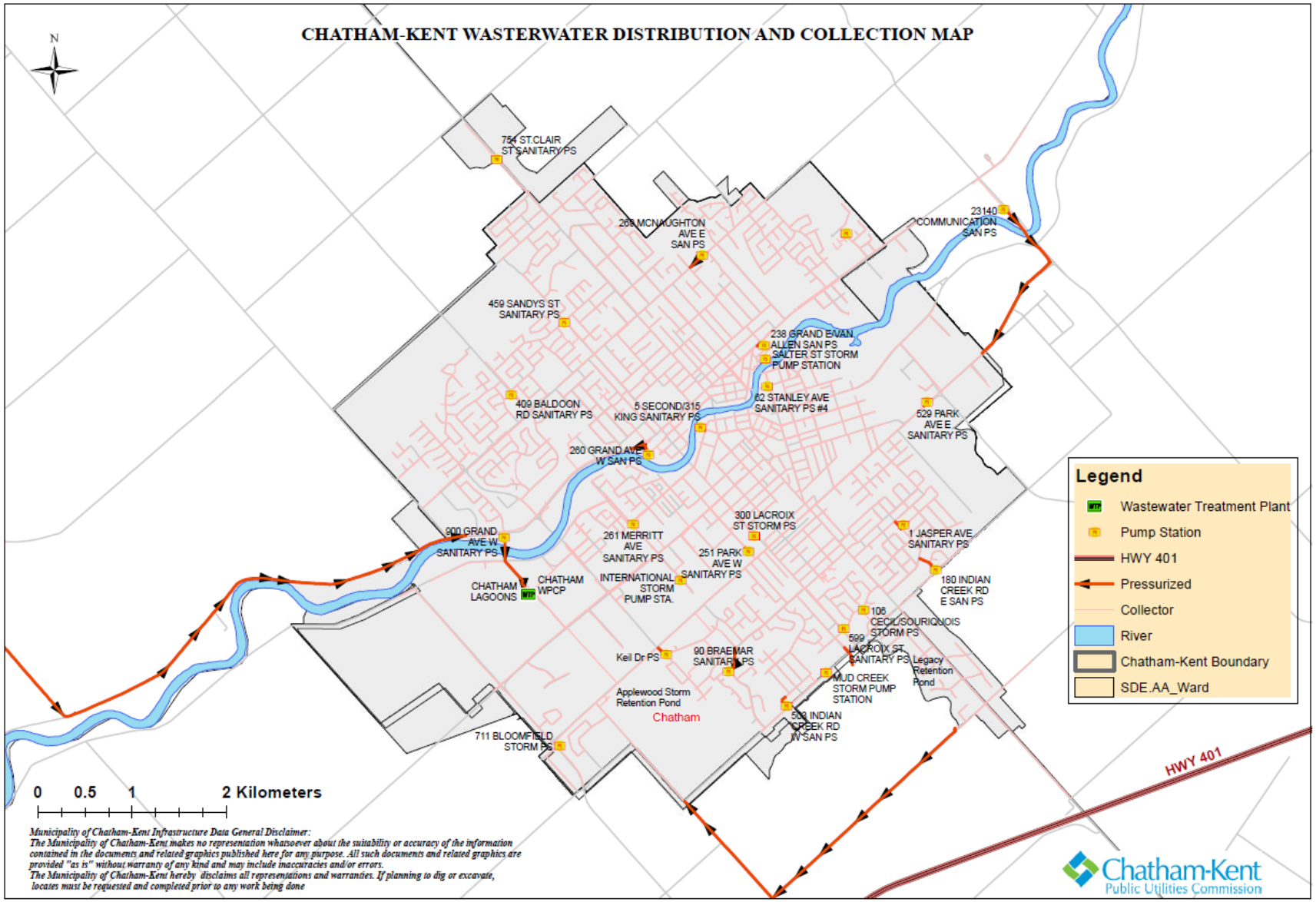


Figure: Chatham-Kent Wastewater Distribution Collection Map (Charing Cross)

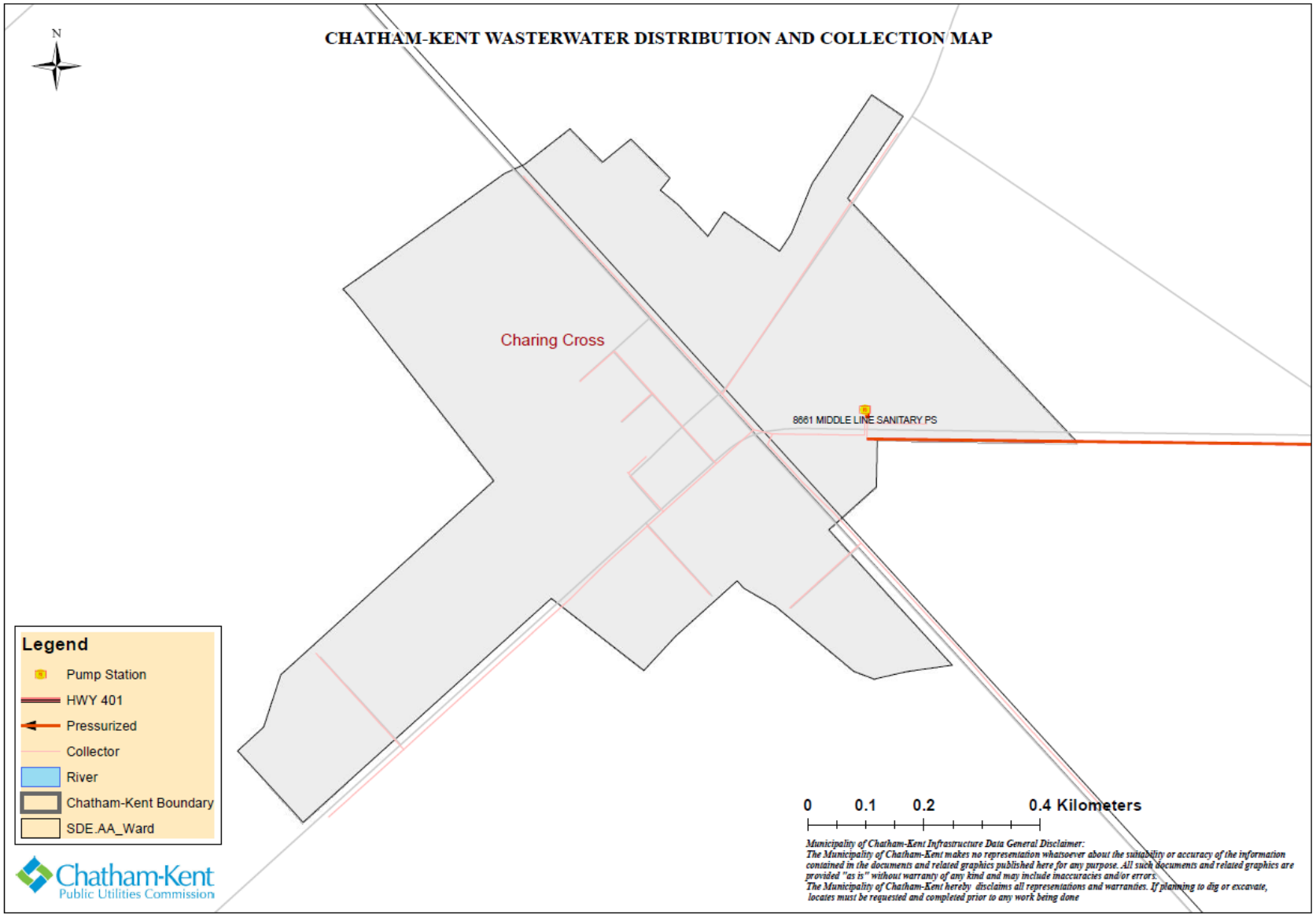


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Dresden)

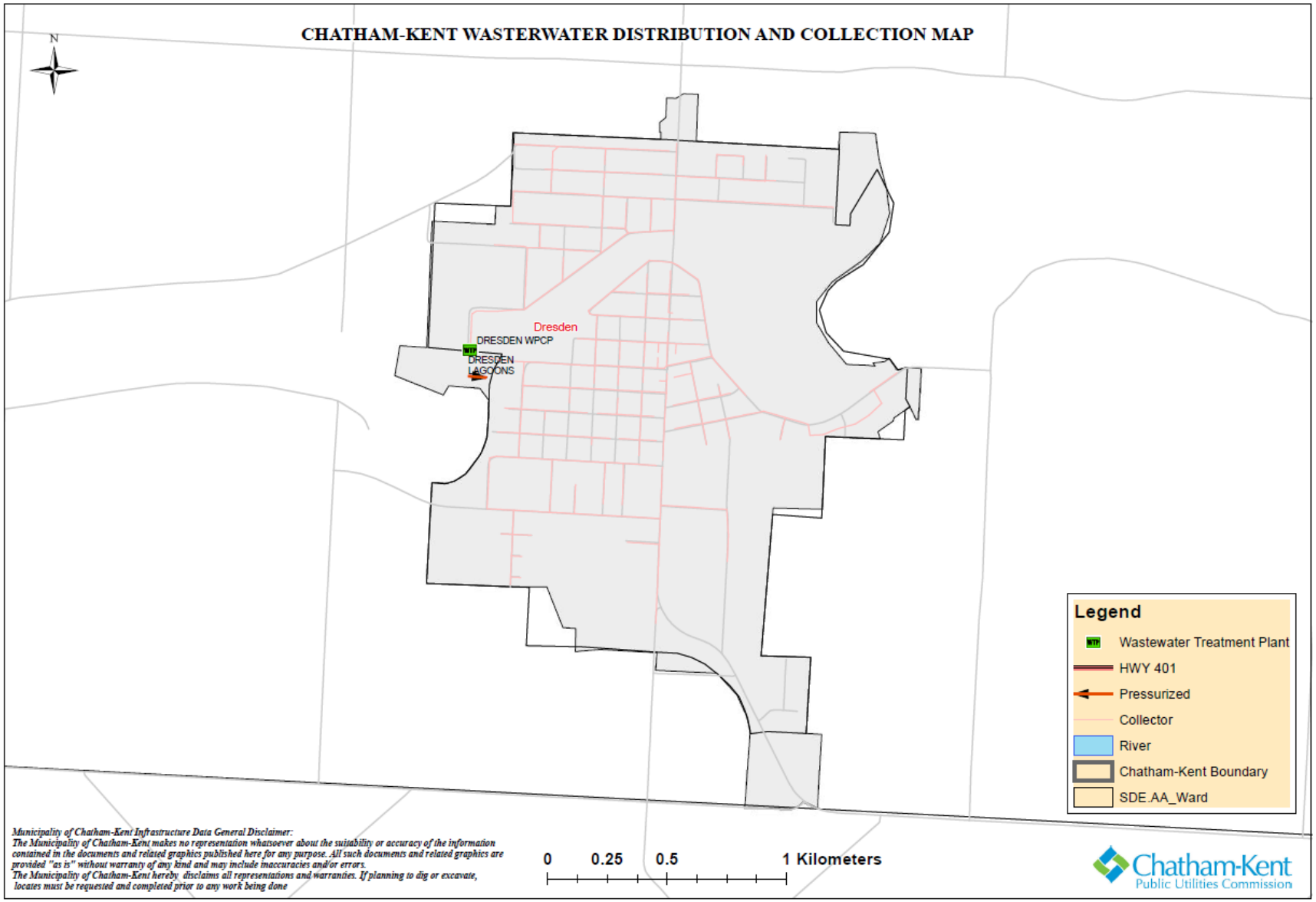


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Merlin)

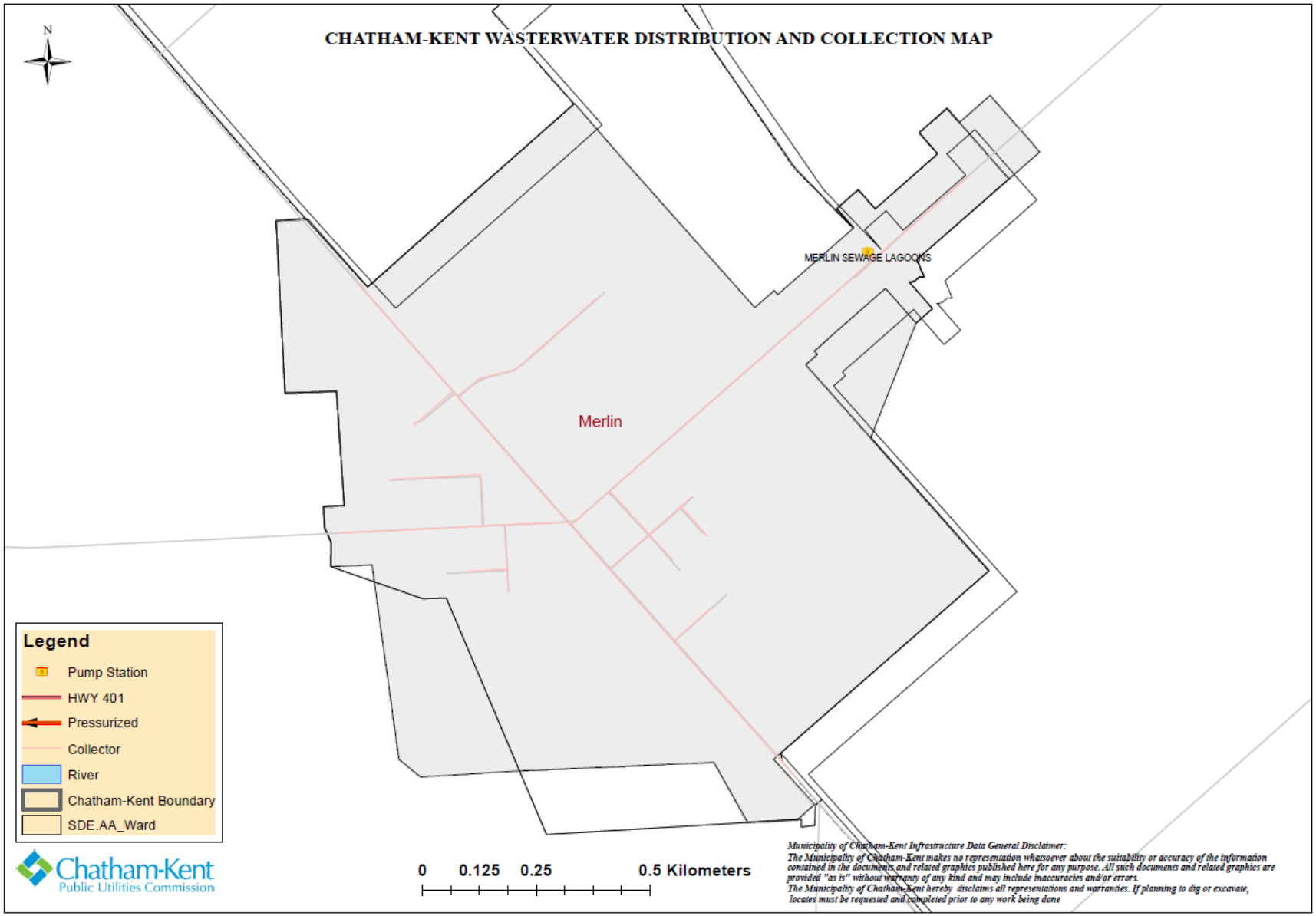


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Mitchell's Bay)

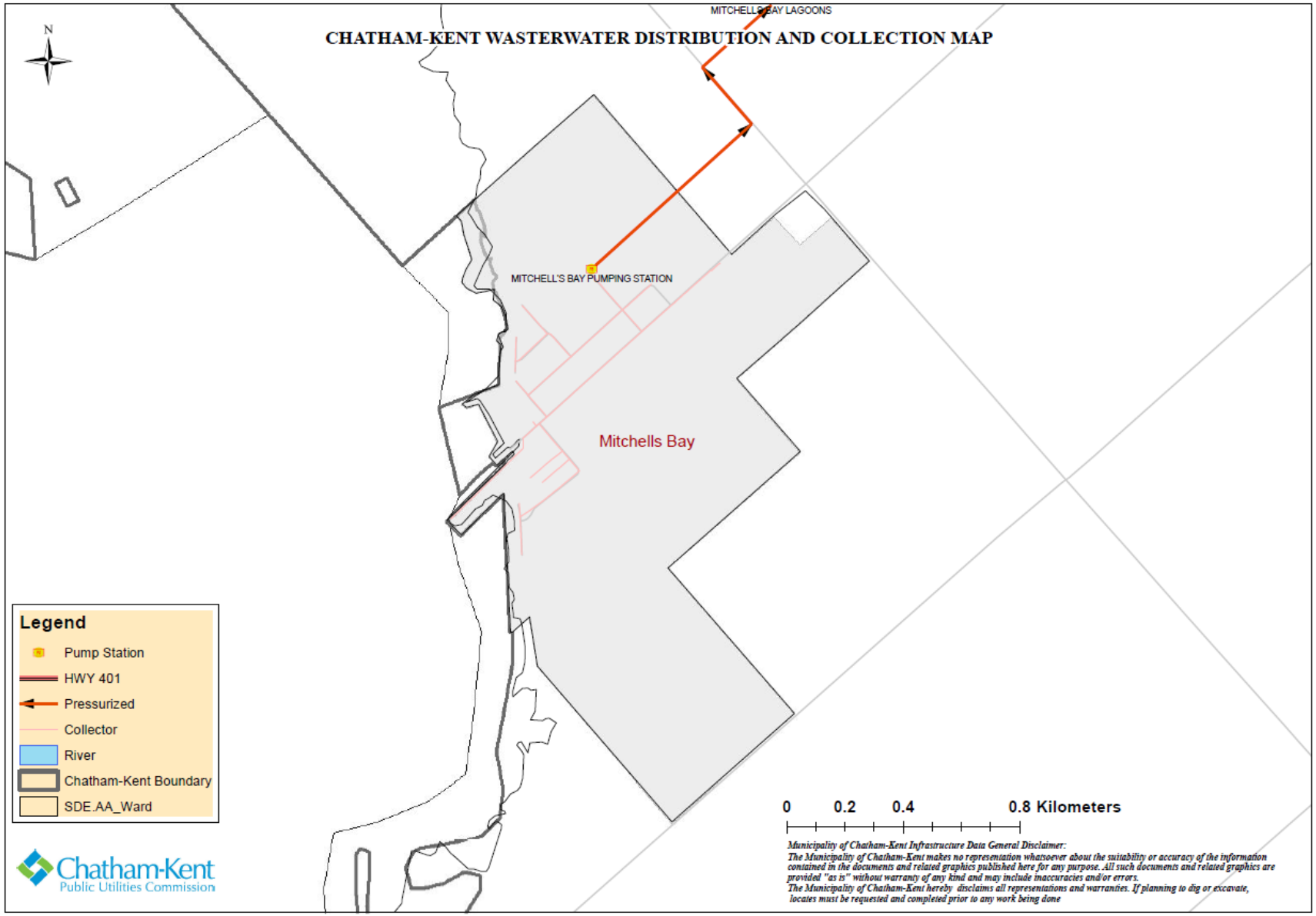


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Pain Court)

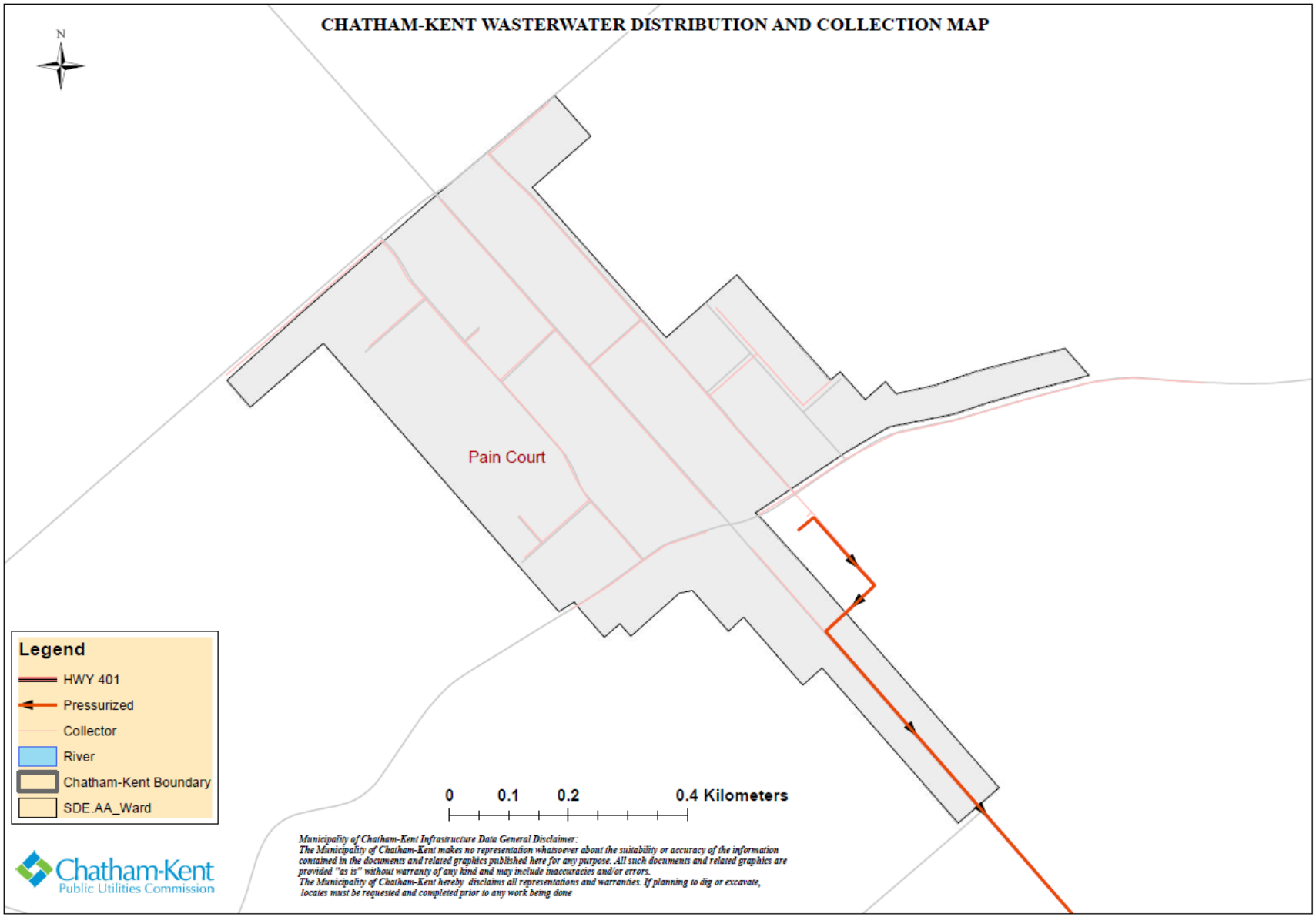


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Ridgetown)

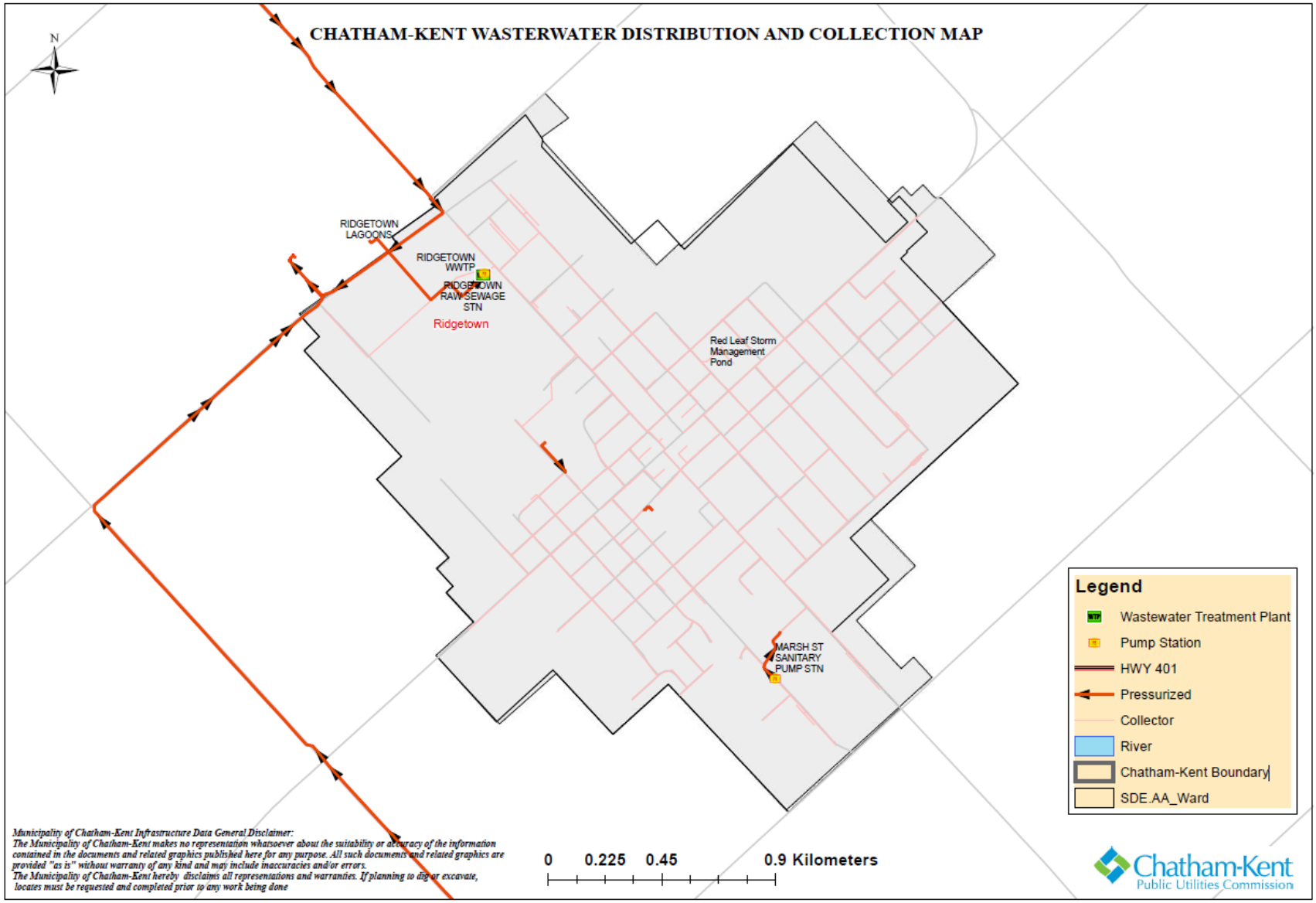


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Thamesville)

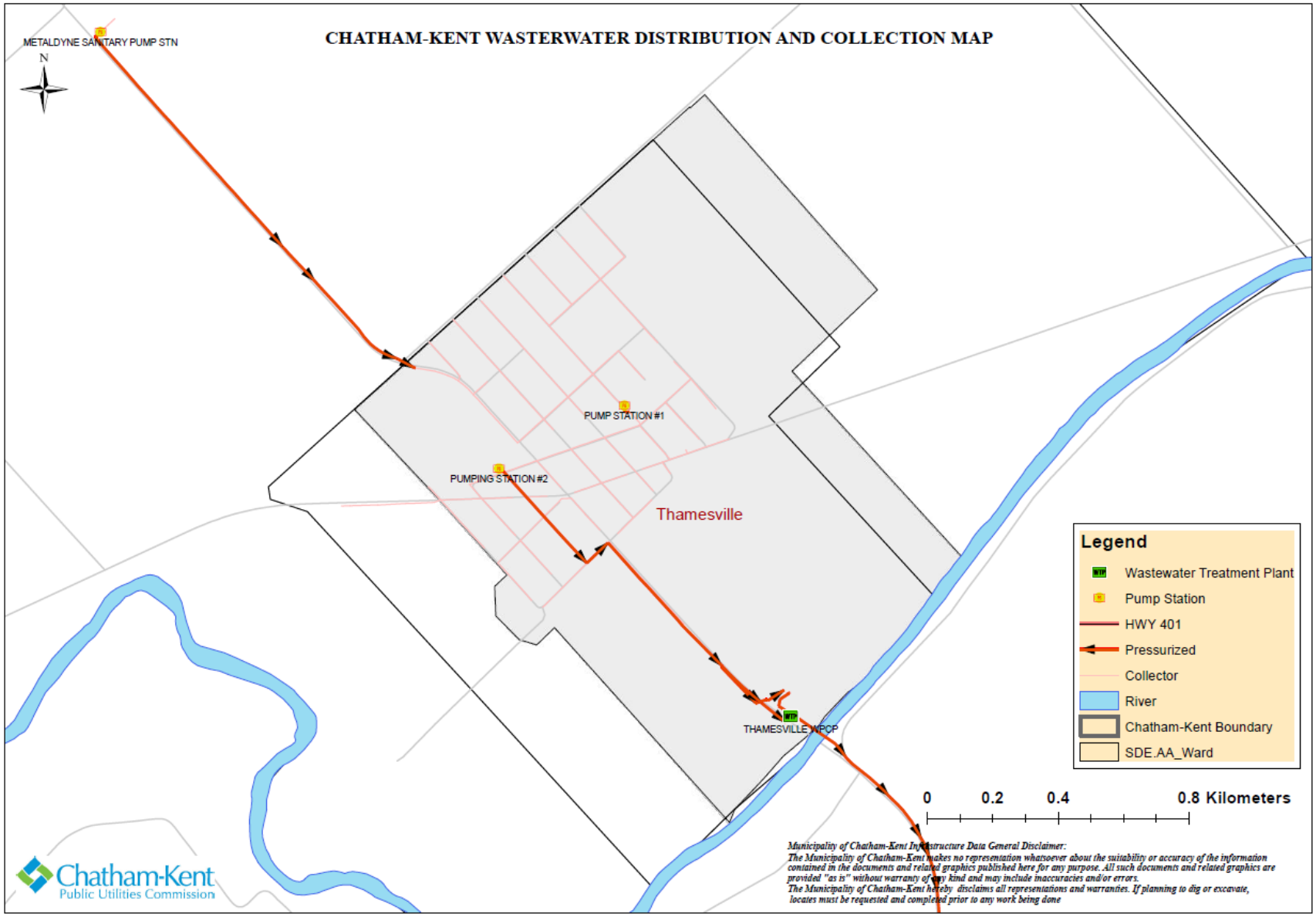


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Tilbury)

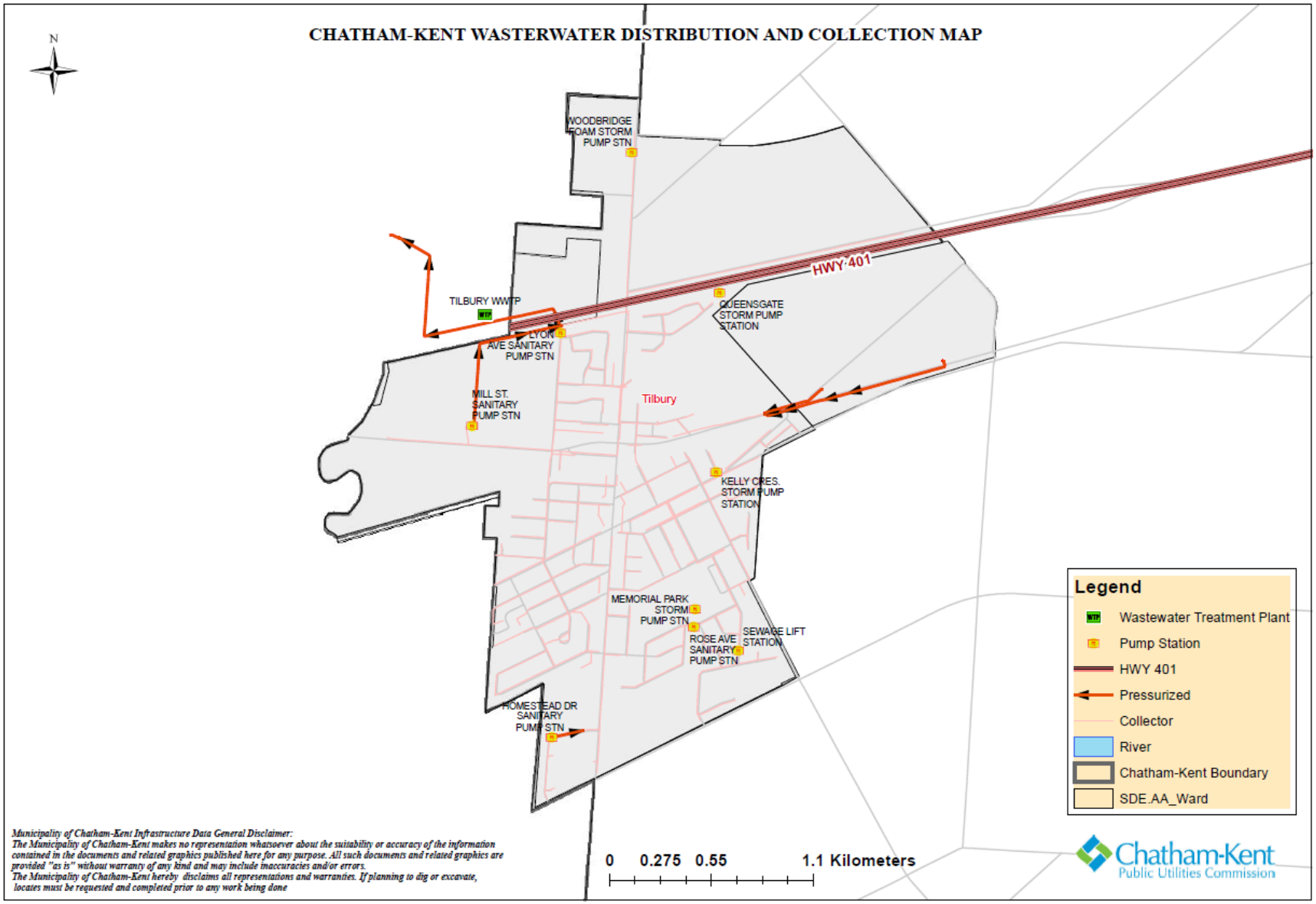


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Wallaceburg)

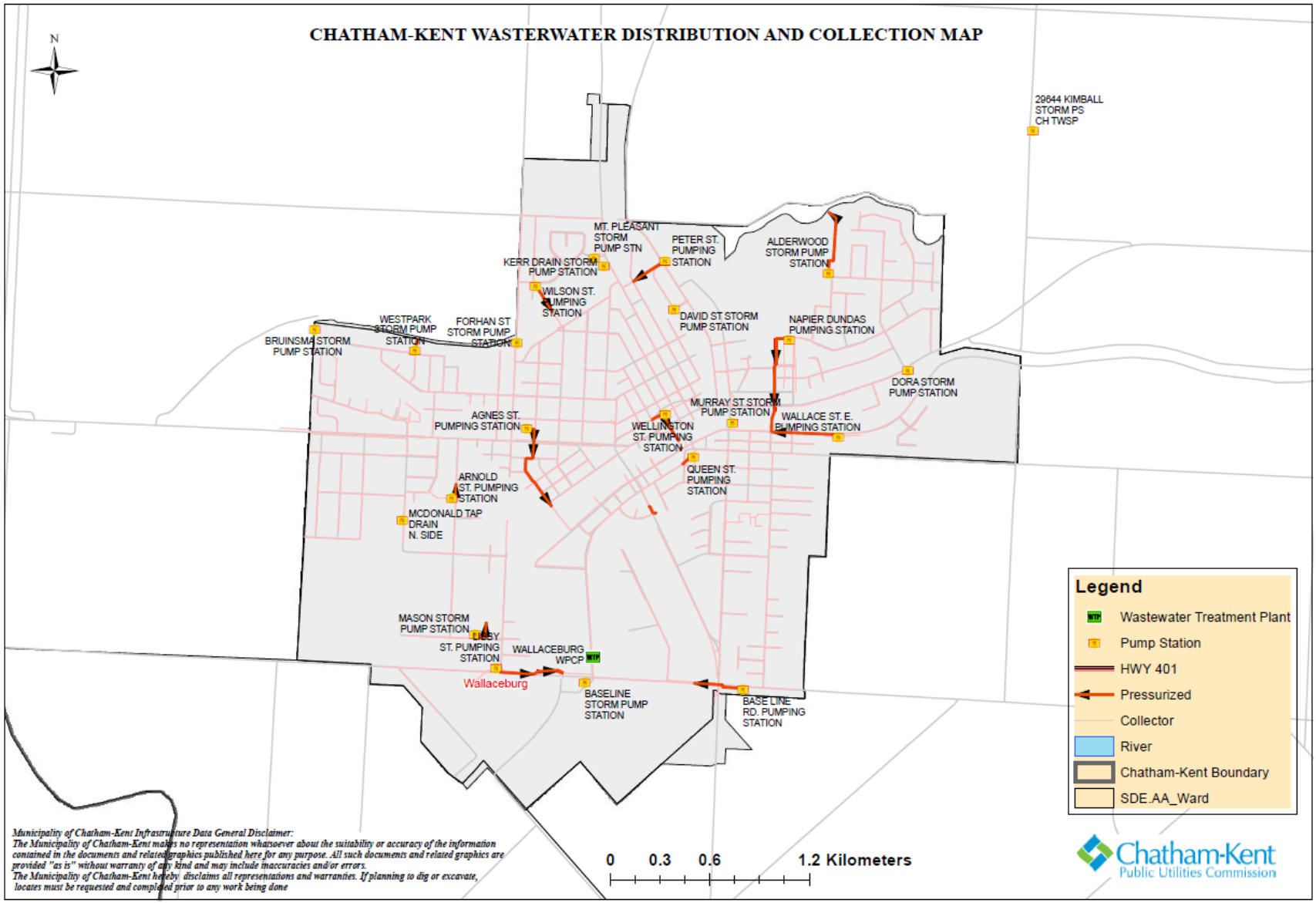
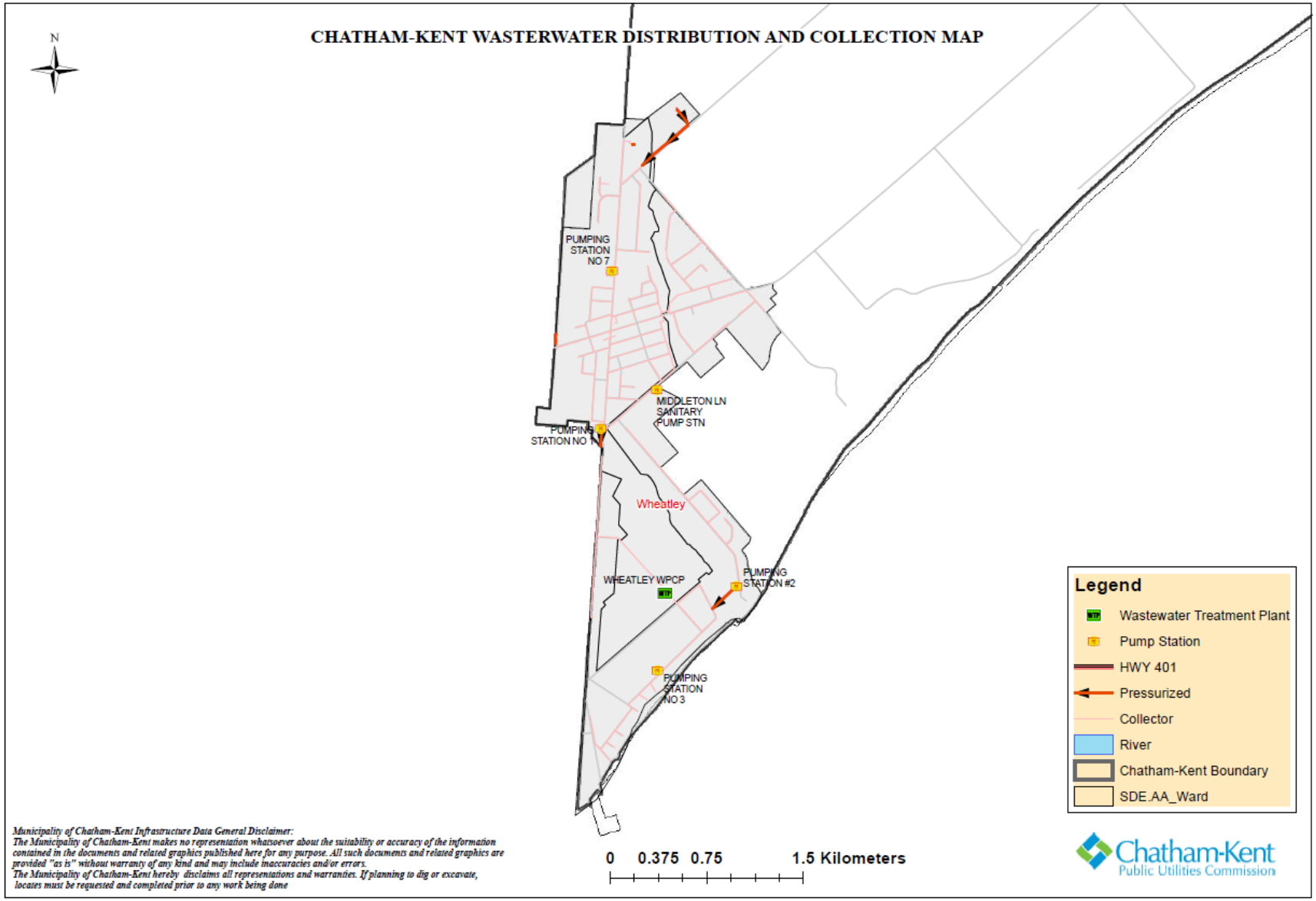


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Wheatley)



Lifecycle Activities Needed to Maintain Current Levels of Service

Lifecycle activities needed to maintain assets are influenced by Ministry of the Environment, Conservation and Parks (MECP) requirements and capital budgets approved by the commission. Lifecycle activities are focused on maintaining operation of critical infrastructure and minimizing disruption. Chatham-Kent PUC is shifting towards a proactive approach to maintain assets by following the recommendations of the condition assessments prior to failure of assets. When possible, projects are coordinated with other departments to consolidate construction/rehabilitation in one project to reduce cost and timelines. Proactive maintenance has been shown to cost less than retroactive repairs by a factor of approximately 1:5.