

# Asset Management Plan 2025



## Table of Contents

<b>Executive Summary .....</b>	<b>1</b>
<b>Introduction.....</b>	<b>10</b>
<b>Growth, Economic Activity and Implications .....</b>	<b>13</b>
<b>Linear Assets and Catchment Areas.....</b>	<b>15</b>
<b>Streets.....</b>	<b>19</b>
<b>Storm Water .....</b>	<b>27</b>
<b>Water .....</b>	<b>31</b>
<b>Wastewater .....</b>	<b>37</b>
<b>Fleet &amp; Equipment.....</b>	<b>45</b>
<b>Facilities.....</b>	<b>48</b>
<b>Landfill .....</b>	<b>51</b>
<b>Green Assets .....</b>	<b>54</b>
<b>Financial .....</b>	<b>59</b>
<b>Funding Gap Solutions .....</b>	<b>62</b>
<b>Future.....</b>	<b>65</b>
<b>Appendices</b>	
<b>A1 Road Network</b>	
<b>A2 Storm Network</b>	
<b>A3 Sidewalk Network</b>	
<b>A4 Water</b>	
<b>A5 Waste Water</b>	
<b>A6 Facilities</b>	
<b>A7 Linear Capital Increases</b>	
<b>A8 Linear Capital - Backlog</b>	
<b>A9 Front Loaded Capital Increases</b>	

## Executive Summary

### Preface

This Executive Summary outlines the key findings, risks, and recommendations from the 2025 Asset Management Plan (AMP). It summarizes the Town's infrastructure replacement needs, funding gaps, and strategies to ensure sustainable service delivery for current and future residents.

This Asset Management Plan (AMP) is designed to work in conjunction with Renfrew's audited annual Tangible Capital Assets (TCA) data. As such, the AMP can be considered a living document updated yearly or periodically as required. It is to be coordinated with other Town of Renfrew (Town) activities, including, but not limited to the development of annual service plans for infrastructure, conditions assessments and, most significant, the Town's operating and capital budget.

Note: the **2023 Tangible Capital Asset List** and the **2024 Budget** were used for this Asset Management Plan. With the exception that the \$32 million for the myFM centre was added to the TCA list for completeness.

### Legislation

This AMP aligns with Ontario Regulation 588/17, which requires municipalities to establish a 10-year lifecycle and financial strategy by July 2025. A 10-year planning horizon must be incorporated in the Asset Management Plan for each asset category, all levels of service, performance, and lifecycle activities with costs. A financial plan is required to determine if Levels of Service are achievable and affordable while considering future growth and economic development.



*Figure 1: Town of Renfrew Council (2022-2026)*

The plan must be reviewed by the CAO and passed by a Resolution of Council.

### Approach

The main purpose of an Asset Management Plan (AMP) is to determine the expected replacement cost of the Town of Renfrew assets. Once replacement cost is determined, the annual budget contribution to capital to maintain those assets can be established. Plans can then be formulated to target a level of service and budget accordingly.

Whenever possible, replacement cost will be based upon recent quotations, contracts or unit cost data. In the absence of recent replacement data, the Sinking Fund Method is utilized.<sup>1</sup>

### Findings and Recommendations

The Town of Renfrew has many advantages:

- Capacities in water and waste water that are more than double the present requirements of the Town
- A population growth of an expected 1,000 persons over the next 10 years will easily be accommodated in the already planned subdivisions in the Town and accommodated by water and wastewater treatment plants
- A street network where all arterial streets are in good to excellent condition providing a construction strategy over the next 10 years
- Facilities that are in acceptable condition to weather the next 10 years while a new addition, the myFM Centre, will improve citizen well-being and potentially attract growth
- An integrated hydro generation facility ensures reliable power to the Town
- 20 km of trails and numerous parks
- Last, but certainly not least, a landfill that could potentially last another 50+ years.
- There is, however, a capital funding gap that, if left unattended, could threaten the future of the Town, but nevertheless, a threat that can be managed.

The table below includes summary excerpts from each section are provided starting with a synopsis of the overall replacement costs and yearly budgetary requirements for the sustainability of the Town. The funding gap will be dealt with in some detail.

*Table 1: Asset Replacement Costs*

<b>Asset Category</b>	<b>Replacement Cost</b>	<b>% of Total</b>	<b>Annual Funding Required</b>
Streets	\$197,392,493	40.3%	\$5,407,695
Facilities	\$86,550,274	17.7%	\$3,650,106
Other	\$46,038,128	9.4%	\$1,170,465
<b>Tax Supported</b>	<b>\$329,980,894</b>	<b>67.3%</b>	<b>\$10,228,266</b>
Water Linear	\$49,585,600	10.1%	\$907,064
Water Point	\$20,485,922	4.2%	\$433,052
<b>Total Water</b>	<b>\$70,071,522</b>	<b>14.3%</b>	<b>\$1,340,115</b>
Sanitary Linear	\$50,932,322	10.4%	\$378,669

<sup>1</sup> The sinking fund approach first calculates the future replacement value based on inflation and then determines a yearly savings (funding) required based upon interest to reach that replacement value. Watson and Associates Economists use the same technique for Renfrew's Rate Study.

Sanitary Facilities	\$39,120,912	8.0%	\$1,056,031
<b>Total Sewer</b>	<b>\$90,053,234</b>	<b>18.4%</b>	<b>\$1,434,700</b>
<b>Grand Total</b>	<b>\$490,105,651</b>	<b>100.0%</b>	<b>\$13,003,082</b>

### **Growth**

The expected growth of approximately 9,300 people by 2034, can be more than accommodated by four well-planned subdivisions and a commercial/industrial complex. Growth of about 1% or more is certainly welcome to offset the required funding gap tax increases. Water and wastewater capacities are more than double the present requirements. Integrated hydroelectric capabilities and enviable landfill capacities provide not boundaries, but incentives for growth in the Town.

### **Linear Assets**

Streets along with storm, water and wastewater mains must all be considered as a unit for that section and catchment area to make each reconstruction non-typical and thus cost-effective. The present effective linear asset approach is to capture Pavement Condition Indexes (PCI) and problem areas visually. The best future management of linear assets is to utilize technologies like Street Scan and professional CCTV assessment of underground system to ultimately digitize the entire network!

### **Streets and Linear Network**

Condition assessment of the 68 km network is fair to good at a Pavement Condition Index (PCI) of 59 or 60, a replacement cost of \$197 million, and yearly requirements of \$5.4 million. Considering the larger arterial streets are in good to excellent condition with an expected remaining life of over 20 years, provides a strategy for the next 10 years. The strategy will be to continue with collector streets, for example, Munroe and Harry, and connecting Local streets. Over the course of the next ten-years, the PCI for streets will fall at least 10 points to less than 50 and continue to fall. If the funding gap is extinguished, the streets will return to a PCI of 60 and continue to improve for the following 10 years.

### **Storm**

The storm drain network is 19.5 km long with 432 catch basins, at a replacement cost of \$8.7 million and \$2.89 million, respectively. Concrete accounts for 70%, PVC 20% and vitrified clay about 10% of the network length. Annual funding should be in the area of \$58 thousand for storm mains, and \$23.7 thousand for catch-basins.

Life cycle activities should focus on:

1. Areas with known problems,
2. Sections containing old, vitrified clay pipes, and
3. Replacing pipes with PVC, except where large diameters warrant a different material.

The Town should pursue climate change funding to compensate for already installed storm conveyances to bring them up to present day requirements.

## **Water & Waste Water**

Renfrew's Water Treatment Plant (WTP) is capable of supplying more than 18,000 cubic meters per day, while during 2024, the average usage was less than 4,000 cubic meters per day. Of the 69.3 km of water linear assets (pipe), approximately 16% of the system is considered to be aged out, and in 10 years, without construction, 30% would be aged out (i.e. 20.8 km of the 69.3 km total length of the system). However, the performance of the plant is good - no boil water advisories, and the pipes' performance is beyond their years with 5 to 7 breaks per year and zero connection days.

On the return side, for wastewater, the average daily rate is 4,950 cubic meters or 52% of the current rated capacity of the wastewater treatment plant. Wastewater linear assets includes 52 km pipe, of which 23% will be aged out or will be by 2025. There were fewer than 10 experienced blockages by homes last year, and from 2023 to 2024, there were no effluent violations, with limits at a tenth to a third of the ECA limits.

## **Equipment and Rolling Stock**

The replacement cost for rolling stock and equipment is \$9.7 million and \$2.3 million, respectively, with total annual funding requirement for both of them at \$712,000. At present, less than \$290,000 is directed towards them. Over the next ten years a "maintain and make do" strategy is mandated to push out the purchase year. Useful Performance Indicators may be developed by the Town, potentially \$/km or \$/hr of operation.

## **Facilities**

In general, the building assets are in fair to good condition and performing adequately to provide the intended services. The replacement costs are \$86.5 million with a funding requirement of \$3.65 million. However, there is a massive backlog of \$31 million, far beyond the Town's financial capability. That backlog is made up primarily of \$4.5 million in recreation & culture, \$3.2 in Town Hall, \$2.6 at 550 Hall, \$1.6 at the Public Works Garage and Salt Shed, and the largest backlog of 40% being at 1 Innovation Drive at \$13.3 million.

The Town's strategy should focus on maintaining – or improving when necessary – the condition and performance of existing infrastructure to ensure the delivery of intended services. Major replacement or new construction projects are not feasible at this time. Like the Fleet, a "maintain and make do" approach is required.

## **Landfill**

The site is in compliance and not adversely impacting the water quality of the Bonnechere River. An overall performance indicator is the remaining life of the site. Good site management has extended the life of Stage 4 from an expected 16 in 2024 to 20 years. Total site life, with the remainder of Stage 4 and the move to Stage 5, is 50+ years, while more than adequately servicing the Town. Pack density of over 0.5 tonnes/m<sup>3</sup> for both 2023 and 2024 is commendable. Additionally, the site provides in-kind services to the Town in the order of \$1 to \$2 million per year accepting road construction and bio cakes without tipping fees.

### Green Assets

Renfrew has a spectrum of green assets, from the Bonnechere River’s natural beauty and Smith’s Creek provision of wildlife habitat and flood mitigation. The Bonnechere has a past history as Chute 2, conveying pine logs to market; at present, it is the source of the Town’s drinking water and hydro-electric power. Enhanced green assets in Renfrew are numerous with 20 km of trails, 16 parks, five tennis courts, three pickleball courts, and a splash pad at Ma-te-Way.

The values of the Bonnechere River, Smith’s Creek, the ravines, urban canopy, trails and grassy parks are undeniably high but nearly unassignable. Enhanced and engineered green assets have an assignable replacement value of \$8 million, with a \$350k annual funding requirement, while the Town-owned land has a 2008 assessment of \$14 million.

### Financial

The Town operates and maintains tax-supported infrastructure and rate-supported infrastructure. Tax-supported assets include streets, storm pipes, equipment, land, and facilities, while rate-supported infrastructure includes water mains and meters, the water treatment plant and standpipe, and, on the return-side are wastewater mains, six pumping stations, and the waste water treatment plant. Table 2 below shows the tax-supported infrastructure example of streets.

*Table 2: Replacement & Funding Costs - Streets*

Life (y)	Streets	Replacement (\$)	Funding (\$/yr)
30	<b>Roads</b>	\$173,364,631	\$4,983,222
50	<b>Sidewalks</b>	\$10,349,261	\$188,472
25	<b>Traffic Signals</b>	\$954,461	\$33,794
30	<b>Street Lights</b>	\$2,002,117	\$20,707
10	<b>Signs</b>	\$47,043	\$4,497
50	<b>Bridges</b>	\$10,674,979	\$177,003
	<b>Streets Total</b>	<b>\$197,392,493</b>	<b>\$5,407,695</b>

To investigate these numbers, take roads as an example. The original cost for roads was in the area of \$96 million, and with a life of 30 years, with average inflation of 2.0%, the calculated replacement cost is \$173 million, with the annual funding at ~\$5 million per year. That is, to maintain the entire streets network, including the bridge(s), \$5.4 million should be budgeted each year. Table 3 below shows the remainder of the tax-supported infrastructure.

*Table 3: Replacement & Funding Costs - Tax-Supported Assets*

	Replacement (\$)	Funding (\$/yr)
<b>Streets Total</b>	\$197,392,493	\$5,407,695
<b>Storm Total</b>	\$11,569,651	\$81,770

<b>Equipment Total</b>	\$11,997,824	\$737,759
<b>Land (Parks) Total</b>	\$22,470,653	\$350,937
<b>Facilities Total</b>	\$86,550,274	\$3,650,106
<b>Total Tax-Supported</b>	<b>\$329,980,894</b>	<b>\$10,228,266</b>

Therefore, total tax-supported infrastructure replacement cost for the Town is \$330 million. The annual budgeted amount to support that infrastructure should be \$10.2 million per year. From the 2024 Budget, the capital support is only \$1,687,700 from the Town, \$1,489,193 from the province, and \$257,495 was Federally funded, totalling \$3.434 million in 2024. In round terms, the Town of Renfrew has a \$6.8million-dollar annual funding gap for tax supported assets!

This of course is not at all trivial considering the 2024 tax levy was \$11.32 million, the life cycle funding gap at \$6.8 million is 60% of the 2024 levies. Clearly taxes would need increase by 60% to extinguish the capital funding gap. **This is not unexpected** as Renfrew’s 2022 Asset Management Plan cited a similar life cycle funding gap and projected increases in the levy at 8.4 to 9.4%<sup>2</sup> until 2034 where the levy would be \$25.5 million<sup>3</sup>. This plan cites \$21.0 million to close the gap, see table below with an average levy increase of 7.1%, as shown below in Table 4.

Table 4: Impact to Levy

<b>Zero Gap</b>	<b>Years</b>	<b>Levy Average</b>	<b>Levy (\$M)</b>
Gap	9	7.1%	\$21.0
Gap plus Accumulated	15	8.9%	\$40.7
<b>With Backlog</b>			
Gap	9	7.1%	\$23.1
Gap plus Accumulated	17	9.0%	\$49.6

It is important to realize that the Town amount allocated to capital is only a portion of the actual budget, \$1.7 million on \$11.3 million in 2024. Therefore, the funding gap can be aggressively attacked without making equally large additions to the overall levy, at least at first. However, it’s equally important to realize that each year there is a funding gap the accumulated funding gap continues to grow, as does the backlog.

### Funding Gap Solutions

With the above in mind a linear approach with a constant increase in capital funding at 20% above the Consumer Price Index would eliminate the life cycle funding gap in 9 years and the accumulated gap in 15 years shown in Figure 2 below. Notice the accumulated funding curve turns upward at a value of -\$49 million when the funding gap is closed.

<sup>2</sup> Renfrew 2022 Asset Management Plan pg. 213

<sup>3</sup> Renfrew 2022 Asset Management Plan Appendix B Financial Strategy - Watson and Associates for Dillon.

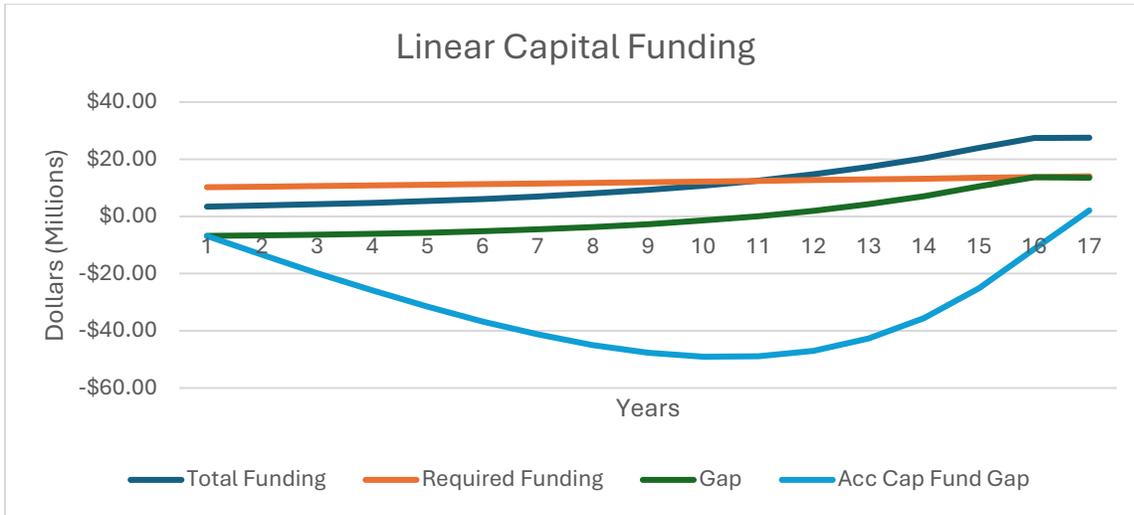


Figure 2: Linear Capital Funding

Average increases in the levy over those 9 years would be 7.1%. With the expected growth it could be in the area of 6% total or 4% above the CPI.

The above approach has not considered the backlog of some \$43.5 million. Incorporating the backlog starts the accumulated gap at ~ minus \$50.3 million and reaches -\$93.5 million before it swings upward at 9 years however it closes in 17 years. The backlog is shown in Figure 3 below.

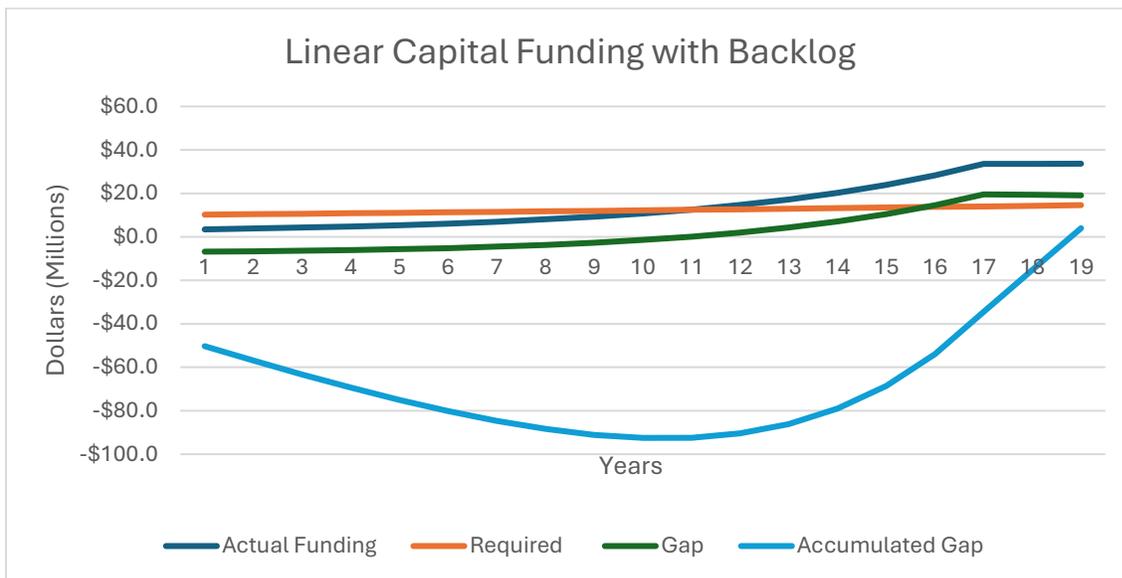


Figure 3: Linear Capital Funding with Backlog

The gap still converges after 9 years but the accumulated gap takes another two years to recover at 17 years.

Finally, an alternative to a constant % increase of the capital funding is to front load the increases. For example, to increase the capital funding by 50% the first year and 30% the second year and then drop to 16% thereafter can close the gap in 8 years and the backlog in 16 at similar perhaps less levy increases. The downside is the first two years before growth considerations average levy increases is 9%. The significant up-side is the cost to the tax payer, to close the gap, is considerably reduced \$127 million in levies over those 8 years as opposed to \$141 for the 20% per year increase to capital.

### **Future Steps**

Considering the above, the Town can (a) ignore that there is a funding gap and hope for help from the province (b) attack and hopefully extinguish the funding gap, (c) eliminate the funding gap and accumulated gap, and (d) even reduce the backlog by following several steps below.

1. Complete the 2024 Tangible Capital Asset list
2. Load Sinking Fund equations and 10-year plan onto the TCA list
3. Load in 2025 budget numbers
4. Scrutinize the backlog, adjust expected life values where appropriate
5. Wherever possible use recent quotations to best estimate costs
6. Determine priorities
7. Commit to raising capital funding in 2026
8. Decide the Town's future asset funding plan.

### **Recommendations:**

1. Raise the capital funding 20% per year for the next 10 years.
  - a. Potentially front load the increase(s) in the first year(s)
2. Monitor progress each year by following the above steps.

Renfrew is in an enviable position. It has natural “green” assets that not only provide beauty and well-being to the Town, but also drinking water, hydro, flood mitigation and wildlife habitat. Residents can walk and exercise on 20 km of trails, in 16 parks, on numerous sport fields and hard courts. Growth and commerce can be accommodated with four well planned new neighborhoods. The water supply and waste water capacity and performance are more than double the Town's present requirements and it has 50+ years of landfill capacity left. Renfrew also has a potential to eliminate its capital funding gap and maintain even improve its level of service; it's future.

### **Level of Service Targets – 2025 to 2034**

The level of service targets for the Town of Renfrew can be summarized in the table below. Provided water and waste water rates are high enough to cover the required capital in the next 10 years there is little change in the level of service in those areas. If the capital funding gap is closed by 2033 to 2035 depending on the approach taken levels of service will be in much the same as 2025. However, if there is little or no attempt to close the funding gap tax

supported levels of service will fall, in particular streets, storm, fleet and buildings; the landfill should remain unchanged.

Table 5: Service Level Targets

Asset Service	LOS Parameter	LOS Measure	2025 LOS Delivered	LOS to 2034 with Gap Closing	LOS to 2034 Gap Not Closed
<b>Water Treatment</b>	Reliability	Boil-water advisory	Zero	Zero	Zero
<b>Water Distribution</b>	Reliability	Connection days per year due to water main breaks	5 -7 watermain breaks per year	Same	Same
<b>Wastewater Treatment</b>	Reliability	Effluent violations	Zero	Zero	Zero
<b>Wastewater Collection</b>	Reliability	Connection days due to backups	10	10	20 plus
<b>Stormwater</b>	Reliability	Percentage of the SWMS resistant to a 5-year storm	80%	80%	60%
<b>Roads</b>	Quality	Average Pavement Condition Index (PCI)	Fair 59	Good 60+	Less than 50
<b>Sidewalks</b>	Quality	Average Sidewalk Condition Index (SCI)	Fair 56	Poor 50	Poor 40
<b>Bridges &amp; Culverts</b>	Quality	OSIM BCI	Good	Good	Fair
<b>Buildings Accessibility</b>		AODA	100%	100%	100%
<b>Buildings</b>	Quality	Average Building Condition Index	Fair 3.1	Good 3.1	Fair to Poor
<b>Fleet</b>	Quality	Condition Description	3.7	3.7	3
<b>Waste</b>	Scope/ Quality	Annual Volume of Waste through collection services	7062 t and 12,604 m <sup>3</sup> in 2024 KPI 0.55 t/m <sup>3</sup>	KPI target of > 0.5 t/m <sup>3</sup> and >95 % of population served by curbside pickup.	No change
<b>Green Spaces</b>	Scope	Continued use and appreciation of engineered spaces – further understanding appreciation of natural resources.	Measurement techniques see Master Plan for Parks for engineered spaces courts etc. - develop techniques for community and tech measurement of natural resources	Community and technical LOS indicators to be determined for natural resources e.g. The Bonnechere River	No change

## Introduction

This Asset Management Plan (AMP) to most effectively achieve the requirements of the Act is designed to work in conjunction with Renfrew's audited annual Tangible Capital Assets (TCA) data. Relatively straightforward calculations can be appended to the TCA to create a living document updated periodically amongst departments. Replacement costs can be calculated, annual budgetary requirements determined, and a 10-year plan generated. It will allow staff and Council to plan on multi-year horizons.

**Note:** that the **2023 Capital Asset List** and the **2024 Budget** was used for this Asset Management Plan. It can be readily updated with the 2024 TCA list and the 2025 budget when available.

### Legislation

On June 4, 2015, the Province of Ontario passed the Infrastructure for Jobs and Prosperity Act (I.J.P.A.) which, over time, required municipalities to undertake and implement an Asset Management Plan for all infrastructure. On December 27, 2017, the Province released Ontario Regulation 588/17 under the I.J.P.A. which has three phases culminating in Phase 3 in July 2025.

By July 2025 a 10-year planning horizon needed to be incorporated in the Asset Management Plan for each asset category, all of levels of service, performance, and lifecycle activities with costs. A financial plan is required to determine if Levels of Service are achievable and affordable while considering future growth and economic development. The plan must be reviewed by the CAO and passed by Resolution of Council.

### The Town

Named after Renfrewshire, Scotland, in approximately 1848, Renfrew was settled largely due to logging in the area in the early 19th century. The river was used to drive pine logs to locations such as Ottawa for the lumber industry. Renfrew is at the intersections of Highways 17, 60 and 132 and near the confluence of the Bonnechere and Ottawa Rivers.

Renfrew is the 4<sup>th</sup> largest Town in Renfrew County after Petawawa, Pembroke and Arnprior. Renfrew is also known historically for its role in the formation of the National Hockey League and relatedly Renfrew makes most of Canada's hockey tape.

In the 2021 census, conducted by Statistics Canada, Renfrew had a population of 8190 down 0.4% from its 2016 population of 8223. Despite the past receding population, the County of Renfrew Master Plan predicts by 2034 there will be an expected population of 9271. To more than accommodate this increase, the Town has 4 future development areas for over 500 planned homes. There is also a planned commercial industrial park near to Highway 17.

A general inventory of linear assets includes 69 km and 52 km of water and wastewater, under the 68 km of asphalt roads, lined by 47 km of sidewalks and joined by only one major bridge. There are 14 Municipal buildings, 16 parks and 3 town water front/access points. The Town owns an additional 215 acres of land and can more than double its current population with its water and waste water capacities.

Notably, the expensive major arteries are in good to excellent condition providing a strategy for the next ten years. The Bonnechere River provides the Town's drinking water, and the treated waste water returns down river; and the significant river drop spins turbines producing reliable Hydroelectric Power for the Town.

### **Replacement Cost, Funding and Approach**

An Asset Management Plan must estimate replacement cost of an asset. Whenever possible, replacement cost will be based upon recent quotations or contract unit cost data. In the absence of recent replacement data, the Sinking Fund Method is utilized.

Sinking Fund first estimates the future value or replacement cost of an asset based upon its' historical cost, date at acquisition or construction, and annual inflation. A calculation is then performed to determine annual contributions which, when invested, will equal the future replacement cost<sup>4</sup>. From this data, a 10-year replacement plan is generated. Calculations are relatively simple, and the equations can be made as part of the Tangible Capital Asset list.

### **Replacement in Words**

As an example of replacement – if there were 30 km of roads with an expected life of 30 years, then you would expect to replace 1 km each year. If you had 68 km of paved surface as Renfrew does, then one might expect on average to replace 2.27 km of road each year or 68km divided by 30 years. Respecting the mathematics, at a 2% inflation rate the cost of the road would have increased by 81% in those 30 years.

### **Linear Assets**

Although by nature of the municipal structure this AMP separates tax supported and rate supported infrastructure, in order to cost effectively deliver capital projects, linear assets must be grouped. That is Streets and Storm tax supported linear infrastructure are collectively evaluated with rate supported Water and Waste Water Mains infrastructure. The advantage of this from a cost and level of service perspective will be made clear in later sections. Sufficient to say at this point, it is best life cycle at lowest cost. Also, the advantages of having indices to describe the condition of these assets is very beneficial, perhaps critical.

---

<sup>4</sup> For example, an asset costing \$100,000 with a 20-year useful life at 2.0% inflation yields a replacement cost of ~\$150,000 with life cycle costs (LCC) of ~ \$7,500 / y. Invested at 1.0% the annual LCC drop to \$6,750/y or \$750/y less.

Roadways, sidewalks, etc. account for almost 50% of tax supported asset value whereas facilities account for close to 34% and the remaining 16% is made up of storm, fleet and land improvements like parks. Tax assets are considered in detail in this document over the next 10 years with solutions, options and associated risks. Water and sewer analysis relies heavily upon the rate study by Watson & Associates – Economists and capital infrastructure analysis by the Ontario Clean Water Association (OCWA) and their most recent findings<sup>5</sup>.

### **AMP Objectives and Co-operation**

In addition to meeting the legislative requirements under the Act, the AMP is intended to enhance the Town’s overall policy and planning framework for infrastructure management, while at the same time increasing its internal capacity through people and processes.

The approach, herein, not only groups like asset categories like linear, facilities and rolling stock, but overlaps Municipal Departments through those groupings. Using the TCA list to establish replacement cost and annual funding requirements promotes interdepartmental synergy. Plus, it establishes a road map for Council, Staff, and the community, complete with all the advantages and pitfalls in the Town’s future path.

The Town needs to re-develop its’ formal asset management planning policy and consider the Asset Management Plan as part of budgeting and planning activities. The Town can establish a roadmap if appropriate that details required asset management planning action items with associated key performance indices (KPIs) to assess and report progress.

---

<sup>5</sup> Amp 2022 section 16.6 and Appendices B. - Watson & Associates Town of Renfrew Rate Review 2021

## Growth, Economic Activity and Implications

Growth projections for the Town can influence the strategy for development and infrastructure investment. A study of growth projections has been undertaken by Watson in support of development charges in 2020 and a rate study for 2021, as well as by the County of Renfrew as part of their Official Plan.

According to the County of Renfrew Master Plan, by 2034 there is an expected population of 9,271 or just over a 1000 person increase since the last census in 2021. This 1.2 % growth per year seems unlikely considering the near half percent shrink in the Town of Renfrew from the 2016 census to 2021. Nevertheless, Renfrew is ready for growth.

*Table 6: Growth Projections*

Year	2021	2026	2031	2034	2036
Population	8190	8856	9080	9271	9309
Period Increase		666	224	191	38
Avg. Yearly Increase		133	44.8	64	19

The expansion of Highway 417 to Renfrew is expected to promote economic growth in the Town but is unlikely to happen before 2034. New retail development has occurred in the east end of the Town along O’Brien. The Town has undertaken multiple studies to guide in growth and development, including:

- Master Plan for Parks, Recreation and Culture, 2024. Includes implementation plan with priority, timeline and estimated costs for recommendations.
- Master Servicing Plan, 2017 (water, wastewater and stormwater servicing). Includes figures and guidance for development planning.

There are four well planned areas for growth; one already underway and the other three lying in wait. Hunter Gate subdivision in the east side of Town and North of the O’Brien Arterial roadway off of Highway 17 is underway, with a plan for ~ 60 more homes.

Pinnacle View at the opposite end of the Town is planned followed by a residential/commercial/industrial integration called the Renfrew East Secondary Plan that is south of O’Brien and near to Highway 17. Finally, a potential subdivision south of Opeongo near to the Ma-te-Way recreation facility. Altogether more that 500 homes are planned.

Considering the water and waste water infrastructure is capable of supplying twice as many people as Renfrew presently has, there is little to no concern in Asset Management about expected growth over the next 10 years.

Perhaps the only consideration for the 2025 AMP is the demographics of the population in Renfrew. A more elderly population may have mobility issues requiring buildings be accessible and sidewalks negotiable.

*Table 7: Demographics*

<b>Age Group</b>	<b>0-19</b>	<b>20-64</b>	<b>65+</b>
Town of Renfrew	16.7 %	51.1 %	32.10 %
Renfrew County	20.7 %	55.9 %	23.2 %
Province of Ontario	34.6 %	40 %	25.4 %

Renfrew does seem to be a Meca for the 65+ at 39% higher concentration than the County and 26% higher than the rest of the Province. <sup>6</sup>

### **Summary**

The expected growth to ~ 9,300 people by 2034, the horizon of this 2025 AMP, can be more than accommodated by four well planned subdivisions and a commercial/industrial complex. Growth of about 1% or more is certainly welcome to offset the required funding gap tax increases. Water and Wastewater capacities are more than double the present requirements. Integrated hydroelectric capabilities and enviable landfill capacities provide not boundaries but incentives for growth in the Town.

---

<sup>6</sup> Source – 2021 Canadian Census

## Linear Assets and Catchment Areas

### Grouping Linear Assets for an Infrastructure Assessment

It is critical to point out that linear assets should be grouped and considered as a unit when making capital project decisions. A preliminary assessment can be made starting with street conditions, i.e. pavement and sidewalk conditions and traffic levels. From the other side of the pavement, historical records and operational experience of watermain breaks and sewage flow problems. To consider the Town as divided into catchment areas is proving effective.

First, a good example of the advantage of grouping linear assets is the Argyle/Lochiel project that had 6 components totaling 2,685 meters. The focus was on watermains; storm and wastewater were in acceptable condition as verified by CCTV investigation and maintenance records. The full 2685-meter project came in at approximately \$4,300/ meter.

Table 8: Cost Breakdown of Previous Projects

	Total	\$/m	meters	Road	Sidewalk/ MUP	Water	Waste Water	Storm
<b>Lochiel Street</b>	<b>\$11,582,793</b>	<b>\$4,314</b>	<b>2685</b>	<b>23%</b>	<b>15%</b>	<b>48%</b>	<b>7%</b>	<b>7%</b>
	<b>Allocation</b>			\$2,664,042	\$1,737,419	\$5,559,741	\$810,796	\$810,796
	<b>\$/m</b>			\$992	\$647	\$2,071	\$302	\$302
<b>Stewart Street</b>	<b>\$5,050,056</b>	<b>\$5,208</b>	<b>1100</b>	<b>47%</b>	<b>11%</b>	<b>7%</b>	<b>23%</b>	<b>13%</b>
	<b>Allocation</b>			\$2,355,793	\$562,524	\$337,235	\$1,142,548	\$651,956
	<b>\$/m</b>			\$2,142	\$512	\$307	\$1,038	\$593

By comparison, Stewart Street was a near to full reconstruction project, and came in at \$5,200/m. Had the Argyle/Lochiel project been done as a full reconstruct, then \$2.4 million more would have been required.

Aside from new construction, there is no typical cost per meter of road, nor should there be. Each application has to be tailored to the specific needs of that segment as shown by the bar table below.

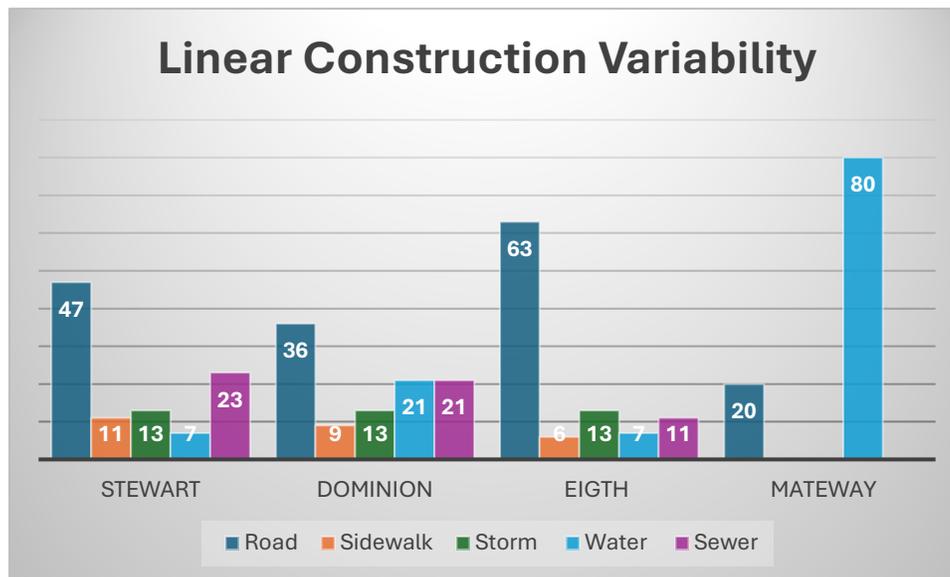


Figure 4: Construction Variability between Projects

As shown above in the graph:

1. Stewart Street – full reconstruction on an existing road.
2. Dominion Street – a portion of the street;
3. Eighth Street – new construction, including minor sanitary and storm repairs; and
4. Ma-te-Way Park Drive Planned Watermain Replacement - strictly a watermain planned repair (80% and a 20% repave).

### One Sidewalk Advantage

In all cases shown above there are road/pavement costs when other linear assets are repaired, even in Ma-te-Way. This is a consideration of new construction, Hunter Gate and Pinnacle View for example, that only one sidewalk should service a street while on the other side are all water sewer mains to provide easy future service to repair mains without the added cost of tearing up and resurfacing the roadway. Not so obvious, it also provides a lane to plow snow to in the winter months reducing winter maintenance snow clearing costs<sup>7</sup>.

### Inspection of Storm and Sanitary

Aside from sanitary and storm being old, it is still prudent to also have them inspected prior to making costly decisions to fully reconstruct. It may also be the case that new infrastructure has identifiable problems that need to be rectified. The most common of these is home sump pumps feeds attached to the sanitary not the storm pipe. This results in the wastewater being overloaded during heavy rain falls. According to discussion with

<sup>7</sup> These ideas were a result of meetings with personnel from Arnprior and Pembroke and discussions with Renfrew operational staff.

OCWA personnel, past inflow and infiltration (I&I)<sup>8</sup> rectifications have greatly reduced the overflow problems.

To assess the quality of the storm and waste water network, the systems can be reviewed and recorded by means of a CCTV camera. It is most useful to employ experts to monitor and assess the information to formulate condition grades that help digitize and prioritize future reconstruction activity. Large savings (millions) can be realized by utilizing CCTV camera and professional evaluation as clearly indicated in the above example of Argyle/Lochiel.

### Catchment Areas

On a broad scale, there are five different catchment areas in the Town:

1. North of the River,
2. East of Raglan,
3. West of Raglan,
4. South Side, and
5. West End.

1. **North of the River** - The catchment area that's north of the river and particularly near the hospital has concerns about old water pipes feeding the hospital and the need for a flushing valve at the end of Grigg<sup>9</sup> to save many thousands of dollars per year. Sewage problems exist at the corner of Oak and Frank Dench, and at the corner of Arthur and Albert, where also the pavement is in need of repair.



*Figure 5: Water flow at Grigg Avenue*

2. **East of Raglan** - The catchment area under a lot of scrutiny is south of the river, but east of Raglan, and in particular the Munroe, Harry and Hall link and east where the street surface is in particularly poor condition. There are sewage problems at Rotary and Francis and both sewage and storm problems on Peter at Wilson and William respectively. The roads in this catchment area are fair to poor.
3. **West of Raglan** - The West and old part of town is festooned with Streets in poor condition and underground issues. Along Opeongo there are sewage issues at Raglan and Bonnechere, and storm issues at the hill near Airth. All of Queen Street south

---

<sup>8</sup> Inflow and Infiltration (I&I) Inflow is residential sump pumps incorrectly hooked to the Sanitary Sewer Pipes and Infiltration is leakages into the waste water mains network from ground water.

<sup>9</sup> Potable water steams from the end of a 4-inch pipe down the embankment toward the landfill site 24-7!

from Arnprior Avenue to Patrick exhibits sewage problems. There are specific problems at Thompson and Ross and Storm issues under a freshly paved Arnprior Street! Sidewalks are of concern at Renfrew Ave. West and Carswell. There have been a dozen water main breaks on Ma-te-Way Park Drive, just south of Haig Avenue, that are being addressed in 2025. Sewage issues are present at Lisgar between Blake and Tupper, and on Tupper to Mary. Notably the Hydrovac truck pulls up pieces of clay pipe near to Mary.

4. **South Side** - The south side has sewage problems at Pine from Raglan to York. Storm flooding issues occur on the James Street cul-de-sac and along the back of the lots along Wade.
5. **West End** - In this catchment area, there was ponding in the spring at the corner of Foxden and Gillan. In ditch flooding occurs all along Gillan and some of Mayhew. There was a flooded area at Mask and O'Brien, due to new construction issues (that have since been rectified) and ponding along Whitton Road.

### **Linear Summary**

Streets along with storm, water and wastewater mains must all be considered as a unit for that section and catchment area to make each reconstruct non typical and thus cost effective. The present and very effective linear asset approach is to capture Pavement Condition Indexes (PCI) and problem areas visually. Best future management of linear assets is to utilize technologies like Street Scan and professional CCTV assessment of underground system to ultimately digitize the entire network!

## Streets

### Roads, Sidewalks, Signals, Signs, Lights and Bridges

The Town of Renfrew has 67.96 km of streets with 47.4 km of sidewalks and 6 traffic signals, three on O’ Brien at No Frills, Mask and Gillan, a set at “Confusion Corner”, Raglan and Renfrew West, and Raglan and Munroe. Numerous streetlights, 574 signs, and one major traffic bridge exist in the Town, with a total replacement value of 197 million dollars. To support that infrastructure, there should be \$5.4 million of funding each year, but due to the backlog over the next ten years, the requirement is more than double the calculated annual funding.

Table 9: Funding Requirements for Streets

Life (y)	Streets	Replacement (\$)	Funding (\$/yr)	10-yr Average
30	<b>Roads</b>	\$173,364,631	\$4,983,222	\$12,194,901
50	<b>Sidewalks</b>	\$10,349,261	\$188,472	\$14,578
25	<b>Traffic Signals</b>	\$954,461	\$33,794	\$57,530
30	<b>Street Lights</b>	\$2,002,117	\$20,707	\$43,712
10	<b>Signs</b>	\$47,043	\$4,497	\$4,704
50	<b>Bridges</b>	\$10,674,979	\$177,003	\$6,500
	<b>Streets Total</b>	<b>\$197,392,493</b>	<b>\$5,407,695</b>	<b>\$12,321,925</b>

The streets have a fair to good aggregate condition rating of 59. The useful expected life is typically 30<sup>10</sup> years and in Renfrew’s enviable case the larger, more costly 11km of Arterials have an average of 21 years left. Collector and Local roads have approximately 10 years, providing a replacement strategy for the following 10 years. The estimated replacement cost is \$173 million with an annual replacement requirement of \$4.9 million. See more below in Life Cycle Strategy. Although Bridges are considered a core asset, Renfrew has the advantage of having only one traffic bridge and it is in relatively good condition with only \$65,000 scheduled for preventative maintenance over the following 10 years.

<sup>10</sup> 30 years is stipulated in the Tangible Capital Assets List for depreciation purposes

Table 10: Level of Service for Streets

LOS Parameter	Community LOS 2025-34	Technical LOS 2025-34
Scope	<p>A map of the road network is shown in <b>Appendix 1</b>.</p> <p><i>Considering the proportion of 65 + population, as is 26 and 32% higher for the Town as compared to the County and the province, respectively, consideration has to be made for sidewalk accessibility.</i></p>	<p>Lane kilometers (km) as Proportion of Town Land Area (km<sup>2</sup>)</p> <p>Local Roads – 6.9 km/km<sup>2</sup></p> <p>Collector Roads 1.9 km/km<sup>2</sup></p> <p>Arterial Roads 1.8 km/km<sup>2</sup></p> <p>Sidewalks account for 3.7 km/km<sup>2</sup></p> <p><i>Potentially one sidewalk will service both sides of the street in new construction for future capital and operational efficiencies, see Linear Asset and Catchment Areas</i></p> <p><i>Over the next 10 years 1 to 1.5 km of road is expected to be assumed in Hunters Gate area changing the local ratio to 7.1 km/km<sup>2</sup> and sidewalks to 3.76km/km<sup>2</sup>.</i></p>
Quality	<p>Pavement condition was most recently assessed by the Town in 2020 with a <i>planned reassessment in 2025</i>. The road segment surfaces were visually assessed and provided a condition rating in line with the MTO Manual technique.</p> <p><i>Sidewalks have had no formal assessment, but an SCI is planned for 2026 as part of the Street Scan program.</i></p>	<p>Avg condition index an Equivalent PCI: 59 in 2025.</p> <p><i>Over the next ten years with expected continued underfunding the PCI is calculated to drop to 52 or less.</i></p>

**Life Cycle Activities:** The roads are visually inspected and rated according to the MTO Inventory Manual approach and subsequently mapped and ratings color coded<sup>11</sup> as in Appendix A1. Wherever possible, indications of watermain breaks, wastewater problems, flooding and poor drainage for storm are also added to the maps to create a full picture of linear assets. For clarity, a portion of the Appendix A1 Road Map is shown below.

<sup>11</sup> As noted in the linear asset section Red – Poor through Purple – Excellent.



# Town of Renfrew Roads Index

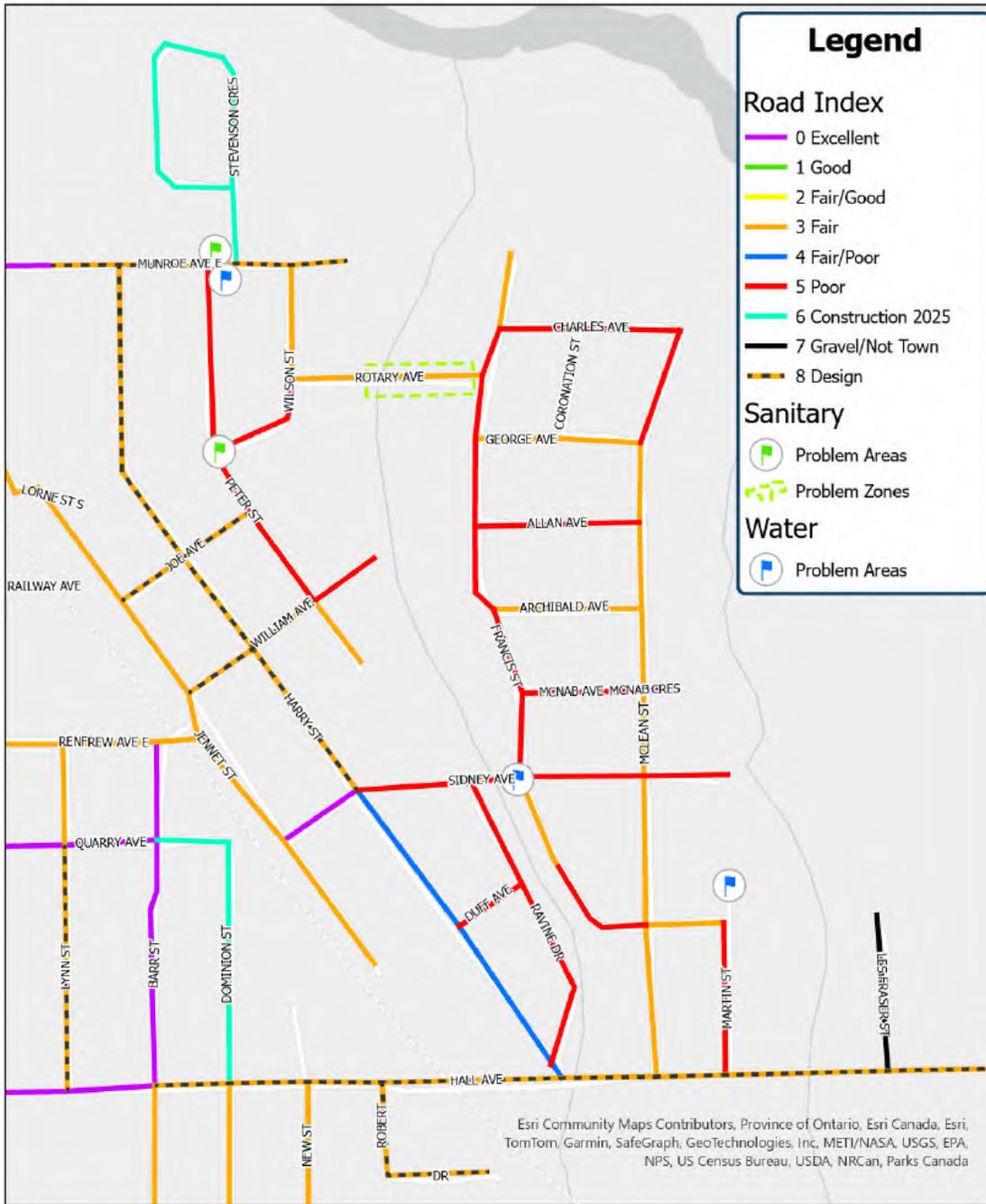


Figure 6: Road Condition and Problem Areas in the Northeast area of Town

## Life Cycle Strategy for Streets for the next 10 years

As alluded to in the opening paragraph, Renfrew is in an enviable position. Its Arterial Roads that have an estimated average of 21 years of remaining life. For the next decade, Renfrew can focus on Collector roads and the associated linear assets! Additionally, to save mobilization costs, any connected local roads could be included wherever sensible.

Table 11: Replacement Costs for Street Classes

Class	Length (km)	Estimated Replacement Cost (\$)	Annual Replacement Amount (\$)	Condition Rating
<b>Arterial</b>	11.45	\$20,760,583	\$596,828	85
<b>Collector</b>	12.62	\$27,718,403	\$796,852	65
<b>Local</b>	43.89	\$124,885,645	\$3,590,227	50
<b>Total</b>	<b>67.96</b>	<b>\$173,364,631</b>	<b>\$4,983,906</b>	<b>59</b>

To cite an example, Munroe Ave east of Plaunt is in poor condition; it serves a school and is also part of a continuing string of collectors including Harry, Hall and Gillan, that cuts the corner through the Town and reconnects with Highway 60 near to Highway 17. There are numerous connected local roads colored red (poor on the infrastructure map). Collector roads and attached locals are a prime strategy over the next ten years and there are numerous options. Here is the list of ongoing or upcoming projects. Roads that are Collectors are shown in bold.

Table 12: 2025 Ongoing Projects & Upcoming Potential Projects

“Priority”	Project – Street Name	Length (m)	Cost Estimate
1	Dominion (Barr to Hall) 2024 – 2025	245	\$ 2,000,000
2	Ma-te-way Park Drive Watermain	400	\$ 1,600,000
3	<b>Munroe/Harry – Munroe Portion</b>	225	\$ 3,500,000
4	<b>Munroe/Harry – Harry Portion</b>	300	\$ 1,450,694
5	<b>Hall Avenue Reconstruction - Barr to Algonquin Trail</b>	300	\$ 1,350,000
6	<b>Hall Ave Reconstruction - Algonquin Trail to Gillan</b>	770	\$ 2,000,000
7	<b>Opeongo – Bonnechere to Town Limits</b>	1300	\$ 2,639,000
8	<b>Harry (to Sidney) &amp; Joe Avenue</b>	630	\$ 4,650,000
9	Lynn – Quarry to Hall	240	\$ 750,000 +
10	Queen & Bonnechere	1500	\$2,500,000
<b>Total</b>			<b>\$20 million</b>

The focus on Collector Streets and their linked local streets could limit the dive of the PCI due to underfunding. The arterial roads will, over the next ten years, still be in “good”

condition, or at least fair to good, while the collectors go from a PCI of 65 to 85-95. See below for this option.

Should this option be followed, the expected condition rating would increase in the collectors but drop overall in the arterials and local roads, but notably the major roads would still be considered to be in good condition. The conceivable risk is that some local roads would move to very poor.

Table 13: Streets Replacement Costs

Class	Length (km)	Estimated Replacement Cost (\$)	Annual Replacement Amount (\$)	Condition Rating
<b>Arterial</b>	11.45	\$20,760,583	\$596,828	75
<b>Collector</b>	12.62	\$27,718,403	\$796,852	78
<b>Local</b>	43.89	\$124,885,645	\$3,590,227	39
<b>Total</b>	<b>67.96</b>	<b>\$173,364,631</b>	<b>\$4,983,906</b>	<b>52</b>

With the construction of the roads listed above during the next 5 to 7 years or so the attention would have to return to portions of the main arterials into the worst of the local area roadways. This would be re-evaluated through the use of Road studies particularly StreetScan.

Along with the strategy listed above, there were other opportunities identified. For example, if the other linear infrastructure outlasts an application of pavement, then ‘shave and pave’ is considered. Obvious candidates for a mill and overlay that can be done in conjunction with the above list are as follows:

Table 14: Potential Shave and Pave Projects

Street	Location
<b>Moore Street</b>	Bruce Street to Dead End
<b>Aberdeen Street</b>	Mason to Dead End
<b>Mason Avenue</b>	Near Future Pump Station
<b>Raglan North</b>	Hincks to Bruce
<b>Railway Avenue</b>	Plaunt Street to Dead Eng
<b>Rousselle Street</b>	Elgin to McAndrew

In the event of reconstruction in areas of the Town where future growth is expected, Pinnacle View in the northwest of the Town, or near Highway 17 and Hunters Gate in the southeast, special consideration must be made for pipe sizing to accommodate future growth.

Visual inspections, especially in the spring with frost movement, can identify cracking and thus the need to apply crack seal in the summer to mitigate not only pothole formation but also other forms of cracking (linear, transverse and alligator) and increase the life expectancy of the road.

Although for accounting purposes we are bound to an expected life of 30 years, for Asset Management strategy, we are not. By striving to make roads last 35 years rather than 30 years, and sidewalks to 60 years, there is a \$850,000 reduction in annual streets funding and the 10-year average has dropped from over \$12 million to more manageable \$4.5 million.

This is not insignificant and speaks to the importance of crack sealing and the application of emulsions to stop the ingress of water and thus extend the life of the road, which will increase the operating budget marginally.

*Table 15: Street Lifecycle*

Life (yr)	Streets	Replacement (\$)	Funding (\$/yr)	10 yr Average
35	<b>Roads</b>	\$173,364,631	\$4,160,818	\$4,477,898
60	<b>Sidewalks</b>	\$10,349,261	\$164,328	\$4,234
25	<b>Traffic Signals</b>	\$954,461	\$33,794	\$57,530
30	<b>Street Lights</b>	\$2,002,117	\$20,707	\$43,712
10	<b>Signs</b>	\$47,043	\$4,497	\$4,704
50	<b>Bridges</b>	\$10,674,979	\$177,003	\$6,500
	<b>Streets Total</b>	<b>\$197,392,493</b>	<b>\$4,561,147</b>	<b>\$4,594,578</b>

### **Pavement Condition Index and Street Scan**

Town personnel have done a very effective job at assessing their streets' Pavement Condition Index (PCI) using the MTO Inventory Manual approach. At present, the Town is at a PCI of 59, on the border of good (60 to 80) and fair (40 to 60). Of particular usefulness is that these assessments are transferred to Town maps to visually distinguish the street conditions. As such decisions can be made with confidence, i.e. Red – poor, light green – fair, dark green – good, and purple – excellent.

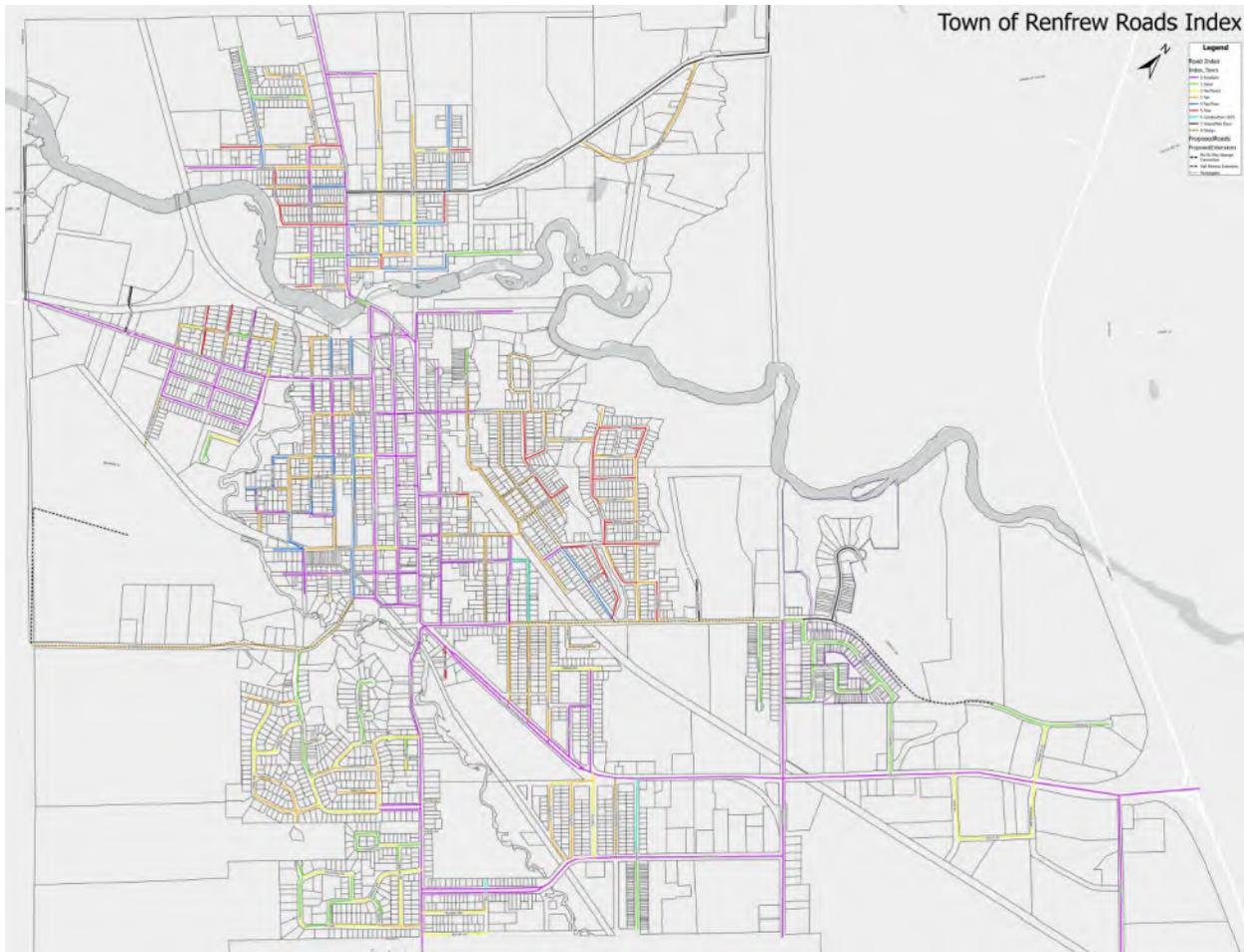


Figure 7: Renfrew Roads Index

The MTO method requires considerable experience and judgement to assess both the defects and the ride index for a PCI. To remove the judgement quotient, a proven technology called StreetScan can be used that is provided to Municipalities through LAS and sponsored by AMO. The technology has been used by neighbouring towns of Arnprior and Pembroke with excellent results. The technology yields an accurate PCI for each segment and overall spot-on aggregate for the Town, and a SCI for sidewalks too. This provides a major Key Performance Indicator for the Town to manage their assets.

### **Bridges**

Although there are two bridges in Town, only Bridge Street is part of the transportation network. Its' historic cost is ~ \$3 million and a replacement value estimated at \$11 million. In keeping with discussion of KPI, and for linear assets this bridge has an OSIM assessment every two years to establish the BCI. The Bridge Street Bridge BCI is high and only \$65,000 of maintenance work is scheduled over the next 10 years.

### **Streets Summary**

The best estimate for condition assessment of the 68 km network is fair to good at a pavement condition index of 59, a replacement cost of \$197 million, and yearly requirements of \$5.4 million. Considering the larger Arterial streets are in good to excellent condition with an expected remaining life of over 20 years, this provides a strategy for the next 10 years to continue with Collector streets, for example Munroe and Harry and connecting Local streets. Over the course of the next ten-years, the PCI for streets will fall at least 10 points to less than 50 and continue to fall. If the Funding gap is extinguished, the streets will return to 60 and continue to improve for the following 10 years.

## Storm Water

The Storm system has 19,482 meters of mains made up of PVC, concrete and vitrified clay pipes. There are a total of 432 concrete catch basins both round top and square top, with diameters of 600 to 1200 mm. See Appendix A2 for the layout of the Town's storm network.

### Assets and Conditions

Table 16: Storm Water Assets

Storm Assets	Storm Mains	Catch Basins
Replacement Cost (\$)	\$8,680,000	\$2,889,605
Annual Funding (\$)	\$58,000	\$23,750
Length (m)/Number	19,482	432
Concrete (m)	14,252	-
PVC (m)	4,258	-
Vitrified Clay (m)	959	-

Replacement cost of storm pipes has edged up by an average of 2.1% per year since 2007 and over a third of the assets by length are 300mm in diameter.

Table 17: Storm Pipes Replacement Cost

Storm Pipes Diameter (mm)	Replacement Cost/meter		Length (m)	Cost
	2007	2025		
100	\$100.00	\$167.29	-	-
150	\$100.00	\$167.29	18.5	\$3,095
200	\$125.00	\$209.12	1385	\$289,625
225	\$130.00	\$217.48	41.5	\$9,025
250	\$135.00	\$225.85	2693.9	\$608,404
300	\$150.00	\$250.94	7292.6	\$1,829,997
375	\$200.00	\$334.59	2078.5	\$695,435
450	\$300.00	\$501.88	1218.1	\$611,337
525	\$375.00	\$627.35	481.9	\$302,319
600	\$450.00	\$752.82	1858.5	\$1,399,110
750	\$600.00	\$1,003.76	1122	\$1,126,214
825	\$675.00	\$1,129.23	212.5	\$239,960
900	\$750.00	\$1,254.69	594.2	\$745,539
1050	\$900.00	\$1,505.63	115.5	\$173,901
1200	\$1,050.00	\$1,756.57	369	\$648,175
<b>Total</b>			<b>19,482</b>	<b>\$8,682,137</b>

From a material point of view the Town’s storm network is in relatively good position in that only 5% of the length according to the 2023 TCA is serviced by Vitrified Clay pipes.

Table 18: Storm Pipe Material

Material	Length (m)	Overall
Concrete	14,253	73%
Vitrified Clay	959	5%
PVC	4258	22%
Other	12	~0%
<b>Total</b>	<b>19,482</b>	<b>100%</b>

### Service Levels

During 2025 spring melt and after a heavy rainfall, there were 10 areas where flooding was experienced. Notably, on Gillan Road there were 22 properties that experienced flooded ditch levels but zero basements or properties experienced inflow or damage. Also, this may have been the result of a, now resolved, construction deficiency.

#### Spring Flooded Areas

1. Mayhew/Gillan Culverts – new neighbourhood area – about 22 houses had water running across their driveways. Sump pumps were emptying into an already full ditch.
2. James Crescent – Ponding on crescent
3. Opeongo Road (Hill) – West of Airth Blvd
4. Wade Avenue – Opposite Vanier Crescent (Backyard storm drain)
5. Smith’s Creek Behind St. Joe’s High School (Beaver dam)
6. Visitor Information Centre Ditch (New issue – has been rectified)
7. Baldwin Street Catch Basins – Between Hincks and Elgin (Off road)
8. Aberdeen Street (Fatima School yard)
9. Peter Street @ William Avenue – Ponding at east corner of intersection
10. Whitton Road Culverts
11. Ivy Avenue Culverts

Despite the above record of full ditches, ponding in school playgrounds and back yards, no homes were impacted even during the confluence of spring melt and a heavy rainfall.

Table 19: Level of Service for Storm

LOS Parameter	Community LOS 2025-34	Technical LOS 2025-34
Scope	The storm system is devised to provide conveyance of stormwater to protect properties. The extent of the network is shown in Appendix A2.	99 % of properties expected to be resilient to 5-year storm based on the 2025 spring break up and heavy rains
Quality		80+% of properties expected to be resilient to 100-year storm

### Life Cycle Strategy – Risk – Performance

Of the reported 19,482 m of storm pipe, 6,313 m has aged out according to the expected life of the asset. Expected life for vitrified clay is 70 years, concrete is 90 years PVC is 100 years. Still, of the 107 aged-out assets, approximately 30 were considered truly in poor condition from past inspection. About half of these would have been replaced in the Argyle/Lochiel construction reported earlier in the Linear section and have not yet updated in the TCA. Of the 25 assets destined to age out in the next ten years, only about 10% of these are problematic at this time.

Table 20: Storm Main Assets

Useful Life (yr)	Assets	Length (m)	Overall
< 0	14,253	631	32%
0-10	959	1888	10%
10-100	4258	11,281	58%
<b>Total</b>	<b>366</b>	<b>19,482</b>	<b>100%</b>

As stated above, the replacement costs are \$8.7 million for the storm mains while replacement funding is only \$58k per year. There is a significant backlog for 2025, but as previously indicated, the system is performing well despite its age and tired assets are being replaced in conjunction with other linear network construction.

Table 21: Lifecycle for Storm Assets

Storm	Replacement (\$)	Funding (\$/yr)	10 yr Average	2025 Backlog
<b>Storm Mains</b>	\$8,680,046	\$58,021	\$325,995	\$2,147,171
<b>Catch Basins</b>	\$2,889,605	\$23,749	\$838	\$0
<b>Storm Total</b>	<b>\$11,569,651</b>	<b>\$81,770</b>	<b>\$326,832</b>	<b>\$2,147,171</b>

The obvious replacement target is the vitrified clay storm piping. However, the fact that it is vitrified clay does not necessarily mean it is performing poorly. If at all possible, camera inspection should be undertaken professionally to make the appropriate high-cost decisions and ultimately digitize the linear networks condition ratings.

## Summary

The Storm Drain Network is 19.5 km long with 432 catch basins, with a replacement cost of \$8.7 million and \$2.89 million, respectively. Concrete accounts for 70%, PVC 20%, and Vitrified Clay about 10% of the network length. Annual funding should be in the area of \$58 thousand for storm mains, and \$23.7 thousand for catch-basins.



Life cycle activities should be where:

1. There have been problems,
2. There are old, vitrified clay pipe sections, and
3. Replacing pipes with PVC, except where large diameters warrant a different material.

The Town should pursue climate change funding to compensate for already installed storm conveyances to bring them up to present day requirements.

# Water

## Water Point Assets

For the collection and treatment for water distribution, the Town takes from the Bonnechere River with a Low Lift Pump Station at McAndrew Avenue and sends it across (under) the street to the Water Treatment Plant. The plant has a maximum treatment capacity of 18,184 m<sup>3</sup>/day. Water is stored in a 6435 m<sup>3</sup> standpipe that was constructed in 1972 and recoated in 2010 and 2021.

The Kedrosky Water Booster Station, located on Kedrosky Drive, provides increased pressure in this area of the Town. This booster station was most recently rehabilitated in 2010, which included replacement of booster pumps into the existing underground chamber, and new kiosk and controls. The Town contracts operation of the water treatment plant, low lift pump station, and standpipe to a third party, currently the Ontario Clean Water Agency (OCWA).



Figure 8: Standpipe

## Water Linear Assets

The Town owns and operates the distribution system 69.3 km of linear pipe, appurtenances like valves, etc., and a total of 400 hydrants.

Table 22: Water Linear Assets

Material	Length	Percent	Expected Life (yr)
Transite	28,619	41%	85
Cast Iron	17,116	25%	85
Ductile Iron	12,059	17%	85
PVC	11,301	16%	100
Galvanized	99	~0%	85
Copper	75	~0%	85
<b>Total</b>	<b>69,269</b>	<b>100%</b>	

The preferred material, perhaps the only material, when the Town’s water distribution system was first constructed was Cast Iron, exclusive in installations up to 1930. Later installations included Ductile Iron as early as 1934 on, for example, Raglan Street North. But there was no distinct material cut-off date. For example, on Harry Street, which was built in the mid-forties, there is all of Cast Iron, Ductile Iron and Transite<sup>12</sup> from 25 mm to 250 mm with no apparent differentiation for diameter. Modern day installations are with PVC that has an expected life of 100 years or longer.

<sup>12</sup> Transite in this area was likely a result of repair work.

There are 152 assets with what would be considered no remaining life, yet still in service. Those assets constitute 9369 meters and with an average length of 62.4 meters. Many of these are in the catchment area North of the River. Some interesting observations of these antique pipes is that one of the largest at 400 mm is under Baldwin between Elgin and Hincks and then throttles back at Hincks to a 150 mm to feed Ready, which is all cast iron and installed in 1924. The main under Albert is all 150 mm save for a short 45 m section of only 25 mm installed in 1920 and of course it is cast iron<sup>13</sup>.

Water mains assets that are and expected to age out in the next 10 years number 149 and are 11,664 m long, with an average length of 78 meters and installation dates from 1946 to 1950. Those areas included Munroe East, Joe, Ma-te-Way, Carswell, Thompson, Lynn, York & Pine, and are all of Cast Iron, Ductile Iron and Transite<sup>14</sup>. More importantly the above means that over 33% of the assets or 31% of the length of the system is at the end of its expected life or will be in 10 years.

Table 23: Water Assets Lifecycle

Useful Life (yr)	Assets (#)	%	Length (m)	%
<b>Less Than Zero</b>	152	17%	9366	14%
<b>Zero to Ten</b>	149	16%	11664	17%
<b>Ten to 100</b>	607	67%	48239	70%
<b>Total</b>	<b>908</b>	<b>100%</b>	<b>69,269</b>	<b>100.0%</b>

## Performance

The treated water flows over the course of 2024 are shown in the table below. The water flow for the Town is rated at and allowed to be 18,184 m<sup>3</sup> per day. This of course is four times the average flow rate and certainly three times the daily max experienced last year.

Table 24: 2024 Monthly Water Flows

Treated Water Flows (1,000 m <sup>3</sup> /d)												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<b>Rated</b>	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2	18.2
<b>Daily Max</b>	4.5	4.6	4.6	4.2	6.4	5	5.1	5.3	5.2	5	4	3.9
<b>Average</b>	3.6	3.6	3.4	3.1	3.4	3.6	3.8	3.8	3.6	3.5	3.1	3

There appears to be considerable room for growth, given the rated capacity of over 18,000 m<sup>3</sup>/day, compared to a maximum daily flow of 6,400 m<sup>3</sup>/day (May 2024), a monthly average of 4,800 m<sup>3</sup>/day, and a minimum monthly average of 3,800 m<sup>3</sup>/day (August 2024). The yearly average flow for 2024 was 3,500 m<sup>3</sup>/day.

<sup>13</sup> According to the TCA

<sup>14</sup> Transite may have been the material of choice for repair in this area rather than put in originally However Asbestos Cement or Transite was introduced in 1929 and was in common use by 1931.

Table 25: Water Asset Performance Measures

Asset Performances Measure	Current Value
Number of annual non-compliances	0-1
Cost efficiency (operating cost to provide service \$/household for water services)	A future KPI for the Town
Number of watermain breaks and repair time	5 to 7 per year with 1 Hour response time and 10-hour average repair time
Service interruptions (duration and number of users impacted)	Not tracked
Number of customer complaints	< 50 annually

## Levels of Service

Table 26: Level of Service for Water

LOS Parameter	Proposed Community LOS 2022-34	Proposed Technical LOS 2022-34
Scope	The water distribution system provides water service to properties across the Town. The extent of the network is shown in <b>Appendix A4.</b>	<ul style="list-style-type: none"> <li>2022: 3,347 connected services</li> <li>2023: 3,299 connected services</li> <li>2024: 3331 connected services</li> <li>2025 – 2034: 3830 expected connected services</li> </ul>
Scope	All properties with water service have fire flow. 2025-34 fire flow and water service	98% of properties in the Town (100% of connected properties in 2034)
Reliability	Interruptions to service area short in duration and addressed immediately such that duration of interruption is not significant. Duration of interruption by user is not individually tracked.	<ul style="list-style-type: none"> <li>2022: Zero connection days (no boil water advisories)</li> <li>2023: Zero connection days (no boil water advisories)</li> <li>2024: Zero connection days (no boil water advisories)</li> <li>2025 – 34: 2 connection days/y in the next ten years.</li> <li>5 to 7 watermain breaks experienced annually. Response time varies depending on severity and location of break.</li> </ul>
	<ul style="list-style-type: none"> <li>2022: 0 Non-compliance</li> <li>2023: 2 Non-compliance</li> <li>2024: 1 Non-compliance</li> <li>2025 – 34: 0-2 Non-Compliance/yr</li> </ul>	<ul style="list-style-type: none"> <li>2022: 2 Adverse water quality incidents (AWQI)</li> <li>2023: 1 AWQI</li> <li>2024: 7 AWQI</li> </ul>

Most watermain breaks (12) have been on Ma-te-Way Park Drive just past Haig Avenue. Watermain breaks have occurred more recently at the intersection of Harry Street and Hall

Avenue. As noted above in Roads, a water main repair is planned in 2025 for Ma-te-Way and design work is underway for both Harry Street and Hall Avenue.

### Risks

The Standpipe mixing system has failed and pending litigation a new mixing system, at an estimated \$65,000 but it is on hold until after litigation.

During the low water levels, the water is more stagnant in the river and becomes anoxic which leaches magnesium from the river bed and turns the water brown. This is concerning, but magnesium has only limited health impacts. Technical solutions can be implemented to limit the impact of magnesium.

The only major concern OCWA personnel expressed was the O’Brien pumping station. Other pumping stations also do not have back up power, but O’Brien is most critical as it overflows more easily, and they have about 30 minutes to get portable generators hooked up. In recent memory, there hasn’t been an overflow here, and Renfrew has a very reliable Hydro supply.

The Town is currently digitizing records of watermain breaks as a component of the GIS system to assist in identifying locations of common occurrences that will factor into prioritization of works. Changes can be made in the asset management software to track assets.

According to the TCA list, water pipes are as old as 105 years on the inner part of the Town including on Railway Avenue, Prince, and Argyle, etc., however these were likely changed in recent construction and not yet updated in the TCA as they have not been fully capitalized. However, what is concerning is if these antiques may serve the Hospital in the North of the River Catchment Area.

### Replacement Costs and Life Cycle Considerations

Age based replacement costs for the meters, mains and plant work out to \$2.6, \$47 and \$20.5 million respectively and annual life cycle funding should be \$74, \$833 and \$433 thousand per year. Considering the linear system is decidedly old in some areas and that it makes up over 30% of the system, there is a large backlog of \$5.2 million shown in year 2025. After that backlog, the following 9 years totals \$5.8 million with an average of \$640 thousand per year in line with the calculated Life Cycle Funding of \$832 thousand per year.

Table 27: Water Asset Replacement Costs

Water	Replacement (\$)	Funding (\$/yr)	10 yr Average	2025 Backlog	2026
<b>Meters</b>	\$2,585,030	\$74,315	\$240,044	\$0	\$0
<b>Mains</b>	\$47,000,570	\$832,749	\$1,095,170	\$5,196,585	\$847,873
<b>WTP</b>	\$20,485,922	\$433,052	\$804,063	\$49,665	\$0
<b>Water Total</b>	<b>\$70,071,522</b>	<b>\$1,340,115</b>	<b>\$2,139,277</b>	<b>\$5,246,250</b>	<b>\$847,873</b>

Table 28: Water Asset Replacement Costs & Forecast

Water	2027	2028	2029	2030	2031	2032	2033	2034
<b>Meters</b>	\$0	\$0	\$0	\$0	\$0	\$0	\$2,400,440	\$0
<b>Mains</b>	\$494,640	\$1,204,988	\$0	\$299,047	\$0	\$1,695,159	\$0	\$1,213,405
<b>WTP</b>	\$15,499	\$0	\$0	\$0	\$0	\$7,949,061	\$0	\$26,403
	<b>\$510,139</b>	<b>\$1,204,988</b>	<b>\$0</b>	<b>\$299,047</b>	<b>\$0</b>	<b>\$9,644,220</b>	<b>\$2,400,440</b>	<b>\$1,239,808</b>

**Replacement unit costs** for the water linear assets are determined for full reconstruction of a pipe segment, including consideration for trench and surface restoration. It is assumed that reconstruction works on the network will be completed using PVC piping. Replacement costs for the water assets were determined based on 2007 information augmented by recent tender costs.

Table 29: Watermains Unit Price/Diameter

Diameter (mm)	2007 (\$/m)	2025 (\$/m)	Length (m)	Replacement (\$)
18.75	\$360	\$644	84	\$54,399
25	\$360	\$523	965	\$505,122
31.25	\$360	\$523	409	\$214,273
37.5	\$360	\$523	1,051	\$549,960
50	\$445	\$647	1,912	\$1,236,775
100	\$445	\$647	9,984	\$6,458,587
150	\$445	\$667	23,577	\$15,725,666
200	\$460	\$669	13,943	\$9,323,166
250	\$475	\$690	5,403	\$3,731,052
300	\$490	\$712	4,799	\$3,418,421
350	\$490	\$712	1,250	\$890,631
400	\$570	\$829	5,905	\$4,892,517
			<b>69,283</b>	<b>\$47,000,570</b>

As shown above, the replacement cost is expected to be \$70 million with a yearly average budget installment of \$1.34 million. For a complete treatise on the subject, see Watson & Associates Renfrew Rate Studies 2021 and OCWA report.

### Life Cycle

Despite the fact that 30% of the linear system on an aged-based assessment could be humorously referred to as either the antique or pending antiquity, both the performance and the level of service reported above are acceptable. Clearly an age-based assessment does not capture the story for the water mains. Old cast iron pipes are performing beyond their expectations quite likely due to the Town’s drainage characteristics and the non- corrosive chemistry of the sub pavement environment.

The replacement target aside from obvious leaks and main breaks is the cast-iron infrastructure. Cast-iron's flake graphite component is more prone to stress cracking and corrosion the spherical component of ductile iron.<sup>15</sup> As previously stated almost for sure PVC will be the material used for replacement pipe at this time rather than iron or Transite.

There are certain risky areas of the Town as mentioned above near the hospital, schools, retirement areas and Town's main core, but for the most part, the age of the system is not an immediate problem. Replacement of water pipes should either be in problem areas like Ma-te-Way or Harry Street mentioned above or follow the course of road replacement.

### **Summary**

Renfrew's Water Treatment Plant is capable of supplying more than 18,000 cubic meters per day, while during 2024 the average usage was less than 4000 cubic meters per day. Of the 69.3 km of water linear assets (pipe), ~ 16 % of the system is considered to be aged out and in 10 years, without construction, 30% would be aged out (i.e. 20.8 km of the 69.3 km total length of the system). However, the performance of the plant is good – there have been no boil water advisories - and the pipes performance is beyond their years with 5 to 7 breaks per year and zero connection days.

---

<sup>15</sup> Ductile iron is alloyed with magnesium to produce a spherical graphite component that resists cracking in is less prone to corrosion.

## Wastewater

### Wastewater Point Assets

The Town owns and operates a wastewater retrieval system consisting of 52 km of linear pipe. At the wastewater plant, the average daily flow was 4,941 m<sup>3</sup>/d in 2024; 52% of the rated capacity of 9500 m<sup>3</sup>/day. Annual flows are from 1.9 to 2.0 million cubic meters per year.



*Figure 9: Wastewater Treatment Plant*

There is a total of 6 sewage pumping stations that discharge to the Class 111 Waste Water

Treatment facility new in 2009, located at 301 Mutual Avenue. The Sewage Pumping Stations (SPS) are located on Arthur Avenue, O'Brien Road, Lisgar Avenue, June Street, Coleraine Drive and Forestview (Hunter Gate) Crescent. See Appendix A5 for locations. There are authorized overflow points at the Hunter Gate, and June Street's SPS.

The WWTP, new in 2009, is equipped with a:

- 25m<sup>3</sup> receiving tank to 750 mm influent pipe,
- 2 aerated grit tanks,
- 2 grit slurry pumps.
  - RAW and RAS pump impellers 2021
- 2 grit cyclones, and
- One grit classifier/dewatering unit – separates inorganic particulate to dumpster.

The remaining organic material continues through:

- 2 three-pass aeration tanks,
- 2 two-pass clarifiers,
  - Chain tensioner 2021
- Aerobic digester,
- Dewatering centrifuge (Sludge cake hauled to the Renfrew Landfill Site), and
  - Centrifuge – rebuild in 2016
  - Centrifuge gearbox in 2021
- Ultraviolet disinfection - final effluent discharge to the Bonnechere River.

The facility is equipped with a 750-kW back-up diesel generator. The six (6) sewage pumping stations share three portable backup power generators.

Table 30: Wastewater Facilities Replacement Costs

WW Facility	Replacement (\$)	Capacity (m <sup>3</sup> /d)	Age	
<b>WWTP</b>	\$40,000,000	9,500 rated, 50,000 peak	16	Good <sup>16</sup>
<b>O'Brien Road SPS</b>	\$1,000,000		45	Good <sup>17</sup>
<b>June Street SPS</b>	\$250,000		18	Good
<b>Hincks SPS</b>	\$250,000		22	Good
<b>Lisgar SPS</b>	\$300,000		70	Poor
<b>Coleraine SPS</b>	\$400,000		8	Very Good
<b>Hunter Gate SPS</b>	\$500,000		7	Very Good



Figure 10: Renfrew WWTP

The Wastewater Treatment Plant, constructed in 2009 with further upgrades in 2021, has a rated capacity of 9,500 cubic meters of flow per day, with a peak hydraulic capacity of 50,000 cubic meters of flow per day, with bypass flows further available.

Total cost for the facility was \$28,500,000 with component costs allocated as follows:

Table 31: Total Facility Costs

Component	Split of Costs (\$)	Expected Life (yr)
<b>Building</b>	13,819,000	95
<b>Equipment</b>	6,141,000	15
<b>Conveying Equipment</b>	573,000	35
<b>Mechanical</b>	3,998,000	25
<b>Electrical</b>	3,845,000	25
<b>Total</b>	28,500,000	

Since construction there has been numerous equipment betterments: in 2016 and in 2021 to the centrifuge clarifier odour control and Raw Activated Waste (RAW) and Return Activated Sludge (RAS) impellers totalling ~\$150,000.

<sup>16</sup> OCWA & Morrison Hershfield 2020

<sup>17</sup> J.L. Richards and Associates 2014

All things considered, the annual replacement cost is \$525,000/yr.

Table 32: Wastewater Treatment Plant Maintenance Costs

Component	Maintenance Cost (\$)	Year
HVAC Replacement (heaters, louvers, fans, etc.)	30,000	2025
Variable Frequency Drive Replacement	110,000	2026
Boiler System Parts Replacement	14,000	2028
Blower Upgrade	150,000	2028-2029
SCADA Upgrade	35,000	2029
Pump Rehabilitation/Replacement	305,000	2028-2030
Lifting Device Replacement	28,000	2028-2030
Centrifuge System Replacement	162,000	2030
Pump Rebuilds	50,000	2031
Gearbox Replacements	25,000	2033

Table 33: Level of Service for Wastewater

LOS Parameter	Proposed Community LOS 2022-34	Proposed Technical LOS 2022-34
Scope	The Town provides wastewater collection for connected properties; see Appendix A5.	2022: 3305 connected services 2023: 3299 connected services 2024: 3290 connected services 2025-34: 3430 est. connected services - see water for same
Reliability	Bypass point located at sewage treatment plant to protect treatment system. Zero to three minor overflows per year at sewage plant. Despite the expected increase in weather severity over the next decade, I&I work is expected to maintain the 0 to 3 minor overflows per year at the WWTP.	2022: 2 bypass/overflow events. August – due to heavy rainfall (20.6 m <sup>3</sup> ) and September – due to equipment failure (1000-1200 m <sup>3</sup> ). 2023: 1 overflow event in July due to heavy rainfall (18383 m <sup>3</sup> ). 2024: 2 overflow events, both in July, due to extreme rain events 8.5 m <sup>3</sup> and 4.89 m <sup>3</sup> respectively. 2025 – 34: <2
Reliability	3-5 sewage back-ups due to blockage or deficiency in sewer main or lateral within the Town’s responsibility (property owner vs Town responsibilities defined in BL-66-2015).	2022: 2 emergency repairs, 4 unplanned line cleanings. 2023: 2 emergency lateral repairs, 3 unplanned line cleanings. 2024: 3 emergency lateral repairs, 3 unplanned line cleanings. 2025- 34: <5 lateral repairs, <5 unplanned line cleanings.

Reliability	Storm water has potential to enter the wastewater system through multiple points including roof leaders, sump pumps, inflow and infiltration within manholes, and damaged pipe joints. I&I reductions have helped reduce overflow events.	2022 to 2024: no effluent violations. Town's annual wastewater effluent performance reported below.  2025 – 34: no expected effluent violations
Reliability	Develop guidelines and engineering design standards – additional capacity created in pipe network and separation of combined sewer – design for high peak factor MECP.	Total annual flow 2022: 1,868,221 m <sup>3</sup> 2023: 2,018,837 m <sup>3</sup> 2024: 1,808,522 m <sup>3</sup> 2025 – 34: 1,826,607 – 1,997,733 m <sup>3</sup>

Table 34: Annual Effluent Flow Sample Results

Parameter (Annual Average) ECA Limit – Objective	2022	2023	2024	2025-2034
<b>CBOD5 (mg/L)</b> ECA 15 - 10	3.07	2.98	3	3
<b>TSS (mg/L)</b> ECA 15 - 10	3.75	3.88	3.66	3.9
<b>Total Phosphorous (mg/L)</b> ECA 0.75 - 0.7	0.07	0.09	0.07	0.1
<b>Total Ammonia Nitrogen (mg/L)</b> ECA 10	0.15	0.63	0.43	0.7
<b>E. coli (geometric mean average (cfu/100mL))</b> ECA 200 – 150	7.58	14.25	8.07	10.0
<b>pH</b>	6.60 – 8.19	6.62 - 7.35	6.59 – 7.35	6.9 - 8.0

Asset performance measures were determined in consultation with the Town, which provide relevant metrics against which the Town can gauge the performance of their assets. The performance measures for wastewater, and their current values are shown below.

Table 35: Wastewater Asset Performance Measures

Asset Performances Measure	Current Value
Cost efficiency (operating cost to provide service - \$/household for wastewater services)	To be established
Number of customers that have experienced an unplanned service interruption in the last year as a result of a deficiency or blockage within the Town's responsibility	<10 annually
Percentage of wastewater flows that meet environmental objectives when discharged	99%
Number of non-compliances and spills	<5 annually

### Linear Wastewater Asset Inventory and Life Cycle Activities

In the lifecycle of a sanitary sewer pipe asset, there are multiple activities that can be undertaken, depending on the asset attributes. The actual 2024 lifecycle activities to be used on the Town assets aside from routine flushing were follows:

- Collapsed pipe at 90 Greg Street
- Poor slope at 848 Raglan St. South - laterals were replaced
- Low flow at Arnprior and Cross
- Blockage at Hincks and Albert - Vac truck had to remove impediments
- Power outage affecting all Sewage Pumping Stations

Another was an unattached lateral after new construction at 150 Lochiel Street, and on Gillan Road, a wastewater service was improperly attached to the storm main. These maintenance activities are quite minimal for a system that dates back to the 1930s, has 10,000 plus meters of clay pipe, and 20 to 23% of the system that can be considered aged out.

*Table 36: Wastewater Pipe Material*

Material	Length (m)
Concrete	26651
PVC	13422
Vitrified Clay	10483
CIPP	1153
Other*	332
Total	52,040

*Table 37: Wastewater Linear Assets*

Useful Life	Number of Assets	Length (m)	%
Less Than Zero	160	10,595	20%
Zero to Ten	26	1,487	3%
Ten to 100	581	39,958	77%
Total	767	52,040	100%

### Replacement Costs and Life Cycle Considerations

Replacement on wastewater mains is \$51 million based on recent quotations and work in the field in 2025. The then calculated annual requirement of \$379 thousand. Not unlike water and storm networks previously considered, the linear system is decidedly old in some areas, and it makes up over 23% of the system. There is a large backlog of \$17 million shown in year 2025, and similar to water and storm networks, this backlog may have been reduced as per recent construction and not yet accounted for in the TCA. After that backlog the

following 9 years totals only \$1.4 million and averages \$160k/yr, in the ball park of the calculated annual of \$379k/yr.

Table 38: Wastewater Asset Replacement Costs & Forecast

Replacement Cost	Annual Budget	2025	2026-2031	2032	2033-2034
\$50,932,300	\$378,700	\$17,187,200		\$1,431,900	

**Replacement unit costs** for the wastewater linear assets are determined for full reconstruction including trench and surface restoration. Reconstruction works on the network will be completed using concrete and PVC piping. Replacement costs for the wastewater assets were based on 2007 information aligned with recent tender costs for 150 mm and 200 mm pipes. For 2025 construction, costs have increased at a full 5% per year for waste water mains installation since 2007.

Table 39: Wastewater Mains Unit Price/Diameter

Diameter (mm)	2007 (\$/m)	2025 (\$/m)	Length (m)	Replacement (\$)
100	\$300	\$722	23	\$16,606
150	\$400	\$814	3,550	\$2,889,700
200	\$400	\$990	23,394	\$23,159,763
225	\$360	\$866	1,511	\$1,309,191
250	\$440	\$1,059	7,862	\$8,325,382
300	\$500	\$1,203	4,836	\$5,818,604
375	\$360	\$866	3,675	\$3,184,217
450	\$360	\$866	4,194	\$3,633,177
600	\$360	\$866	2,269	\$1,965,823
750	\$360	\$866	603	\$521,996
900	\$360	\$866	116	\$100,067
1200	\$360	\$866	9	\$7,797
			<b>52,040</b>	<b>\$50,932,322</b>

### Life Cycle Activities

Ten of the fifteen complaints in 2024 were directed to plumbers as there were problems within the household. The remaining five were actual blockages, and one was considered bad enough to be added to a weekly check list. Specific areas of interest, the weekly checklist, are shown below as a result of maintenance records and system specific knowledge. This totals close to 1600 meters of “problem” lineage out of 52 km mains or 3% of the system, and 55% of the problems are vitrified clay.

Table 40: Problem Wastewater Mains

Location	From	To	Length (m)	Diameter (mm)	Material
Aberdeen Street	Basswood Avenue	Mason Avenue West	90.50	200	Concrete
Aberdeen Street	Basswood Avenue	Mason Avenue West	100.50	200	Concrete

Arthur Avenue	NA	Stewart Street	76.50	150	Vit' Clay
Haig Avenue	Dufferin Street	Vimy Boulevard	92.00	200	Concrete
Lisgar Avenue	Tupper Street	Blake Street	94.00	250	Concrete
Mary Street	Tupper Street	Blake Street	53.00	150	Vit' Clay
Mason Avenue West	NA	NA	45.00	200	PVC
Oak Crescent	NA	Frank Dench Street	69.00	200	Concrete
Oak Crescent	NA	Frank Dench Street	72.00	200	Concrete
Opeongo Road	NA	Bonnechere Street	7.00	150	Vit' Clay
Peter Street	Wilson Street	Munroe Avenue East	91.00	150	Vit' Clay
Peter Street	NA	William Avenue	69.00	250	Vit' Clay
Pine Avenue	York Street	Raglan Street South	28.00	150	Vit' Clay
Queen Street North	Renfrew Avenue E.	Cross Avenue	108.50	200	Vit' Clay
Queen Street North	Cross Avenue	Patrick Avenue	82.00	300	Vit' Clay
Sidney Avenue	McLean Street	NA	26.50	250	Concrete
Sidney Avenue	McLean Street	NA	124.00	250	Concrete
Thompson Avenue	Ross Street	Carswell Street	127.00	150	Vit' Clay
Xavier Street	Renfrew Avenue E.	Railway Avenue	81.00	225	Vit' Clay
Xavier Street	Renfrew Avenue E.	Railway Avenue	77.00	225	Vit' Clay
York Street	Pine Avenue	NA	77.00	150	Vit' Clay
Rotary	not on the TCA list				
Smallfield Lane	not on the TCA list				

Partners to the problem pipes above are the troubled manholes listed below:

- Pine & York
- Railway at Xavier
- Ross at Thompson
- Rotary
- Sidney at Dead End
- Opeongo at Dead End
- Peter at Dead End

There is decided overlap of problem wastewater mains and manholes at Peter, Opeongo, Sydney, Rotary and Thompson/Ross.

Current construction materials of the wastewater collection assets are varied. However, best suggested practice for the Town going forward is for construction and replacement to be undertaken with PVC material for pipes up to 600 mm and concrete for pipes of 600 mm in diameter or larger.

It has been noted that there is efficiency in conducting capital reconstruction works where adjacent asset types can be reconstructed simultaneously. Part of the Town's current

strategy is to use capital works projects from other linear asset categories to identify any upcoming capital works on adjacent linear infrastructure (such as road works, watermain or storm), and align the timing of the works such that there is efficiency in the design, construction and material costs associated with the project, and reduced disruption to service delivery.

### **Summary**

On the return side, wastewater, the average daily rate is 4950 cubic meters or 52% of the current rated capacity of the wastewater treatment plant. Wastewater linear assets include 52 km pipe, 23% of which has been aged out or will be by 2025. However, the pipe performance is that of a younger system in that there were less than 10 experienced blockages in homes last year and from 2023 to 2024. From the wastewater plant, there were no effluent violations and readings are a tenth to a third of the ECA limits.

## Fleet & Equipment

The Town owns 67 assets within its fleet utilized by all of Fire, Public Works, Landfill, Water, Wastewater, and Recreation, with a replacement cost of \$9.7 million and annual budget requirement of \$534 thousand. The fleet assets are utilized for service delivery within various departments of the Town. The fleet is varied and specialized with the likes of ice re-surfacers and flail mowers in Recreation, aerial trucks and pumpers in Fire, sidewalk plows and sweepers in Public Works, the 26 tonne Landfill Cat Compactor, and the common pickup. The inventory reported and subsequent analysis is based on the Town's TCA.

Table 41: Fleet Lifecycle

Fleet	Historical Cost	Estimated Replacement Cost	Annual Replacement Cost	10 yr Average
Protection Services	\$769,114	\$4,136,271	\$171,910	\$3,749
Transportation Services	\$2,770,969	\$3,341,310	\$216,987	\$182,558
Environmental Services	\$998,204	\$1,153,632	\$72,655	\$2,949
Environmental - Water	\$149,814	\$182,018	\$13,984	\$8,086
Environmental - Sewer	\$77,705	\$107,483	\$6,952	\$10,748
Recreation and Cultural Services	\$677,578	\$793,736	\$51,917	\$44,577
<b>Total</b>	<b>\$5,443,384</b>	<b>\$9,714,450</b>	<b>\$534,405</b>	<b>\$252,667</b>

For an understanding of future replacement costs of the fleet assets, the historical cost of each asset has been inflated by a value of 2%, compounded annually since the acquisition date. Where available, recent quotations were used. The expected replacement cost for all fleet assets is approximately \$9.7 million. Notably, the replacement cost for protective services seems extremely high. This is due to the aerial truck replacement being estimated at over \$2 million, and pumper replacement in excess of \$1 million each. Their value has far out distanced normal inflationary pressures.

Similarly for equipment total historical cost was \$1.9 million with expected replacement of \$2.3 million and a \$177 thousand life cycle replacement need. Protective services and recreation exhibit the most backlog.

Table 42: Equipment Lifecycle

Equipment	Historical Cost	Estimated Replacement	Annual Replacement	10 yr Average
General Government	\$189,514	\$235,765	\$27,311	\$96,320
Protection Services	\$452,438	\$581,519	\$34,005	\$124,025
Transportation Services	\$582,470	\$650,959	\$49,492	\$26,134
Environmental - Water	\$100,248	\$115,294	\$7,855	
Environmental - Sewer	\$132,918	\$164,950	\$12,473	\$39,572
Recreation and Cultural Services	\$324,280	\$437,542	\$29,572	\$190,657
Recreation - Library	\$51,598	\$58,836	\$4,825	\$3,703
Planning and Development	\$29,823	\$38,509	\$11,800	\$38,509

<b>Total</b>	<b>\$1,863,290</b>	<b>\$2,283,374</b>	<b>\$177,333</b>	<b>\$518,920</b>
--------------	--------------------	--------------------	------------------	------------------

Table 43: Levels of Service for Fleet & Equipment

LOS Parameter	Community LOS 2025-34	Technical LOS 2025-34
Scope	Fleet assets stored as required in: Fire Hall, Works Garage, Landfill, Ma-te-Way Activity Centre, Henry Eady and Garage	
Quality	Average Condition is Fair	Regulatory Local Standards Provincial Equipment Standards - Manufacturer Recommendations – Driver training

Table 44: Levels of Service - Fleet Assets

Department	Assets	Replacement Cost	Annual Replacement	Vehicles/Town Area (km <sup>2</sup> )	Town Persons/Vehicle
<b>Protection Services</b>	4	\$4,136,271 <sup>18</sup>	\$171,910	0.31	2100
<b>Transportation</b>	24	\$3,341,310	\$216,987	1.87	350
<b>Environmental Services</b>	2	\$1,153,632	\$72,655	0.16	4200
<b>Environmental Water</b>	3	\$182,018	\$13,984	0.23	2800
<b>Environmental Sewer</b>	1	\$107,483	\$6,952	0.08	8400
<b>Recreation</b>	21	\$793,736	\$51,917	1.64	400
<b>Miscellaneous</b>	13			1.01	646
<b>Total</b>	68	\$9,714,450	\$534,405	5.13	124

### Fleet Strategy

The AMP strategy is driven by the age of the fleet asset; however, the Town must temper this strategy to include the performance of the asset. The Town may decide to use a maintenance vs capital replacement as an indicator of performance; \$/km or \$/hr. Regardless, fleet assets are purchased new, and replaced following the expected useful life, or when it no longer performs satisfactorily. There will be a point in the lifecycle where the risk and maintenance costs are such that replacement of the asset will be the preferred solution.

Many of the assets have surpassed their expected useful life, with 12 assets (across all department categories) having been identified for replacement prior to the current year (2025).

<sup>18</sup> Despite there being only 4 vehicles in Fire, the replacement cost outweighs the 24 vehicles in Transportation due to the expected \$2.1 million for an Aerial truck and \$1.2 million for a pumper.

The average expenditure over the 10-year timeframe is approximately \$253,000; however, the plan contains 2 years when the expenditure is zero, 2027 & 2029. The Town has the opportunity to adjust the replacement year of the assets (where appropriate) to make the plan more affordable on an annual basis.

Table 45: 10-Year Financial Plan (\$ in thousands)

Department	10yr Average	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Protection Services	3.7	37.5									
Transportation Services	182.6	506.9	36.9				283.2	247.1	27.8	114.5	609.2
Environmental Services	2.9	29.5									
Environmental - Sewer	10.7	99.3			8.2						
Environmental - Water	8.1	38.6					42.3				
Recreation	44.6	158.5			44.6		92.4	118.6	7.5	24.1	
<b>Total</b>	<b>252.7</b>	<b>870.2</b>	<b>36.9</b>		<b>52.8</b>		<b>417.9</b>	<b>365.7</b>	<b>35.3</b>	<b>138.7</b>	<b>609.2</b>

The backlog of fleet assets for 2025 is over \$870k, consisting of large items like a loader and plow truck for public works, replacement of a 30-year-old 1995 5-ton dump-truck for wastewater, and an ice re-surfacer for recreation. This is more than could be expected in a yearly budget, even beyond the calculated \$534k for annual replacement, so decisions have to be made based upon reliability, not useful life estimates, to push fleet vehicles into years 2026, 2027, 2028 and even 2029. Notice especially that years 2027 and 2029 have no items in Table 44 above. The annual replacement value should be at \$534k, but this is not possible due to the capital funding gap.

There is a significant backlog of fleet vehicles in that the numbers show a value of \$870k in 2025. The Town has been making do, considering one of the backlogs is a dump truck that is 30 years old and a 25-plus year-old Olympia<sup>19</sup>. This may have been rectified in 2024-2025, but the point is that replacement is not based entirely on age. Useful Performance Indicators may be developed by the Town like maintenance \$/km or \$/hr of operation.

**Summary**

Replacement costs for rolling stock and equipment are \$9.7 million and \$2.3 million respectively, with total annual funding requirement for both at \$712,000. At present, less than \$290 thousand is directed toward them. Over the next ten years, a heavy maintenance and make do strategy must be mandated to push out the purchase year. Useful Performance Indicators may be developed by the Town like maintenance \$/km or \$/hr of operation.

<sup>19</sup> This is based upon the 2023 audited TCA may have been rectified in 2024.

## Facilities

Municipal buildings provide a variety of services for the Town. This asset category includes buildings that are both accessible and inaccessible to the public and aid in service delivery related to a number of municipal departments. The Town owns and maintains 14 municipal buildings, with a replacement value of \$86.55 million, and an annual funding requirement of \$3.65 million.

Note: Analysis of the water and wastewater buildings have been included in their respective sections.



Figure 11: Low Square - Cenotaph

An inventory of the current state of the building assets is in the table below. This table provides detail regarding the age, useful life, condition rating, size, and replacement cost. Estimated replacement costs were based on values provided by the Town, provided on a componentry level, and the replacement cost for each building represents a summation of these componentry costs. The replacement cost was determined through inflation by 2% annually of the historical cost since year of construction, or of the TCA replacement cost since the identified year of replacement.

The total replacement cost for all of these buildings is \$86.5 million.

Table 46: Building Assets Inventory

Building Asset	Average Age (yrs)	Useful Life (yrs)	Condition 1 – good, 5 – poor	Square Footage	2025 Replacement Cost (\$ millions)
1 Innovation Dr	45	36	2.3	156,120	\$17.85
550 Hall Ave.	48	42	3.6	52,108	\$6.085
Fire Hall	69	30	2.5	8,000	\$2.971
Henry Eady Bld.	40	32	3.0	2,100	\$0.132
Kallies Pavillion	43	32	5.0	2,100	\$0.094
Library	78	31	2.5	1,500	\$3.309
myFM Centre	19	20	2.4	86,960	\$45.7
Millennium Station	25	32	3.0	350	\$0.033
Town Hall	41	36	2.4	14,465	\$5.62

Public Works Garage	67	36	2.0	9,651	\$1.78
Recreation Centre			2.4	5,475	\$2.41
Salt & Sand Shed	37	36	3.6	1,675	\$0.145
Tourism Booth	32	32	4.0	375	\$0.038
Tourist Information	8	36	1.2	1,200	\$0.017
<b>Total</b>					<b>\$86.5</b>

### Current Condition Data

Information reported in this AMP and the subsequent analysis are based on the current Building Condition Assessment (BCA) and TCA database. The BCA reporting is for the Library and Firehall, Ma-te-Way Activity Centre, Municipal Garage, Recreation Centre, Town Hall, and 1 Innovation Drive. All BCA reporting was done by Morrison Hershfield, with 1 Innovation Drive being done in 2018 and all others in 2013.

Table 47: Level of Service for Buildings

LOS Parameter	Community LOS 2025-34	Technical LOS 2025-34
Scope	Locations of buildings are shown in Appendix A6	Cultural Services (2) Fire (1) General Government (5) Library (2) Recreation (4) Roads (2) Tourism (2)
	See inventory and condition rating above	Floor Space – see table above
	Emergency service available 24/7 Administration during business hours Mon – Fri 8 to 4 Library business hours and Saturday Rec facilities available seasonally or rental basis	Legal regulatory and local standards: Accessibility (AODA) Health and Safety MECP drinking water standards Ontario Building Code

### Management Strategy

In general, the building assets are in fair to good condition and performing adequately to provide the intended services. The replacement costs are \$86.55 million with a funding requirement of \$3.65 million. However, there is a massive backlog of \$31 million, far beyond the Town's financial capability. That backlog is made up primarily of \$6.9 million in recreation, \$2 million in the library, \$3.2 for Town Hall, \$2.6 at 550 Hall, but a full 42% of the backlog is in 1 Innovation Dr. at \$13.34 million.

The Town strategy should be to maintain (or improve where appropriate) the condition and performance adequately to provide the intended services. No major replacement or new building projects can be considered but similar to the Fleet, a maintain and make do strategy is required.

Table 48: Asset Replacement Costs - Facilities

Facilities	Replacement (\$)	Funding (\$/y)	10 yr Average	2025 Backlog
<b>Government</b>	\$32,307,841	\$1,250,441	\$1,914,408	\$19,144,075
<b>Protection</b>	\$2,971,745	\$130,422	\$261,705	\$1,554,398
<b>Transportation</b>	\$1,928,726	\$73,688	\$161,065	\$1,610,647
<b>Recreation</b>	\$46,015,666	\$2,033,096	\$978,654	\$6,905,540
<b>Library</b>	\$3,309,249	\$161,686	\$201,990	\$1,996,581
<b>Tourism</b>	\$17,047	\$774	\$0	\$0
<b>Facilities Total</b>	<b>\$86,550,274</b>	<b>\$3,650,106</b>	<b>\$3,517,822</b>	<b>\$31,211,241</b>

The Town’s asset management strategy for buildings relies on building condition assessments to establish the current state of the assets and to recommended works and associated timeframes. The usage of such assessments for complex building assets can provide the Town with reliable information that can be used for capital planning and asset management. The Town should continue to procure detailed building condition assessments at a sufficient frequency, suggested to be every 5 years.

Reconstruction works should consider on a case-by-case basis if the asset is to have a similar or altered service level. This could include changes to the facility to accommodate growth requirements, or changes based on accessibility. Management of building assets should also include climate change considerations, roof replacement draining, etc.

The Town should provide annual updates to LOS and KPI measures to gauge performance of the Town against quantified targets. Where data is not yet available to LOS or KPI measures, a strategy for collecting, verifying and integrating the data should be developed and implemented.

## Landfill

The Town landfill site is located on the north eastern corner of the Town border, accessed from Bruce Street. The landfill site has serviced the Town and surrounding area for 70 years and still has an estimated 50 years of useful life.

### Assets and Condition

The landfill site is 40.73 hectares in size, with an operating waste footprint of 10 hectares. The site is in compliance and is not adversely affecting the condition of the Bonnechere River.



There are three buildings located on the landfill site:

- Household waste depot
- Equipment garage
- Scale House – 20 yr useful life

Site equipment includes:

- Caterpillar 938M Loader - Purchased in 2019 (\$342k); 12 yr life
- Caterpillar 816K Compactor - Purchased in 2019 (\$656k); 15 yr life
- Scale \$120,000 – 12 to 15 yr life

Table 49: Level of Service for Landfill

LOS Parameter	Community LOS 2025-34	Technical LOS 2025-34
Scope	Located part of Lot 14, access from Bruce Street	All properties have waste collection services
Quantity	Site Hours: W/T/F/Sa: 8am to 4 pm (Extended T hrs. May to Aug.) Services include domestic, commercial & Industrial waste, recycling, e-waste, leaf yard & tires, bio solids.	7,062 tonnes 2024 6,893 tonnes 2023 12,912 cubic metres 2024 12,604 cubic metres 2023 KPI = .547 t/m <sup>3</sup> 2024 KPI = .555 t/m <sup>3</sup> 2023
Quantity		Remaining Life Stage 4 – 20 yrs Stage 5 – 30 yrs

### Performance

The performance strategy for the landfill site is to maximize the operational lifespan of the landfill facility and continue to provide adequate waste services to the Town.

The Town is now using Stage 4 of the site and still has Stage 5 to utilize. In 2019, based on average filling results from the previous five years, it was expected that there was 21 years of capacity remaining within Stage 4 (Golder Associates Ltd.). While in the 2024, analysis was done based on a five-year average annual volume consumed, and it was estimated by ATS Canada Inc. that the remaining site life for Stage 4 is now about 20 years, rather than 16 as might be expected. This is due to proper compaction, well defined work spaces, cover material utilization, and good site management.

### **Operational Considerations & In-Kind Services**

In 2024, the landfill generated \$455,000 in tipping fees, \$5,000 in collection site fees (for being an e-waste collection site) and \$75,000 in cost recoveries (internal transfer from curbside collection account (taxation). As a recycling depot host site, the landfill generated \$10,000 in revenue which is recorded under recycling, not landfill operations. Annual operating costs are typically in the \$650,000-\$700,000 range, but that will go up with some large capital expenditures needed in the next few years, and the needed addition of another 0.5 FTE staff member.

However, it is noteworthy that the landfill provided the Town an estimated \$2.2 million of in-kind disposal services. In-kind being those services requiring operational effort & expenses for the landfill, with no offsetting revenue generation. Based on \$100/tonne the in-kind value determined for 2024 is as follows:

- \$1,880,000 for excess soils from road construction
- \$110,000 in curbside collection waste (excludes \$75,000 internal transfer)
- \$13,900 in Town waste
- \$134,300 in biosolids

In 2024, the Landfill received 18,700 MT of soils from road construction and spent \$40,000 on a bulldozer, plus \$35,000 to make the excess soil into a drivable road (shaping and topping with imported gravel). Clearly the Landfill provides services to the Town to alleviate not only costs from projects but also core operations like wastewater's biosolids.

### **Risk**

The main risk for the landfill site is that it could be negatively impacting the water quality of the Bonnechere River. According to the results of the 2024 Environmental Monitoring and Operations Report by WSP Canada Inc. surface water impact assessment, "it does not appear that the Renfrew Landfill is having a comparatively observable impact on water quality in the Bonnechere River". Excellent news for a site that has been operating 70 years with conceivably another 50 years remaining.

### **Summary**

The site is in compliance and not adversely impacting the water quality of the Bonnechere River. An overall performance indicator is the remaining life of the site. Good site management has extended the life of Stage 4 of the site. The 2019 survey stated 21 years remaining, while 2024 survey revealed that 20 years still remain, not the expected 16. Total

site life with the remainder of Stage 4 and the move to Stage 5 is 50+ years, while more than adequately servicing the Town and surrounding area at a high service level. Pack density of over 0.5 tonnes/m<sup>3</sup> for both 2023 and 2024 is commendable. The Waste Site provides in-kind services to the Town in the order of \$1 to \$2 million per year!

## Green Assets

As per O. Reg 588/17, green infrastructure assets must be incorporated into a municipality’s asset management planning. These can include Natural, Enhanced and Engineered Assets. Enhanced and Engineered assets such as parks, and stormwater ponds more closely follow the lifecycle and asset management needs of traditional “grey” assets.



Figure 12: McDougall Mill Museum

However, since natural assets are, of course, naturally occurring, they do not always follow traditional asset or financial management practices. As a result, the process for natural asset management is not as well-defined as it is for traditional assets. This has affected the amount of information that was able to be included within the AMP. Some key differences between traditional and natural assets are shown in below.

Table 50: Characteristics of Grey vs Green Assets

Traditional “Grey” Asset	Natural “Green” Asset
Typically designed to have a specified estimated service life to plan replacement.	Do not have an end-of-life or replacement schedule and are typically maintained in perpetuity unless the asset dies or is irreparably damaged.
Service capacity is immediately available upon construction and replacement costs can be gathered from market data.	Desired service capacity can take decades to achieve, and many natural assets increase in value over time. Therefore, replacement costs cannot always be calculated based on simply acquiring a new asset
Typically, only provides the service it is intended to perform and can be quantified.	May also provide additional ecosystem services that benefit the Town but may not be able to be quantified at this time (e.g. carbon sequestration benefits, wildlife habitat etc.).
Are typically included in Generally Accepted Accounting Principles (GAAP) or Tangible Capital Assets (TCA) reports.	Are typically not included in Generally Accepted Accounting Principles (GAAP) or the Tangible Capital Assets (TCA) reports which means they are not directly included in the Town’s financial reporting.
Exist within the municipal boundary with clear municipal asset ownership.	This may result from a larger system of interconnected features which may span multiple jurisdictions and have multiple stewards (e.g., watershed catchment which may provide stormwater management for many municipalities).
Many available best practices and guides.	Few available best practices for natural asset management which could be used to develop this plan.

## Natural Assets

For Ontario municipalities to meet O. Reg 588/17 for natural assets, the scope of this AMP must cover municipally owned natural assets. The inventory in the table below includes all known natural assets that exist within the municipal boundary as of April 2025. Additionally, garden beds and urban trees have been included, although these assets are better described as enhanced or engineered green assets.

Many of these assets extend beyond the municipal boundary, however only the portion contained within the municipal boundary are included in quantity estimates. Additionally, due to these assets extending beyond the municipal boundary, the responsibility for maintaining these assets is shared with other stakeholders. Currently, the data confidence is Low-Medium for both the total asset quantities.

The identification of Town-managed natural assets is an ongoing process which, as nature, is dynamic. Additionally, some assets do not fit neatly into specific categories and may provide multiple benefits which makes it difficult to fully quantify the individual natural assets. Replacement value and condition are not yet able to be quantified, and the average age would not be applicable for natural assets. Collecting additional inventory data is a continuous improvement item.

*Table 51: Summary of Town of Renfrew Natural Assets*

Asset	Quantity
Bonnechere River	6775 m
Smith's Creek	4254 m
Garden Beds	200 m <sup>2</sup>
Environmental Protected Zoned Lands & Ravines	TBD
Urban Canopy & Woodlands	~50 hectares

Natural assets often deliver core services to the public. When assessing the condition of natural assets, it is important for municipalities to identify the services these natural assets are providing, in order to assess the capacity for these assets to continue to deliver these services. As part of this initial AMP development, the Town explored the key natural assets that exist within the Town and connected these assets to the service that was being provided, which is shown below. This information will be used as the starting point for developing a more robust condition methodology as well as for outlining initial asset owner responsibility.

*Table 52: Service of Natural Assets*

Natural Asset	Service
Bonnechere River	Drinking Water Source, aquatic habitat, recreational opportunities
Smith's Creek	Habitat, flood mitigation
Garden Beds	Green space, habitat and urban beautification

Environmental Protected Zoned Lands & Ravines	Habitat, climate change mitigation, flood mitigation, improved air quality
Urban Trees & Woodlands	Improved air quality, reduced urban heat island effect, enhanced property values, increase aesthetic appeal and property values.

## Enhanced Green Assets

### Trails

There are several existing multi-use trails and paths in Renfrew outlined in the table below. The Town has installed five sections of multi-use paths (MUP), totalling approximately 6.4 kilometres. They run in two directions along Stewart Street, Veterans Memorial Boulevard, O’Brien Road, Barnet Boulevard, Gillan Road, and Raglan Street South. There are also three parks with existing trails including McConnell Park, Ma-te-Way Park, and Fortington Park. Finally, three of these trails, the Algonquin Trail, the K&P Trail, and the Millennium Trail, total approximately 11 kilometres within the Town’s boundary and extend into adjacent municipalities.<sup>20</sup>

Table 53: Town of Renfrew Trails

Trail Name	Type	Length (m)	Surface	Owner
Algonquin (CPR)	Multi Use	6,500	Stone Dust	County
K&P Trail (K&P)	Multi Use	940	Gravel	County
Millenium (CNR)	Multi Use	3,400	Gravel	Town
Stewart Street	Multi Use	550	Asphalt	Town
Veterans/O'Brien	Multi Use	2,500	Asphalt	Town
Barnet	Multi Use	1,500	Asphalt	Town
Gillan	Multi Use	620	Asphalt	Town
Raglan Street S	Multi Use	1,200	Asphalt	Town
McConnell Park	Park Trail	280	Asphalt	Town
Ma-te-Way	Park Trail	2,000	Natural Surface	Town
Bluegrass	Park Trail	500	Gravel	Town
Fortington	Park Trail	150	Asphalt	Town
Swinging Bridge	Secondary	190	Gravel/ Natural	Town
<b>Total</b>		<b>20,330 m</b>		

### Parks

In the Town of Renfrew, there are three waterfront parks and 16 additional parks that have a total area of 70 ha. The average park is 3.8 ha in size. Parks play a vital role in the well-being of communities and for the Town of Renfrew as they are integral to enhancing quality of life.

<sup>20</sup> Table 9.1 in the Parks Recreation and Waterfront Plan

These areas provide essential environmental benefits, such as improving air and water quality and supporting biodiversity, while also offering recreational opportunities to promote physical health and mental well-being. Green spaces also serve as social hubs. They foster community engagement and cohesion by hosting public events and providing tranquil spaces for relaxation and socialization.



Figure 13: Low Square Gazebo

Table 54: Town of Renfrew Parks

Park Name	Address	Area (m <sup>2</sup> )
Aberdeen Greenspace	840 Aberdeen Street	11,612
Victoria Park	150 Bruce Street	7,285
Hunter Gate Park	1 Eagle Avenue	6,441
Kiwanis Park	410 Haig Avenue	2,906
McConnel Park	224 Patrick Avenue	22,226
Ma-te-Way	1 Ma-te-Way Park Drive	576,423
Legion Park	120 Munroe Avenue East	7,570
McLean Greenspace	134 McLean Avenue	11,912
Oddfellows Park	Sydney Avenue	11,442
Stewart Park	430 Raglan Street South	9,224
Fortington Park	280 Jordan Avenue	10,184
Mayhew Park	480 Mayhew Street	1,631
Howard K. Haramis	190 Mask Road	9,140
Knights of Columbus	680 Sixth Street	3,271
Horton Heights Park	152 Erindale Avenue	6,058
Low Square	127 Raglan Street	1,852

For more information and a total appreciation of the Town of Renfrew’s enhanced and engineered green assets, visit Town of Renfrew Parks, Recreation and Waterfront Master Plan available on Renfrew.ca parts one and two.

### Engineered Green Assets

To be brief, the engineered green assets in Renfrew are concisely listed in the small table below. In the 16 parks listed above, 11 have play structures. There are 5 new tennis courts at the myFM centre and three pickleball courts, as well as a splash pad. There are three sports fields, with two being strictly soccer and one that doubles as both football and soccer, and finally 3 softball diamonds.



Figure 14: myFM Centre Complex

*Table 55: Engineered Green Assets*

<b>Engineered Green Assets</b>	<b>Number</b>
Sports Fields	3
Tennis Courts	5
Ball Diamonds	3
Play Structures	11
Splash Pad	1
Pickle Ball Courts	3

**Summary**

Renfrew has a spectrum of green assets, from the Bonnechere River’s natural beauty and Smith’s Creek provision of wildlife habitat and flood mitigation. The Bonnechere has a past history as Chute 2, conveying pine logs to market; at present, it is the source of the Town’s drinking water and hydro-electric power. Enhanced green assets in Renfrew are numerous with 20 km of trails, 16 parks, five tennis courts, three pickleball courts, and a splash pad at Ma-te-Way.

The values of the Bonnechere River, Smith’s Creek, the ravines, urban canopy, trails and grassy parks are undeniably high but nearly unassignable. Enhanced and engineered green assets have an assignable replacement value of \$8 million, with a \$350k annual funding requirement, while the Town-owned land has a 2008 assessment of \$14 million.

## Financial

### Calculation Details

As previously stated, this Asset Management Plan is designed to work in conjunction with Renfrew's audited annual Tangible Capital Assets list (TCA). It can be considered a living document if paired with the TCA and the simple equations that form the Sinking Fund approach.

The Sinking Fund calculates the future value of a present sum with respect to interest and the number periods. In this case, the interest is the inflation rate, and the number of periods is the time between installation and or purchase and the present date or the most recent estimate date. Once the future value is established a calculation is made to determine the number of annual payments to equal this value with respect you again, the number periods and the interest rate of investment.

Canada maintained a relatively stable inflation rate from 2013 to 2019, averaging close to 2%. In contrast, the 2022 average figure was 6.8%. Thus, the average from 2014 to 2024 is 2.49%. However, most larger expense items like roads water mains and facilities have long lives so for this plan 2% inflation will be used and 1% for the interest rate.

The equation for future value (FV) of a present sum (PS) is as follows:

$$FV = PS \times (1+i)^{(n)}$$

- n in both cases is (the current year – year of purchase or installation)
- i = the inflation rate – 2% was used for the 2025 AMP

To determine the annual sum to be invested at interest rate r for number of periods n to match the Future Value of the retiring asset you can use the following:

$$PMT = FV * r / (1+r)^{(n-1)}$$

Both of these equations are readily available in Microsoft's Excel and are labeled FV and PMT. Considering the companion to the AMP is the TCA list in a spread sheet format the added financial formulas are readily accessible from the TCA.

Finally, if there are recent quotations for replacement cost those estimates are used in preference to the sinking fund. The good example of this are fire pumpers and ladder trucks where the replacement cost has far out run inflation. Also, recent 2025 numbers for linear assets were used wherever possible that is for all of water wastewater and storm pipe replacement up to date numbers were utilized.

## Findings

The Town of Renfrew (the “Town”) operates and maintains tax-supported infrastructure, and rate-supported infrastructure. Tax supported assets included streets, storm pipes, equipment, land, and facilities. While rate supported infrastructure includes water, mains, and metres and the water, treatment plant and standpipe and on the return-side are waste water mains and treatment plant with six pumping stations.

Tax Supported Infrastructure Streets example:

Table 56: Tax-Supported Infrastructure - Streets

Streets	Replacement (\$)	Funding (\$/yr)
<b>Roads</b>	\$173,364,631	\$4,983,222
<b>Sidewalks</b>	\$10,349,261	\$188,472
<b>Traffic Signals</b>	\$954,461	\$33,794
<b>Street Lights</b>	\$2,002,117	\$20,707
<b>Signs</b>	\$47,043	\$4,497
<b>Bridges</b>	\$10,674,979	\$177,003
<b>Streets Total</b>	<b>\$197,392,493</b>	<b>\$5,407,695</b>

To investigate these numbers, take Roads as an example. Roads original cost was in the area of \$92 million and at a life of 30 years and average inflation of 2.0%, thus the calculated replacement costs is  $\sim 96 * (1+.02)^{30} = 1\$73$  million, while the annual funding at 1% would be  $= 173 / (1+0.01)^{30-1} / 0.01 = \$5$  million/yr. Therefore, to maintain the road network, on average \$5.0 million should be budgeted each year.

Consider the remainder of the tax supported infrastructure:

Table 57: Tax-Supported Infrastructure Replacement Value

		Replacement (\$)	Funding (\$/yr)
<b>Storm</b>	<b>Storm Mains</b>	\$8,680,046	\$58,021
	<b>Catch Basins</b>	\$2,889,605	\$23,749
	<b>Storm Total</b>	<b>\$11,569,651</b>	<b>\$81,770</b>
<b>Rolling Stock &amp; Equipment</b>	<b>Rolling Stock</b>	\$9,714,450	\$560,426
	<b>Equipment</b>	\$2,283,374	\$177,333
	<b>Equipment Total</b>	<b>\$11,997,824</b>	<b>\$737,759</b>
<b>Land</b>	<b>Land Improvements</b>	\$8,089,942	\$350,937
	<b>Land</b>	\$14,380,711	
	<b>Land (Parks) Total</b>	<b>\$22,470,653</b>	<b>\$350,937</b>

<b>Facilities</b>	<b>Government</b>	\$32,307,841	\$1,250,441
	<b>Protection</b>	\$2,971,745	\$130,422
	<b>Transportation</b>	\$1,928,726	\$73,688
	<b>Recreation</b>	\$46,015,666	\$2,033,096
	<b>Library</b>	\$3,309,249	\$161,686
	<b>Tourism</b>	\$17,047	\$774
	<b>Facilities Total</b>	<b>\$86,550,274</b>	<b>\$3,650,106</b>
<b>Total Tax Supported</b>		<b>\$329,980,894</b>	<b>\$10,228,266</b>

Therefore, total tax supported infrastructure in the Town is \$330 million. The annual budgeted amount to support that infrastructure should be \$10.2 million.

Capital support in the 2024 budget was as follows: <sup>21</sup>

- Infrastructure           \$560,800
- Facilities               \$152,200
- Rolling Stock         \$197,100
- Equipment             \$89,650
- Pave                    \$281,500
- AMP Infrastructure   \$300,500
- Capital Levy          \$87,850
- Parking Lots          \$11,000
- Millenium Trail       \$8,100

Totalling       **\$1,687,700**

Therefore, total tax supported infrastructure replacement cost for the Town is \$330 million. The annual budgeted amount to support that infrastructure should be approximately \$10 million per year. From the 2024 Budget, the capital support is only \$1,687,700 from the Town, \$1,489,193 from the province and \$257,495 was Federally funded totalling \$3.434 million in 2024. In round terms, the Town of Renfrew has a 6.8-million-dollar annual funding gap for tax supported assets!

This of course is concerning when considering the 2024 tax levy was \$11.32 million, the life cycle funding gap at \$7 million is 80% of the 24 levies. Clearly taxes would need to almost double to extinguish the capital funding gap. This is not surprising as Renfrew’s 2022 Asset Management Plan cited a similar life cycle funding gap and projected increases in the levy at 8.4 to 9.4%<sup>22</sup> until 2034 where the levy would be \$25.5 million<sup>23</sup>.

<sup>21</sup> As per conversation with Renfrew Deputy Treasurer

<sup>22</sup> Renfrew 2022 Asset Management Plan pg. 213

<sup>23</sup> Renfrew 2022 Asset Management Plan Appendix B Financial Strategy - Watson and Associates for Dillon.

It is important to realize that the Town amount that's allocated to capital is only a portion of the actual budget, \$1.7 million on \$11.3 million in 2024. Therefore, the funding gap can be aggressively attacked without making equally large additions to the overall levy, at least at first. However, it's equally important to realize that each year there is a funding gap, the accumulated funding gap continues to grow and so does the backlog.

## Funding Gap Solutions

### Linear

With the above in mind a constant increase in capital funding at 20% above the Consumer Price Index would extinguish the gap in ~10 years and the accumulated gap in 20! See below:

The gap now is \$6.8 million. Provincial and Federal Funding are \$1.7 million. Both the gap and funding will grow at the CPI of 2 %. That is the now \$6.8 million dollars gap will grow to \$8.53 million in by 2034.

$$\text{Gap} = 6.8 * (1 + 0.02)^{10} = 8.29$$

Essentially, \$1.69 million needs to grow to \$8.29 million in 10 years. Using the future value FV of a present sum PS:

$$\text{FV} = \text{PS} * (1 + r)^n$$

with a PS set to 1.69, n = 10 years and a trial r = 20%, works out to \$10.46 million. Lowering the trial to 18 % effectively, or in theory, more than closes the gap at \$8.85 million.

It is commendable if the capital funding gap can be closed however while the total funding is less than the required funding, an accumulated deficit grows represented by the light blue curve as shown below.

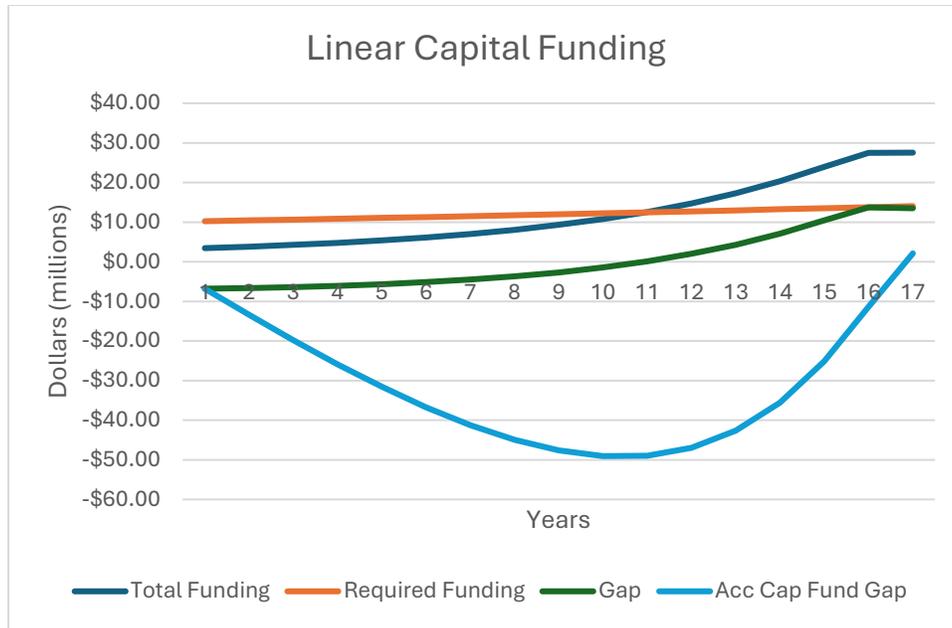


Figure 15: Linear Capital Funding

Average increases in the levy over those 9 years is 7.1%, perhaps 1% to 1.1% less with expected growth.

Table 58: Linear Capital Funding

	Years	Total Collected (millions)	Yearly	Average % Increase
<b>Gap Close Total</b>	9	\$140.8	\$21.0	7.1%
<b>Accumulated Gap Close Total</b>	15	\$327.9	\$40.7	8.9%

What the table above means is that over the course of 9 years, \$140.8 million would be collected in tax revenue, the levy would be at \$21.0 million, and the average increase over those 9 years would have been 7.1%. See Appendix A7 for more details.

### Front Load

This linear approach is understandable, easy to explain and does get the job done albeit in a very distant 9 years for gap, and 15 years for accumulated gap. An alternative to a linear approach is to front load the attack on the funding gap. The distinct advantage is that the amount collected from the tax payer is considerably less, in this case \$127 million in 8 years as opposed to \$140 in the linear case.

Table 59: Front Load Capital Funding

	Years	Total Collected (millions)	Yearly	Average % Increase
<b>Gap Close Total</b>	8	\$127.3	\$20.1	7.4%
<b>Accumulated Gap Close Total</b>	14	\$293.3	\$34.7	8.3%

Examples of a 20%/yr capital funding increase is shown in Appendix A7, capital funding increase with backlog is shown in A8, and finally a capital funding increase with backlog front loaded in Appendix A9.

## Future

### Living Document

Pulling directly from the Preface to the Executive Summary:

*“This Asset Management Plan (AMP) is designed to work in conjunction with Renfrew’s audited annual Tangible Capital Assets (TCA) data. As such, the AMP can be considered a living document updated yearly or periodically as required. It is to be coordinated with other Town of Renfrew (Town) activities, including, but not limited to the development of annual service plans for infrastructure, conditions assessments and, most significant, the Town’s operating and capital budget.”*

*Note: the 2023 Tangible Capital Asset List and the 2024 Budget was used for this Asset Management Plan. With the exception that the \$32 million for myFM Centre was added to the TCA list for completeness.*

### Future Steps

Considering the above, the Town can (a) ignore that there is a funding gap and hope for help from the province; (b) attack and hopefully extinguish the funding gap; (c) eliminate the funding gap and accumulated gap; and (d) even reduce the backlog by following several steps below:

- Complete the 2024 Tangible Capital Asset list
- Load Sinking Fund equations and 10-year plan onto the TCA list
- Load in 2025 budget numbers
- Scrutinize the backlog, adjust expected life values where appropriate
- Wherever possible use recent quotations to best estimate costs
- Determine priorities
- Commit to raising capital funding in 2026
- Decide the Town’s future asset funding plan.

### Recommendations

1. Raise the capital funding 20% per year for the next 10 years.
  - a. Potentially front load the increase(s) in the first year(s).
2. Monitor progress each year by following the above steps.

Renfrew is in an enviable position. It has natural “green” assets that not only provide beauty and well-being to the Town, but also drinking water, hydro, flood mitigation and wildlife habitat. Residents can walk and exercise on 20 km of trails, in 16 parks, on numerous sport fields and hard courts. Growth and commerce can be accommodated with four well planned new neighborhoods. The water supply and waste water capacity and performance are more than double the Town’s present requirements and it has 50+ years of landfill

capacity left. Renfrew also has a potential to eliminate its capital funding gap and maintain, even improve its level of service; it's future.

### Level of Service Targets – 2025 to 2034

The level of service targets for the Town of Renfrew can be summarized in the table below. Provided water and waste water rates are high enough to cover the required capital in the next 10 years there is little change in the level of service in those areas. If the capital funding gap is closed by 2033 to 2035 depending on the approach taken levels of service will be in much the same as 2025. However, if there is little or no attempt to close the funding gap tax supported levels of service will fall, in particular Streets, Storm, Fleet and Buildings; the Landfill should remain unchanged.

Table 60: Service Level Targets

Asset Service	POS Parameter	LOS Measure	2025 LOS Delivered	LOS to 2034 with Gap Closing	LOS to 2034 Gap Not Closed
<b>Water Treatment</b>	Reliability	Boil-water advisory	Zero	Zero	Zero
<b>Water Distribution</b>	Reliability	Connection days per year due to water main breaks	5 -7 watermain breaks per year	Same	Same
<b>Waste water Treatment</b>	Reliability	Effluent violations	Zero	Zero	Zero
<b>Wastewater Collection</b>	Reliability	Connection days due to backups	10	10	20 plus
<b>Stormwater</b>	Reliability	Percentage of the SWMS resistant to a 5-year storm	80%	80%	60%
<b>Roads</b>	Quality	Average Pavement Condition Index (PCI)	Fair 59	Good 60+	Less than 50
<b>Sidewalks</b>	Quality	Average Condition Index SCI	Fair 56	Poor 50	Poor 40
<b>Bridges &amp; Culverts</b>	Quality	OSIM BCI	Good	Good	Fair
<b>Buildings Accessibility</b>		AODA	100%	100%	100%
<b>Buildings</b>	Quality	Average Building Condition Index	Fair 3.1	Good 3.1	Fair to Poor
<b>Fleet</b>	Quality	Condition Description	3.7	3.7	3
<b>Waste</b>	Scope/ Quality	Annual Volume of Waste through collection services	7062 t and 12,604 m3 in 2024 KPI 0.55 t/m3	KPI target of > 0.5 t/m3 and >95 % of population served by curbside pickup.	No change
<b>Green Spaces</b>	Scope	Continued use and appreciation of engineered spaces – further understanding appreciation of natural resources.	Measurement techniques see Master Plan for Parks for engineered spaces courts etc. - develop	Community and technical LOS indicators to be determined for natural resources eg. The Bonnechere River	No Change

			techniques for community and tech measurement of natural resources		
--	--	--	--	--	--

**Key Performance Indicators and Level of Service**

Each department needs to consider and refine their Key Performance Indicators and that relationship with the level of service. For example, street performance indicators are well defined as pavement condition index (PCI), the sidewalk condition index (SCI), bridge condition index (BCI), and luminaries defined by minimum maintenance standards and signs by reflection readings.

Water to the homes in the Town’s performance may be defined by the number of days of boil water advisories and delivery by the number of water main breaks and those affected by those breaks. On the returning side, wastewater can be characterized by major spills, connection days due to backups or effluent levels in the Bonnechere.

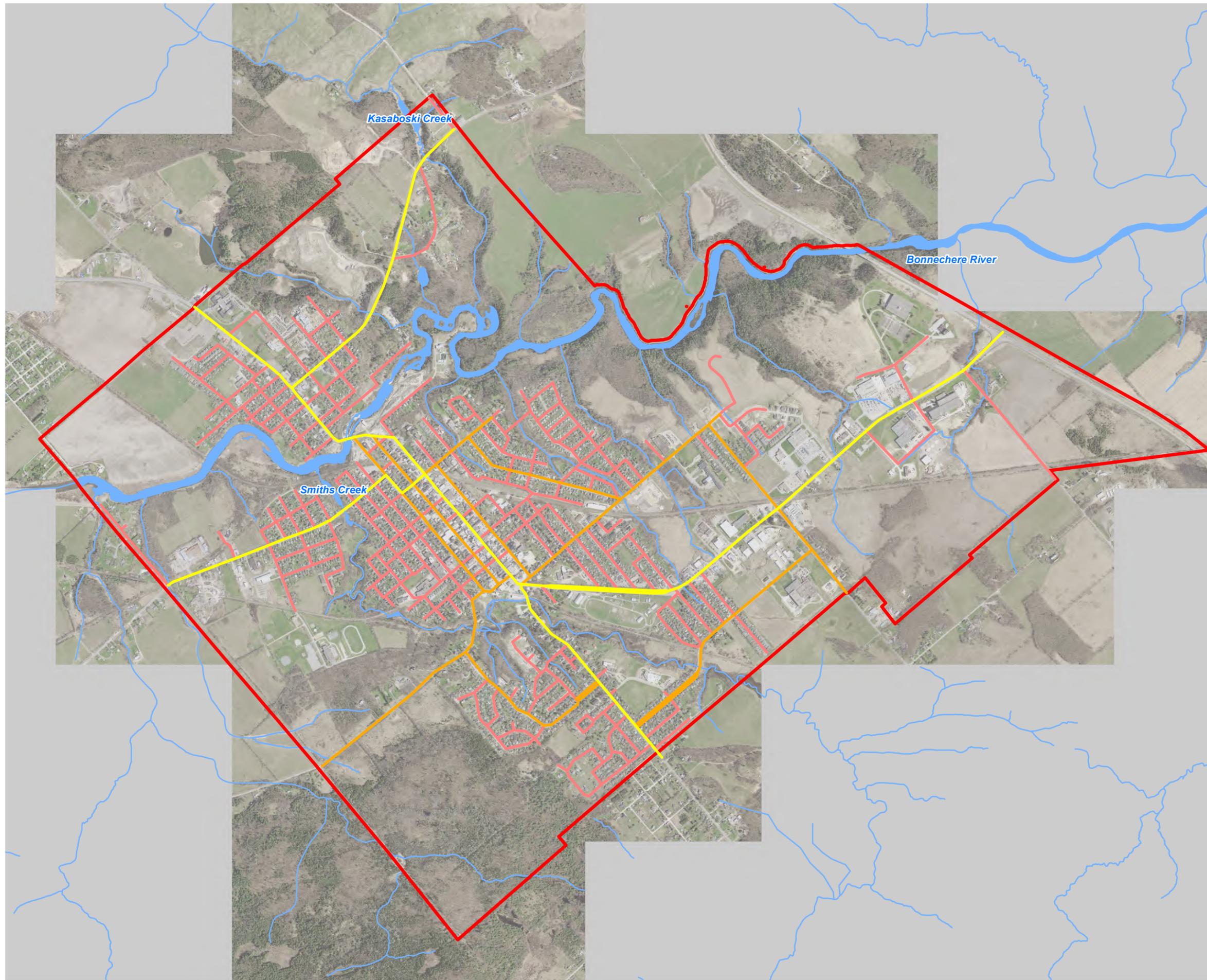
Fleet performance indicators could be maintenance dollars per kilometre as a definition of wellness of the fleet. Facilities require specialized assessment of their condition to determine the Building Condition Index (BldCI).

The waste site has expectations as to tipping fees per ton but as indicated herein compaction rates are key to the longevity of the site.



## Appendices

### A1 Road Network



**TOWN OF RENFREW**  
ASSEST MANAGEMENT PLAN

**ROAD NETWORK**  
FIGURE A-4

- Town Boundary
  - Watercourse
  - Water Body
- Functional Road Classification**
- Arterial
  - Collector
  - Local

NOTES:



MAP DRAWING INFORMATION:  
Data and DRAPE Imagery provided by  
The Town of Renfrew (2019)

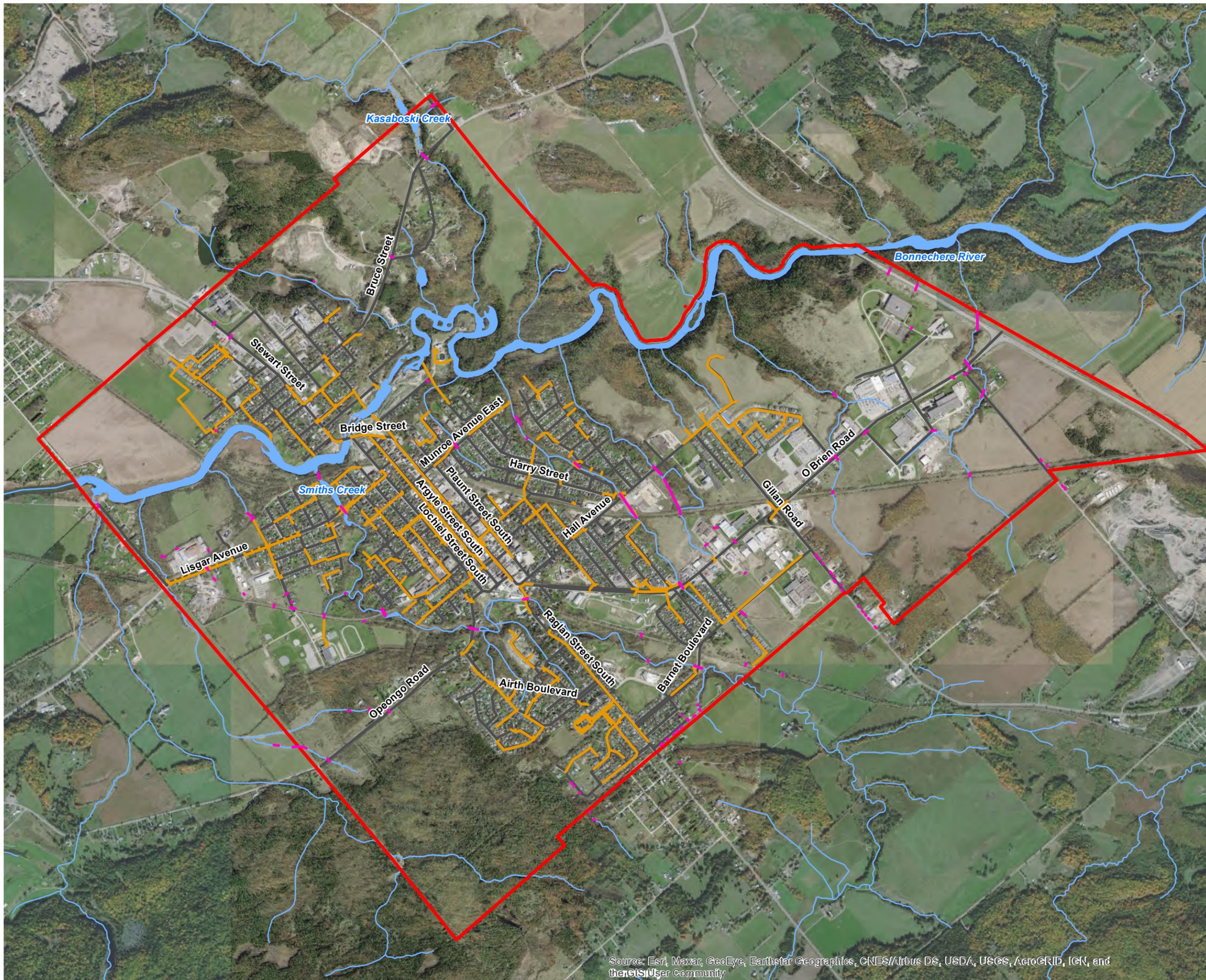
MAP CREATED BY: LMM  
MAP CHECKED BY: -  
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 20-2329  
STATUS: DRAFT  
DATE: 2020-10-05



## A2 Storm Network



**TOWN OF RENFREW**  
ASSEST MANAGEMENT PLAN

**STORM NETWORK**  
FIGURE A-3

- Town Boundary
- Road
- Watercourse
- Water Body
- Culvert
- Storm Pipe

NOTES:

SCALE 1:21,000  
0 0.125 0.25 0.5 km



MAP DRAWING INFORMATION:  
Data and DRAPE Imagery provided by  
The Town of Renfrew (2019)

MAP CREATED BY: LMM  
MAP CHECKED BY: -  
MAP PROJECTION: NAD 1983 UTM Zone 18N

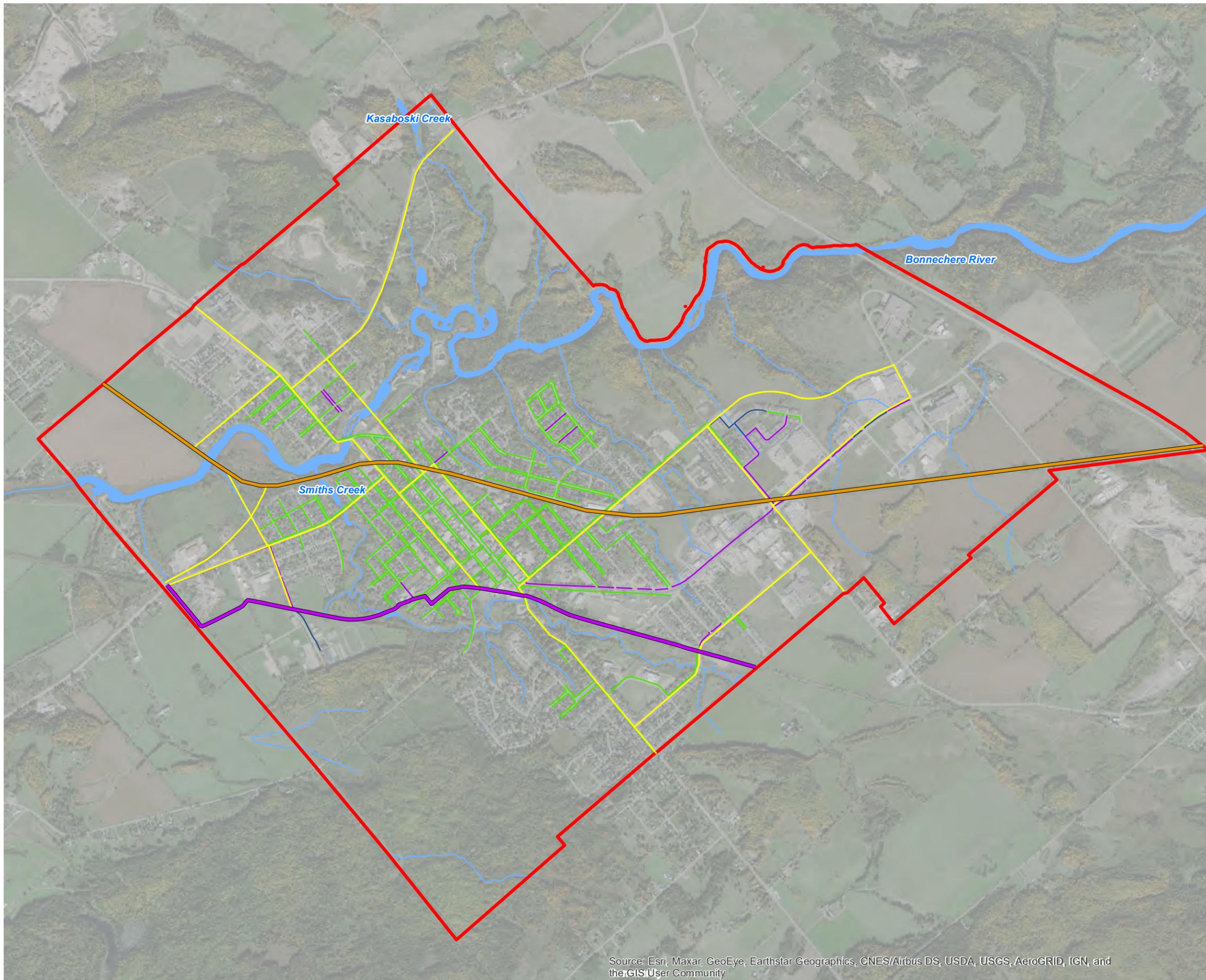


PROJECT: 20-2329  
STATUS: DRAFT  
DATE: 2020-10-05

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



## A3 Sidewalk Network



**TOWN OF RENFREW**  
ASSEST MANAGEMENT PLAN

**SIDEWALK NETWORK**  
FIGURE A-5

- Town Boundary
  - Watercourse
  - Water Body
  - Algonquin Trail
  - Millennium Trail
  - On-Street Pathway
- Material 1
- <Null>
  - Asphalt
  - Concrete

NOTES:



MAP DRAWING INFORMATION:  
Data and DRAPE Imagery provided by  
The Town of Renfrew (2019)

MAP CREATED BY: LMM  
MAP CHECKED BY: -  
MAP PROJECTION: NAD 1983 UTM Zone 18N

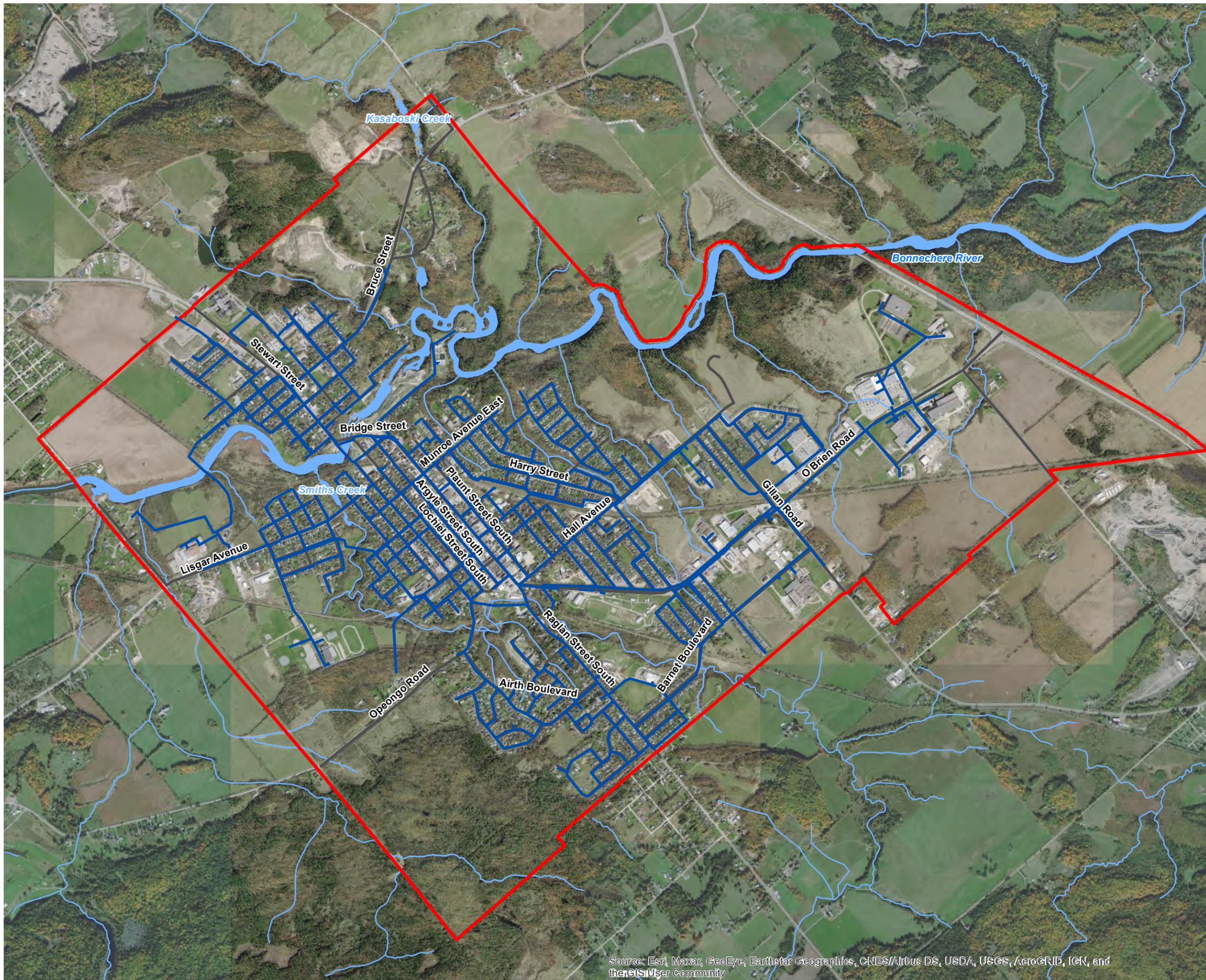
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



PROJECT: 20-2329  
STATUS: DRAFT  
DATE: 2020-10-05



## A4 Water



**TOWN OF RENFREW**  
ASSEST MANAGEMENT PLAN

**WATER NETWORK**  
FIGURE A-1

- Town Boundary
- Road
- Watercourse
- Water Body
- Water Pipe

NOTES:

SCALE 1:21,000  
0 0.125 0.25 0.5 km



MAP DRAWING INFORMATION:  
Data and DRAPE Imagery provided by  
The Town of Renfrew (2019)

MAP CREATED BY: LMM  
MAP CHECKED BY: -  
MAP PROJECTION: NAD 1983 UTM Zone 18N



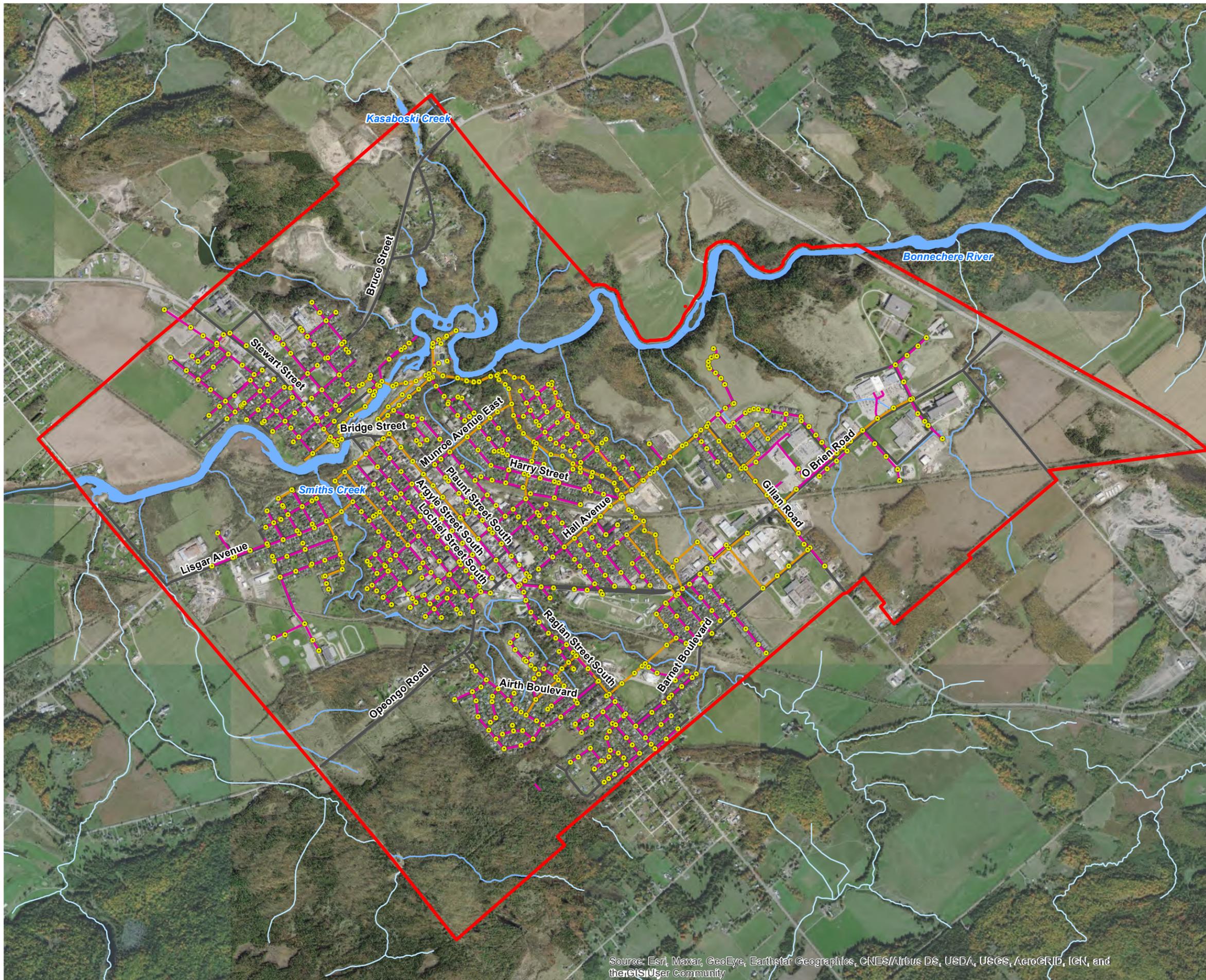
PROJECT: 20-2329  
STATUS: DRAFT  
DATE: 2020-10-05

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



**Renfrew**  
INC. 1888  
Bridging Charm and Convenience

## A5 Waste Water



**TOWN OF RENFREW**  
ASSEST MANAGEMENT PLAN

**SANITARY NETWORK**  
FIGURE A-2

- Town Boundary
  - Road
  - Watercourse
  - Water Body
  - Sanitary Manholes
- Sanitary Pipe Diameter**
- Local Pipe (<300mm)
  - Collector Pipe (>300mm)

NOTES:

SCALE 1:21,000  
0 0.125 0.25 0.5 km



MAP DRAWING INFORMATION:  
Data and DRAPE Imagery provided by  
The Town of Renfrew (2019)

MAP CREATED BY: LMM  
MAP CHECKED BY: -  
MAP PROJECTION: NAD 1983 UTM Zone 18N

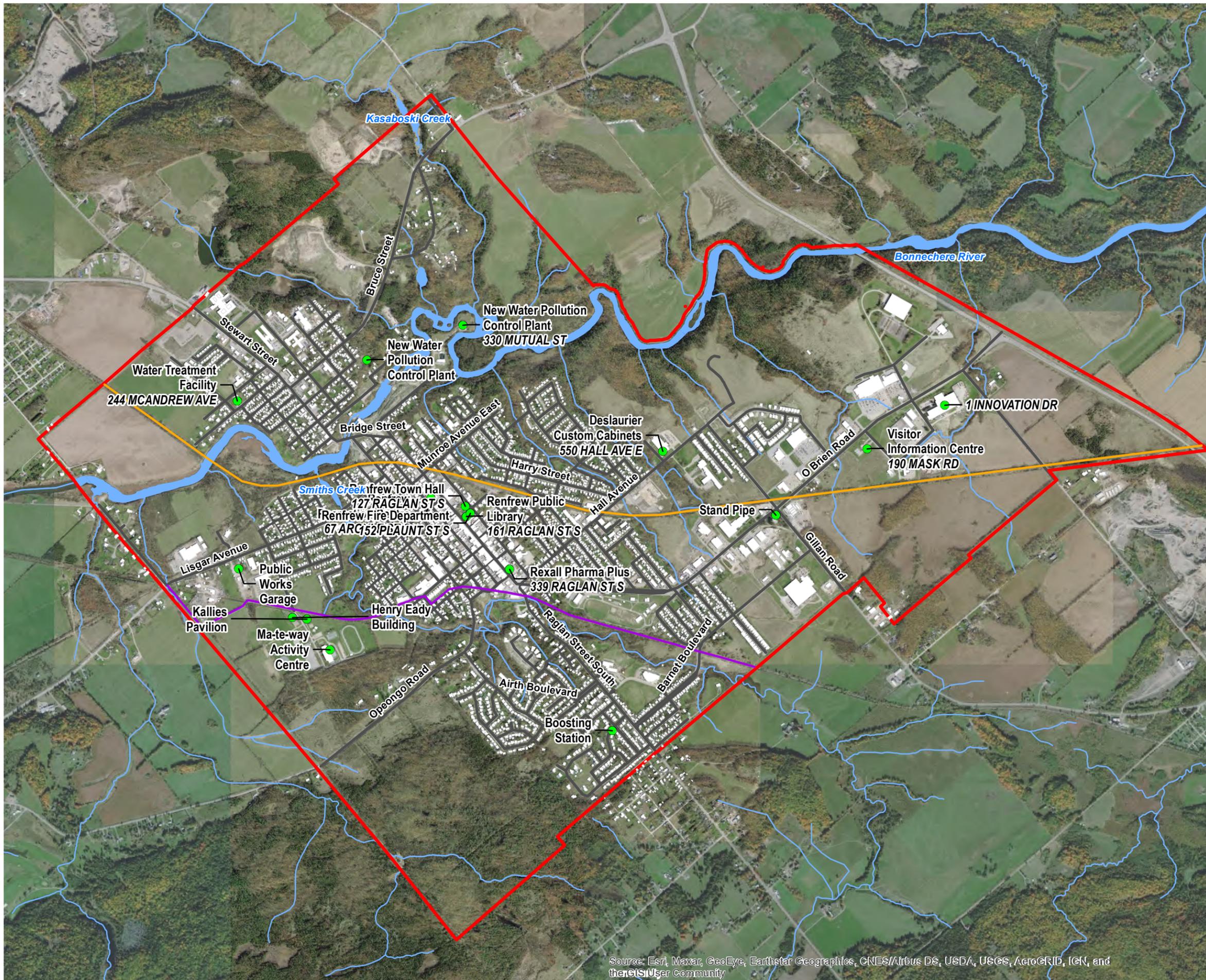


PROJECT: 20-2329  
STATUS: DRAFT  
DATE: 2020-10-05

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



## A6 Facilities



**TOWN OF RENFREW**  
ASSEST MANAGEMENT PLAN

**BUILDING**  
FIGURE A-6

-  Town Boundary
-  Road
-  Watercourse
-  Water Body
-  Select Building
-  Millennium Trail
-  Algonquin Trail
-  Building Footprint

NOTES:

SCALE 1:21,000  
0 0.125 0.25 0.5 km



MAP DRAWING INFORMATION:  
Data and DRAPE Imagery provided by  
The Town of Renfrew (2019)

MAP CREATED BY: LMM  
MAP CHECKED BY: -  
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 20-2329  
STATUS: DRAFT  
DATE: 2020-10-05

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

## A7 Linear Capital Increases

	Capital Budget Increase	Town	Total Funding	Required Funding	Gap	Acc Cap Fund Gap	Budget (\$millions)	Tax Levy
0		\$1.69	\$3.43	\$10.2	-\$6.8	-\$6.8	\$11.32	
1	20.0%	\$2.0	\$3.8	\$10.4	-\$6.6	-\$13.4	\$11.89	5.0%
2	20.0%	\$2.4	\$4.2	\$10.6	-\$6.4	-\$19.8	\$12.53	5.4%
3	20.0%	\$2.9	\$4.8	\$10.9	-\$6.1	-\$25.9	\$13.27	5.9%
4	20.0%	\$3.5	\$5.4	\$11.1	-\$5.7	-\$31.6	\$14.11	6.4%
5	20.0%	\$4.2	\$6.1	\$11.3	-\$5.2	-\$36.7	\$15.10	7.0%
6	20.0%	\$5.0	\$7.0	\$11.5	-\$4.5	-\$41.3	\$16.24	7.6%
7	20.0%	\$6.0	\$8.1	\$11.7	-\$3.7	-\$45.0	\$17.57	8.2%
8	20.0%	\$7.3	\$9.3	\$12.0	-\$2.7	-\$47.6	\$19.13	8.9%
9	20.0%	\$8.7	\$10.8	\$12.2	-\$1.4	-\$49.1	\$20.97	9.6%
10	20.0%	\$10.4	\$12.6	\$12.5	\$0.1	-\$48.9	\$23.13	10.3%
11	20.0%	\$12.5	\$14.7	\$12.7	\$2.0	-\$47.0	\$25.68	11.0%
12	20.0%	\$15.0	\$17.3	\$13.0	\$4.3	-\$42.7	\$28.70	11.8%
13	20.0%	\$18.1	\$20.3	\$13.2	\$7.1	-\$35.6	\$32.28	12.5%
14	20.0%	\$21.7	\$24.0	\$13.5	\$10.5	-\$25.1	\$36.54	13.2%
15	16.0%	\$25.1	\$27.5	\$13.8	\$13.7	-\$11.4	\$40.74	11.5%
16	0.0%	\$25.1	\$27.5	\$14.0	\$13.5	\$2.1	\$41.55	2.0%
17	0.0%	\$25.1	\$27.6	\$14.3	\$13.3	\$15.4	\$42.38	2.0%
18	0.0%	\$25.1	\$27.6	\$14.6	\$13.0	\$28.4	\$43.23	2.0%
19	0.0%	\$25.1	\$27.7	\$14.9	\$12.8	\$41.2	\$44.10	2.0%
					<b>Yrs to Close</b>	<b>Total Collected</b>	<b>Levy at Closure</b>	<b>Ave % Inc. to Closure</b>
					<b>9</b>	<b>\$140.8</b>	<b>\$21.0</b>	<b>7.1%</b>
					<b>15</b>	<b>\$327.9</b>	<b>\$40.7</b>	<b>8.9%</b>
<b>Gap Close Total</b>								
<b>Acc Gap Close Total</b>								

## A8 Linear Capital - Backlog

Years	Capital Budget Increase	Town	Actual Funding	Required	Gap	Accumulated Gap	Budget (\$millions)	Tax Levy % Increase
						<b>-\$43.5</b>		
<b>0</b>		\$1.7	\$3.4	\$10.2	-\$6.8	-\$50.3	\$11.3	
<b>1</b>	<b>20.0%</b>	\$2.0	\$3.8	\$10.4	-\$6.6	-\$56.9	\$11.9	5.0%
<b>2</b>	20.0%	\$2.4	\$4.2	\$10.6	-\$6.4	-\$63.3	\$12.5	5.4%
<b>3</b>	20.0%	\$2.9	\$4.8	\$10.9	-\$6.1	-\$69.4	\$13.3	5.9%
<b>4</b>	20.0%	\$3.5	\$5.4	\$11.1	-\$5.7	-\$75.0	\$14.1	6.4%
<b>5</b>	20.0%	\$4.2	\$6.1	\$11.3	-\$5.2	-\$80.2	\$15.1	7.0%
<b>6</b>	20.0%	\$5.0	\$7.0	\$11.5	-\$4.5	-\$84.7	\$16.2	7.6%
<b>7</b>	20.0%	\$6.0	\$8.1	\$11.7	-\$3.7	-\$88.4	\$17.6	8.2%
<b>8</b>	20.0%	\$7.3	\$9.3	\$12.0	-\$2.7	-\$91.1	\$19.1	8.9%
<b>9</b>	20.0%	\$8.7	\$10.8	\$12.2	-\$1.4	-\$92.5	\$21.0	9.6%
<b>10</b>	20.0%	\$10.4	\$12.6	\$12.5	\$0.1	-\$92.4	\$23.1	10.3%
<b>11</b>	20.0%	\$12.5	\$14.7	\$12.7	\$2.0	-\$90.4	\$25.7	11.0%
<b>12</b>	20.0%	\$15.0	\$17.3	\$13.0	\$4.3	-\$86.1	\$28.7	11.8%
<b>13</b>	20.0%	\$18.1	\$20.3	\$13.2	\$7.1	-\$79.0	\$32.3	12.5%
<b>14</b>	20.0%	\$21.7	\$24.0	\$13.5	\$10.5	-\$68.6	\$36.5	13.2%
<b>15</b>	20.0%	\$26.0	\$28.4	\$13.8	\$14.6	-\$54.0	\$41.6	13.9%
<b>16</b>	20.0%	\$31.2	\$33.6	\$14.0	\$19.6	-\$34.4	\$47.6	14.5%
<b>17</b>	0.0%	\$31.2	\$33.6	\$14.3	\$19.3	-\$15.1	\$48.6	2.0%
<b>18</b>	0.0%	\$31.2	\$33.7	\$14.6	\$19.1	\$4.0	\$49.6	2.0%
					<b>Yrs to Close</b>	<b>Total Collected</b>	<b>Levy at Closure</b>	<b>Ave % Inc. to Closure</b>
					<b>9</b>	<b>\$140.8</b>	<b>\$23.1</b>	<b>7.1%</b>
					<b>17</b>	<b>\$425.0</b>	<b>\$49.6</b>	<b>9.0%</b>
<b>Total Gap Close</b>								
<b>Total Acc Gap Close</b>								

## A9 Front Loaded Capital Increases

Years	Capital Budget Increase	Town Capital Budget	Actual Funding	Required Funding	Gap	Accumulated Gap with Backlog	Budget (\$millions)	Tax Levy	
						<b>-\$43.5</b>			
<b>0</b>		\$1.7	\$3.4	\$10.2	-\$6.8	-\$50.3	\$11.32		
<b>1</b>	<b>50.0%</b>	\$2.5	\$4.3	\$10.4	-\$6.1	-\$56.4	\$12.39	<b>9.5%</b>	
<b>2</b>	30%	\$3.3	\$5.1	\$10.6	-\$5.6	-\$62.0	\$13.40	<b>8.1%</b>	
<b>3</b>	17%	\$3.9	\$5.8	\$10.9	-\$5.0	-\$67.0	\$14.23	<b>6.2%</b>	
<b>4</b>	16%	\$4.5	\$6.6	\$11.1	-\$4.5	-\$71.5	\$15.13	<b>6.3%</b>	
<b>5</b>	16%	\$5.2	\$7.5	\$11.3	-\$3.8	-\$75.3	\$16.14	<b>6.7%</b>	
<b>6</b>	16%	\$6.0	\$8.6	\$11.5	-\$3.0	-\$78.2	\$17.30	<b>7.1%</b>	
<b>7</b>	16%	\$7.0	\$9.8	\$11.7	-\$2.0	-\$80.2	\$18.60	<b>7.6%</b>	
<b>8</b>	16%	\$8.1	\$11.1	\$12.0	-\$0.9	-\$81.1	\$20.09	<b>8.0%</b>	
<b>9</b>	16%	\$9.4	\$12.7	\$12.2	\$0.5	-\$80.6	\$21.79	<b>8.4%</b>	
<b>10</b>	16%	\$10.9	\$14.5	\$12.5	\$2.0	-\$78.6	\$23.72	<b>8.9%</b>	
<b>11</b>	16%	\$12.6	\$16.6	\$12.7	\$3.9	-\$74.7	\$25.94	<b>9.3%</b>	
<b>12</b>	16%	\$14.6	\$19.0	\$13.0	\$6.0	-\$68.7	\$28.48	<b>9.8%</b>	
<b>13</b>	16%	\$17.0	\$21.7	\$13.2	\$8.5	-\$60.2	\$31.39	<b>10.2%</b>	
<b>14</b>	16%	\$19.7	\$24.9	\$13.5	\$11.4	-\$48.8	\$34.74	<b>10.7%</b>	
<b>15</b>	16%	\$22.9	\$28.6	\$13.8	\$14.8	-\$34.0	\$38.58	<b>11.1%</b>	
<b>16</b>	16%	\$26.5	\$32.8	\$14.0	\$18.7	-\$15.3	\$43.01	<b>11.5%</b>	
<b>17</b>	8%	\$28.6	\$35.5	\$14.3	\$21.1	\$5.9	\$45.99	<b>6.9%</b>	
<b>18</b>	0%	\$28.6	\$36.1	\$14.6	\$21.5	\$27.4	\$46.91	<b>2.0%</b>	
					<b>Yrs to Close</b>	<b>Total Collected</b>	<b>Levy at Closure</b>	<b>Ave Levy %</b>	
					<b>Total Gap Close</b>	<b>8</b>	<b>\$127.3</b>	<b>\$20.1</b>	<b>7.4%</b>
					<b>Total Acc Gap Close</b>	<b>16</b>	<b>\$374.9</b>	<b>\$43.0</b>	<b>8.7%</b>