Municipality of Chatham-Kent

Core Infrastructure Asset Management Plan

ADDENDUM

June 2022

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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

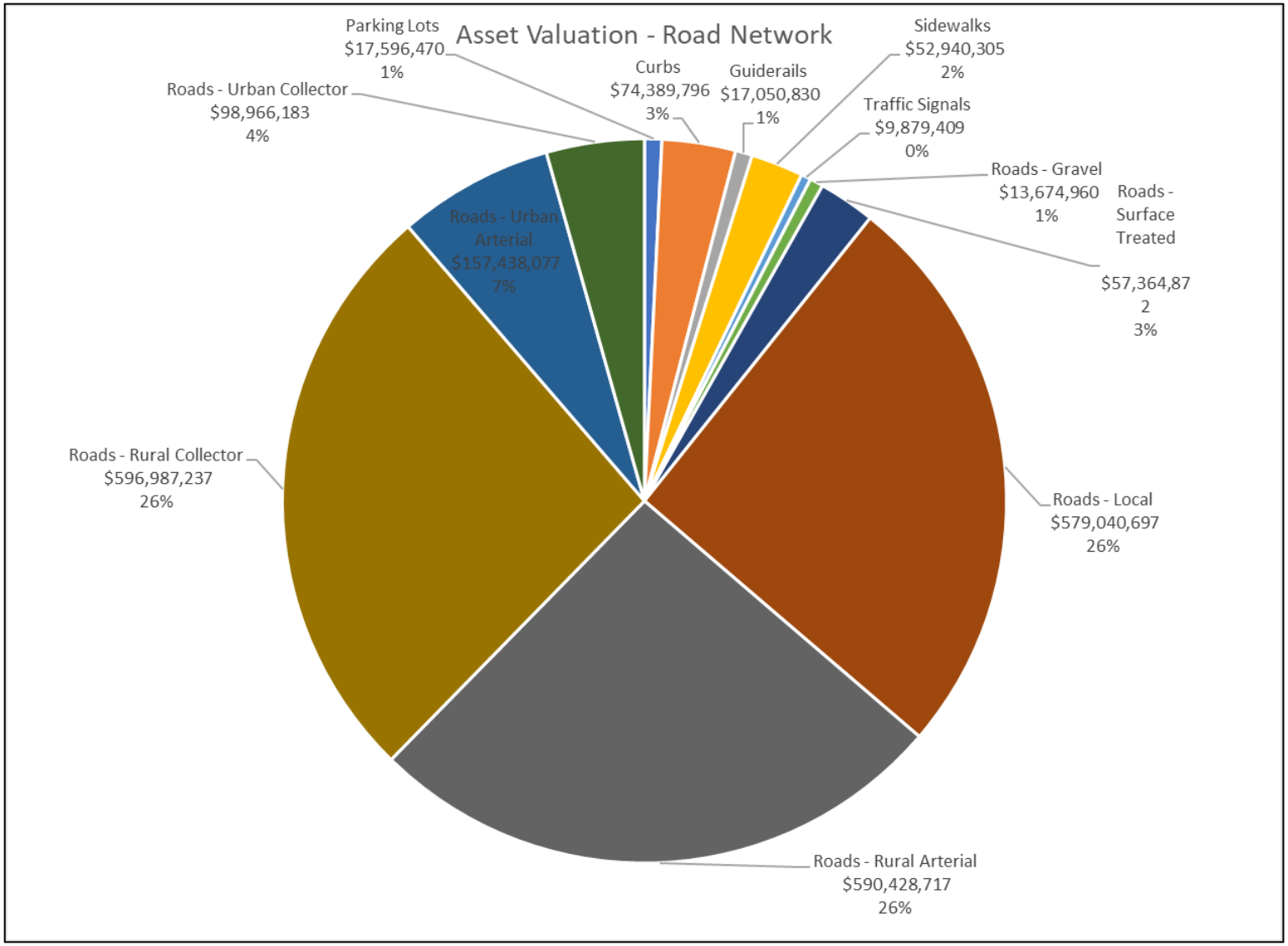
Table 5 illustrates key asset attributes for the municipality's road network, including quantities of various assets, their useful life, their replacement cost, and the valuation method by which the replacement costs were derived. In total, the municipality's roads assets are valued at $2.26 billion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

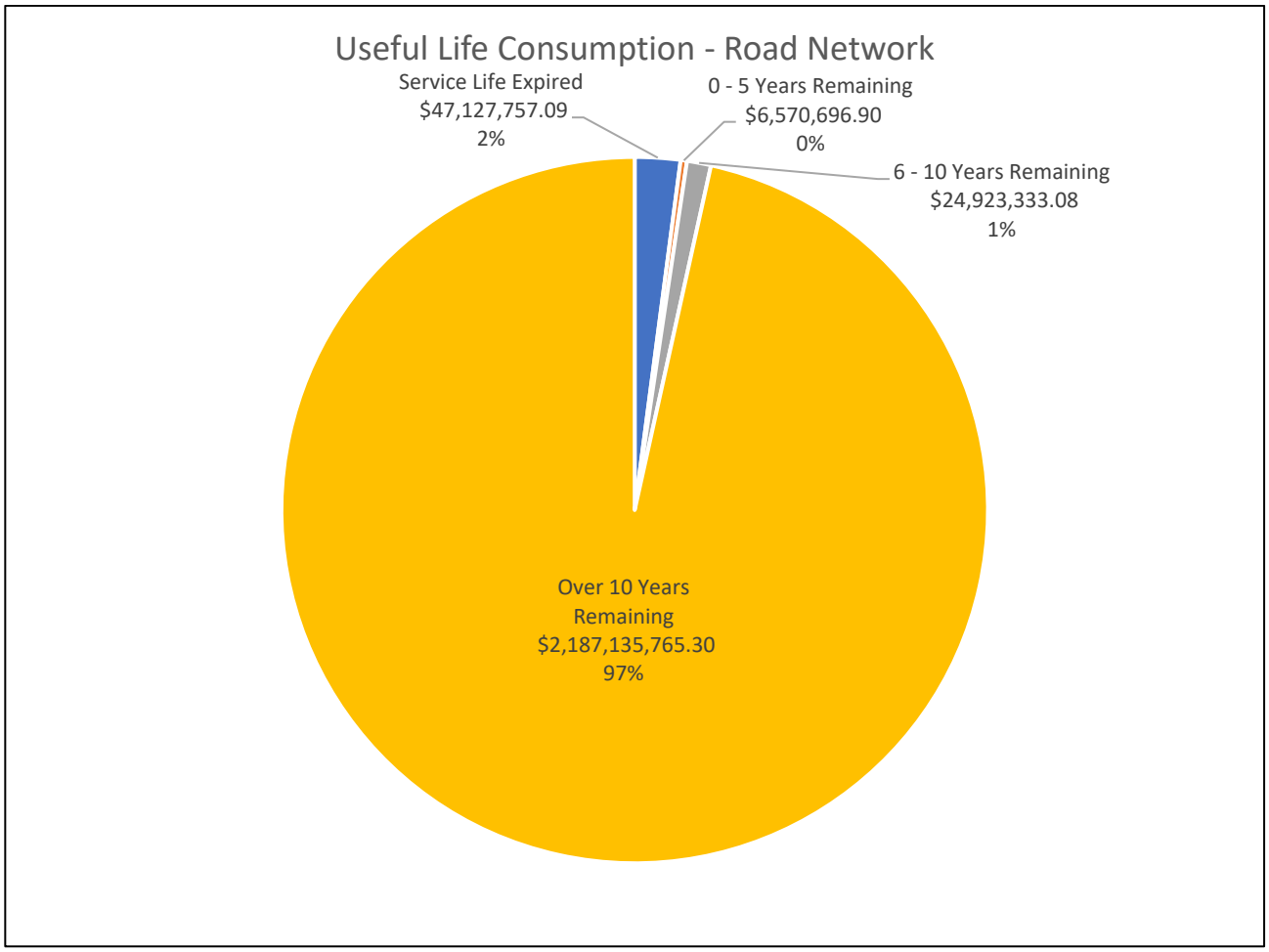
Figure 11 Asset Valuation – Road Network



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

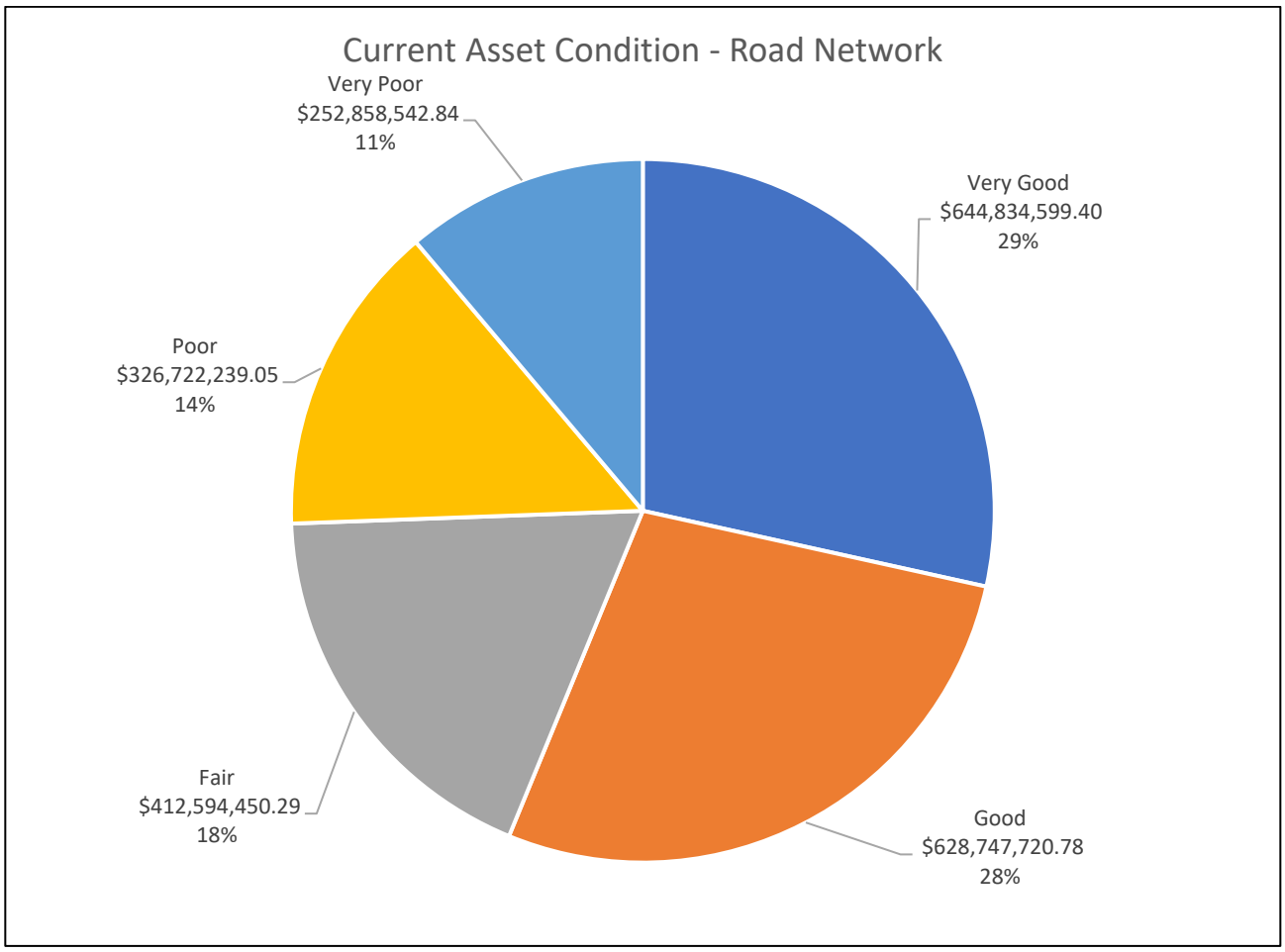


While almost all of the municipality's road network has at least 10 years of useful life remaining, 2%, with a valuation of $47 million, remain in operation beyond their useful life. An additional $6.5 million will reach the end of their useful life within the next five years.

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

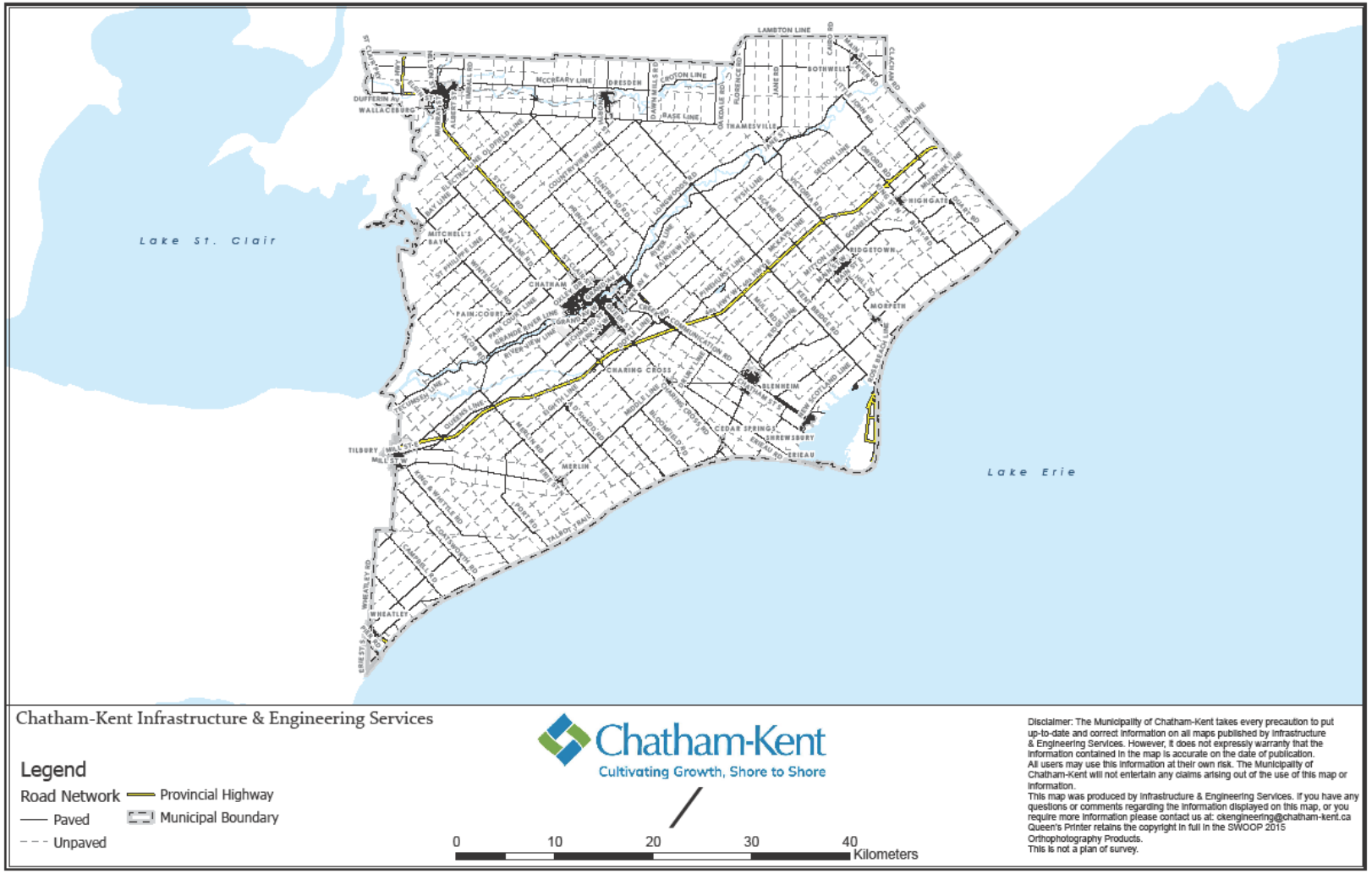
Transportation infrastructure is such a crucial part of daily life that it is often taken for granted. When somebody leaves their home, they use a transportation service. Good roads and structures promote business, create employment, provide social opportunities, create markets, and save lives. When 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.

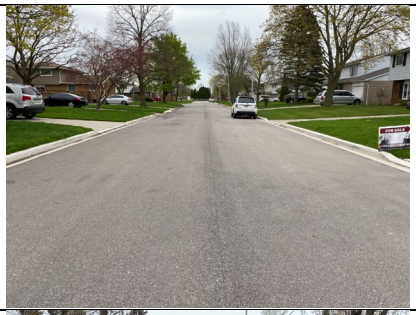
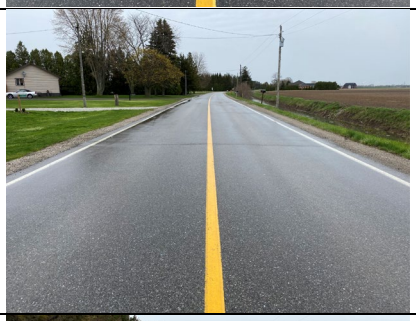
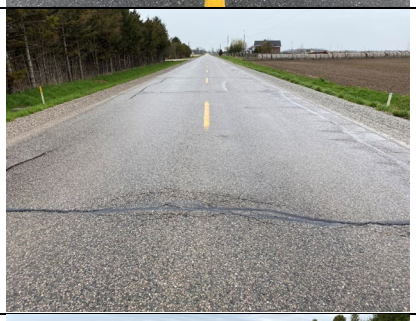
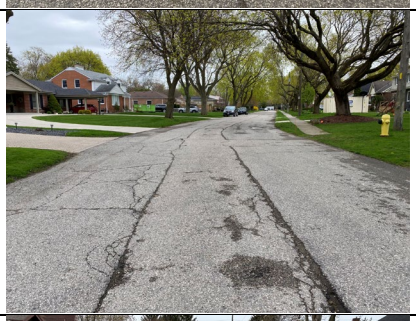
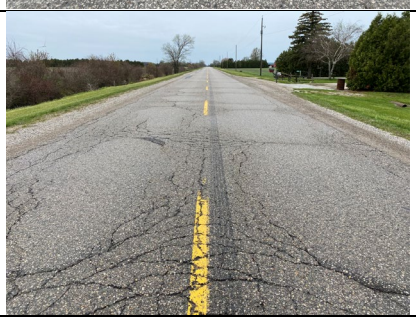
The Municipality of Chatham-Kent operates and maintains roadways, bridges and traffic infrastructure, thus enabling safe and effective travel. The Municipalities Infrastructure & Engineering Department is responsible for planning and operating this critical infrastructure. In addition, the Municipality 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.

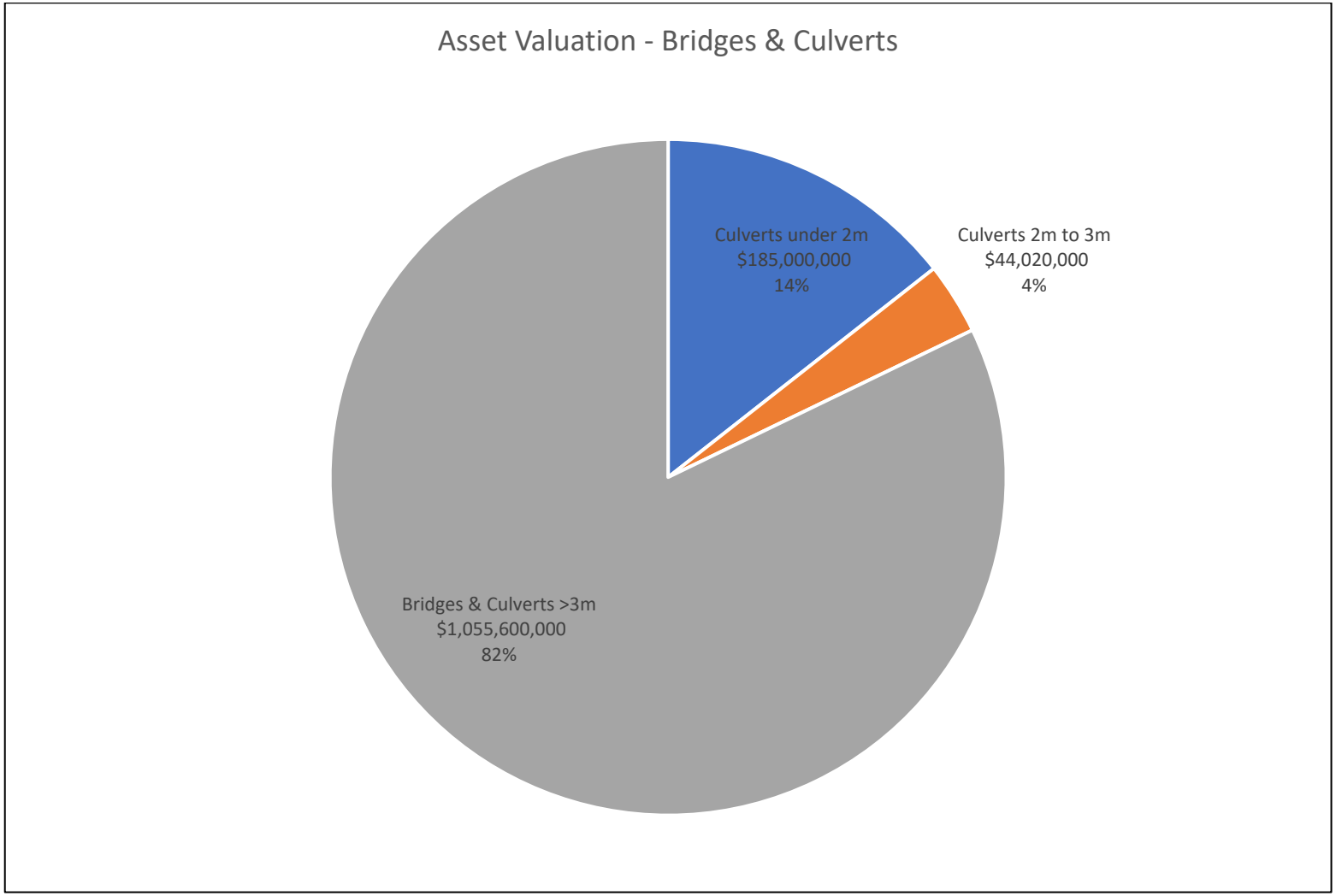
Table 6 Key Asset Attributes – Bridges & Culverts

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.

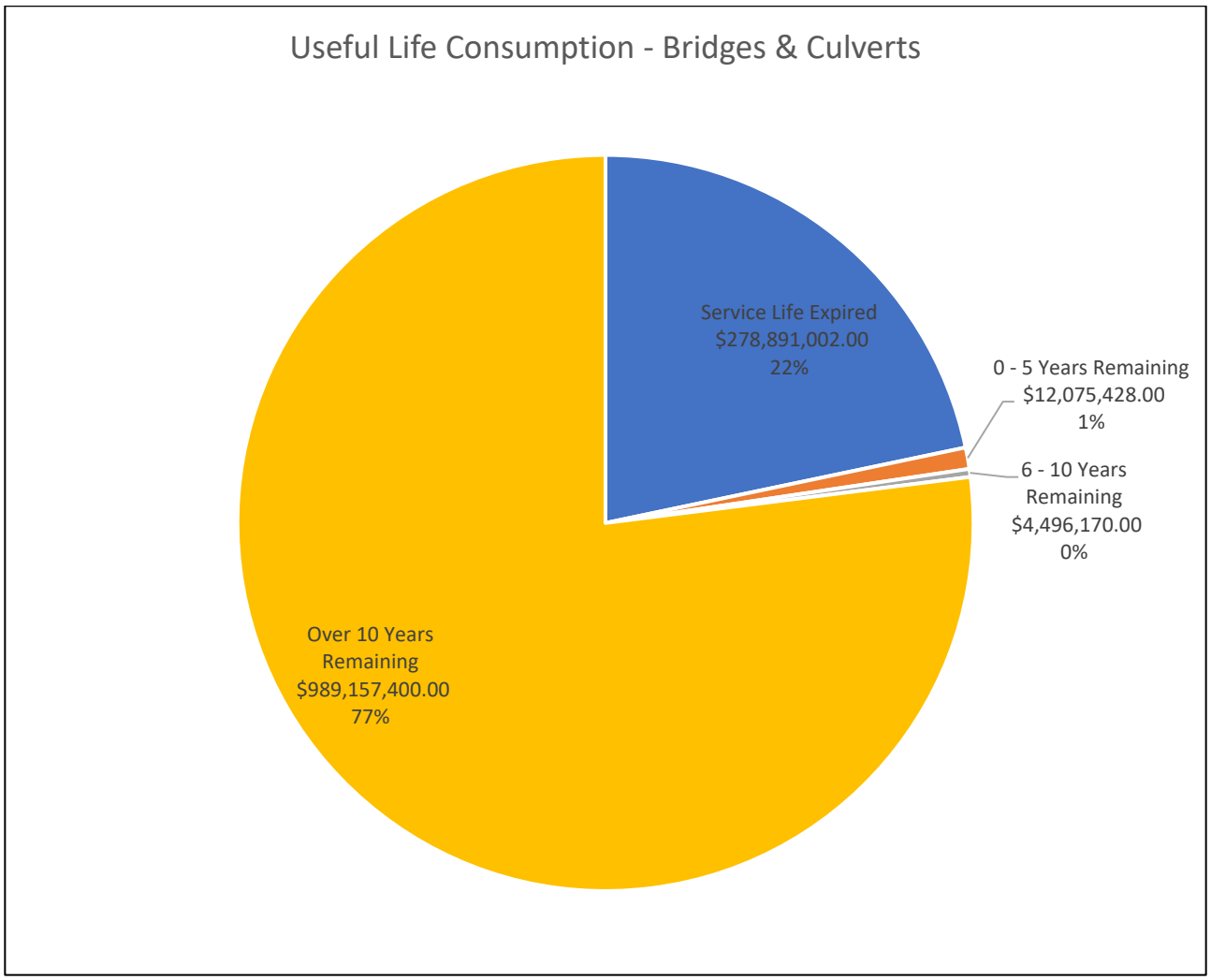
Figure 16 Asset Valuation – Bridges & Culverts



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

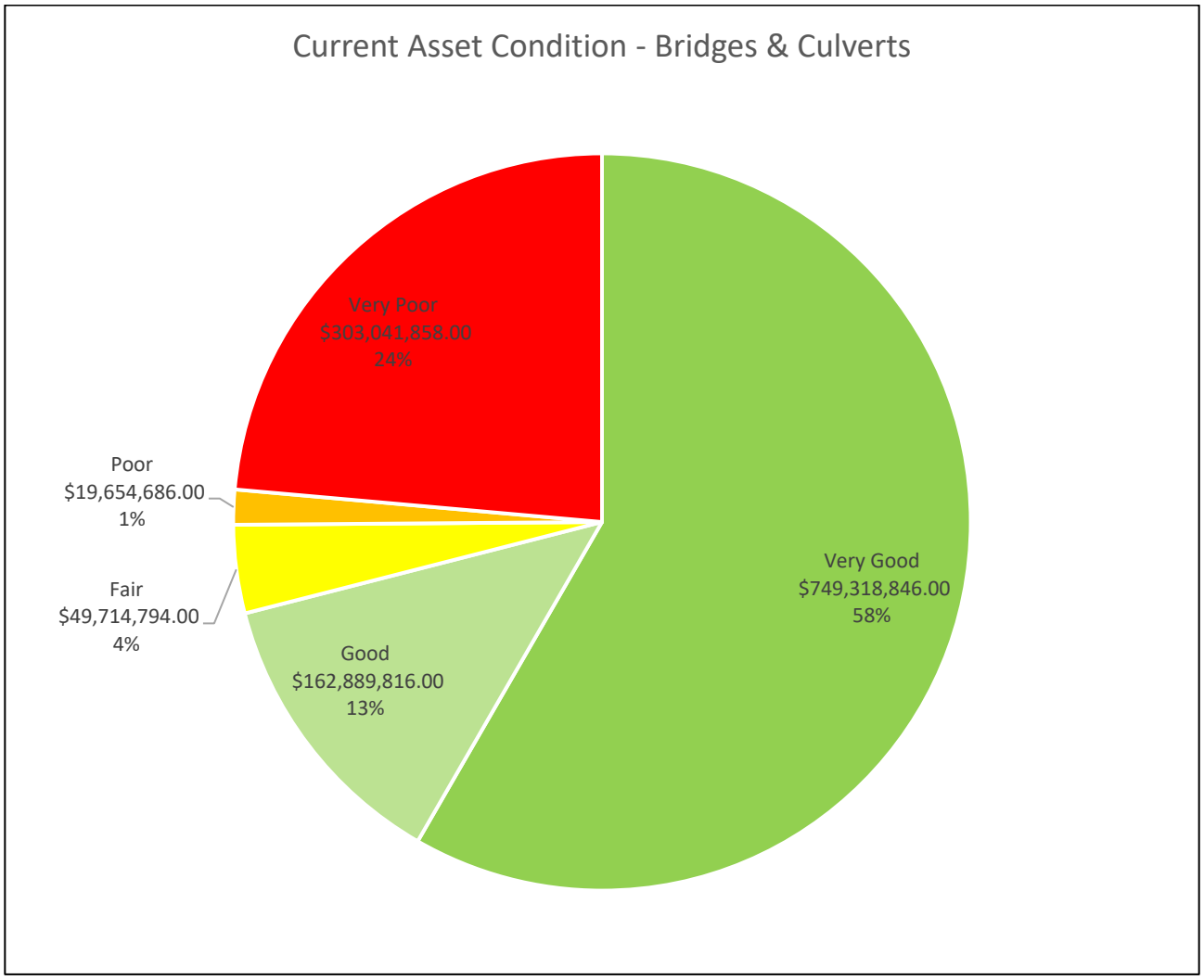


77% of the assets have at least 10 years of useful life remaining while 1%, with a valuation of $12 million, will expire in the next five years.

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

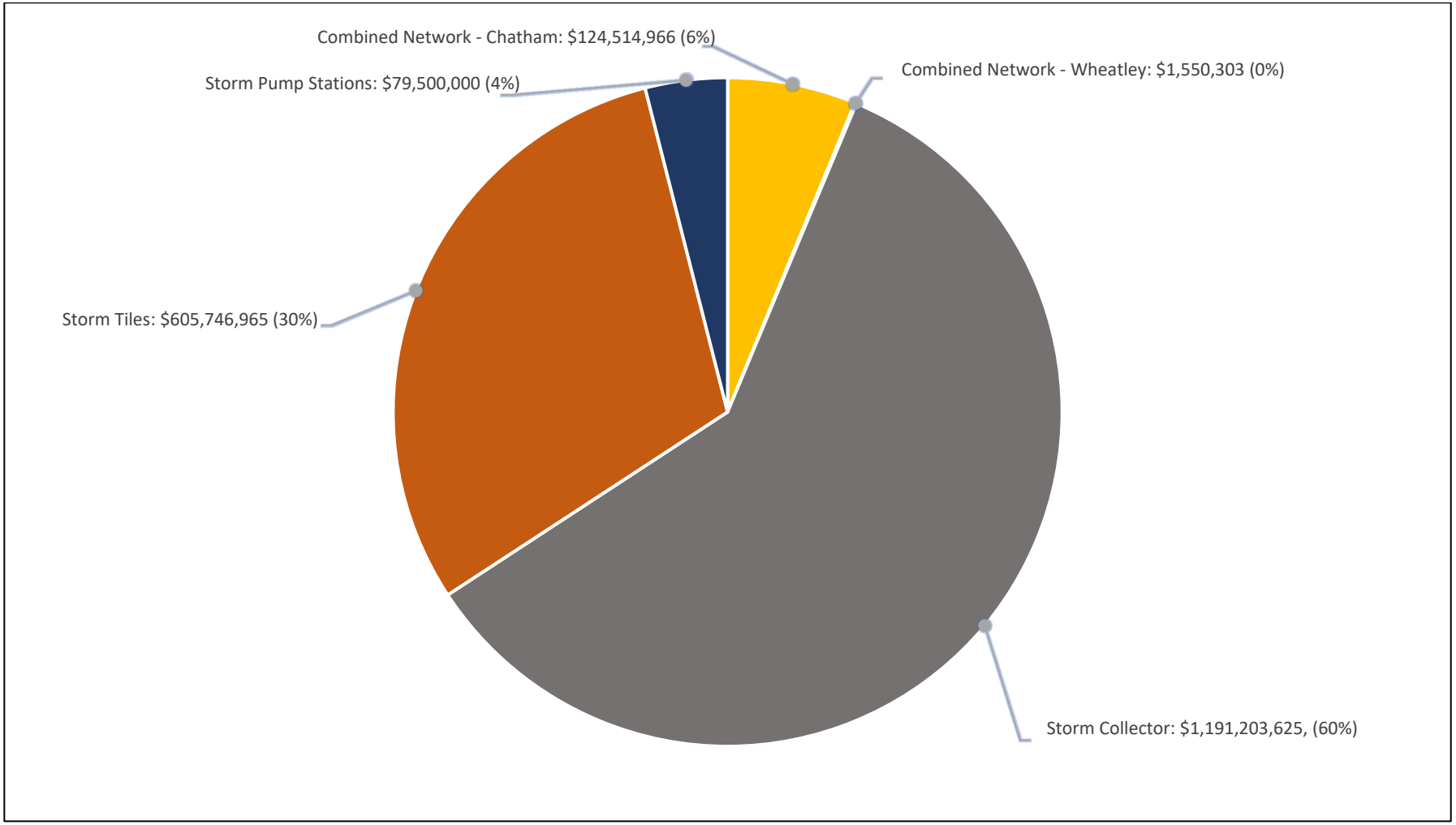
Asset Portfolio: Quantity, Useful Life and Replacement Cost

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

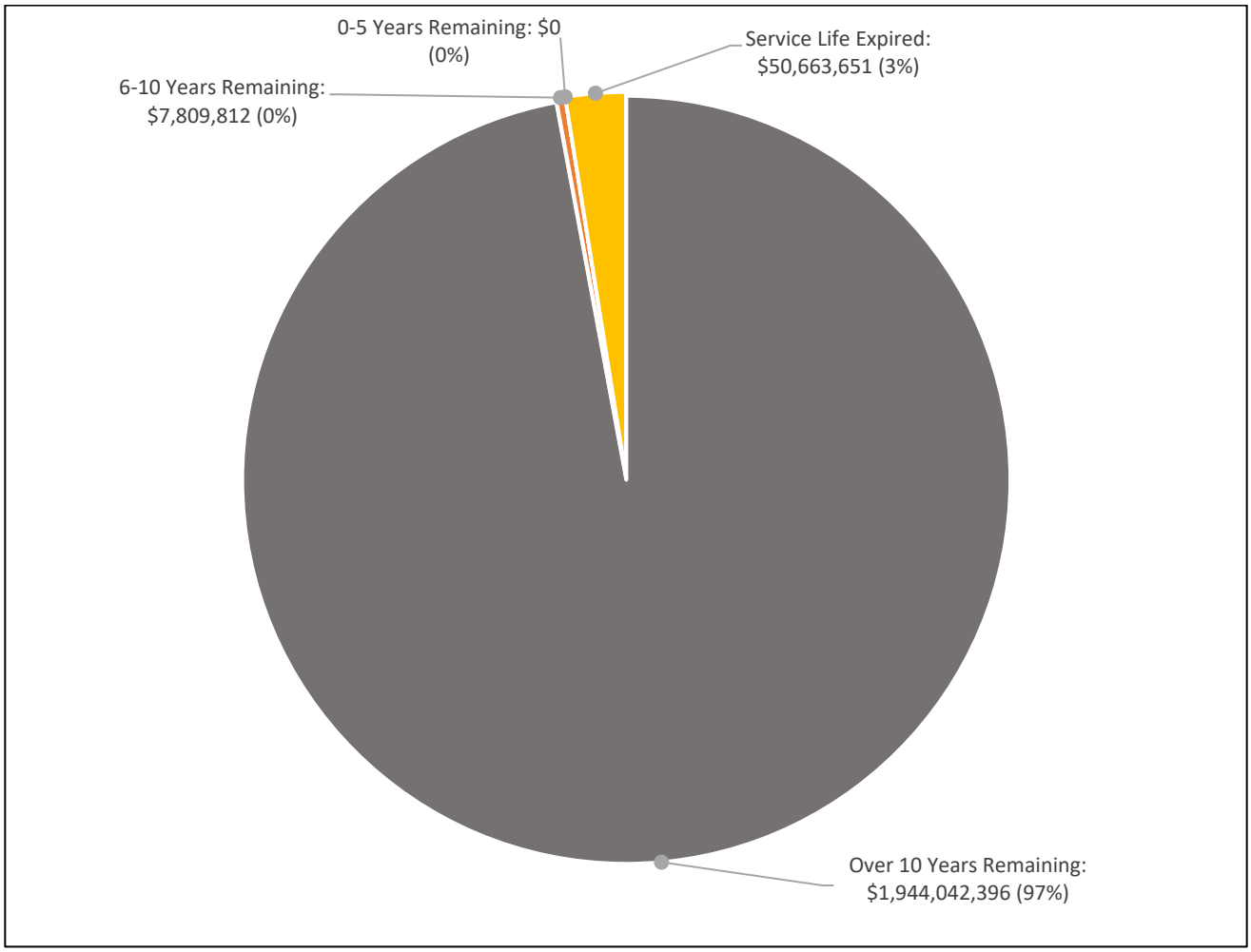
Figure 31 Asset Valuation – Storm Network



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

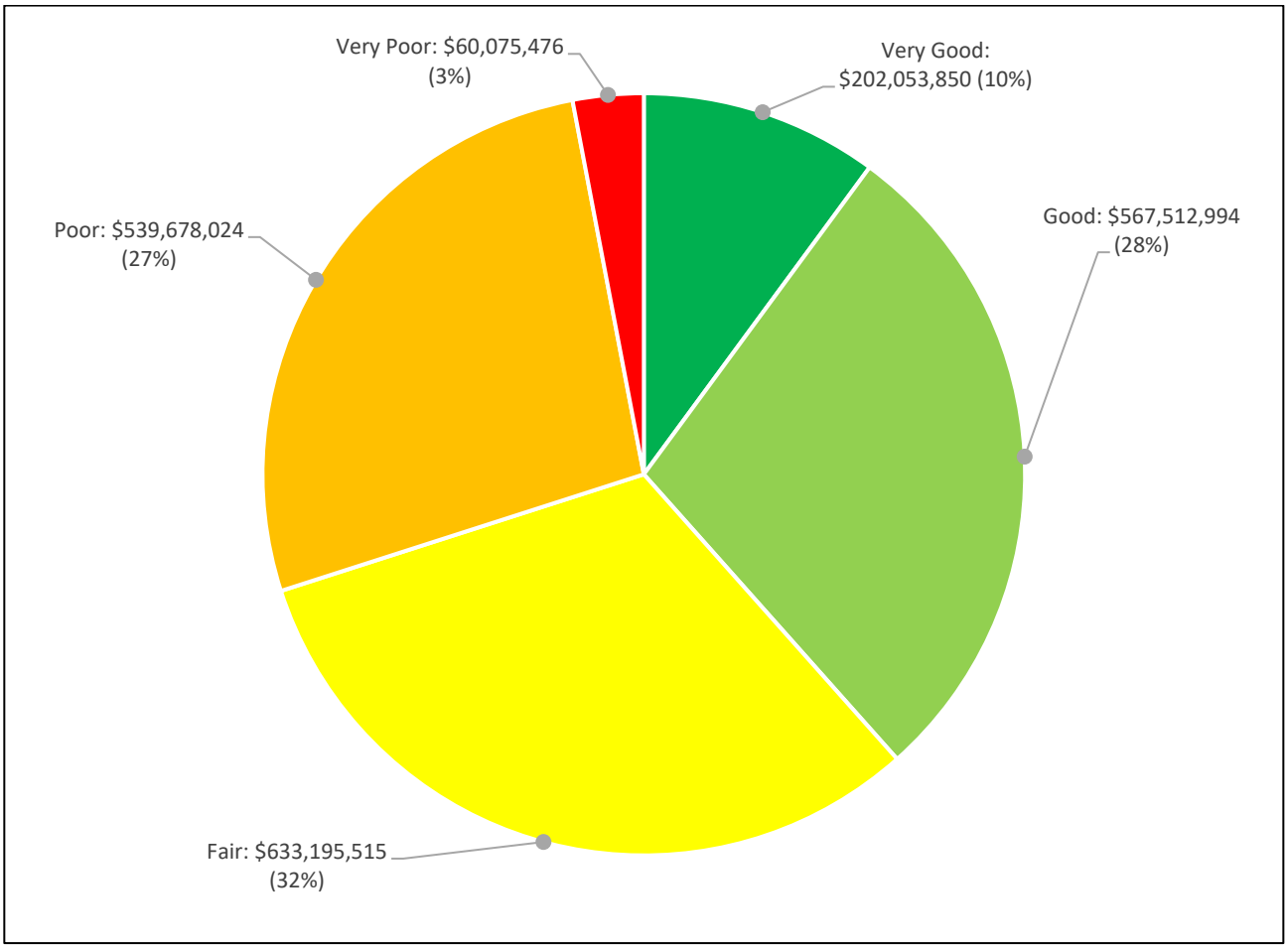


97% of the assets have at least 10 years of useful life remaining while 3%, with a valuation of $50 million, remain in operation beyond their useful life.

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.

Technical Levels of Service

Figure: Five Year Storm Map

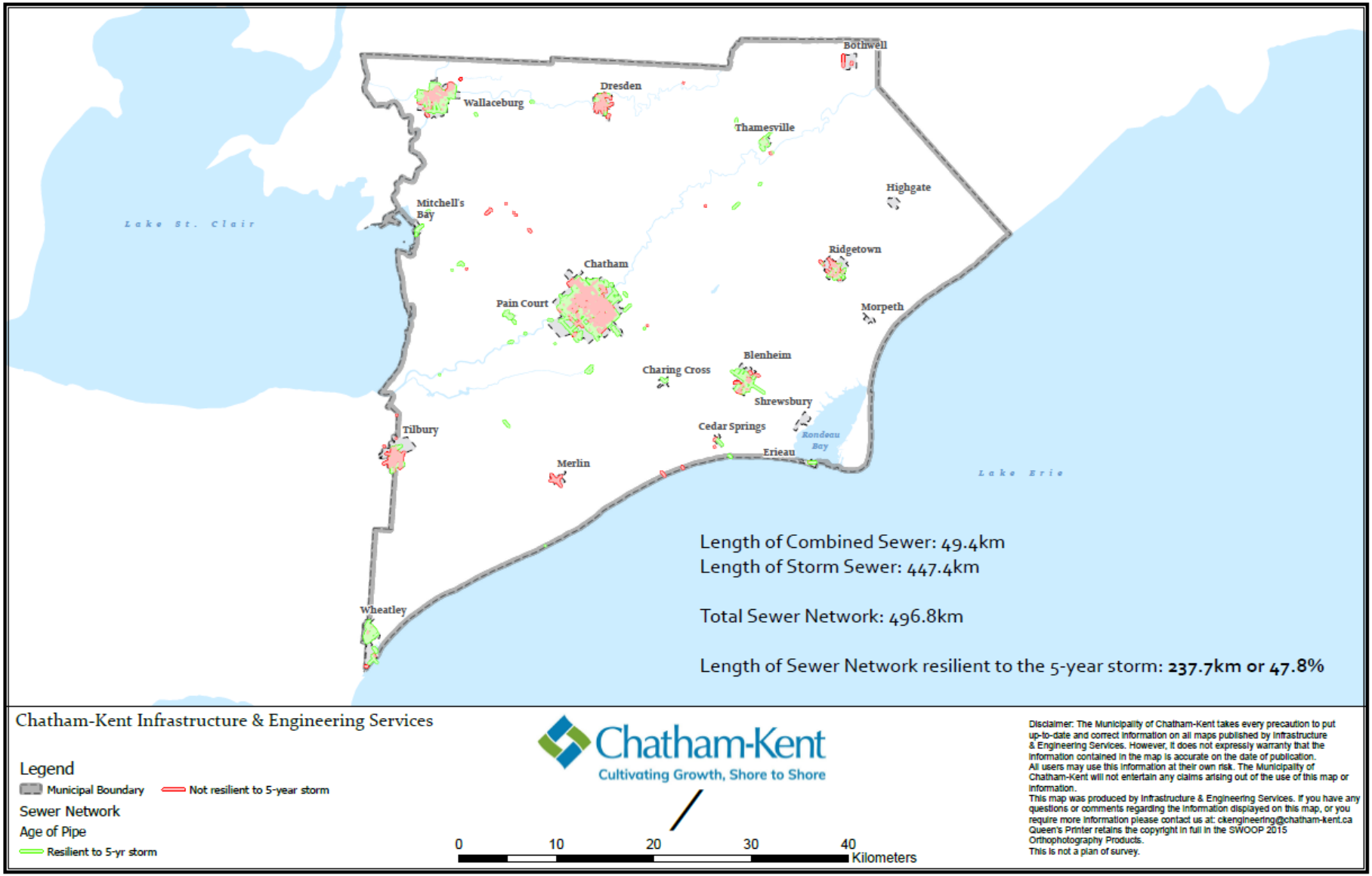
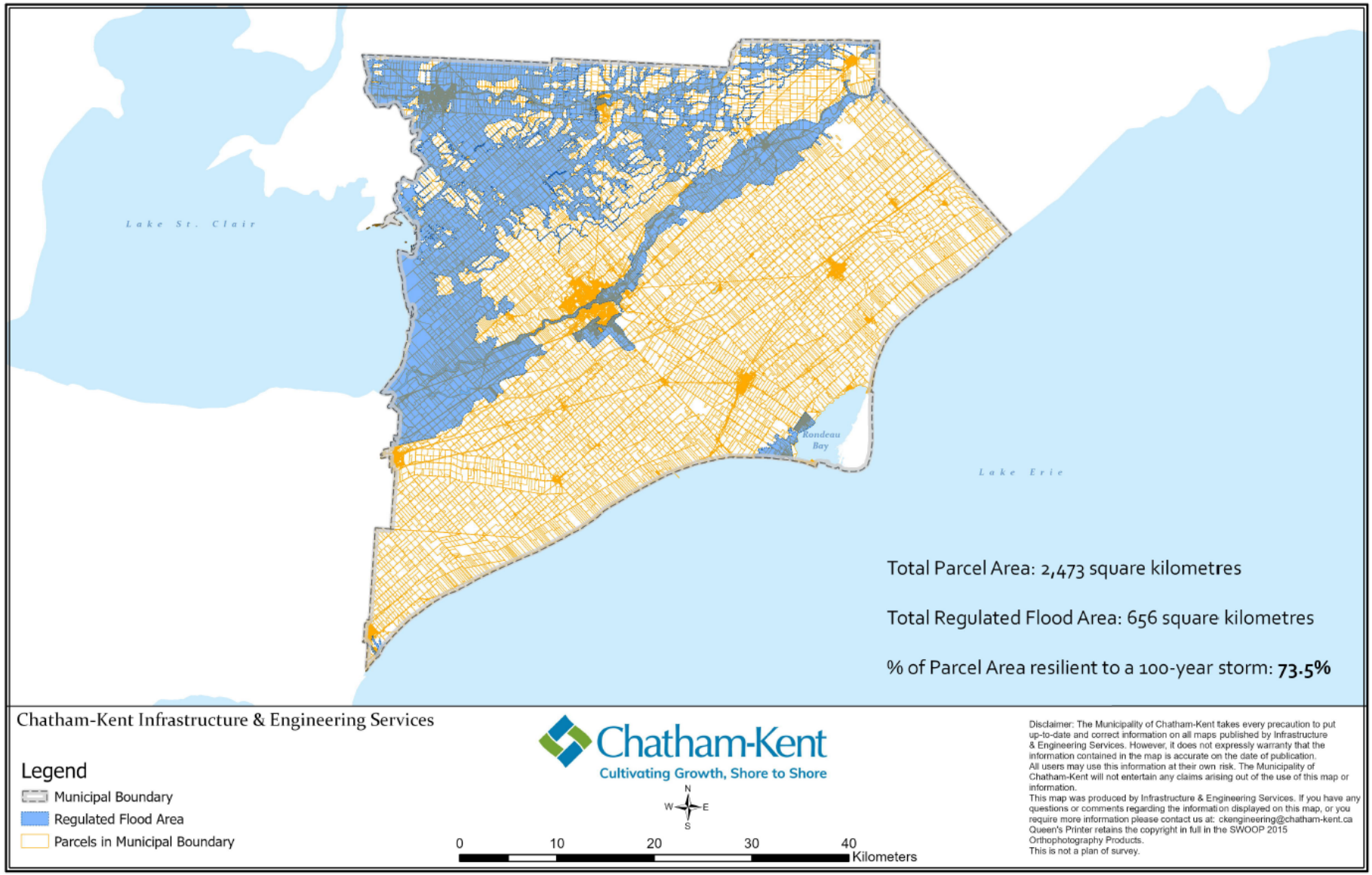


Figure: 100-Year Storm Map



LIFECYCLE ACTIVITIES NEEDED TO MAINTAIN CURRENT LEVELS OF SERVICE

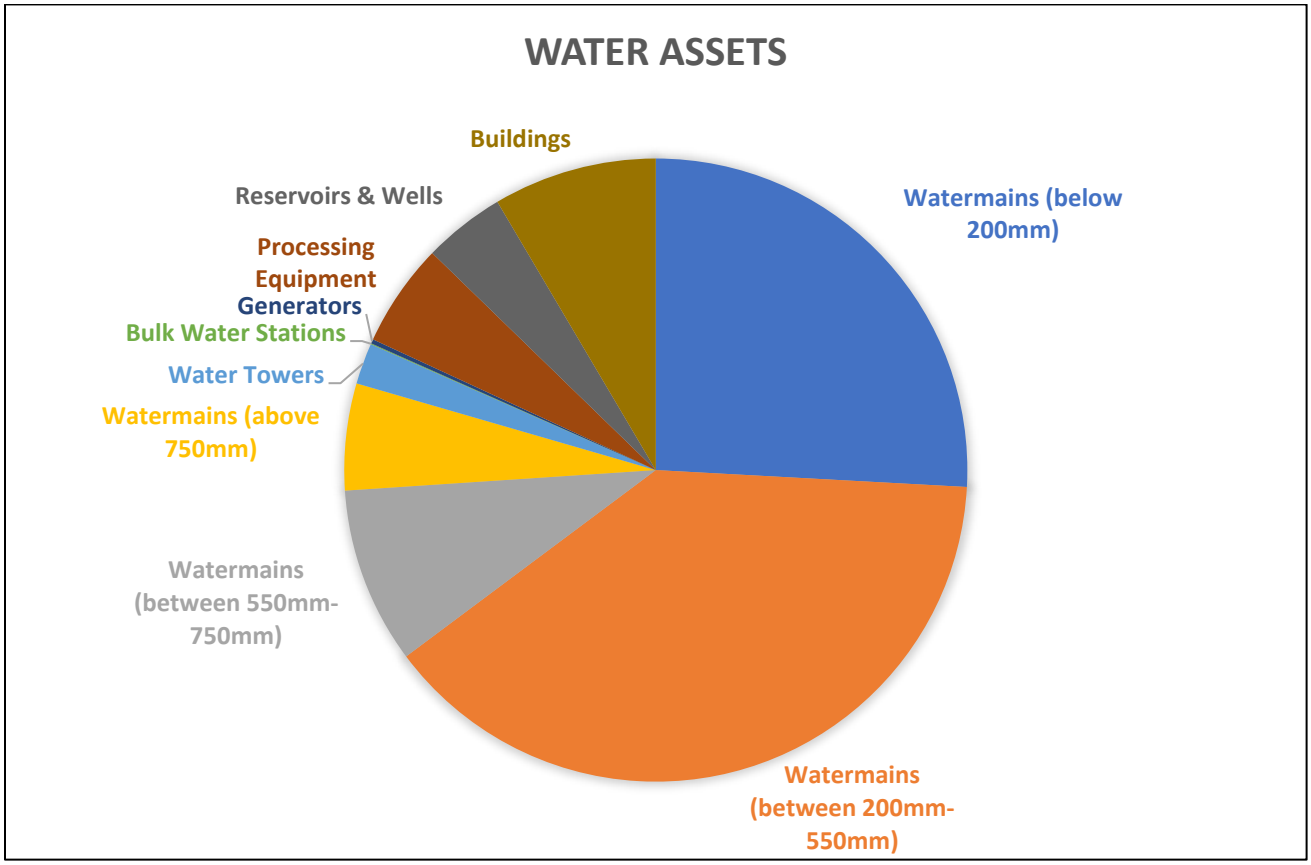
Activity	Planned Action	Specific Risks
Non-Infrastructure Solutions	Improve water quality through by-laws	- Additional street sweeping requires higher staffing levels or reduced LOS in other areas - Master Plan studies are time consuming and result in large projects
	Increase street sweeping activities	
	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

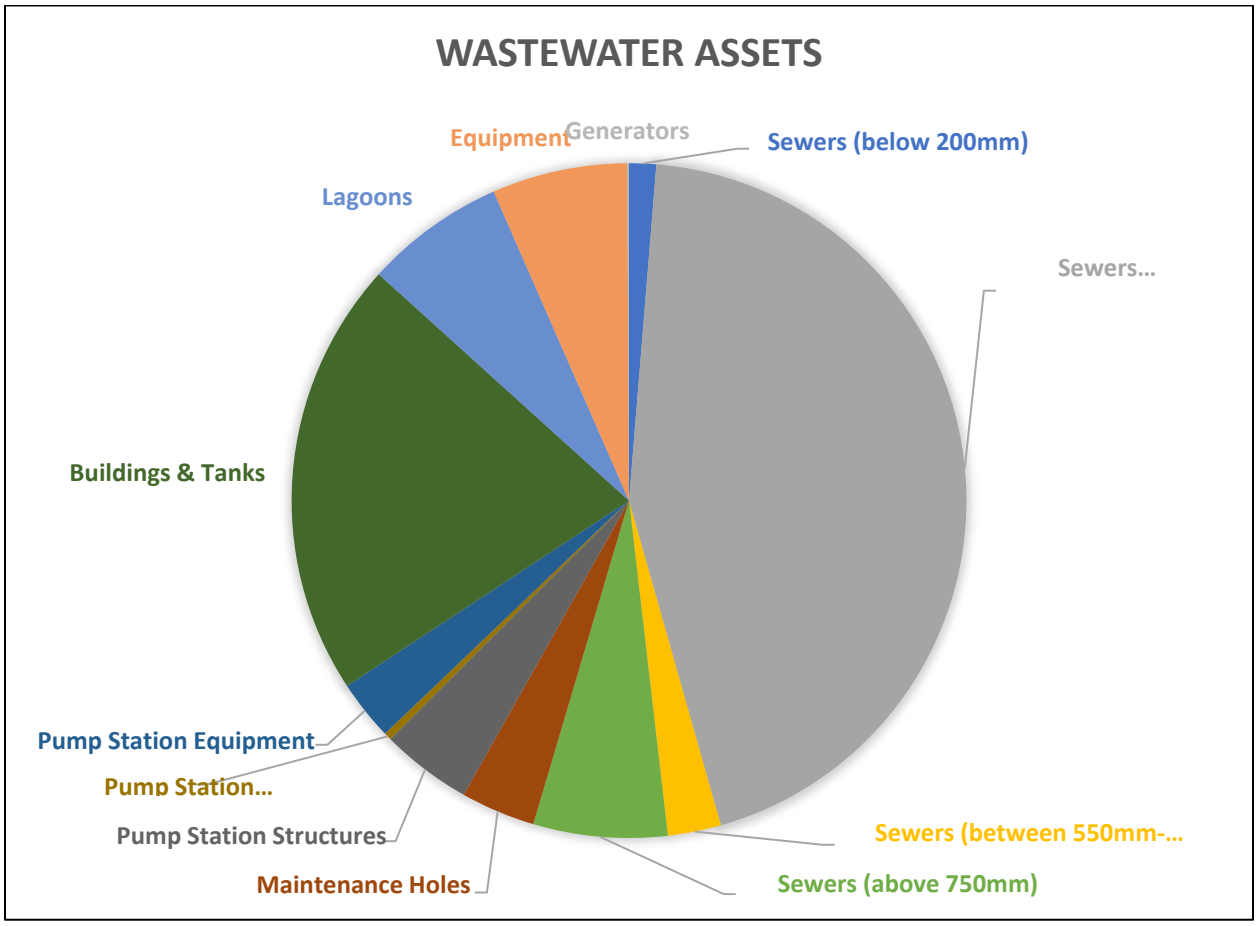
WATER ASSETS

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

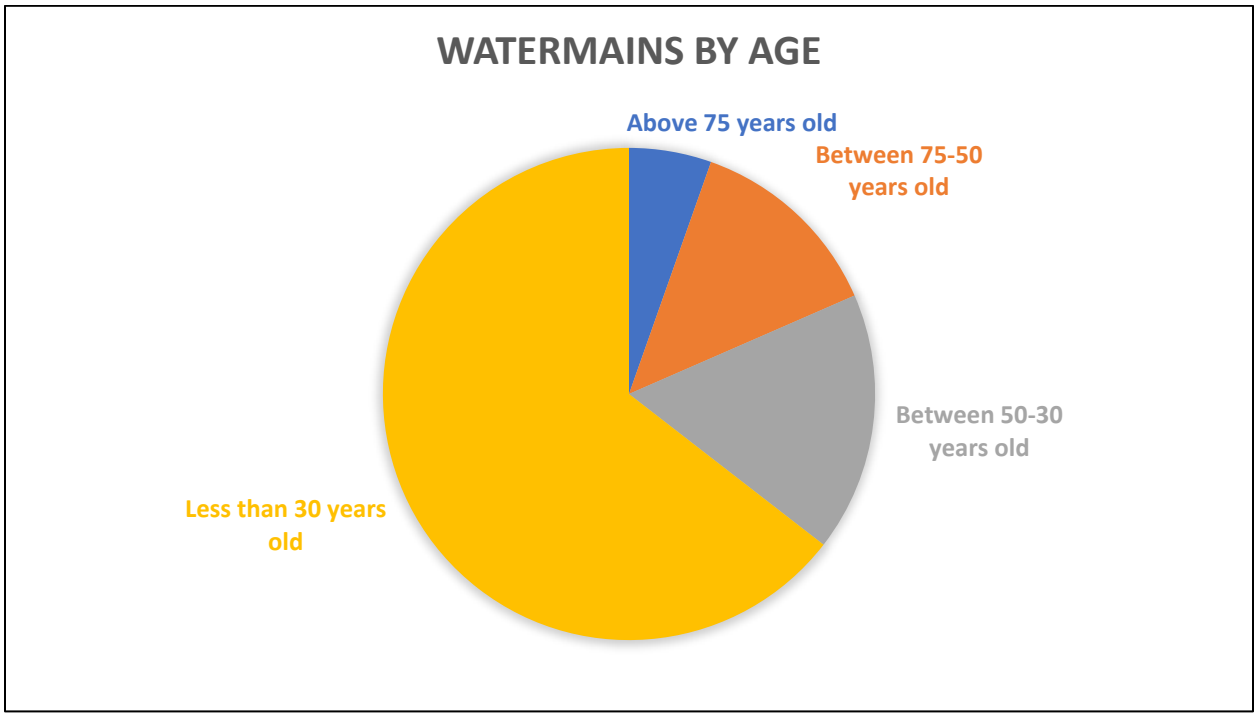
Inspection and Maintenance Program

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.

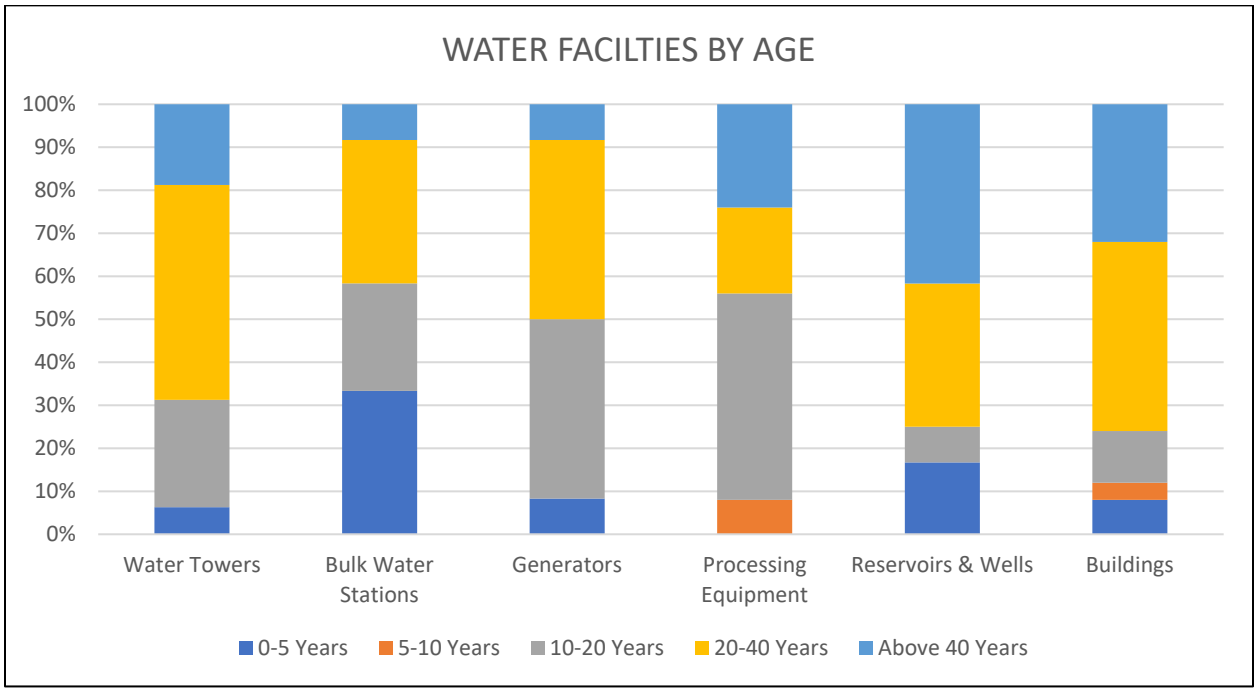
Underground infrastructure rehabilitation and maintenances is based on complaints and failure frequency. Regular prioritization reviews are conducted between the Public Works, Public Utilities Commission and Engineering departments.

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**

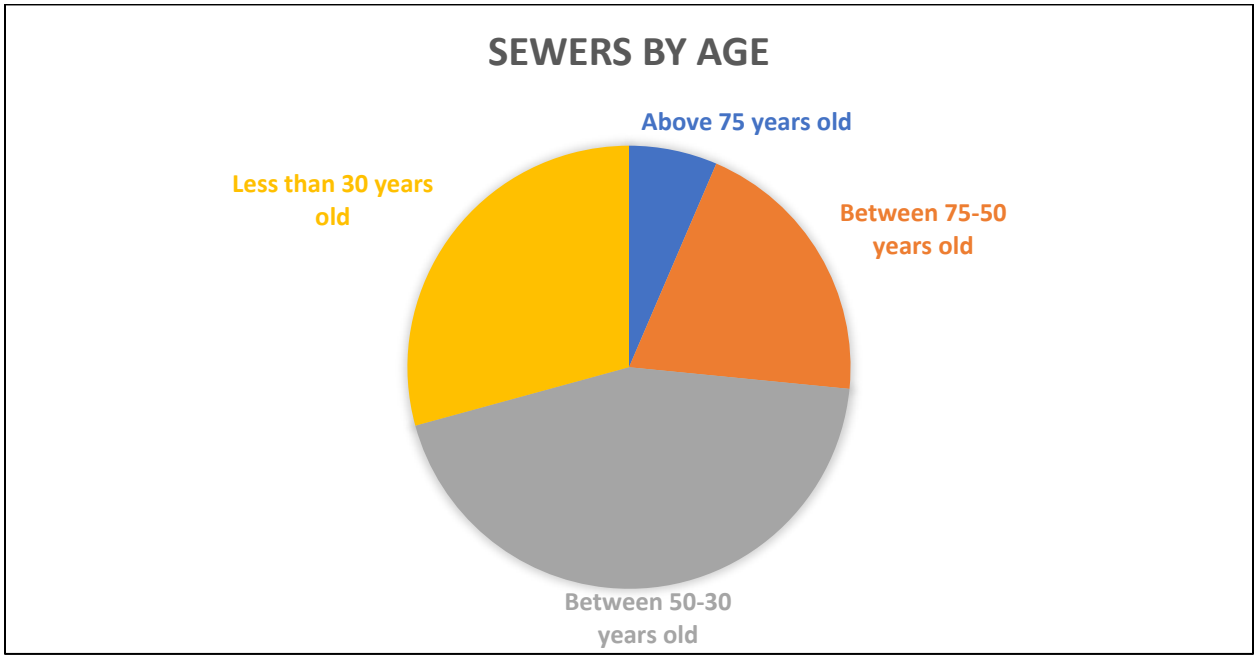


Watermains by Material		
Age	**Length (m)**	**Percentage**
Conc./Asb. Cement	115,572	6.95
Iron/Steel/Copper	325,542	19.58
PVC/HDPE/PE	1,187,191	71.42
Unknown	33,936	2.04
Total	**1,662,241**	**100.00**

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%

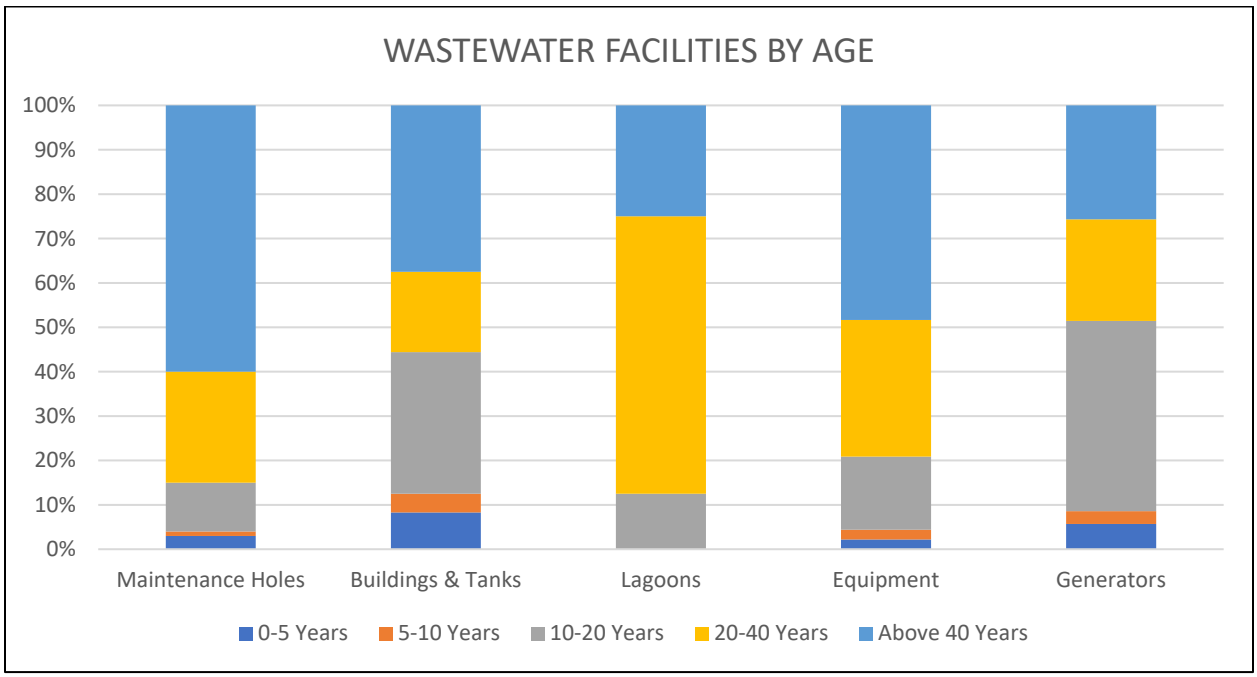


Sewers by Age		
Age	**Length (m)**	**Percentage**
Above 75 years old	35,717	6.45
Between 75-50 years old	111,711	20.11
Between 50-30 years old	244,868	44.19
Less than 30 years old	162,117	29.25
Total	**554,414**	**100.00**



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

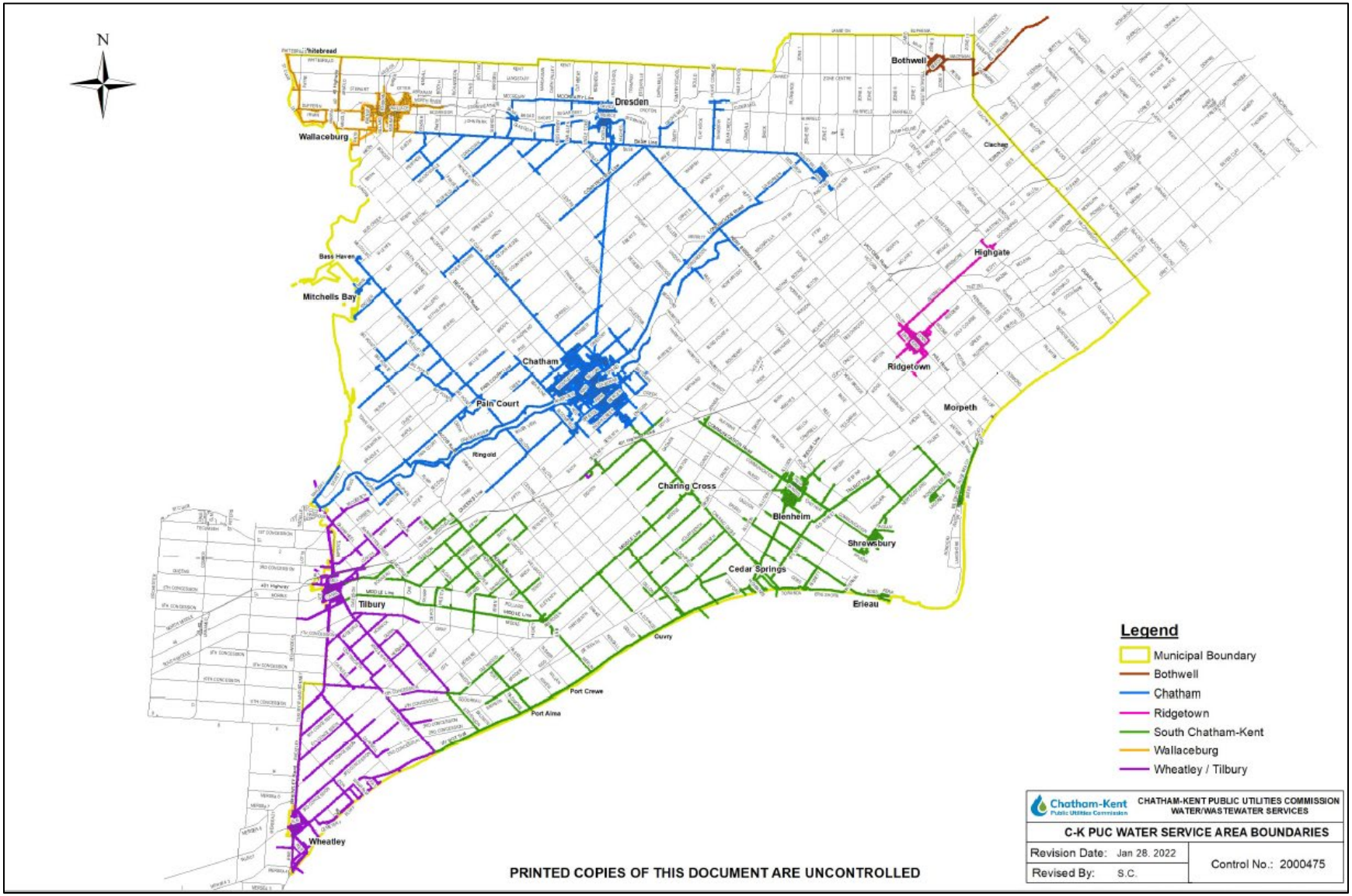


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Blenheim)

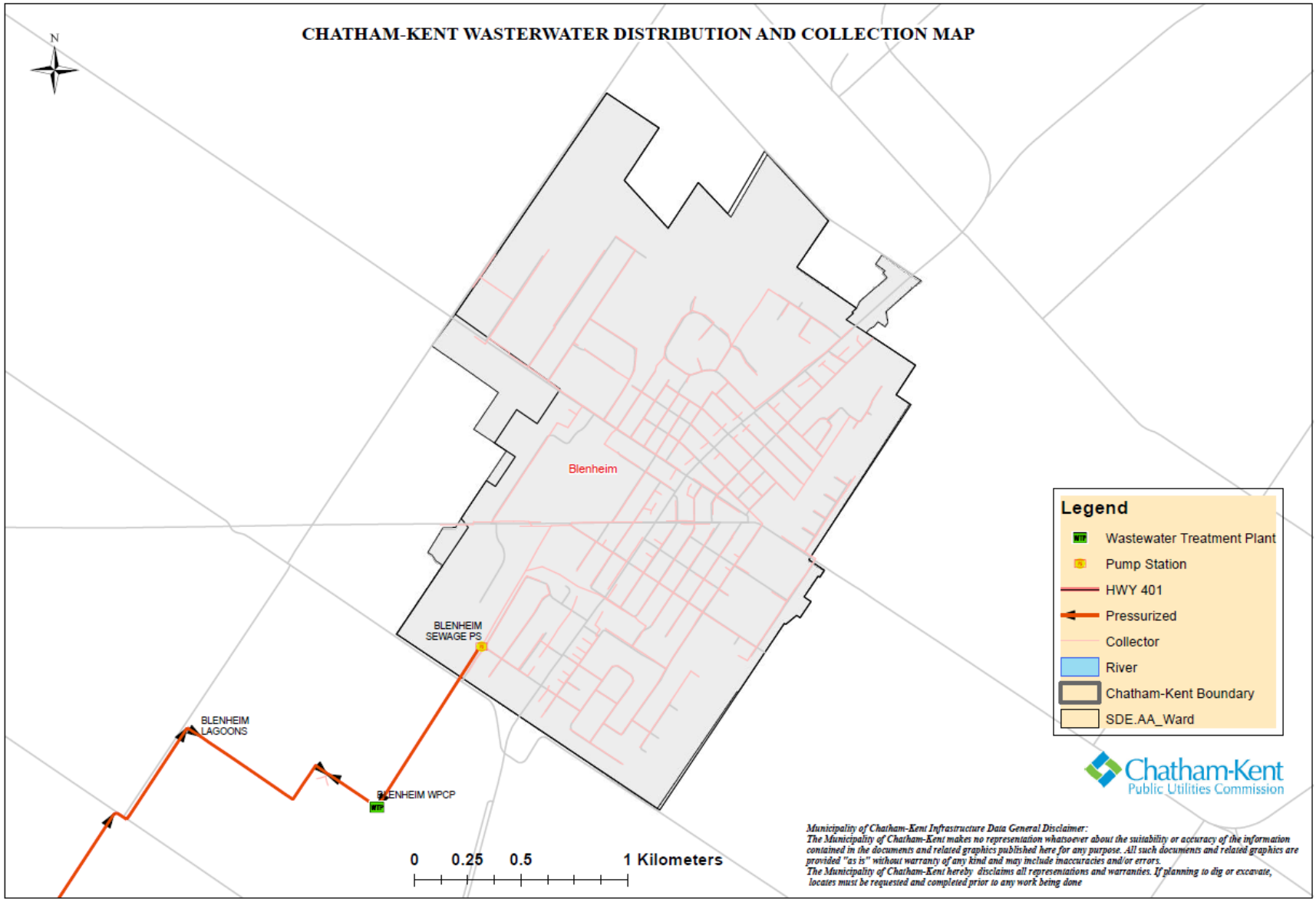


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Chatham)

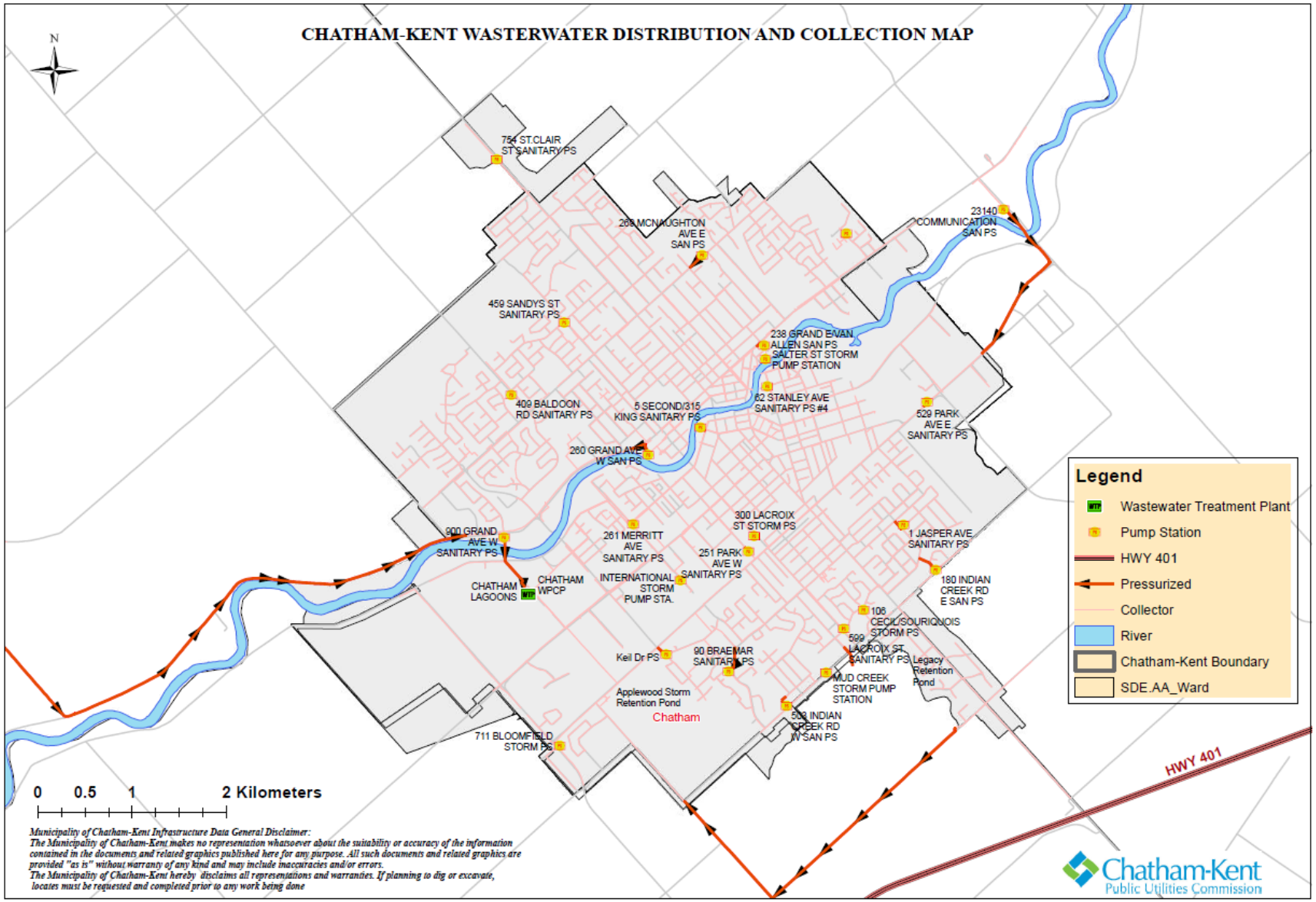


Figure: Chatham-Kent Wastewater Distribution Collection Map (Charing Cross)

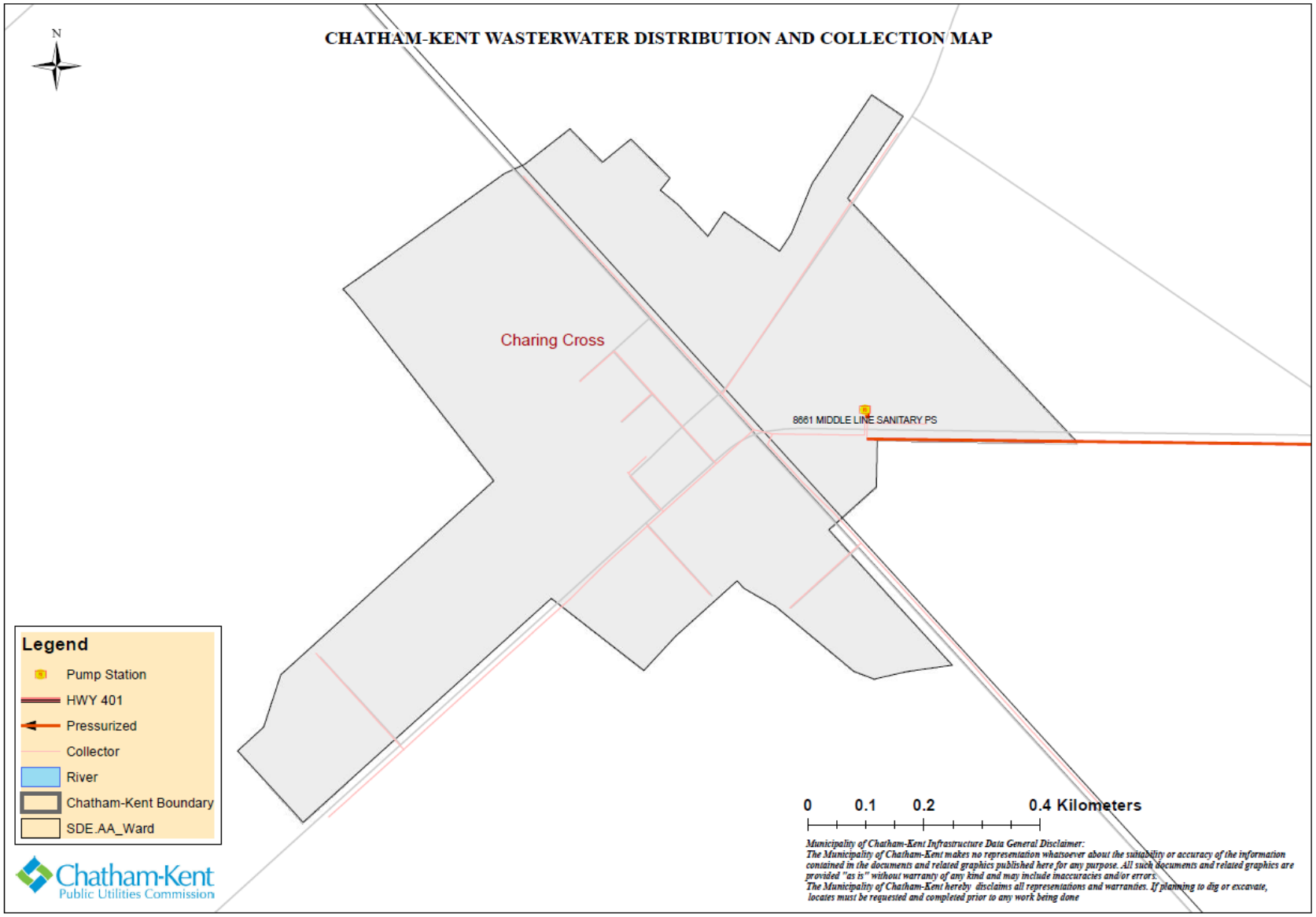


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Dresden)

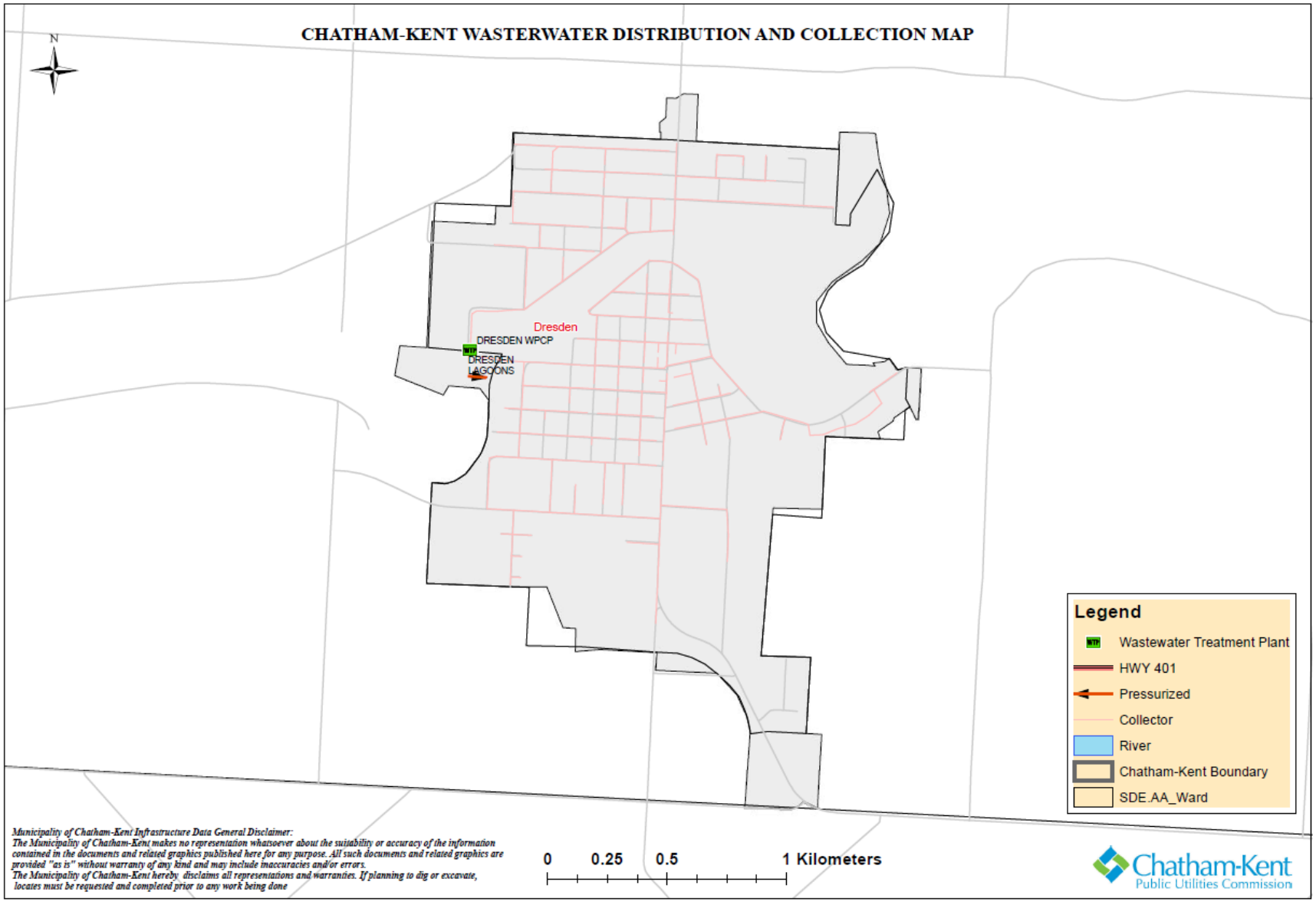


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Merlin)

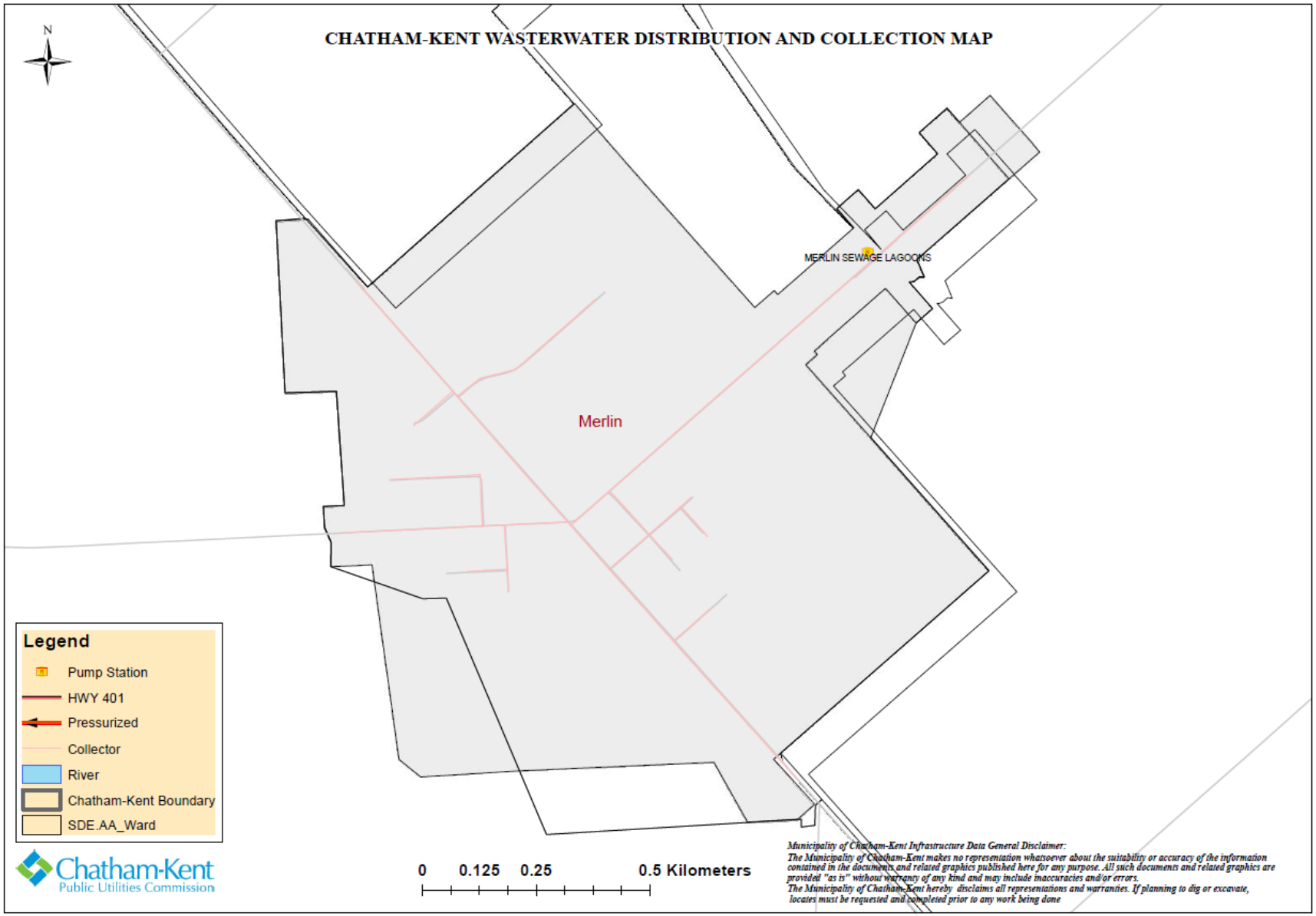


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Mitchell's Bay)

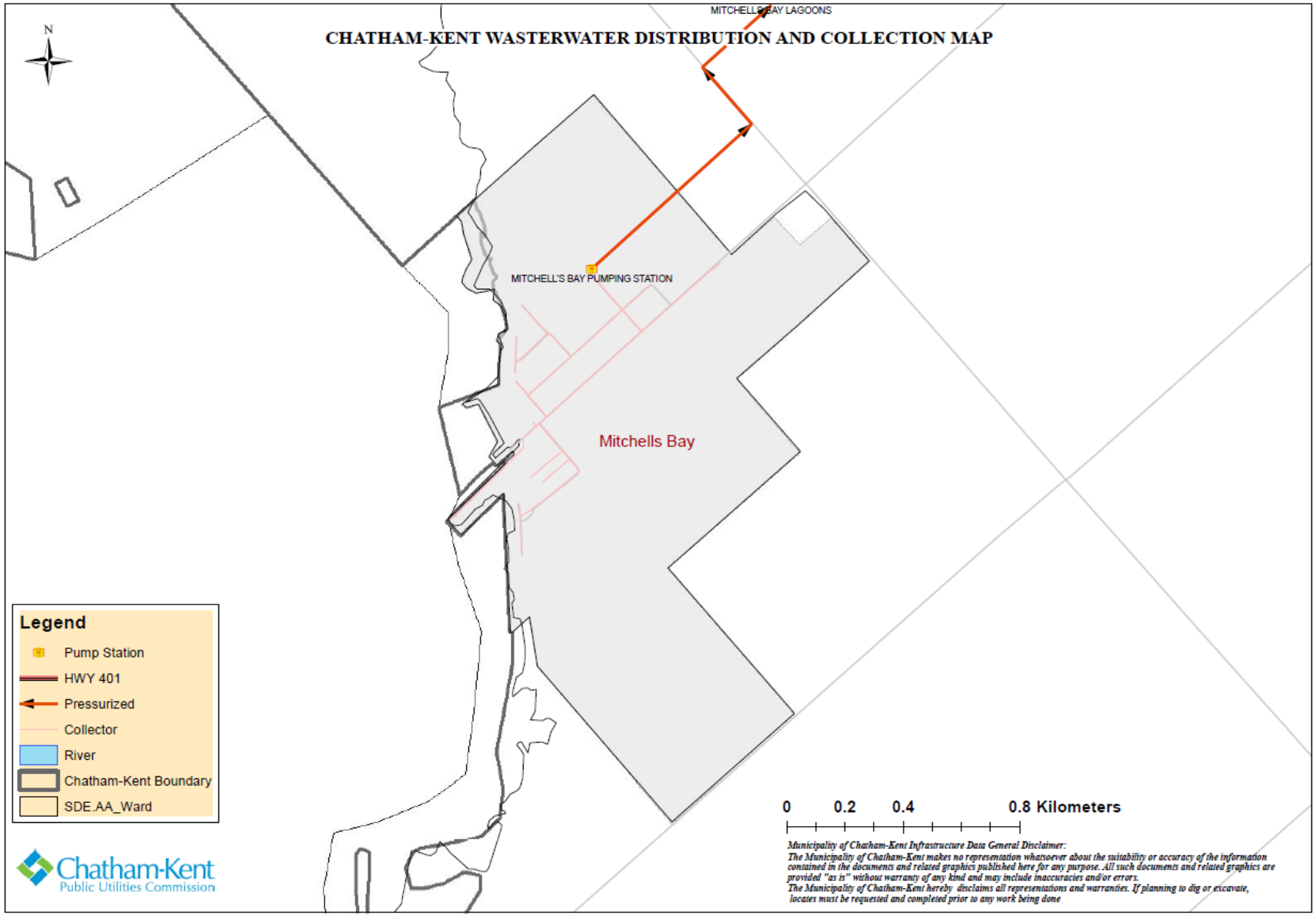


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Pain Court)

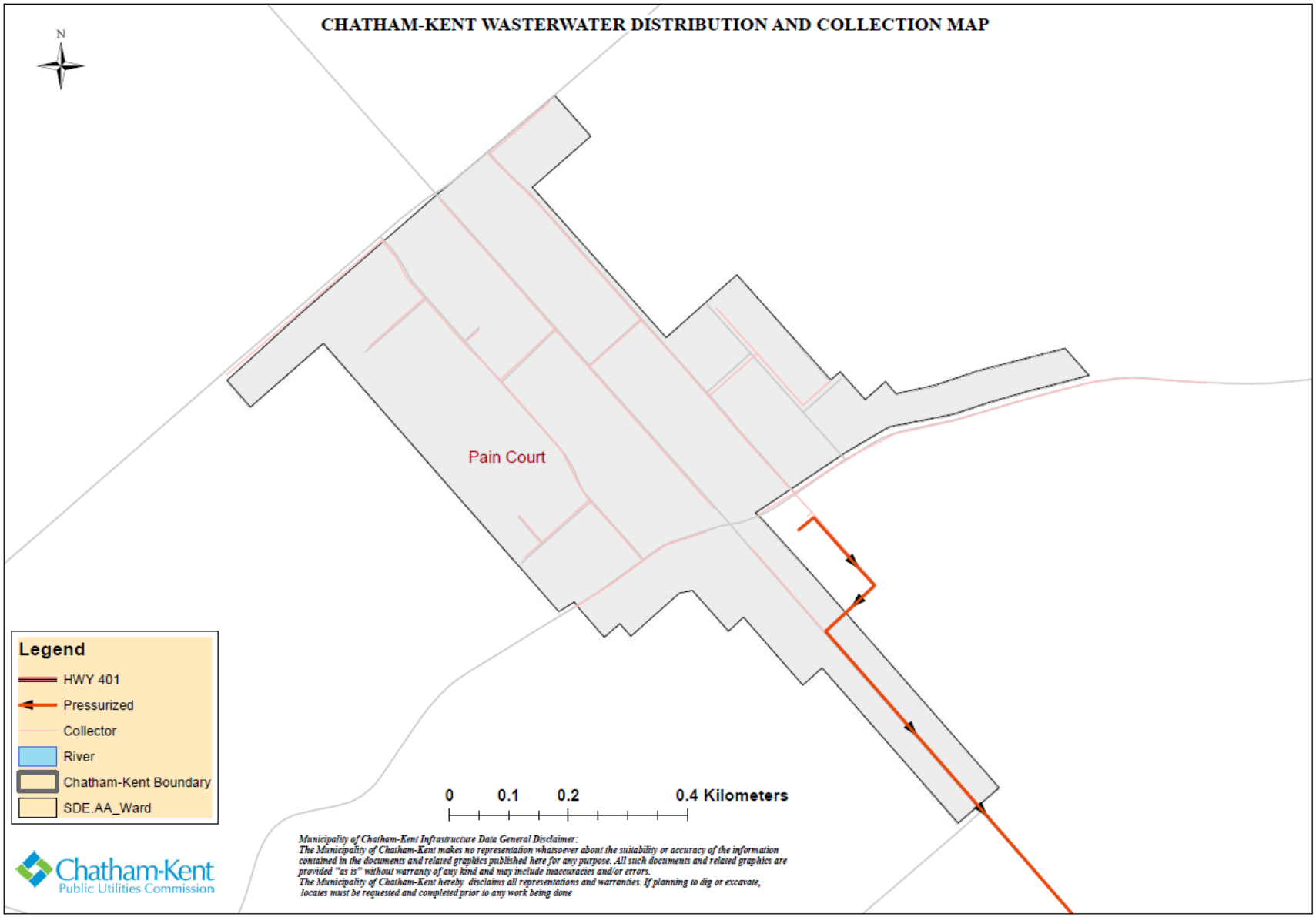


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Ridgetown)

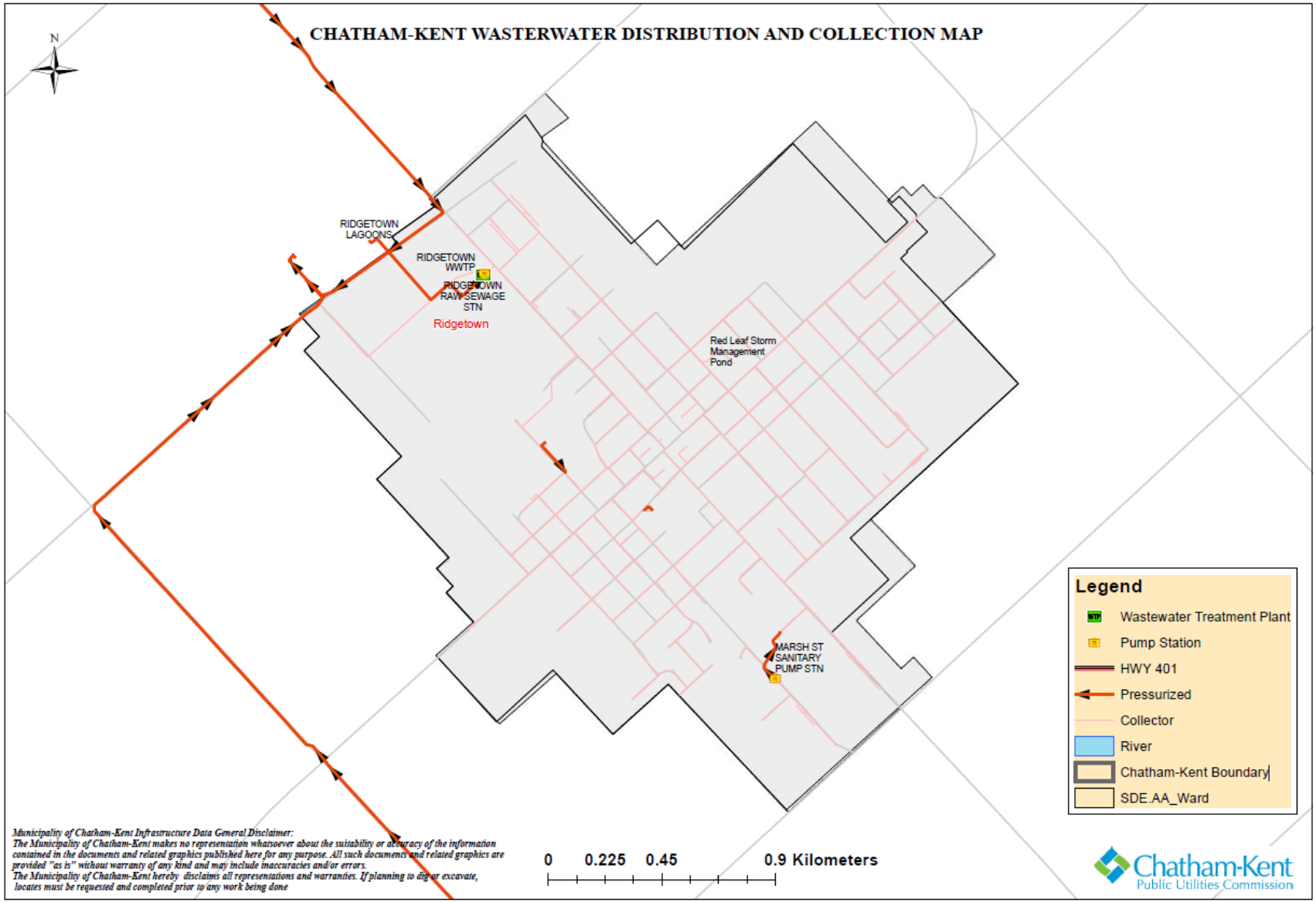


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Thamesville)

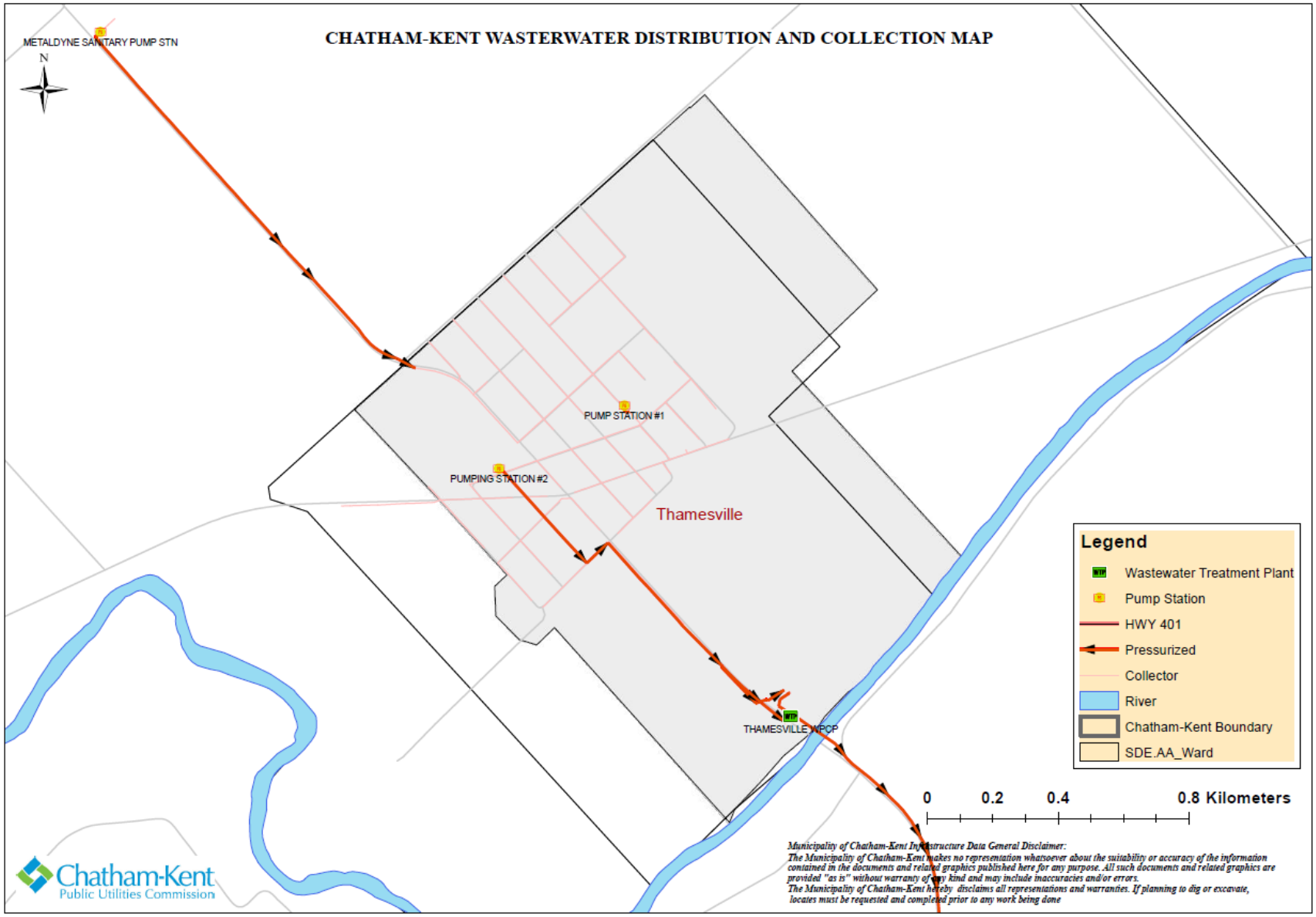


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Tilbury)

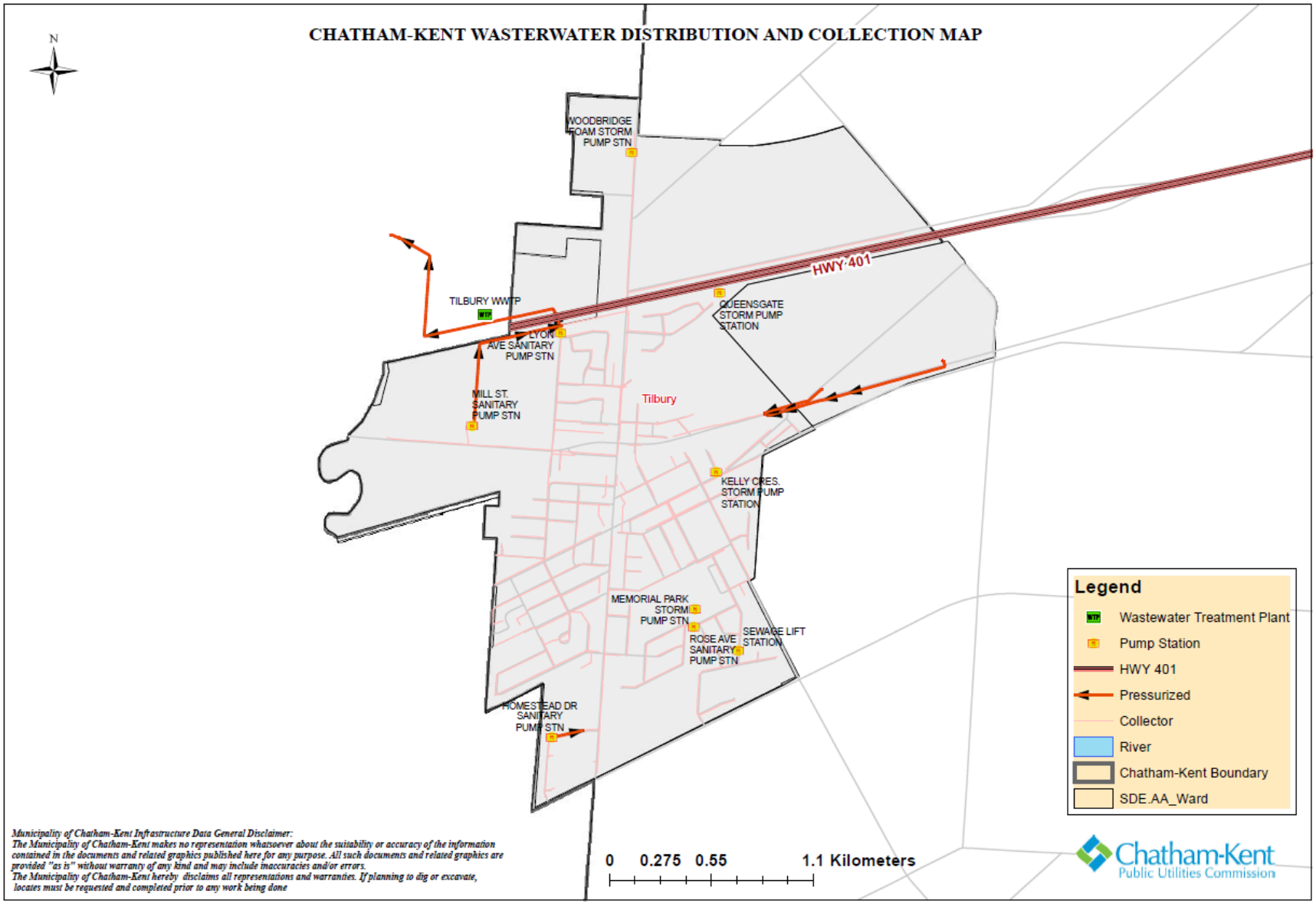


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Wallaceburg)

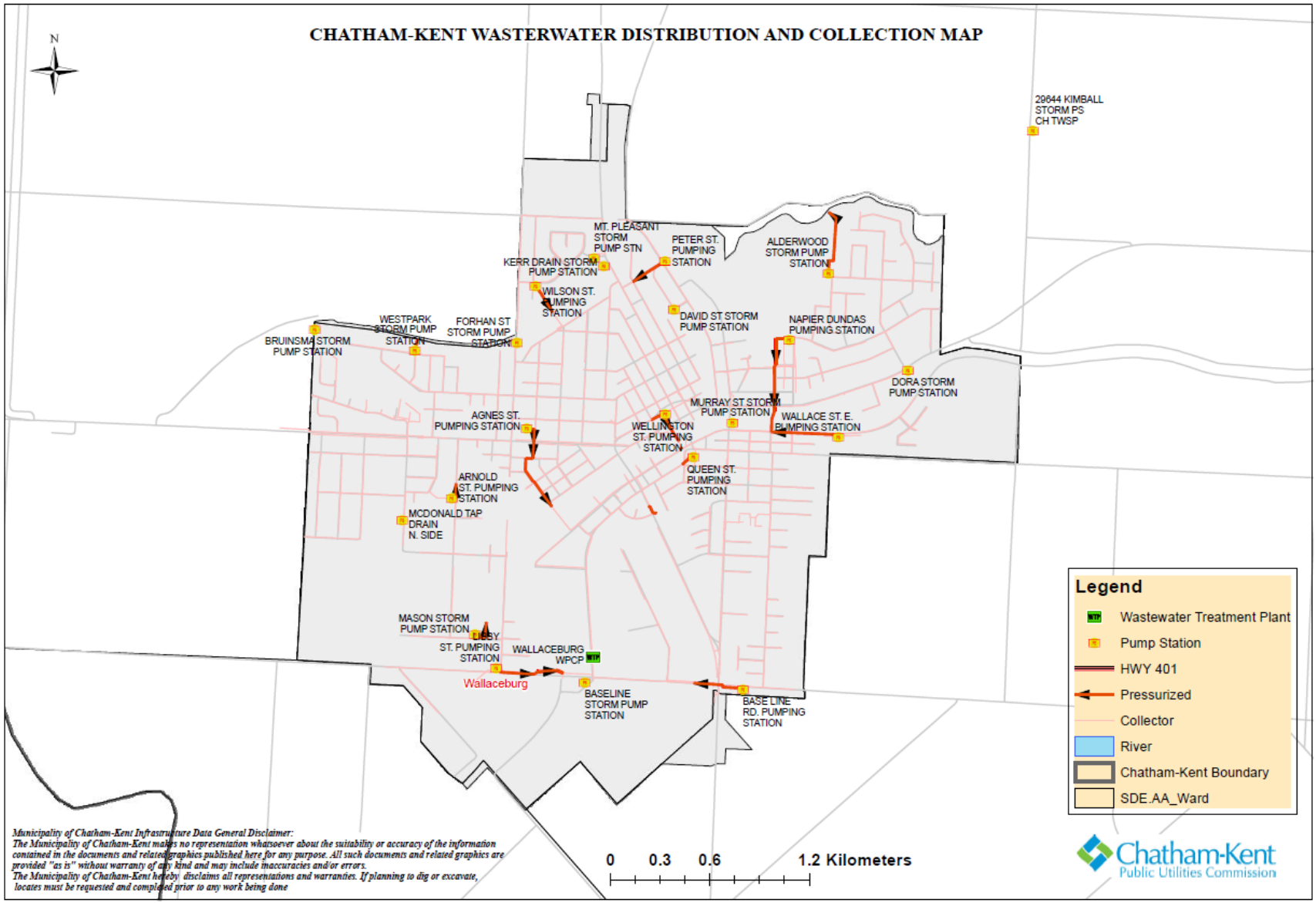
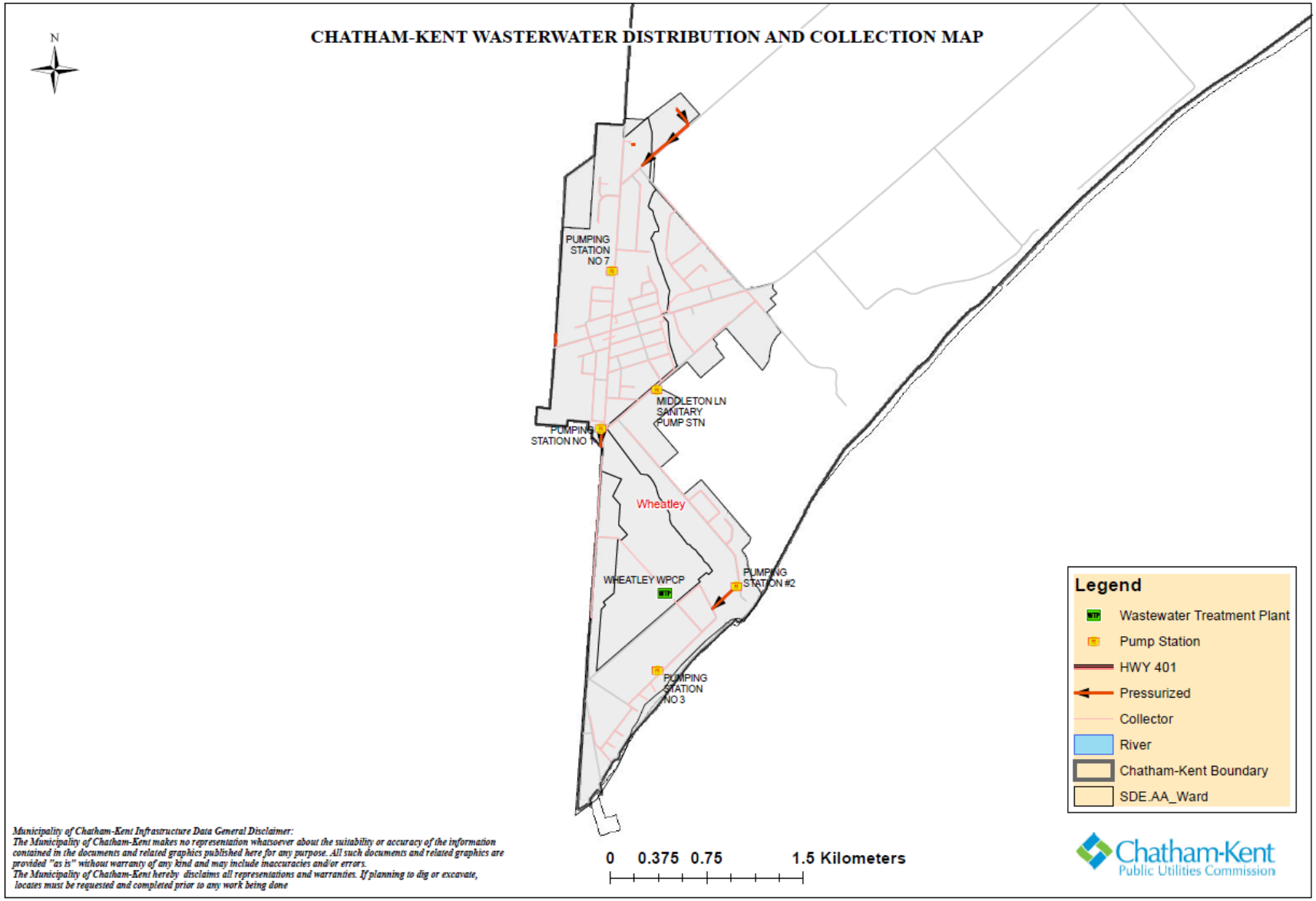


Figure: Chatham-Kent Wastewater Distribution and Collection Map (Wheatley)



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.