



# **City of Guelph Corporate Asset Management Plan 2024**

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# City of Guelph Corporate Asset Management Plan

May 2024

## Document History

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April 4, 2024	Draft 1 review
April 11, 2024	Added details after SWAT meeting
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### Contributors

Several people and teams from across the City of Guelph have provided support, input and feedback through the process of preparing this asset management plan document. The following table thanks and recognizes them and identifies their roles and responsibilities.

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## Executive Summary

The City of Guelph is required to prepare a Corporate Asset Management Plan (AMP) and submit the plan to the Ontario Ministry of Infrastructure by July 1, 2024. The AMP is required to identify:

- A summary of the City’s infrastructure assets that identifies their current replacement value, their condition, their average ages and how those metrics are determined
- The levels of service that the assets are currently providing and the costs to do so
- A ten-year forecast of the lifecycle management needs of the assets including costs to complete these needs
- Identification of annual funding that is projected to be available for the same ten-year period

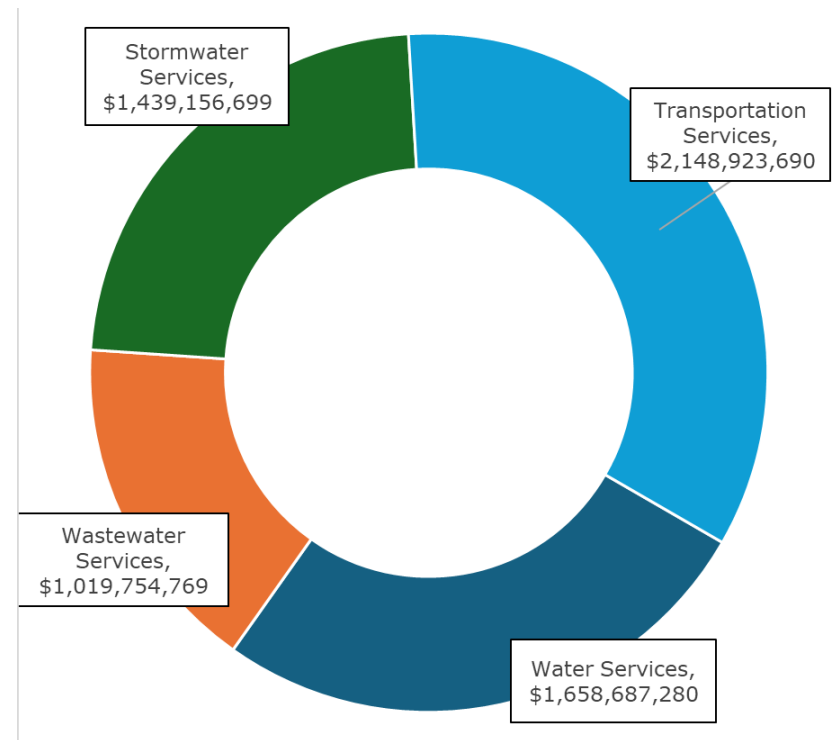
### State of the Assets

The 2024 City of Guelph Corporate AMP reports on over 200,000 City-owned assets with a total replacement value of approximately \$7.7 billion, compared to \$4.4 billion in 2020 (approximately \$50,278 per resident in 2024 vs. \$36,041 in 2020). This equates to a **28 per cent** increase in replacement value in the four years that have passed, however, this increase is not unreasonable when considering the general economic inflation and growth Guelph has experienced through this period.

Approximately 80% of the City’s assets are considered “Core” types<sup>1</sup>. These include all the asset types in the

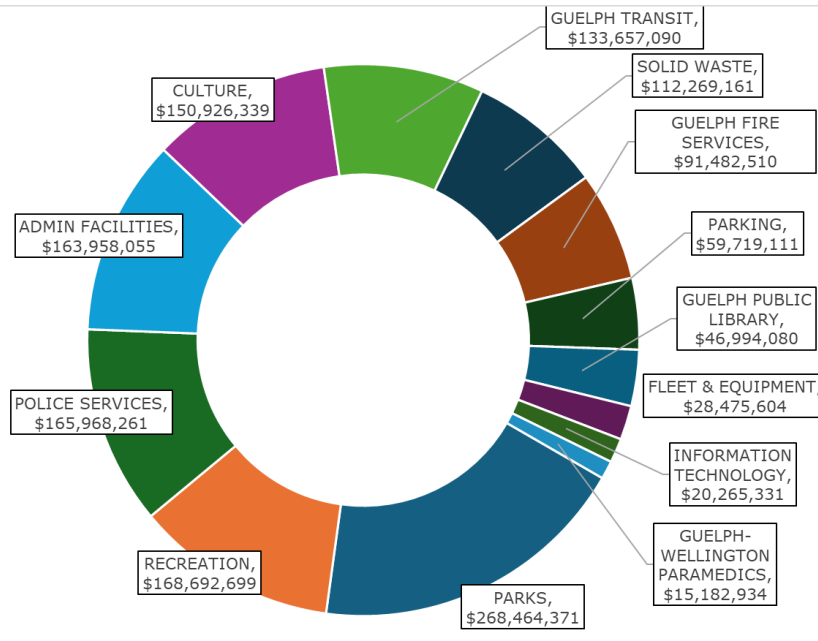
transportation (roads, bridges, etc.), water, wastewater and stormwater services. The balance of the assets are categorized into thirteen separate service areas based on their functions.

**Figure 1: Core Asset Types Replacement Value**



<sup>1</sup> As defined by O. Reg. 588/17

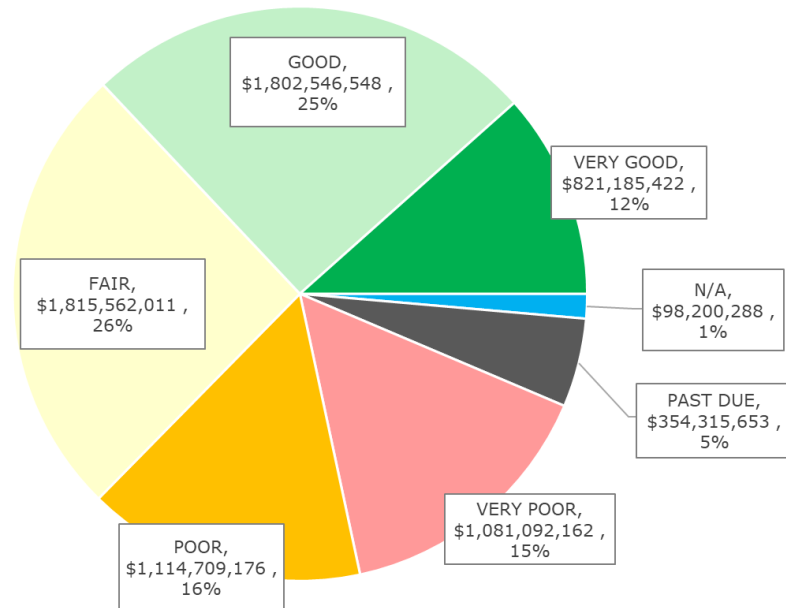
**Figure 2: Non-Core Asset Types Replacement Value**



On average the assets included in the AMP have been assessed to be in a Fair condition level. There are both positive and negative exceptions to this average, but in general the City’s assets are delivering the services expected at the levels desired. Importantly about 57% of the City’s assets are considered in “fair”, “good” or “very good” condition. However, there remains 33% in less than “fair” condition, including about \$1 billion worth of assets assessed in “very poor” condition, and another \$354 million assessed as “past due”. These assets have been identified as recommended for replacement prior to 2024 either to their assessed condition or because they have aged past their

theoretical maximum lifecycle but have not yet been replaced. “Past due” does not define an asset that is no longer functional – several asset types can remain functional beyond theoretical lifecycles. But “past due” does identify a potential value of work that should be planned for within the next ten years. Assets with this condition rating also typically require more regular maintenance and are at higher risk of unplanned failures.

**Figure 3: Condition of the City Assets by Replacement Value**



**Renewal Needs**

From 2024 to 2033 the forecast infrastructure renewals needs are estimated to equal almost \$2 billion. These needs would include replacement of

aging assets that have either physically or functionally reached the end of their service lives.

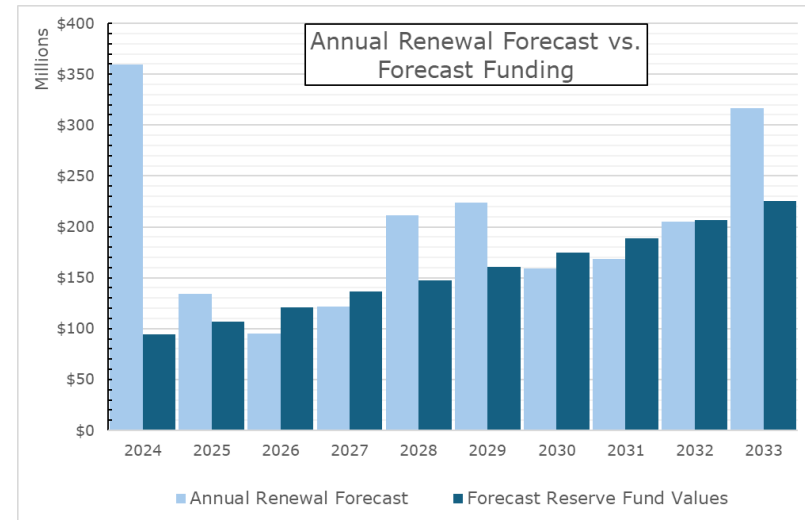
During the same time period the forecast available funding in the City’s reserve funds dedicated to asset infrastructure renewals is only expected to equal \$1.56 billion: a \$432 million negative funding gap over the ten-year period.

**Table 1: Ten-year Summary of Needs vs. Funding**

10-Year Total Renewal Forecast	10-Year Total Funding Forecast	10-Year Forecast Total Gap
\$1,995,083,824	\$1,562,555,416	-\$432,525,408

One of the reasons for this gap is the current deferred work backlog that is estimated at \$354 million. Over the ten-year forecast period the combined effect of the existing backlog and the annual renewal needs is an estimated growth in the backlog to a value of \$527 million. This growth is expected despite some years where the predicted funding will be greater than the renewal needs. Over time the cumulative effect of the existing backlog and the net negative funding gap combines to cause the growth of the backlog.

**Figure 4: Forecast Renewal Needs vs. Funding 2024-2033**



The impacts of the funding gap will not affect any of the critical services that the City delivers, nor any legislated requirements related to the assets or services. These are high priority activities that will remain so but the resulting increase in deferred renewal work will result in risks to the City that will need to be addressed.

Asset renewals that are not completed generally result in a combination of increased regular maintenance needs, higher risk of unplanned asset failures and a reduction of capacity or service levels that can be delivered. These risks can be mitigated with the concentration on effective prioritization of both capital renewal and regular operations and maintenance tasks.

**Climate Change**

The O. Reg. requires the AMP to address the issues related to the changing climate and how that will impact the City's assets. Guelph has been ahead of trends on this subject: many of the recommended actions identified in the [Climate Adaptation Plan](#) (CAP) that was prepared and approved in 2023 were adapted into the renewal needs included in the AMP. Further details on the risks facing each service area and the asset types they manage are identified in the specific chapter for each service. Also identified are some of the recommended mitigation strategies. The CAP should be referenced for full details.

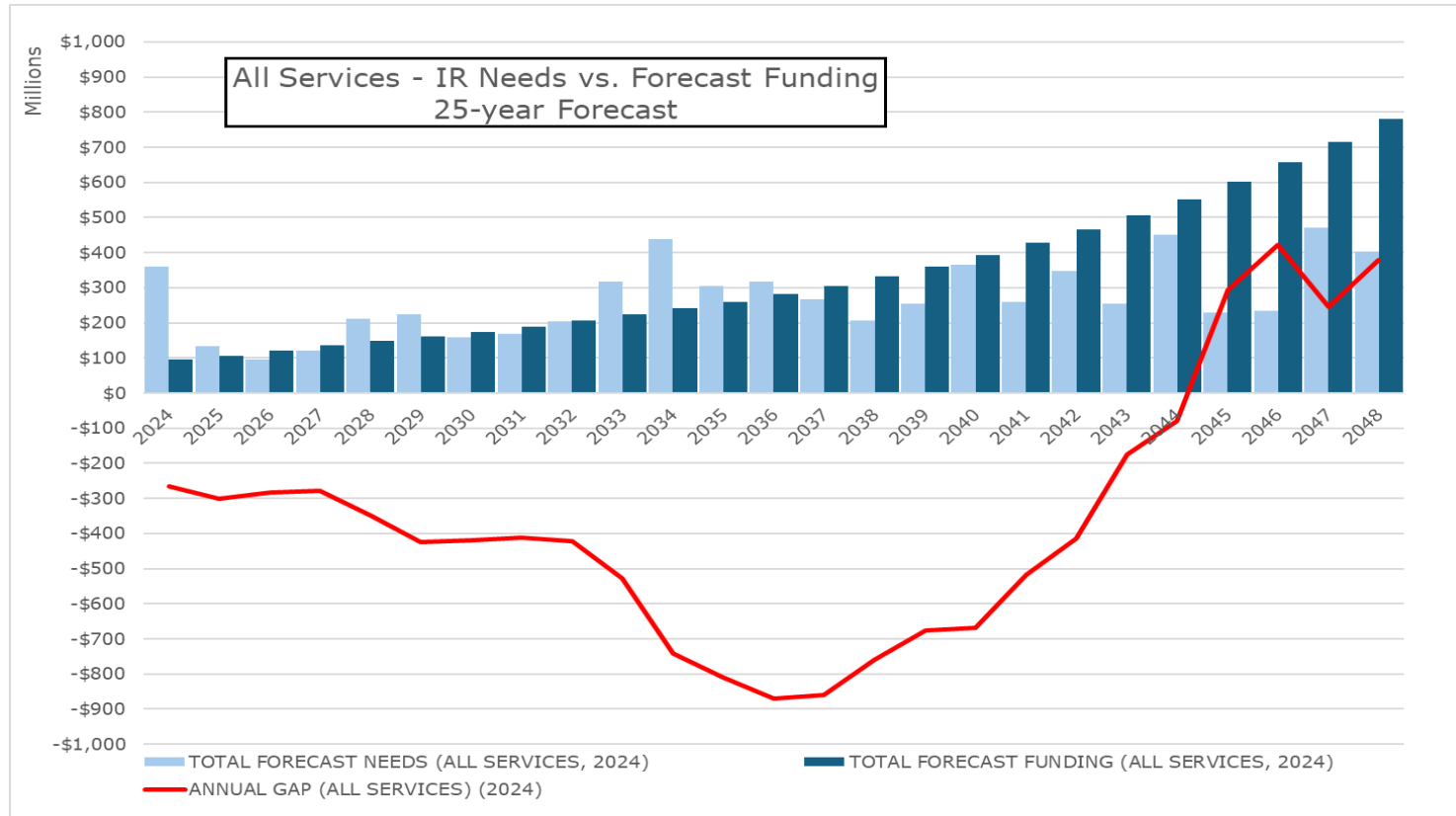
**Sustainability**

For many years Guelph has been working to attain a state of financial sustainability in its asset management practices, meaning the available funding matches the expected renewal needs. The 2024 sustainability review was completed by extending the infrastructure renewal forecast beyond the ten-year period required by O. Reg. 588/17.

The results of this forecast model predicts that if the funding strategies currently in use continue the deferred work backlog begins to close around 2037. By 2044 the accumulated available funding will be sufficient to have eliminated the deferred work backlog and ensure that beyond 2044 the available funding will continue to be greater than forecast needs. This is the point of asset management sustainability – when the needs and funding are balanced.

Previous information presented to Council indicated that the target year for sustainability was predicted to be 2037. The cause of the extension is due to a combination of factors: the asset data related to cost and future needs is much more accurate than has ever been used in previous analysis work and this includes integration with capital renewal details in the various master plans and other studies that have been developed in the past four years. Most critically costs for infrastructure renewal work have increased greatly since the beginning of 2020 and the COVID pandemic.

**Figure 5: Forecast Renewal Needs vs. Funding 2024-2033 Showing Point of Sustainability**



The sustainability review and the ten-year renewal forecast have been completed using data that predicts the estimated annual renewals will differ year to year, with some years showing a higher spike than the average. In practice the annual capital renewal projects will result in a more even distribution of the needs, eliminating the spike years. This will alter the annual cumulative gap and sustainability target forecast, but without details of approved renewal

projects per year it is difficult to interpret how these changes will look.

More importantly these forecasts have been completed using infrastructure renewal needs and forecast funding values that were approved in Nov. 2023 during the 2024-2027 Multi-year Capital Budget approvals. Any change to this funding strategy, whether it be a result of reduced or increased taxes,

changes to the infrastructure levy, or increases or decreases in user rates will alter the forecast.

The consequences of any funding changes need to be balanced against the impact of those changes to the City's infrastructure and levels of service that are being delivered.

### **Beyond 2024**

The 2024 AMP has been prepared using the best data that has been available for asset analysis. This has been the result of extensive work by the CAM team with the support of all service areas to improve the accuracy of the information available about the assets. This maturing of the City's AM processes is a central idea in asset management and will continue indefinitely.

The CAM team is actively involved with the development and implementation of the City's new Enterprise Resource Program (ERP). This work involves centralizing essential asset information to allow standardization of work processes and integration with multiple other tools, including a financial system and GIS. The implementation of this program will further enhance the idea of asset management at Guelph.

The 2024 Corporate AMP is the baseline to a requirement in 2025 for the City to submit an updated AMP that expands on the Levels of Service requirements of [O. Reg. 588/17](#).

The 2024 AMP includes the identification of a series of metrics that help asset managers understand how well the assets are functioning against expectations, and an indication of how well the City is meeting those

metrics. In 2025 the AMP will be updated to identify **target** levels of service and a forecast of estimated costs to achieve those targets. This implies that during the remainder of 2024 and early 2025 efforts will be undertaken to identify what levels of service are desired for the City to deliver. This will be an exercise involving Council, the community and staff through a multi-pronged approach to understand what is expected, and how it can be delivered.

When complete, these two major efforts will allow the City of Guelph to continue its maturing and growing asset management path for many years to come.

## Table of Contents

### Contents

City of Guelph Corporate Asset Management Plan 2024 .....	i
City of Guelph Corporate Asset Management Plan .....	iii
Contributors.....	iv
Executive Summary .....	x
Table of Contents .....	xvi
Chapter 1: Introduction.....	1
Goals and Objectives .....	1
Next Steps.....	3
Asset Information Sources.....	3
Comparison to the 2020 and 2021 AMP Documents .....	6
Levels of Service.....	7
Infrastructure Renewal and Lifecycle Management .....	9
Deferred Renewal Backlog.....	13
Operations and Maintenance.....	17
Limitations and Constraints .....	19
Improving the Asset Management Plan.....	20
Risks to City Infrastructure Due to Climate Change .....	24
The City of Guelph .....	26
The State of the City’s Assets .....	30
Quick Facts .....	31
State of the Assets – What Does Guelph Have?.....	32
Sustainable Funding Targets.....	53



Chapter 2: Transportation Assets: Roads, Sidewalks, Bridges and Other .....	64
Quick Facts: City of Guelph Transportation Assets .....	65
Inventory and State of the Assets.....	66
Other Asset Information.....	68
State of the Infrastructure.....	71
Levels of Service – Transportation Services .....	83
Renewal Needs vs. Funding Analysis .....	86
Summary and Risk Assessment.....	94
Chapter 3: Water Services .....	95
Quick Facts: City of Guelph Water Collection, Treatment and Distribution Services Assets.....	96
Introduction.....	97
State of the Water Assets.....	100
Renewal Needs vs. Funding Analysis .....	113
Master & Major Capital Plans.....	119
Levels of Service.....	120
Risks to the Water Services .....	122
Summary and Recommendations .....	126
Chapter 4: Wastewater Services .....	127
Quick Facts: City of Guelph Wastewater Services Assets .....	128
Introduction.....	129
State of the Wastewater Assets.....	131
Renewal Needs vs. Funding Analysis .....	138
Levels of Service.....	146
Risks to the Wastewater Services .....	149
Summary and Recommendations .....	151

Chapter 5: Stormwater Services .....	152
Quick Facts: City of Guelph Stormwater Services Assets.....	153
Introduction.....	154
Assets in the Stormwater System .....	154
State of the Stormwater Assets.....	157
Lifecycle Renewal Planning and Replacement Costs .....	161
Master & Major Capital Plans.....	168
Levels of Service.....	169
Risks to the Stormwater Services .....	172
Summary and Recommendations .....	173
Chapter 6: City of Guelph Facilities Management.....	175
Quick Facts: City of Guelph Administration & Operations Facilities Services Assets.....	176
Introduction.....	177
Corporate Administration and Operations Facilities .....	182
Chapter 7: Culture .....	195
Quick Facts:.....	196
City of Guelph Culture Assets.....	196
Introduction.....	197
State of the Culture Assets.....	198
Renewal Needs vs. Funding Analysis .....	203
Master and Major Capital Plans .....	210
Levels of Service.....	210
Risks to the Culture Assets .....	211
Summary and Recommendations .....	212
Chapter 8: Recreation.....	213

Quick Facts:.....	214
City of Guelph Recreation Assets .....	214
Introduction.....	215
State of the Recreation Assets .....	217
Renewal Needs vs. Funding Analysis .....	221
Master and Major Capital Plans .....	227
Levels of Service.....	227
Risks to the Recreation Assets .....	229
Summary and Recommendations .....	230
Chapter 9: Parks .....	231
Quick Facts:.....	232
City of Guelph Parks Assets .....	232
Introduction.....	233
State of the Parks Assets .....	234
Renewal Needs vs. Funding Analysis .....	244
Master and Major Capital Plans .....	249
Levels of Service.....	249
Risks to the Parks Assets .....	252
Summary and Recommendations .....	253
Chapter 10: Guelph Public Library .....	255
Quick Facts:.....	256
Guelph Public Library Assets .....	256
Introduction.....	257
Assets in the Guelph Public Library System .....	257
State of the Guelph Public Library Assets .....	258

Renewal Needs vs. Funding Analysis .....263

Master and Major Capital Plans .....270

Levels of Service.....270

Risks to the GPL Assets.....272

Summary .....273

Chapter 11: Solid Waste.....274

Quick Facts:.....275

City of Guelph Solid Waste Assets.....275

Introduction.....276

State of the Solid Waste Assets .....277

Renewal Needs vs. Funding Analysis .....282

Master and Major Capital Plans .....288

Levels of Service.....288

Risks to the Solid Waste Assets .....290

Summary .....291

Chapter 12: Guelph Transit.....292

Quick Facts:.....293

Guelph Transit Assets.....293

Introduction.....294

State of the Guelph Transit Assets .....295

Renewal Needs vs. Funding Analysis .....301

Master and Major Capital Plans .....308

Levels of Service.....308

Risks to the Transit Assets .....310

Summary & Recommendations .....311

Chapter 13: Guelph-Wellington Paramedic Service.....	312
Quick Facts:.....	313
Guelph-Wellington Paramedics Assets .....	313
Introduction.....	314
Assets in the GWPS System.....	314
State of the GWPS Assets.....	315
Renewal Needs vs. Funding Analysis .....	320
Master and Major Capital Plans .....	326
Levels of Service.....	326
Risks to the GWPS Assets.....	329
Summary and Recommendations .....	329
Chapter 14: Guelph Police Service .....	330
Quick Facts:.....	331
Guelph Police Service Assets.....	331
Introduction.....	332
Assets in the Guelph Police Service System .....	332
State of the Guelph Police Service Assets.....	333
Renewal Needs vs. Funding Analysis .....	338
Master and Major Capital Plans .....	344
Levels of Service.....	344
Summary and Recommendations .....	346
Chapter 15: Guelph Fire Department.....	347
Quick Facts: City of Guelph Fire Department Assets.....	348
Introduction.....	349
Assets in the GFD System .....	349

State of the GFD Assets .....	350
Renewal Needs vs. Funding Analysis .....	354
Master and Major Capital Plans .....	360
Levels of Service.....	360
Climate Change Risk Mitigation .....	365
Chapter 16: Parking Service.....	366
Quick Facts: City of Guelph – Parking Service Assets .....	367
Introduction.....	368
Assets in the Parking Service System .....	368
State of the Parking Service Assets.....	369
Renewal Needs vs. Funding Analysis .....	373
Master and Major Capital Plans .....	378
Levels of Service.....	379
Risks to the Parking Service assets .....	381
Summary and Recommendations .....	381
Chapter 17: Operations Service Fleet .....	382
Quick Facts:.....	383
City of Guelph Operations Fleet Assets .....	383
Introduction.....	384
Assets in the Operations Service Fleet System .....	384
State of the Operations Service Fleet Assets.....	385
Renewal Needs vs. Funding Analysis .....	388
Master and Major Capital Plans .....	395
Levels of Service.....	395
Risks to the Operations Services Fleet Assets .....	397

Summary and Recommendations .....	397
Chapter 18: Information Technology .....	398
Quick Facts:.....	399
City of Guelph Information Technology Assets .....	399
Introduction.....	400
State of the IT Assets .....	401
IT Technology Asset Condition .....	401
Renewal Needs vs. Funding Analysis .....	406
Master and Major Capital Plans .....	411
Levels of Service.....	411
Risks to the IT Assets .....	413
Summary and Recommendations .....	413
APPENDICES .....	416
Appendix A: Asset Management Terminology .....	417
Appendix B: Condition Rating Definitions .....	422
Appendix C: Asset Maturity Levels .....	424
Appendix D: Overview of Fleet Assets .....	430
City of Guelph Fleet Overview .....	431
Renewal Needs vs. Funding Analysis .....	437
Appendix E: Reference Documents .....	441

## Chapter 1: Introduction

### Goals and Objectives

All Ontario Municipalities are mandated to incorporate asset management principals in their planning and management strategies in accordance with the *Infrastructure for Jobs and Prosperity Act* and specifically [O. Reg. 588/17](#). The regulation exists to emphasize the importance of the long-term planning a municipality must do to maximize the capital and operating dollars that are spent to deliver the services expected by residents and businesses.

These services are delivered through the infrastructure that Guelph owns and manages: everything from roads and bridges, administration buildings that allow residents to directly interact with City staff, the collection, treatment and delivery of potable water, waste collection, public transit, fire, police and paramedics to the recreation centres, parks and sports and entertainment facilities. None of the City services can be delivered without some type of infrastructure. The costs to build and manage this infrastructure are significant and have grown in recent years due to changes in the general economic conditions that have affected every aspect of Canadian life.

This is where Asset Management Planning is effective. AM planning provides a long-term view of the needs of the City and helps identify priorities using a risk-based approach to prioritize needs. While good AM will help identify the financial resources needed by the City, it is not financial planning: the service needs and current functional performance of the assets are given careful consideration during all steps involved with AM

planning. The result is a factual and balanced approach to making difficult decisions on service and infrastructure needs while considering what is affordable to the City.

AM provides a logical process that uses quantitative information while considering multiple actions that can be done to ensure an organization will properly manage their assets and as a result, the services they deliver. The end result of a good AM plan is to ensure limited financial resources can be used to provide the greatest benefit by maximizing the performance and service delivery each asset provides as part of the complete set of services that are delivered. In simplest terms, an organization like the City of Guelph can accomplish this by using the following questions as a guide when for decision making when assets are involved:

1. What do you own?
2. Where is it?
3. What is it worth?
4. What condition is it in?
5. What required work has been deferred?
6. What is the remaining useful lifecycle?
7. Are the desired levels of service being delivered?

Knowing the answers to these seven questions makes it possible to make educated and data driven decisions around what work should be prioritized.



The City of Guelph has been proactive in implementing proper asset management practices. The City's first Asset Management policy was established in 2016 with the support of an Asset Management Steering Committee comprised of senior managers directly responsible for managing City infrastructure and services. A Corporate Asset Management (CAM) team was established in 2017 to manage and implement the many tasks that fall under the AM umbrella, and to support all City staff in better understanding what they could do to support AM best practices.

The City's first Asset Management Plan (AMP) was delivered in 2017 with a second, more detailed plan delivered in Oct. 2020. A 2021 update to the 2020 plan that focused on the defined "core" asset types - roads, bridges and major structures, water, wastewater, and stormwater - was delivered to the Ministry of Infrastructure in July of that year, as per the requirements of O. Reg. 588/17.

The 2024 AMP represents the City's commitment to continue to meet the regulated mandate by presenting a corporate asset management plan that includes all City services and the asset types those services are responsible for.

A key focus of good asset planning by an organization is to continuously improve. The CAM team follows this idea and the 2024 AMP builds upon the previous AMP documents with much improved asset inventory and financial information.

O. Reg. 588/17 requires that municipalities use the 2024 AMP to examine in more detail the "level of service" (LOS) metrics that define target functional and performance levels for the assets and the services

they provide. These metrics help the City gauge their success in delivering services to the community and cyclical analysis of them will reveal trends that shows the City's efforts over time. O. Reg. (588/17) defines some mandatory LOS metrics for the core asset types that all municipalities must report on, while also mandating that each city develop their own, focused set of LOS metrics.

For 2024, the AMP is only required to identify the current levels of service being delivered. In 2025, O. Reg. 588/17 requires an enhancement to the 2024 AMP that will identify future target LOS measures - what service performance levels the City wants to deliver - and the cost to reach those future targets compared to the costs in 2024. As a result of this 2025 requirement, the work being presented in 2024 will be the baseline against which those future targets will be measured.

The AMP document is divided into chapters, each of which will highlight a specific service area and the assets they manage. In accordance with O. Reg. 588/17 the information included will focus on the state of the assets (i.e. condition), their value, the forecast renewal and replacement needs, and operational costs for a ten (10) year period. The LOS metrics specific to each service area will also be identified, and the current performance of the assets against those metrics is presented.

Because climate change issues have become critical in the 21<sup>st</sup> century much of the analysis work has focused on the potential effects of climate change on the City's assets and identifying mitigation actions and strategies to minimize any resulting risks. In 2023 the

City of Guelph approved a “Climate Change Adaptation Plan” that identified more than 150 actions related to mitigation of climate change risks directly to assets and these have been used in the analysis of the asset information and development of recommendations in the AMP.

The 2024 AMP will become an important tool in planning future infrastructure and service delivery strategies for the City but it will not identify specific projects, nor identify the future needs of any single asset. The document is intended to provide a broad, high-level understanding of the status-quo condition of the City’s infrastructure assets and how well they are delivering the expected services combined with recommended financial and functional strategies to address the needs that have been identified. The AMP helps drive the development of future capital and operations budgets but should not be considered a budget document itself.

Producing the AMP has been a collaborative effort led by the City’s CAM team with direct input from service area staff and the City’s Financial Strategy and Long Term Planning team which emphasizes the importance of AM planning across all City departments.

### **Next Steps**

After endorsement of the AMP by Council, the information gathered will be used by staff in all City services to help prioritize specific project needs and establish budget estimate priorities. This is a continuation of the work that was done to complete the AMP. Department Master Plans were used as one of the sources of information into the AMP. These

documents included specific recommendations for capital renewal work, including cost estimates and timelines for implementation, which were directly incorporated into the renewal forecasts for each service area. Much of the asset condition information was from reports or studies that staff had already reviewed. The AMP helps consolidate all the different information available and allows the needs of each service to be compared relative to the overall needs of the City. CAM staff worked closely with staff in all service areas to verify the information in the AMP and to fully understand the needs of each service area. This work will continue as the AM Program at the City of Guelph continues to mature.

### **Asset Information Sources**

The AMP is one of the City’s key documents used for long term planning. It does this by incorporating and consolidating information from multiple other sources.

The baseline for most of the AMP analysis is knowing what assets the City owns, operates and needs to manage. CAM manages a large database that includes about 200,000 individual records representing the City’s assets. This information is recorded in either a Geographic Information System (GIS) database or in a series of tables specific to asset type. The data available about each asset normally includes the year it was purchased or constructed, its replacement value, physical properties like material, capacity or length, as well as any condition rating information available. The City’s official plan and strategic plan provide the foundation for what the City wishes to accomplish and how to deliver those services.

Each service area prepares their own business plans that include the needs of any regulations, by-laws, policies or Provincial legislation that applies to them combined with the current needs of the assets, consideration for how the City will grow and what future needs will exist. Often these ideas are presented in a Master Plan document specific to each service area that examines in greater detail the status-quo situation of the assets belonging to that service and then identifies short to mid-term requirements. These master plans normally include specific project needs and cost estimates. Many services prepare their own department specific AMP that will provide more detail on the assets they manage than the corporate AMP can.

The financial information used in the AMP is taken directly from the 2024-2027 Multi Year Capital Budget endorsed by City Council in November 2023. Finally, information from any studies or reports that have been prepared that affect the entire city such as the Climate Change Adaptation Plan is incorporated to the AMP.

Information from the noted above sources is reviewed and the data analyzed with consideration for the City as a whole.

The AMP is then used as the baseline for establishing the next iterations of the City's Infrastructure Renewal Strategy and Growth Strategy. Both documents are essential in framing how the City can continue to grow while managing the current needs of the assets in a sustainable manner.

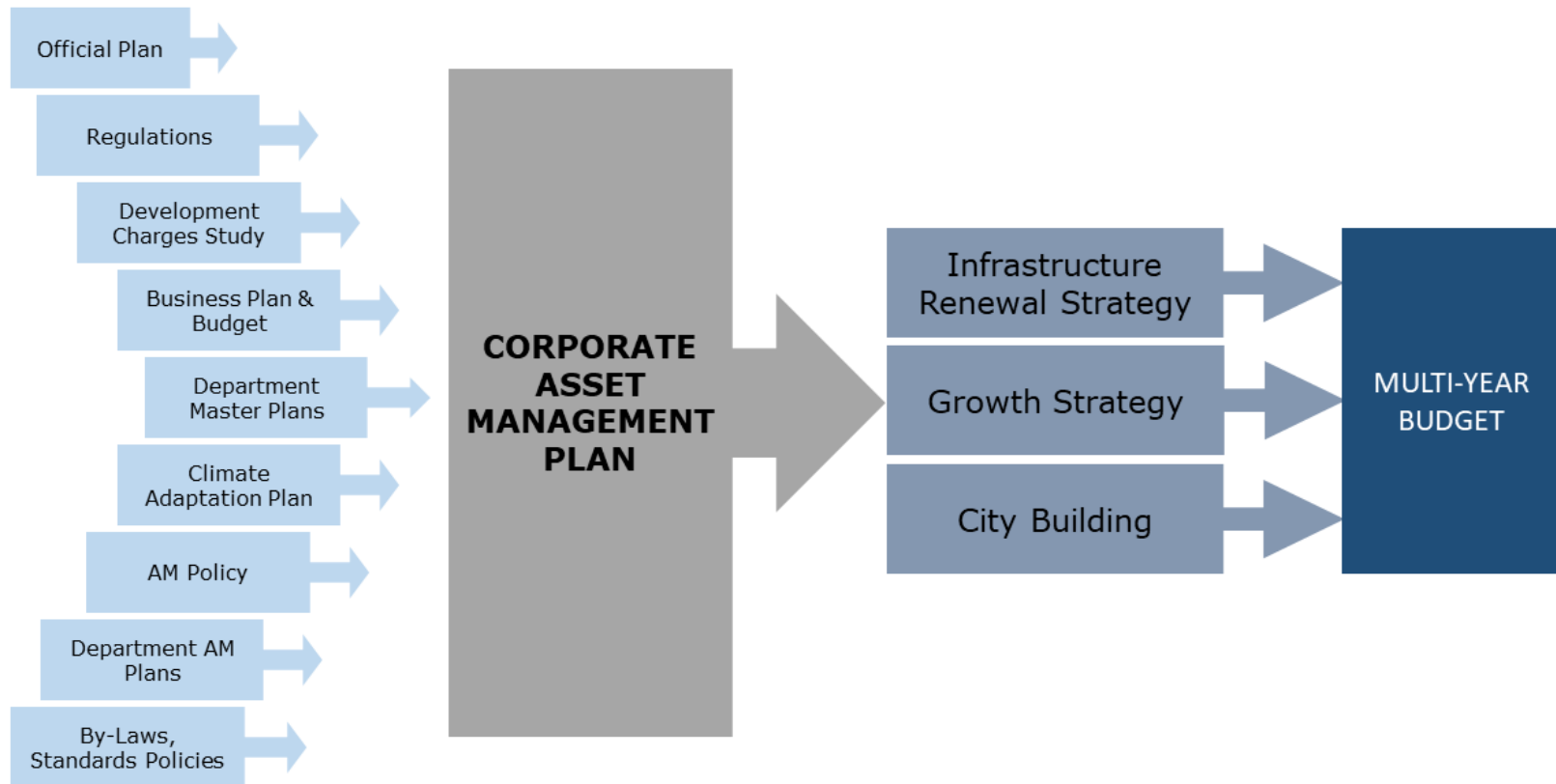
While the information used in the AMP is as current as possible, it must also be noted that it represents a moment in time only. The financial information related to available and forecast funding uses the values established in the 2024-2027 Multi Year Capital Budget that was approved by Council in November 2023. At the time of completing the analysis work for the AMP Mayor Guthrie's directives on reducing future year tax increases had been announced, but specific details about what changes in the budget would be needed to achieve the new direction had not been finalized.

Asset conditions change due to normal use and the passage of time. Other factors such as unplanned repairs, changing service priorities, or unexpected directives from other levels of Government can occur. Changes in service delivery priorities, external inflationary factors or supply chain issues that are prone to the effects of inflation are not always possible to predict, and in the period of time since the last Corporate AMP these factors changed beyond any previous expectations. In the case of constructed assets, the effects of changing status or availability of material and labour and when those effects will occur will affect the City in ways that cannot be represented in the AMP.

Additionally, the recent Ontario Provincial Government decisions regarding development charges and housing were not predicted in 2020 and the full effects of those decisions on the City are yet to be finalized. Any further such changes related to housing, or any other aspect of municipal government funding and management would have similar effects.

Figure 1 presents a visual perspective of what information is used to prepare the AMP, and how the results then frame future strategies and budget needs.

**Figure 1: Asset Information Sources**



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## Comparison to the 2020 and 2021 AMP Documents

Since publishing the 2020 and 2021 AMP documents City staff have continued efforts to improve the asset inventory that provides the baseline data used in the AMP Program. In the years that have passed since those documents were completed extensive efforts have been underway to improve the quality of the data about the assets. This includes validating the existence of assets and verifying the physical details about them such as size, material of construction and age.

In 2024, nearly 200,000 asset records were reviewed as part of the AMP work compared to 97,000 in 2020. The more than doubling of the number of assets analysed is a result of efforts by staff in all City services to better track what assets exist and record information about them in greater detail. Several asset types that were not included in 2020 because appropriate data was not available, have been included in 2024. This includes all road directional, regulatory and warning signs, public art works, the library collection and bookmobile, all individual assets within parks such as furniture and fencing, as well as the City's natural assets.

In 2017 nearly 100% of the assets had a condition rating based only on their age as a ratio of what their expected lifecycle would be. In 2020 that changed and about 40% of the assets were rated based on actual assessments done by subject matter experts. In subsequent years asset assessment programs have

been expanded and have reached a stage where about 80% of the assets have an assigned condition rating based on industry standard quantitative assessment methods. Often this assessment work included a risk analysis where the likelihood of failure – directly related to an asset's condition – and the consequences of failure of each asset were recorded. The risk factors were determined in accordance with established Risk Framework methodologies and best practices for each asset category.

Replacement values of the assets in 2024 have been established using actual historical costs whenever possible. This applies to most of the linear type assets such as roads and pipes, as well as to the buildings and facilities and the equipment in them owned by the City. This step has provided much improved confidence in the accuracy of the asset values compared to the 2017 and 2020 AMPs.

Staff have also ensured that the financial values used in 2024 are the same values as those used in other studies and reports, such as the 2023 Development Charges Study.

The data and information used to complete the 2024 AMP analysis represents the best set of infrastructure data that the City of Guelph has ever been able to compile and use and while it has been a major step forward for the City's CAM team, efforts will continue to always improve.

## Levels of Service

Understanding how well assets are performing their intended functions to the community is done by measuring that performance against a series of metrics known as Levels of Service (LOS). Setting LOS targets that are connected to the City’s Strategic plan provides focus and direction to identifying the needs of the assets, in turn helping to identify where City resources should be committed. The LOS metrics should represent the expectations of the community while taking into consideration the costs to deliver those expectations.

The International Infrastructure Management Manual (IIMM) defines LOS as “the defined service quality for a particular service against which service performance may be measured. Service levels usually relate to quality, quantity, reliability, responsiveness, environmental, acceptability and cost”.

The Municipal Finance Officers Association of Ontario (MFOA) Asset Management Framework<sup>2</sup> document has identified three steps to the LOS Analysis as shown in the following figure.

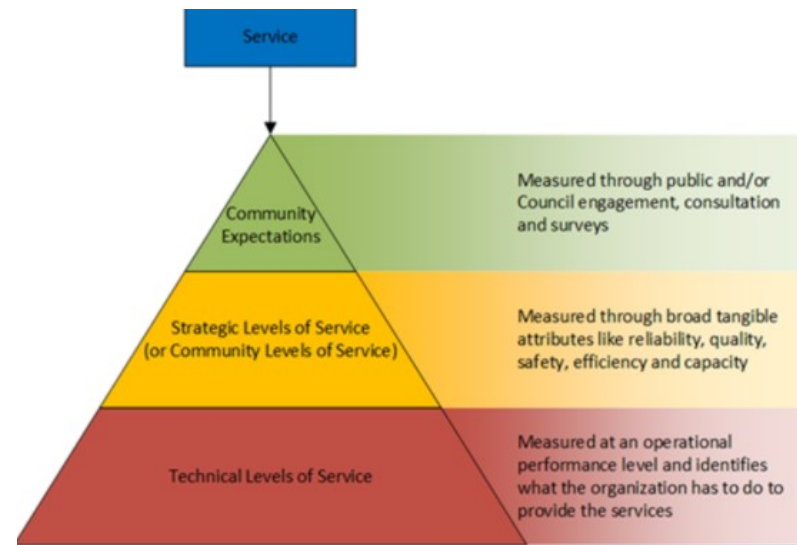
LOS metrics are divided into two categories: Community LOS measure how the community receives the services using attributes like reliability, quality, safety, efficiency and capacity.

Technical LOS measure how well the services are being delivered using quantitative, operational and technical measures. Technical LOS often relate to

attributes like cost to deliver services, levels of compliance with legislation, condition of the assets measured using design standards etc.

Samples of Community (customer) and Technical LOS as they relate to the core asset types are included in Appendix B.

**Figure 2: Level of Service Analysis Components**



For the Core assets there are two sets of LOS metrics that the City must measure against – those defined by O. Reg. 588/17 and specifically detailed in the regulation, and those defined internally by City staff.

<sup>2</sup> Municipal Finance Officers Association of Ontario (MFOA) Asset Management Framework document can

be found at this link [http://mfoa-amp.ca/AMF/AMF\\_04.html#\\_Toc507356241](http://mfoa-amp.ca/AMF/AMF_04.html#_Toc507356241)

The City AM team began efforts to develop an internal LOS framework in late 2017 and early 2018 when a separate LOS Framework document was developed for each service area. These frameworks formed the baseline for the LOS presented in the 2021 Core AMP. For the 2024 AMP, LOS were developed for all service areas to establish the current level of service the City provides. The City will continue to develop the LOS framework in the 2025 AMP such that targets for the next 10 years can be set. Setting those targets is required under O. Reg. 588/17.

## Infrastructure Renewal and Lifecycle Management

The intent of the AMP is to act as a first document to identify those assets in need of renewal or replacement year by year, thus giving the City a broad overview of the value of infrastructure work that is required while also providing an estimate of the financial resources that will be required in future years to be able to do those renewals.

When final capital work plans are prepared, the infrastructure renewal plan in this AMP will be only one part of the decision-making process when projects are funded and formally included in the City's capital budget. Factors such as other service enhancement needs (i.e. pipe upsizing to accommodate increased flow capacity), growth or expansion work, and importantly, geographic location and proximity to other priority assets or projects are major considerations when developing final project budget estimates.

To be able to estimate the future resourcing that the City will require to maintain and improve the current levels of service being delivered by the infrastructure assets, asset managers from all services must understand the current state of the infrastructure supporting those services. This information can then be reviewed and analysed using advanced asset management modelling techniques to predict what infrastructure will need renewal, and when those renewals should occur.

In accordance with the requirements of O. Reg. 588/17 the renewal plan presented in the AMP is a ten (10) year forecast from 2024 to 2033, however, the analysis work behind the presented information was completed for a longer time frame, in some instances looking forward 100 years.

The Current Replacement Value (CRV) of every asset in the City's infrastructure inventory is calculated using techniques and data applicable to the specific asset type. Wherever possible actual historical costs have been used to identify baseline unit costs. In the absence of actual cost info industry standard or best practice type information is used to do this.

Using the status quo condition of an asset is an accepted first step in being able to predict a future year when that particular asset should be renewed or replaced. Following an assumption that each asset will remain in service until it reaches its maximum Expected Useful Lifecycle (EUL) and using accepted deterioration models per each asset type, an end-of-life year can be estimated.

Combining the estimated replacement years and the replacement values of each asset allows for the creation of a multi-year infrastructure renewal capital plan. This plan becomes the baseline for understanding the basic renewal needs of the City's infrastructure but should not be considered an approved capital work plan.



The infrastructure renewal plan is a “high level” forecast that identifies asset replacement years based on best practices and the information available but does not identify specific project plans or methodologies to address asset needs. Within the detailed renewal plans that evolve into actual projects, consideration is given to potential repairs or major rehabilitation that could extend the lifecycle of an asset so that it remains capable of delivering expected service levels but delaying the more costly full replacement of an asset. The data analysis done for the AMP renewal plan will be used by staff to formulate these more specific project details based on the renewal forecast plus several other factors. Technologies in use today that are always improving for asset maintenance, repair and rehabilitation mean it is probable that some forecast replacements will evolve to another type of project instead.

The final renewal plan represents the predicted needs of the assets as of May 2024. Infrastructure work is constantly underway across the City and as a result the state of the assets constantly changes. The values for predicted available funding match those used in the preparation of the City’s 2024-2027 Multi-year Capital Budget. Any changes to those funding levels as a result of changing tax rates, grants no longer being made available, development charge revenue changes or other reasons will impact the renewal plan.

The recommended renewal years do not represent a “must do” date. They are predictions based on best practice asset management modelling using the information that is available as of May 2024. As stated above the AMP renewal recommendations are one variable in the final decision making for when work on

any specific asset will occur. The renewal dates identified in the analysis of the asset data can change from what is presented.

In some years the identified renewal needs were significantly higher than adjacent years or the 10-year average. These spike years identify a large volume of renewal work based on the analysis that has been completed. It is expected that when actual projects are identified to address the renewal needs, efforts will be made to balance the value and volume of work in any single year so it will remain in-line with the available funding.

### **Scale of the Renewal Plan**

Corporate Asset Management summarized the information of approximately 200,000 individual assets in the Renewal Plan and this AMP. With this many records being compiled it is not possible to be perfectly accurate on all the information and assumptions made to complete the plan.

Some assets will be forecast as needing replacement earlier than their actual physical or functional state would indicate if the asset were to be evaluated individually, while others that are not forecast to need replacing for many years, perhaps beyond the timeline of this plan, might require replacement much sooner. This, however, is a generally accepted idea in asset management planning at a whole city scale.

The AMP is not intended to represent or identify the needs of an individual asset. When considered, at the whole city level, it is accepted that the high and low errors will offset each other and the plan is considered

to provide a good overall set of information useful for long-term high value planning.

### **Calculating Replacement Costs**

It is important that the City use the most accurate replacement costs possible to be able to make meaningful forecast and since the 2020 AMP there have been many improvements made on this subject. This has been done during a particularly unique time where the rapidly increasing inflation rates and supply chain issues resulting from the COVID pandemic have increased costs in all facets of the economy.

Important to note is that a replacement cost does not represent a like-for-like replacement where the exact same asset is replaced. The Current Replacement Value (CRV) that is used represents the estimated cost to replace an asset with a new version that provides the same functionality but to modern standards. This factor would consider situations where the City's new design standards require, for example, a complete street design instead of just a road, increases in pipe diameters compared to what was required when the assets were originally installed, or construction of new facilities that meet modern energy efficiency standards mandated through City policies, or through other legislation (like the Ontario Building Code).

Whenever possible the replacement costs of the assets are calculated using actual purchase cost information, then inflated according to accepted financial analysis techniques. Another method considered nearly as accurate is to use historical construction contract information from the previous 5-years based on standard designs the City provides. City Engineering and Transportation Services staff reviewed this info

from typical construction tender packages and Corporate Asset Management staff then used that info to apply a unit cost per asset type to the assets. Using the material and dimensional or capacity attribute information about each asset a total replacement cost was calculated.

This method is especially accurate for linear asset types – roads & pipes – and the related ancillary assets that support the primary linear assets. These would include valves, maintenance holes, hydrants and other features.

Establishing the replacement costs for facilities and the assets within those facilities (i.e. equipment and components like HVAC units, doors and exterior envelope components) has been more challenging. Individual pieces of equipment are normally assigned a replacement cost as part of cyclical facility assessments. Consultants performing this work provide the costs based on their professional knowledge and experience in conjunction with references to construction industry standard cost estimating tools. In concept this is a valid method but historically it has been found that these individual values are often lower than what actual construction costs would be. Staff from the City's Facility Design and Construction team have provided input to help ensure that valid unit cost values are being used.

Due to the nature of a facility assessment, simply summing up the value of all the assets within that facility is not considered an effective way to establish the replacement value of the whole facility. For those cases, the City's asset management team has been using a construction unit cost per area method (i.e. \$

per m<sup>2</sup> or \$ perft<sup>2</sup>) where the unit cost varies depending on the facility type. Unit costs are established based on known recent historical construction costs in the Guelph region in combination with industry standard construction reference information.

For the annual renewal forecast the individual asset replacement costs are used whereas the total facility costs are used in establishing the overall value of the portfolio.

### **Determining Asset Condition**

Whenever possible asset condition ratings are determined with the assistance of 3<sup>rd</sup> party subject matter experts who conduct assessments of the assets and compare their observations to accepted standards.

Assessment methods vary by asset type and the City employs all modern techniques available including CCTV scanning of the interior of wastewater and stormwater pipes, the use of specialized sensing and measurement equipment to determine the condition of pavement and mechanical equipment, and direct visual observation of the assets by subject matter experts.

There are several different asset assessment programs completed each year and the information gathered during those programs forms the baseline for the asset conditions used in this AMP.

Infrastructure assets continuously deteriorate through normal use and so an assessment rating will become out of date in a relatively short time. It is not possible or feasible to re-evaluate every asset every year. To accommodate this the City's Corporate Asset

Management team applies accepted deterioration models to determine the condition of the asset in 2024 compared to the year in which the assessment rating was provided.

Asset condition assessment work is done using a risk-based approach where the final condition rating assigned to an asset is partly based on the consequences of failure of that asset. Normally this is related to the physical condition and/or functional performance levels of an asset, however there are exceptions to this that are accounted for in any analysis.

### **Linear Assets and Related Ancillary Assets**

The current condition of linear assets is determined by using a Weibull statistical analysis to calculate the deterioration of an asset from the date it was assessed (or according to its age) to the date of the AMP analysis. The Weibull model generally assumes that an asset deteriorates at different rates through a lifecycle – slowly when it is new but increasing in rate as the asset ages and finally reaches end of life and is a widely accepted deterioration modelling tool in infrastructure management. The Weibull model is very useful when reviewing assets with long lifecycles, like pipes. In brief: the Weibull model uses the most recent accepted assessment rating score to assign a theoretical age to each asset. From there the theoretical age is used to calculate a predicted replacement year by using the normal expected lifecycle minus the theoretical age of the asset.

The ancillary linear assets were assigned only an age-based condition. While these assets type receive regular maintenance attention they are generally not

assessed to a level of detail where a quantitative condition score would be assigned. These types of assets are assumed to deteriorate at a linear rate, and so the forecast replacement years are calculated simply by using the expected lifecycle of the asset minus the current age.

Some of the asset inventory information available did not include a known age or installation date for the asset. In these instances the asset was assigned a “fair” condition rating representing that the asset is about mid-way through its lifecycle. This age-based method is not perfect, however, for the asset management plan and the scale of the review it is considered an acceptable methodology.

### **Facilities, Buildings and Process Equipment Assets**

Third party consultants with specialties in building engineering or architecture or experts in particular processes are engaged to assess facility assets where each unique piece of equipment or component of a facility or component is assessed in a quantitative manner using industry standards and best practices score. These types of assessments also normally include the consultants assigning a predicted or recommended replacement year that is again based on established standards and best practices.

The information in the FCA reports is often just the first step in understanding the full needs and solutions required. Staff will review the FCA info and identify the priority needs identified. Those assets identified as a priority are normally given a subsequent more detailed inspection that will provide the complete information necessary to develop a project to address the needs.

Most assets that are part of a larger facility have shorter expected lifecycles and so the current condition of the assets uses a linear deterioration model to pro-rate the condition identified in the assessment year.

The FCAs provide information about the physical condition of an asset, separate needs assessment studies are completed to review the functional performance of a facility, examining questions like, is the facility big enough? Does it have the features users require or want? etc. The results from these assessments are used by staff in conjunction with the FCA conditions to finalize detailed requirements for an asset.

All the assessment ratings are determined in accordance with the definitions in Appendix B, table A-2.

### **Deferred Renewal Backlog**

For many years there has been a trend of underfunding needed infrastructure renewal work in municipalities across Canada. Available funding has not been adequate to meet all the needs of aging infrastructure while at the same time cities are growing and new infrastructure needs to be built to support that growth. This trend has resulted in what is known as the “infrastructure funding gap” - a dollar value that represents renewal work that should have been done but wasn’t. Guelph is no exception to this trend.

CAM used a rule that if an asset was determined to require replacement prior to 2024 it was automatically considered to be deferred work and assigned a new

replacement date equal to 2024. These assets are then assigned a rating of “past due”. Assets assessed in “very poor” condition in previous AMPs or other studies are often included in the deferral backlog, as are very old assets, simply due to the passage of time and normal rates of deterioration.

It is possible that some of those assets were replaced or repaired but the asset information was not updated in the information records available. Others may already be included in projects that have received funding approval and are in the queue for completion. When looking at the scale of this AMP these types of errors will offset each other overall and because the AMP is not intended to make a recommendation for individual assets but instead is intended for long-term planning these results are considered good.

### **Corridor Renewal Analysis**

The City has been adopting a corridor analysis methodology to better balance the needs of multiple assets at once instead of focusing only on one asset type at a time. The intent of the corridor method is to develop projects based on infrastructure needs that will maximize available funding to renew as many assets as possible in a single project while minimizing the impacts of disruption due to construction. The approach has proved effective to date and future efforts to better refine the process will continue using the data compiled in the AMP as a baseline set of data for the work.

As a starting point each road segment is considered a unique corridor. Within a single corridor it is possible to find all or some of the following types of assets:

- Roads, including the pavement layers and the base support layers
- Roadway curbs
- sidewalks
- streetlighting
- traffic control light
- directional and other information signage
- water distribution pipes
- water valves and maintenance holes
- stormwater catch-basins and stormwater collection pipes or ditches
- wastewater collection pipes and related ancillary equipment
- traffic islands and landscaped boulevards
- traffic marking
- cycling infrastructure
- etc.

When developing recommendations for asset renewals, the needs of the entire corridor are considered. The City uses a scoring methodology that factors in the conditions of each asset using a weighted average to consider the individual asset conditions by length. Other variables in the algorithm include factors for type of corridor (arterial, collector or local road), if the corridor supports a bus or truck route, and the length of time since work was done on that corridor.

There are instances when the underground services do not fall in a road right of way: these areas are considered as a utility corridor and their needs are evaluated on an equal basis as a roadway corridor with consideration only for the types of assets present.

Calculating a corridor score allows a comparison and prioritization of each corridor against the others. However, this method will occasionally mean that an asset that has not yet been identified as needing renewal according to the AMP analysis will be renewed ahead of the predicted renewal date if it is in a corridor where the condition of the other assets weights the score of the corridor to a high ranking.

This means, for example, that if a corridor has a roadway in “fair” condition but the water and wastewater pipes are considered in “very poor” condition the roadway will be replaced ahead of its end of lifecycle. However, the benefits in doing this outweigh the negative impacts: replacing all assets in a corridor at once negates repeating some phases of work while also not impacting residents as repeatedly (by closing roads due to construction).

Project funding for the corridors is provided by combining the funds from the different asset service areas involved in the project. However, within the AMP analysis the infrastructure renewal needs are considered at the individual service area and not at the corridor level. The shared project costs are not considered in the analysis work – the needs of the individual service are determined based purely on the

asset types belonging to each service are. The identified renewals information is reviewed at a later time and actual project scopes of work and needed budgets determined at that time.

The corridor projects often include service enhancement actions as well as renewal actions. Again, the renewal needs analysis done for the AMP does not consider the service enhancement needs: those are considered elsewhere.

### **Parent Assets**

The asset inventory used in the 2024 City AMP contained approximately 200,000 individual records ranging in scale from vehicle bridges to pumps within a building that circulate water. This level of data granularity is very good for understanding the full spectrum of asset needs and should be able to be grouped and consolidated in order to understand the needs of the parent asset.

For example: The assets within buildings at the wastewater treatment plant (lighting, heating units, interior finishes etc.) are clearly identified<sup>3</sup>. These assets can be considered a “child” asset to the building asset as a whole – the “parent” asset. A similar hierarchical description can be applied to any asset class. While it is important to understand the needs of the individual child assets, it is equally important to understand the needs of the larger parent assets. It does not matter if a circulation pump within a building

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<sup>3</sup> Child assets are sometimes referred to as components of a larger parent asset.

is in good condition when the rest of the building is in poor condition.

Efforts to streamline this data to better represent the higher level parent assets have begun and will be incorporated in the ERP tools.

### **Asset Values**

An asset's current replacement value (CRV) is one of the most important attributes used in asset management. It is essential that the CRV be as accurate as possible so that proper analysis can be done. As previously discussed, major efforts to better standardize how the replacement values are calculated have been implemented since the last AMP in 2020.

Through the preparation of this AMP, historical construction contract documents were reviewed by staff in Engineering and Transportation Services who were able to extract average costs for a variety of assets types and sub-types that would be found in a roadway corridor. These include roads, pipes, curbs, sidewalks and even paint markings and signage. These types of assets make up about 80% of the City's total infrastructure inventory and so the more accurate the

replacement values, the greater benefit for needs planning and project budget estimating.

The average costs per asset type were converted to a "unit cost" - i.e. \$ per m of concrete pipe of 500mm diameter, or \$ per m of asphalt - and then used as the baseline to calculate the replacement value of each asset by matching the right unit cost to the right asset type.

Similar efforts were done on the City's facilities. This work has proven to be essential to greatly improving the quality of asset data at the City of Guelph but it is current only as of July 2023. The review of historical contracts and costs is recommended to become an annual activity so that the database of standard unit costs remains current in future years.

The value of assets is also an important metric for the Finance department and much of the work they do. Moving beyond 2024 CAM and Finance staff are already planning further collaboration in the management and standardization of asset information.

## Operations and Maintenance

Throughout the AMP reference will be made to operations and maintenance activities and requirements. These are important activities that are essential to successful asset management. These activities are separate from capital replacement and renewal activities and are normally funded through dedicated budgets.

The importance of proper operations and maintenance planning and management cannot be overstated: over the lifecycle of an asset the total costs spent on these types of activities will be greater than the initial capital expenditures and any-mid-life renewal capital work done to the same asset.

The operations and maintenance budgets are compiled separately for each of the City services. While there are a set of operations activities that are common to all services, each service also has unique needs that are represented in their budgets. City Finance staff provided the information in the form of actual 2023 expenses and forecast expenses for 2024 and beyond. These values are combined with the forecast renewal needs to evaluate the total forecast funding requirements for the assets over the period of time this AMP covers.

Though often described as two separate groups of activities the City of Guelph includes both operations and maintenance activities in one budget category. The following sections define the activities that are included in each of these terms.

## Operational Needs

According to the International Infrastructure Management Manual (IIMM) operations is defined as:

“The active process of utilising an asset which will consume resources such as manpower, energy, chemicals and materials.”

In other words, operational needs and tasks are those required on a regular, sometimes daily basis, to ensure that assets continue to provide their intended functions and levels of service.

Examples of operational needs include:

- Hydro fees for lighting and powering equipment
- Natural gas fees for heating equipment
- Employee salaries for staff to manage assets
- Fuel costs for vehicles required to help manage assets
- Snow clearing of roads and sidewalks, including salt/brine for ice melting
- Grass cutting and other vegetation management
- The cost of chemicals required in the water treatment process
- Flushing of pipes
- Removal of dirt, debris and grit
- Laboratory testing for water and wastewater services
- Chemicals required for treatment processes
- Etc.

These are essential actions that if not completed will result in partial or complete failure of an asset or system of assets. Many of these actions are related to



ensuring the health and safety of staff or members of the community as they use the assets.

### **Maintenance Needs**

According to the International Infrastructure Management Manual (IIMM) maintenance is defined as:

“All actions necessary for retaining an asset as near as practicable to its original condition but excluding rehabilitation or renewal. Maintenance does not increase the service potential of the asset or keep it in its original condition, it slows down deterioration and delays when rehabilitation or replacement is necessary.”

Maintenance activities can be divided into the following categories:

Planned, these activities are further categorized into Preventive and Predictive types.

Preventive maintenance tasks are those that should be performed based on defined, scheduled timeframes and are recommended to be completed as planned in order to ensure the reliability of the asset and help it to meet its intended design lifecycle. Preventive maintenance activities are often defined in owners and manufacturer’s user manuals. The time-period between maintenance cycles can be set by metrics such as hours of use, numbers of cycles completed or seasonal changes.

Predictive maintenance uses condition monitoring of an asset to determine when and what maintenance tasks are required.

Unplanned (corrective, breakdown or emergency): Actions that are required as a result of full or partial failure of an asset to perform its intended function and return it to a suitable condition for service.

Deferred: maintenance activities (usually preventive types) that should have been completed but for some reason were not. Cumulative deferred maintenance items from one year are carried over to the next year and included in the “past due” or “backlog” category.

Ideally the City maintenance plans will include an emphasis on planned and preventive maintenance tasks as these are cost effective methods of ensuring assets reach their intended full service lifecycle without significant risk of failure or major consequences if they do fail. It has been definitively proven that an effective planned and preventive maintenance program will lower long-term costs associated with managing assets.

Deferred maintenance is a major consideration for all organizations that manage assets and the City of Guelph is no exception. Ideally the volume and value of deferred work would be able to be tracked by reviewing work orders that have been issued against those that were completed. This is not possible for Guelph due to a variety of reasons and so an exact description of deferred maintenance work cannot be identified. For this reason the AMP considers any renewal work that should be completed in 2024 or earlier is considered deferred work – this is a common and accepted method.

Each asset type has unique maintenance needs. With the number of different types of assets in the City inventory it is not feasible to present them all in this

report, but examples will be provided for some of the major asset types when appropriate.

### **Understanding Maintenance and Operations Needs**

Previous AMP documents have identified the challenges with tracking operations and maintenance needs and historic spending. A good preventive maintenance program will help extend the lifecycle of assets which will reduce the number of asset replacements required. Since maintenance is normally less expensive than a full replacement there will be long term financial benefits with this approach.

However, operations and maintenance tasks are often underfunded in any organization, to the detriment of the long term asset performance. With the available data it is difficult to provide a definitive review of what operations and maintenance tasks and activities are currently being done vs. what tasks and activities **should** be done. CAM will work more closely with staff involved in these activities and attempt to quantify the extent of the problem.

The successful implementation of the ERP will make this task easier.

### **Limitations and Constraints**

While significant efforts and improvements in the City's asset management programs have been accomplished since 2016 when modern AM was introduced at Guelph there remain areas for improvement.

Some of the information used in this AMP is sourced from Master Planning documents that various service

areas have developed over time. These are valuable sources that identify major needs from the perspective of the authors at the time they were prepared. However, the older the planning document the less certain the needs remain the same. It is also not always clear if all of the major work identified in these master plans was already completed, is approved and scheduled to be completed, or is no longer considered necessary. The validity of the older plans will be confirmed when the next set of master plans are completed, and a comparison exercise can be done. Until that time the AMP analysis work considers that the information from the older plans as the proper info to use for AM Planning needs.

Asset information changes daily based on operations, maintenance, and capital activities. There is often a time lag between when a replacement or repair occurs and when the updated asset information is recorded. Therefore, the AMP represents the analysis based on the most accurate record information available, however, it may not be completely reflective of assets that are in operation in the City today.

### **Asset Inventory**

Best efforts have been made to ensure the asset inventory and attributes of the assets are current and correct, but it is known that there are missing pieces of the inventory. Within the asset management field, especially with an inventory the size of the City of Guelph's, it is generally accepted that an inventory will never be 100% complete due to the constantly changing status of the assets as normal lifecycle management work is done to them.

Most of the asset inventory data used in the analysis for this AMP was compiled during early summer 2023 using what was available at that time. Much of the facility condition information in various sections of the AMP was gathered during different projects from 2018 to 2022. To be able to have sufficient time to do all analysis tasks necessary this was the timeline necessary. It is possible that changes to some of the assets have occurred since the summer 2023 compilation work, but these changes would have a very minor impact when considering the impact of one asset at the whole-city level of detail, needs and values reviewed in the AMP.

## **Improving the Asset Management Plan**

### **Continuous Improvement**

Asset management is a process of continuous improvement. Assets change over time, as do some of the services the City is expected to deliver. As old assets age and new assets are commissioned the data about the assets must be managed to ensure the most current information is available. This is an ongoing challenge recognized by the CAM team and a task they continually work at.

The maturity level of an organization's asset management capability is normally measured against standards defined in the International Infrastructure Maintenance Manual (IIMM). The manual includes,

### **Valuation and Cost Estimating**

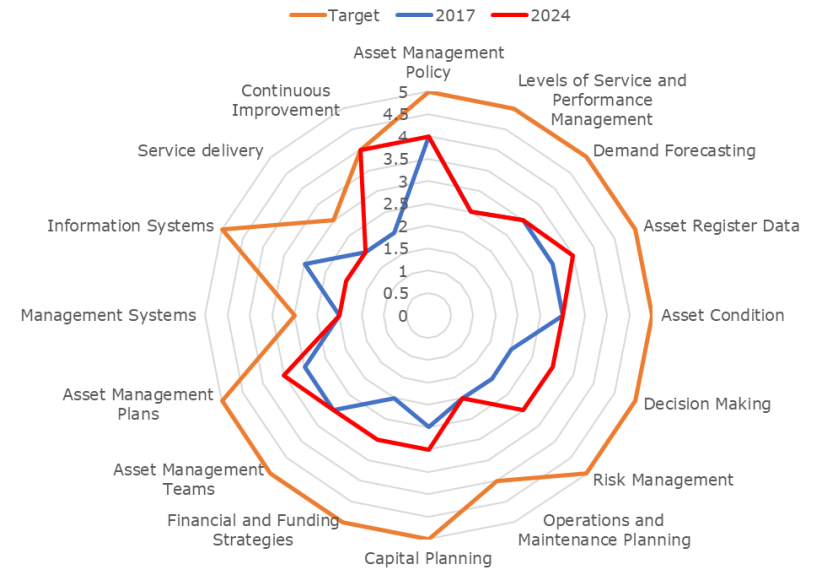
Further, costs related to asset replacement or renewal have been widely varied over the past few years due to the impacts of COVID-19 and inflation. Analyses in this AMP are based on the best available local cost information. However, linear construction cost trends in Q4 2023 and Q1 2024 appear to be stabilizing and even decreasing slightly from 2022/2023 levels, therefore the resultant total replacement value and value of the backlog may be conservative.

Any information about the future value of funding available to address the asset needs is taken from the 2024-2027 Multi-year capital budget that was approved in November 2023. Any decisions changing what was approved in the budget document were not received in enough detail in time to alter the analysis.

among other tools, a matrix that defines different asset management activities and the types of tasks or processes for each of those activities at different levels. (See Appendix C: Asset Maturity Levels). The CAM team has been self-evaluating the level of maturity the City's AM efforts since the first AMP in 2017. While generally improving, there remains more to do until the target maturity levels are reached. The implementation of the new tools from the Enterprise Resource Program will help advance the maturity level, but until those tools are ready the CAM team will be taking a pro-active approach to managing the AM functions at the City by regularly communicating with

staff in all other City departments to exchange information, ideas and tools that benefit the AM functions and using the analysis tools that are available to complete and progress their work.

**Figure 3: AM Maturity at the City of Guelph**



CAM staff maintain an awareness of current trends and improvements in the general asset management profession through journals, conference attendance and training opportunities, allowing the CAM team can perform their duties to the best of their ability.

**Collaboration**

One of the essential tenets of mature asset management is the idea of “line of sight” where all parts and members of an organization understand their role, and the role of the assets they manage in the context of the overall needs of the organization. The CAM team is not directly involved with the day-to-day decision-making regarding activities done to the assets. CAM is responsible for the information about the assets and they rely heavily on the knowledge and experience of staff in the services areas to verify and understand if the information about the assets is correct, or if there are problems. CAM collects, consolidates, validates and analyzes the asset data with the needs of the whole City in mind. Because asset management planning is a evidence and data based activity this data management role is critical to effective infrastructure asset management.

This is especially true when a project involves replacement or repair of assets that are completed as part of capital projects (major or minor). The project managers responsible for the projects need to ensure that information about any change in an asset’s status is updated with CAM. It is also critical that CAM be informed of the results of any Master Plans or Needs Assessment type reports that will identify future asset renewal needs.

While great improvements have been made in this regard since the first AMP in 2017 there remain gaps in the information project flow between the Service Area staff and CAM that result in missing data, in turn affecting the accuracy of the AMP analysis. With the introduction of the Enterprise Resource Program and

related necessary new business work processes it is hoped that many of these gaps will be resolved thereby improving the accuracy of all asset information and the ability to make quantitative analysis of the City’s needs.

**Enterprise Resource Program**

Since 2022 City staff have been engaged in the Enterprise Resource Program (ERP) which involves all City departments and services in the development of new tools and business processes to manage assets.

A major focus of the ERP is to establish a single, central asset inventory accessed by all staff and all other City technology systems. This will include related work-flow processes to standardize how assets are introduced or removed from the official inventory.

Another central driver in the ERP is the need to replace the current WAM software tool that has been in use for many years but has passed the end of its recommended lifecycle. WAM was originally used to manage the City’s asset inventory, track work orders and actions against the assets including the generation and management of Purchase Orders (PO) for that work. Since WAM was first implemented the accuracy of the inventory and quality of the information about the assets has decreased to a point where it is no longer considered useable.

Much of this was because of the introduction of GIS and the shift to manage linear asset information using that tool, but there were other contributing factors to why the use of WAM as a daily AM tool did not continue. At present WAM is still used to manage POs

and some work order info, but it is not consistently used across all services.

The ERP will be introducing new software tools to replace the primary functions of WAM. JDE<sup>4</sup> will be used for PO and other financial information management work and Maximo, linked to the GIS, will be used for daily AM work including inventory management and work order tracking. Together these two primary tools will be supported by secondary support systems where the goal is to introduce a single, central asset inventory with business processes that will allow all City services to access the same core information about the assets and manage them in a manner so that essential data about each asset will always be as accurate as possible.

In addition to the introduction of the new software, a speciality Change Management consultant is engaged to help establish and implement the new business processes that will be required.

The CAM team is a central contributor to the ERP and ensuring that AM best practices will be incorporated while also ensuring the specific needs of each City service are met. This is a complex project with a timeline that spans multiple years. Once complete the central AM inventory will be managed by CAM, and able to be accessed and analysed in a way to greatly simplify the generation of any information about the City's assets.

The implementation of the ERP software tools will greatly improve the quality and accuracy of the asset

information, as well as simplify the efforts required to access and update that information. A major percentage of the asset inventory will be represented in and managed from the City's GIS, building on what is already in place in that system.

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<sup>4</sup> JD Edwards Enterprise One is already in use at the City but its functionality will be expanded.

## Risks to City Infrastructure Due to Climate Change

The full effects of the changing climate are difficult to predict in detail, however many issues that are certain to affect City infrastructure can be identified. These include:

- More intense rain storms occurring with more frequency
- More frequent and longer periods of drought
- More days per year with extreme cold
- More days per year with extreme heat
- Flood events occurring during extreme storms
- Winter freeze/thaw cycles increasing in frequency
- Winter storms with greater intensity
- Increasing number of freezing rain events

O. Reg. 588/17 requires the City to specifically address how climate change risks affecting the infrastructure assets will be mitigated. This includes cost estimations for any work that is identified.

Up to May 2024 the City of Guelph has existing and/or planned adaptive measures to address 95% of the highest risk interactions. Many of these have evolved from (or were inputs to) the first [Climate Adaptation Plan](#) which was delivered to the City in 2023 to better identify the challenges posed by climate change and what the City should do to mitigate risks from those challenges. Areas where infrastructure will potentially be adversely affected by more extreme weather

conditions were identified and adaptation measures were developed. In total the Climate Adaptation Plan identifies 163 adaptation measures for the City to pursue. Just over half of these measures are already part of programs and plans the City is already acting on in response to climate-related risk.

Future AM work including AMP documents will contain even more specifics identifying the needs of the assets with attention to the climate change issues.

Climate change issues and mitigation actions are presented in more detail with specifics to each service area in the following chapters.

Climate change is a major contributor to the needs of Guelph, its infrastructure, and how future growth and infrastructure renewal needs will develop. Throughout all sections of the AMP there will be references to this fact.

It is a subject that is not new to the City and much work has already been done to address future issues and mitigate any risks to the City that will come from climate change issues.

### 2023 Climate Adaptation Plan

In 2023, the City completed its first ever Climate Adaptation Plan which is a long-term forward looking document to address the pressures of climate change<sup>5</sup>. The plan encompasses the City's previous commitments to being future ready such as the "Race to Zero" and "One Canopy" strategies. The primary method for climate adaptation and resiliency is

<sup>5</sup> <https://guelph.ca/plans-and-strategies/climate-adaptation-plan/>

through the City's infrastructure management<sup>5</sup>. By taking actions to adapt municipal infrastructure, the City will be better positioned to manage the effects of future extreme weather events. Given how involved municipal assets will be in the Climate Adaptation Plan, the Corporate Asset and Project Management team will be responsible for overseeing the implementation. The Climate Adaptation Plan identifies 163 actions for the City to take to be better prepared for climate hazards specific to Guelph<sup>5</sup>. Many of these actions apply directly to infrastructure assets and as tangible projects evolve from the AMP some of the actions will be addressed.

### **Race to Zero Initiative**

As part of Guelph's vision to be a leader in sustainability, the City is committed to becoming a net-zero carbon community by 2050 as part of the United Nations' "Race to Zero" campaign<sup>6</sup>. Planned actions to help achieve this goal include moving to an electric transit fleet and using renewable sources for heating and cooling of facilities. The City also offers several rebates and incentives to support the community to reduce water and energy consumption.

According to the 2022 Environmental Sustainability Report, the City is currently using:

- 24.7% renewable energy<sup>6</sup>
- 75.3% non-renewable energy<sup>6</sup>

The City has received grants from the Federal government to support the initiative such as \$1.7M to upgrade heating, ventilation, and air conditioning in the West End Community Centre as well as \$420,000 to install EV charging stations for the City's fleet<sup>7</sup>.

### **One Canopy Strategy**

In January of 2023, the City of Guelph adopted the [One Canopy Tree Planting Strategy](#). Urban forestry is able to help mitigate some of the impacts of climate change but is also threatened by other climate changes. Presently, the urban forest provides an estimated \$9.7 million of ecological services such as storing carbon, improving air quality, reducing stormwater run-off, and much more. In 2019 an estimated 23.3% of the City's land area was tree canopy. The One Canopy Strategy aims to increase the tree canopy of Guelph to 40%. This will require collaboration with private stakeholders to expand the canopy on both public and private land.

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<sup>6</sup> <https://guelph.ca/living/environment/energy/>

<sup>7</sup> <https://guelph.ca/2023/05/city-of-guelph-receives-over-2-million-from-government-of-canada-for-three-climate-change-related-infrastructure-projects/>



## The City of Guelph

### Our Community Today

Geographically situated within the Southern Ontario region, near Toronto and several other municipalities that provide significant contributions to the Canadian and Ontario economies, the City is home to a major university, several businesses leading the agri-food and environmental sectors among others, host to award-winning festivals, vibrant communities and unique cultural events.

The downtown core of the city is centred near the confluence of the Speed and Eramosa Rivers. While this is the historic centre of the city founded in 1827, growth has resulted in the City boundaries expanding in all directions since its original founding. Major highways and railways provide direct connections to Toronto and the rest of Southern Ontario, which in turn provides connections to the United States and other international markets.

While the City development is consistent with that of most urban cities and includes centralized business and shopping sectors, several residential neighbourhoods, designated light industrial and business zones as well as naturalized and managed recreational areas and greenspaces, there is also a rural component to the City. Large areas of land surrounding the City are recognized for being the location of some of Canada's most important and productive agricultural farmland. Despite the extensive man-made development in Greater Golden Horseshoe

(GGH), there remains significant and large areas of natural land with major ecological, hydrological and scenic environments that are protected, and provide drinking water and other environmental benefits to the area.

Infrastructure development has proceeded in stages consistent with the growth and expansion of the City. This includes roadways, water treatment facilities and distribution networks, wastewater collection assets and treatment facilities, stormwater control and management systems, City provided fire, police and paramedic services and the facilities required for them, as well as parks, recreation and sports facilities. All of these services and assets are managed by the City Government through a combination of tax revenue and user charges.

### Future Growth

Like the majority of Canadian Cities, Guelph saw significant growth through the 20<sup>th</sup> century, particularly in the post World War II years. Guelph grew from a population of about 25,000 in 1946 to an estimated current population of about 153,000 people by the end of 2023. This count includes a current for census under coverage estimated at 3.5%. By 2051, the City population is expected to grow to a population of 208,000, representing a 36% increase from today. Since 2011 Guelph has been growing at an average rate of about 1.7% per year.<sup>8</sup>

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<sup>8</sup> Guelph Growth Management and Affordable Housing Monitoring Report 2023 (2024-160).;

Guelph’s Official Plan will accommodate future growth by:

- i. planning for a forecast population of 208,000 people by the year 2051;
- ii. promoting a steady rate of growth equivalent to an average long-term population growth rate of 1.2% annually to 2051, which will allow growth to keep pace with the planning for future physical infrastructure and community infrastructure;
- iii. ensuring the employment growth in the City is planned to keep pace with population growth by planning for a minimum of 116,000 jobs by the year 2051.

By 2051, the projected total number of households is expected to equal approximately 85,700 units; an estimated increase of 22,000 from approximately 64,000 units in 2023.

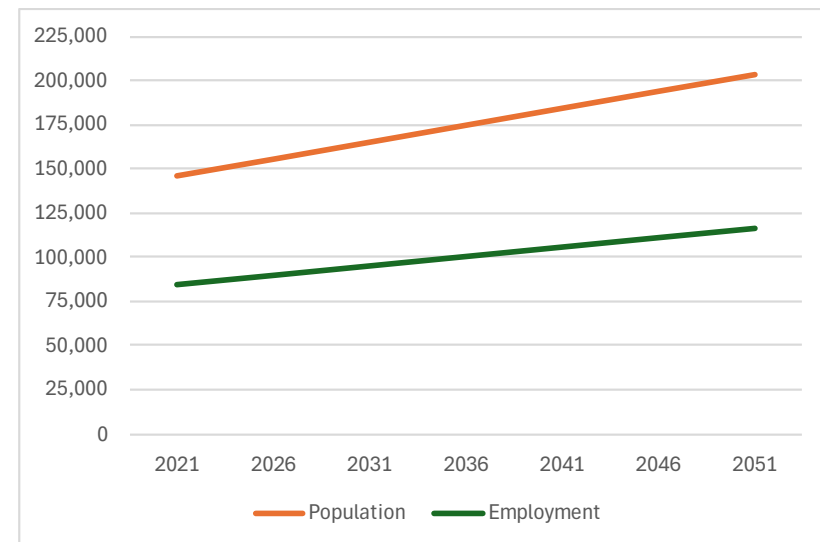
The City has enjoyed about a 58% Activity Rate – that is for every 100 residents, there are approximately 58 jobs in Guelph. This trend has been relatively stable since 2011 and is generally forecast to remain so. The Activity rate dipped to 54% in 2020 – a temporary reduction attributed to the effects of the COVID pandemic.

There were an estimated 86,400 jobs in the City in 2023, with a forecast figure of 116,000 in 2051, a 34% increase from today.

The rates of growth for the demographics described above are used to help estimate how much the existing infrastructure asset base will be required to expand in order to accommodate the increased population. Other factors are also considered when determining the growth of each asset class.

The chart in Figure 4 presents historical and forecast population<sup>9</sup>, employment and numbers of households that are used by City planning staff to help understand what future needs will develop.

**Figure 4: City of Guelph Population and Employment Trend**



<sup>9</sup> These population figures exclude the net census under coverage of approximately 3.5 per cent.

The City of Guelph is included in the Greater Golden Horseshoe (GGH) area, within the economic influence of the Greater Toronto and Hamilton Area (GTHA) and as a result is influenced by the development and activities of the region. The Ontario Provincial Government has produced a planning document called "A Place to Grow – Growth Plan for the Greater Golden Horseshoe"<sup>10</sup> which outlines several broad planning goals and initiatives that will impact decisions made by the City of Guelph.

The level of forecast growth for Guelph will impact the services and infrastructure owned and managed by the City and therefore to be able to support this planned growth, the City of Guelph will be required to continue with its sound integration between land use planning and investment in infrastructure.

"A Place to Grow", among other requirements, identifies that:

Planning for new or expanded infrastructure will occur in an integrated manner, including evaluations of long-range scenario-based land use planning, environmental planning and financial planning, and will be supported by relevant studies, and should involve:

- Leveraging infrastructure investments to direct future growth to meet the minimum intensification and density targets in the plan,
- Provide sufficient infrastructure capacity in strategic growth areas

- Identify full life cycle costs of infrastructure and developing options to pay for them over the long-term
- Consider the impacts of changing climate
- Design, refurbishment, or reconstruction of the street network utilize a complete streets approach
- Support active transportation modes
- Infrastructure corridors be developed that maximize the options to co-locate linear type Assets
- Water and Wastewater systems should be sustainable: municipal revenues should be sufficient to recover the costs of these systems (capital and operating)
- That a Master Plan for Water, Wastewater and Stormwater systems be developed
- Policies that encourage and support water conservation and recycling, energy conservation or alternative energy sources
- Future development be focused in areas where active or public transportation corridors can be facilitated in place of surface parking

All of the above points, and others in "A Place to Grow" will have a direct impact on the asset planning that the City of Guelph will be required to follow. In fact, the above points form the foundation for effective asset planning.

<sup>10</sup> <https://files.ontario.ca/mmah-greater-golden-horseshoe-place-to-grow-english-15may2019.pdf#page=102&zoom=100,338,870>

**Effects of Bills 23 and 109 on Growth**

Bill 23 introduced significant new exemptions and discounts for the City's growth revenue sources (development charges, parkland dedication, community benefits charges). The most significant impact is development charge revenue loss, which must be made up from other sources, and was estimated to be more than \$200 million over the 10-year Development Charge by-law period. Recently introduced legislation (Bill 185) would reduce this estimated impact by approximately \$47 million over 10 years if the mandatory Development Charge rate phase-in is removed, and costs for growth studies are re-added as eligible costs. Development charge revenue loss from exemptions, discounts, rate phase-in, and ineligible costs must be funded from other sources. This diverts property tax and utility rate capacity that could otherwise be used to increase funding for infrastructure renewal to fund development charge exemptions and discounts.

The City's Parkland Dedication By-Law provides resources for parks and greenspace in the City. Under Bill 23, the alternate dedication rate for high density developments was reduced to half of the current rate. Land conveyance requirements were also reduced.

These rates are far lower than the rates targeted by the Official Plan. At the same time that future growth is expected to increase density, funding availability for parkland will decrease resulting in less available parkland for all residents, particularly impactful for residents of high density developments that do not have access to privately owned greenspace. This is further exacerbated by land value appreciating over time, resulting in a reduction in purchasing power for parcels used for parkland. These changes impact asset management, as property tax and utility rate funded parkland is another community priority competing with infrastructure renewal for access to limited funding capacity.

These legislative changes mean that capital funding increases that could otherwise be used to close the infrastructure gap are being diverted to support growth related capital costs. When growth does not pay for growth, the cost of building growth enabling infrastructure and amenities also needs to be funded by the same sources that support infrastructure renewal, reducing the pace of both.

## The State of the City's Assets



**Quick Facts**

**City of Guelph State of the Assets 2024**

Total Replacement Value	\$7,692,577,984
Number of assets	~200,000
Average Condition	FAIR
10-Year Forecast Renewal need	\$2.0 billion \$200 million per year
2024 Renewal Backlog	\$354 million (4.86% of total asset value)
10-Year Forecast Funding	\$1.56 billion \$156 million per year
Projected deferred work backlog at end of 10-year forecast period	\$540 million

## State of the Assets – What Does Guelph Have?

The City of Guelph owns approximately 200,000 assets that exist to provide needed and expected services to the community. As Guelph has grown since its inception the number and types of assets has changed and expanded. As of 2024 the City owns and manages everything from the roads, bridges and sidewalks that allow access to and around the city, the potable water treatment and distribution facilities, the sanitary wastewater collection and treatment facilities, emergency services for fire protection, policing and paramedics, waste collection and public transit.

Other services like the recreation centres, libraries, museums and parks exist to provide a place for Guelph residents and visitors to participate in a wide variety of activities.

To manage all of these different assets the City administration and operations staff work out of many different facilities and make use of modern information technology tools as well as the many types of maintenance vehicles and equipment required to ensure all the assets function as they are supposed to.

All of this effort requires proper funding to ensure that the daily operation and the long-term renewal needs of the assets are properly addressed. Asset and infrastructure renewal funding is generated through a combination of property tax revenue, user fees and various grant programs from Provincial and Federal governments.

This is a complex process, and the purpose of the asset management plan is to present how well the City is doing its work, while recommending what will be

needed in the future to ensure that City services will continue to be delivered effectively while Guelph grows.

For asset management purposes, assets are categorized into one of 17 service areas that match the type of services that are delivered by the City. Ontario Regulation (O. Reg.) 588/17 requires that the City prepares an asset management plan that identifies:

- What assets are in the City inventory
- The replacement value of the assets
- The age of the assets
- The condition of the assets
- The cost to maintain the current level of service those assets provide
- The renewal needs and the costs to ensure that the assets will continue to provide needed levels of service in the future

The O. Reg. also categorizes assets into “core” types – roads, bridges, water, wastewater and stormwater assets – and non-core types – all other service areas. The reason for this is that the core types generally represent most of the assets any municipality would own by both asset count and value. Core asset types are also generally considered to deliver the most important services that the community uses.

In 2024 it has been calculated that the City of Guelph owns assets with an approximate replacement cost equal to \$7.7B across all the service types. Details about the type of assets and their values are presented in the following three tables and in the

charts on the following pages. Further details about the condition of the assets in each service area, and the forecast costs are outlined in following sections.

**Table 1: City of Guelph Core Asset Types**

Service Area	Quick Facts	Replacement Value	% of City Total	Total # Asset Records
TRANSPORTATION SERVICES	546km of Roads 37 Bridges (vehicle or pedestrian) 42 Major Culverts 142 Other Structures 705km Sidewalk 21,281 Signs, Traffic Controls, Street Lighting and more	\$2,148,923,690	27.94%	42,262
WATER SERVICES	574km Distribution Mains 3346 Hydrants 22 Facilities WITH 37 Buildings (pump stations, treatment facilities, storage facilities) and mor	\$1,658,687,280	21.56%	31,876
WASTEWATER SERVICES	520km Collection Mains Water Resource Recovery Centre (treatment plant) 6 Pump Stations	\$1,019,754,769	13.26%	21,139



Service Area	Quick Facts	Replacement Value	% of City Total	Total # Asset Records
	and more			
STORMWATER SERVICES	448km Collection Mains 1,157 Culverts 7,391 Maintenance Holes and more	\$1,439,156,699	18.71%	33,433
	sub-total	\$6,266,522,438	81.46%	128,710

**Table 2: City of Guelph Non-Core Asset Types**

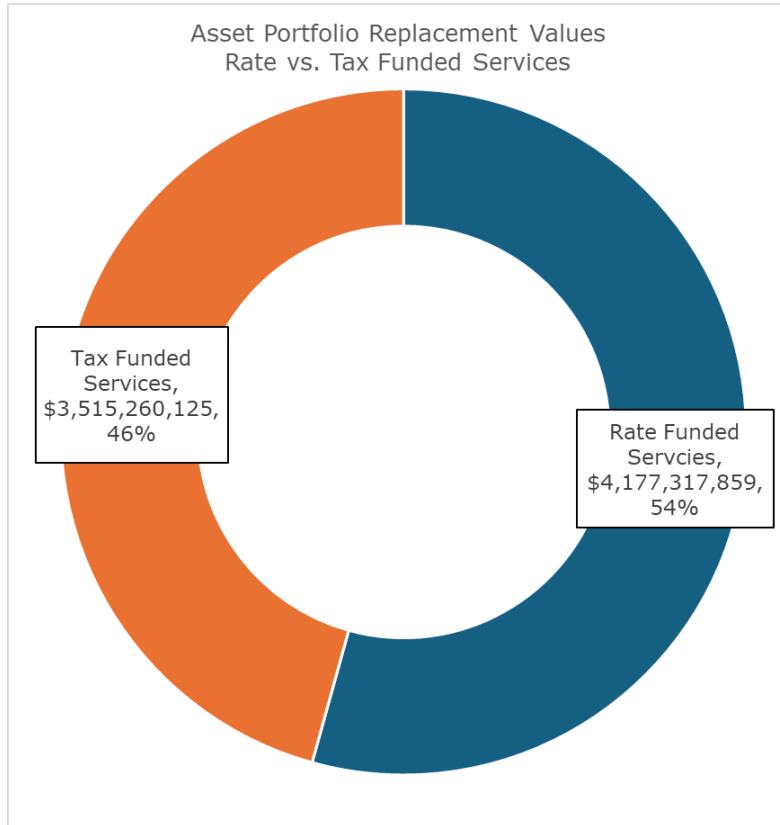
<b>Service Area</b>	<b>Quick Facts</b>	<b>Replacement Value</b>	<b>% of City Total</b>	<b>Total # Asset Records</b>
ADMIN & OPERATIONS FACILITIES	14 Buildings	\$163,958,055	2.13%	1,603
PARKING	3 Above Ground Garages, 5 Surface Lots Street parking + more	\$59,719,111	0.78%	306
FLEET & EQUIPMENT	143 Vehicles, 166 Other Equipment Items	\$28,475,604	0.37%	309
CULTURE	8 Facilities 29 Pieces of Public Art	\$150,926,339	1.96%	1,319
RECREATION	8 Facilities	\$166,771,625	2.19%	1,588
PARKS	122 Parks with Sports Fields, Picnic, Washroom and Concession Facilities and Various other Amenities  Trees, Forest Areas and Natural Spaces	\$268,464,371	3.49%	50,641
GUELPH FIRE SERVICES	6 Fire stations 13 Fire Trucks 33 Support vehicles	\$91,482,510	1.19%	881
GUELPH-WELLINGTON PARAMEDICS	8 Bases (leased spaces) 43 Ambulances	\$15,182,934	0.20%	46

Service Area	Quick Facts	Replacement Value	% of City Total	Total # Asset Records
SOLID WASTE	Waste Resource Innovation Centre with 16 separate buildings and other assets 27 Packer trucks (plus others)	\$112,269,161	1.46%	1,978
GUELPH TRANSIT	Main transit garage and administration facility 641 bus stops 87 Full size buses 14 Mobility buses	\$133,657,090	1.74%	1,087
INFORMATION TECHNOLOGY	All computer hardware, software and various peripheral equipment like printers, phones and AV equipment	\$20,265,331	0.26%	10,303
sub-total		\$1,213,093,205	15.77%	70,061

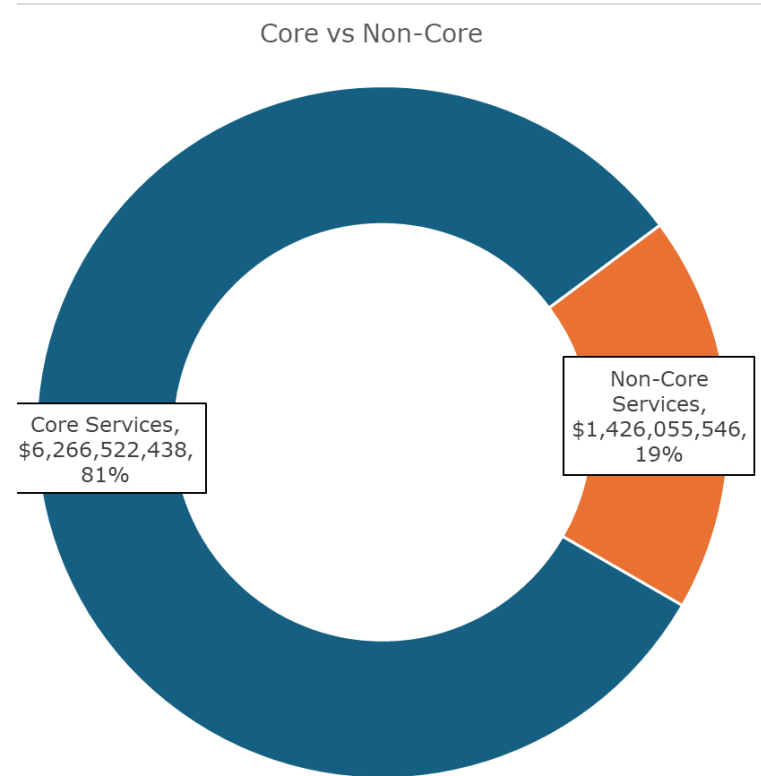
**Table 3: City of Guelph Non-Core Asset Types (Board managed)**

<b>Service Area</b>	<b>Quick Facts</b>	<b>Replacement Value</b>	<b>% of City Total</b>	<b>Total # Asset Records</b>
GUELPH PUBLIC LIBRARY	Main library & other sites, collection,	\$46,994,080	0.61%	29
POLICE SERVICES	Police HQ 88 Vehicles	\$165,968,261	2.16%	404
sub-total		\$212,962,341	2.77%	433

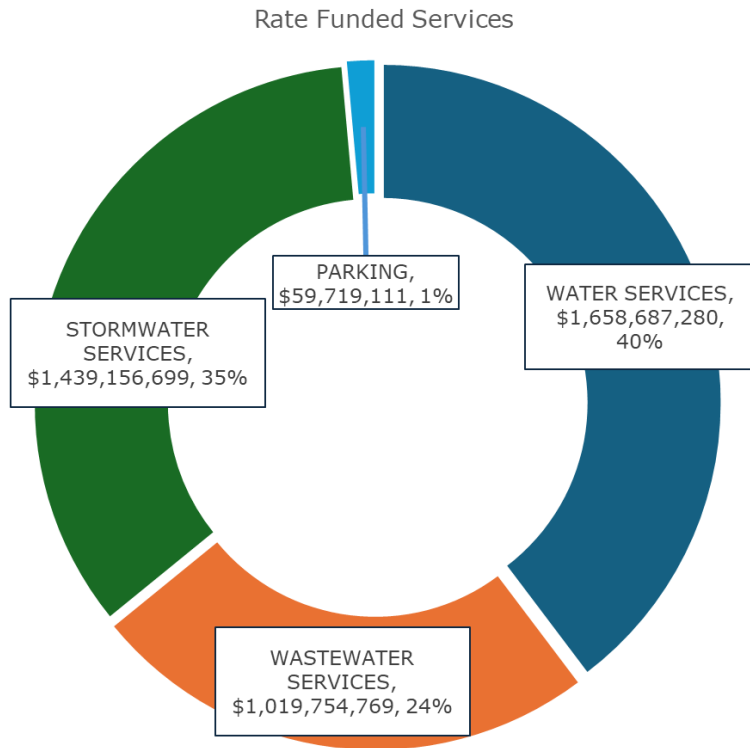
**Figure 5: Asset Portfolio Values - Rate vs. Tax Funded Services**



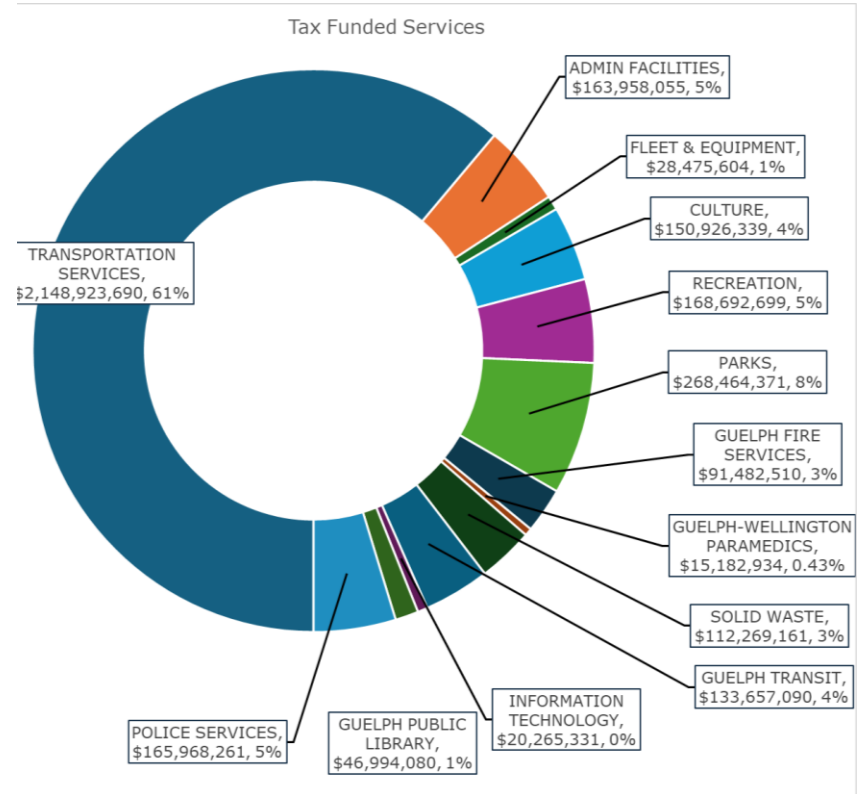
**Figure 6: Asset Portfolio Values - Core vs. All Other Services**



**Figure 7: Value of Rate Funded Service Portfolios**



**Figure 8: Value of Tax Funded Service Portfolios**



**Overall Condition of the Assets**

The condition of the assets is determined according to best practices and techniques that apply to each unique asset type. There are numerous assessment programs and studies completed each year by the City that provide this information. More details are described in the Determining Asset Condition section of this document as well as in the chapters for each specific service type. All the various assessment work is consolidated to a condition rating system according to the following table. Full definitions of the condition ratings are listed in Appendix B: Condition Rating Definitions.

**Table 4: General Condition Ratings**

Condition Rating	Condition Score
5	Very Good
4	Good
3	Fair
2	Poor
1	Very Poor
0	Past Due
N/A	An assessment rating was not assigned <sup>11</sup>

<sup>11</sup> N/A condition rating indicates that there was insufficient detail about an asset to be able to accurately assign a condition rating. This is normally

The overall condition of the assets is presented by summarizing the total replacement value of the assets in each category.

**Table 5: Overall Asset Condition by Replacement Values - All City Assets**

Condition	% of Total	Replacement Value
N/A	1.28%	\$98,200,288
PAST DUE	4.61%	\$354,315,653
VERY POOR	14.05%	\$1,081,092,162
POOR	14.49%	\$1,114,709,176
FAIR	23.60%	\$1,815,562,011
GOOD	23.43%	\$1,802,546,548
VERY GOOD	10.68%	\$821,185,422

The results show that about 58% of the assets by replacement value are considered in “fair” or better condition.

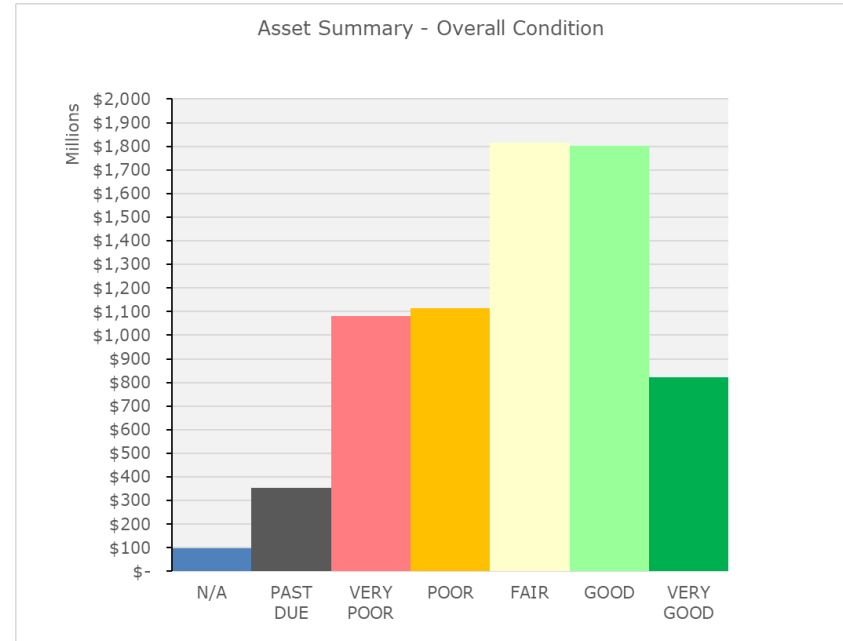
However, the balance of the total representing \$2.65B are considered in less the “fair” condition. Most importantly, \$1.1B worth of assets are considered in “very poor” condition, meaning that value of work will likely need replacing within the next 10 years, and \$354M worth of assets are considered “past due”

due to no assessment being done on an asset, or missing info related to the asset age.

which means that according to the asset information available these assets have passed a stage where they should have been replaced already but remain in service.

The combination of “very poor” and “past due” assets present a financial and service level risk to the City: these are assets that are nearing or past the end of their useful lives and so failure before they can be replaced is a possibility. Given their conditions it is almost a certainty that the levels of service these assets can deliver is not at their intended design levels, or what is desired. These are risks that must be addressed.

**Figure 9: Overall Condition Ratings by Replacement Value – All City Assets**





### Deferred Renewal Backlog

The value of deferred work – that work that should have been completed prior to 2024 – is calculated at a value of \$354M.

This value is higher than the \$289M backlog that was identified in 2020, however, as percentage of the total asset inventory replacement value it is lower - 4.6% in 2024 vs. 6.6% in 2020. The downward trend indicates that the City's plans to address the backlog through various funding strategies and project prioritization is working.

However, the deferred work backlog is still a large value and without continued attention and strategies to address the backlog it will continue to have a negative impact on any plans that the City will make on infrastructure work. Aging assets that are not replaced can present risks to the services the city delivers, ranging from out of service pay kiosks to more roads with more potholes or cracks, recreation centres unable to open an ice-rink because the freezing equipment fails, or playgrounds closing as the facility ages to a point where it may no longer be safe. These are examples of the consequences of not replacing assets at the recommended timelines.

### Core Assets Condition

The core asset types and services as defined by O. Reg. 588/17 – transportation assets including roads, bridges, and related ancillary assets like sign and traffic control systems, water treatment and potable water distribution assets, wastewater treatment and collection assets, and stormwater collection and management assets – represent about 84% of the

total value of the assets that the City of Guelph is responsible for managing (Table 1). These are the assets that affect the most people on a daily basis, provide essential services to the health and safety of the community, protect against natural occurrences like major storms, and allow business and commerce to flow in and through the City.

Water, wastewater and stormwater asset renewal needs are funded directly from user rates charged to customers connected to the systems. Transportation asset renewal needs are funded through a combination of property tax revenue and various other government grant programs. These are the assets most directly affect most residents and business in Guelph both financially and via the services they deliver.

Because the core assets make up such a large percentage of the total asset inventory the general state of the core assets is very similar to the general state of the overall inventory.

The value of the deferred backlog related to the core services is \$227M, about 3.3% of the total value of core assets and 64% of the total backlog.

**Table 6: Core Assets - Condition by Replacement Value**

Condition	% of Total	Replacement Value
N/A	1.17%	\$ 67,589,483
PAST DUE	3.91%	\$ 226,654,106
VERY POOR	18.03%	\$ 1,045,339,746
POOR	17.02%	\$ 986,380,963
FAIR	25.76%	\$ 1,493,049,452
GOOD	24.21%	\$ 1,403,271,993
VERY GOOD	9.91%	\$ 574,659,821

Nearly 60% of the core assets are considered in “fair” or better condition. About 4% of the core assets are “past due” and another 18% are in “very poor” condition. This represents a value of renewal work totalling approximately \$1.2B that should be planned for within the next 10-years. The risks and consequences of not addressing this needed renewal will be reduced performance and quality of critical infrastructure, much of which is related to ensuring the health and safety of the city residents through the potable water and sanitary wastewater treatment services.

**Figure 10: Core Assets - Condition by Replacement Value**



**Non-Core Assets Condition**

The non-core asset types are generally those that people choose to make use of, or that support the overall asset and infrastructure management efforts of the city. This includes recreation centres, parks, sports and entertainment facilities, museums and libraries, City Hall and maintenance operations facilities and fleets and the fire, police and paramedics emergency services.

**Table 7: Non-Core Assets - Condition by Replacement Value**

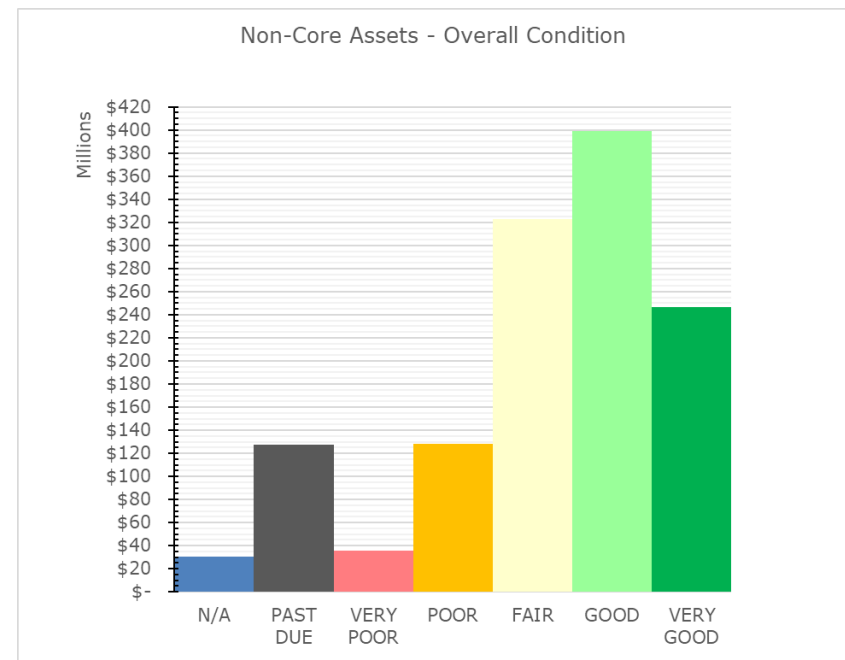
Condition	% of Total	Replacement Value
N/A	2.37%	\$30,610,805
PAST DUE	9.89%	\$127,661,547
VERY POOR	2.77%	\$35,752,415
POOR	9.94%	\$128,328,213
FAIR	24.99%	\$322,512,559
GOOD	30.94%	\$399,274,555
VERY GOOD	19.10%	\$246,525,602

Approximately 75% of the non-core assets are considered in "fair" or better condition with nearly half of the inventory considered in "good" or "very good" condition. One of the major differences between core and non-core asset types is their lifecycles. Core assets like pipes can have theoretical lifecycles of 80 years or more whereas non-core assets like vehicles or the mechanical elements of a building may only have a lifecycle of 5-20 years. This must be considered when

reviewing the condition information because even though a large percentage of the non-core assets are in "good" or "very good" condition they may still require renewal or full replacement more than once in the ten-year forecast, and multiple times compared to a sanitary main pipe for example.

The value of the deferred work backlog for the non-core asset types is \$127.7M representing about 10% of the non-core assets and 36% of the total backlog.

**Figure 11: Non-Core Assets - Condition by Replacement Value**



In some instances it may be acceptable that an asset indicated as “past due” can remain in service with minimal risks to the City. For example a maintenance truck may have an intended lifecycle of 10 years but remains functional and useable many years beyond that, with the expectation and need of increased regular maintenance or unplanned repairs becoming more common.

These increased maintenance and repair costs are not explicitly included in the renewal analysis of the non-core assets, but the value of “past due” work can be used to represent some of those costs.

**Rate Supported Assets**

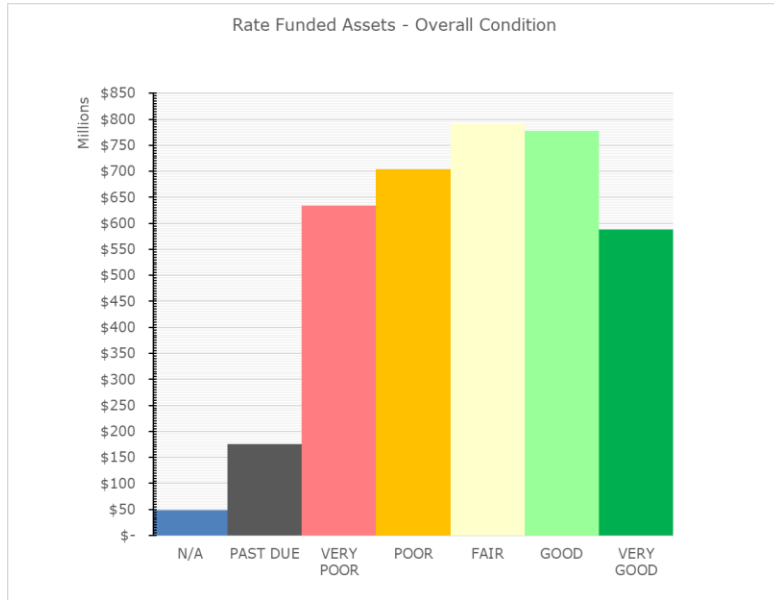
There are four (4) asset categories where the asset renewal needs are funded from user rates: water, wastewater, stormwater and parking. The review of the condition of the rate-funded assets is very similar to the core assets due to the crossover of three of the services.

The intention for rate funded assets and services is that the revenue generated by the user fees be sufficient to cover all required and forecast renewal needs. There is a dedicated reserve fund for each of the four services where the revenue is deposited for future needs. This financial “sustainability” for each service is regularly reviewed as changes to the funding revenue and asset needs are updated and a target year for when the 100% sustainability mark will be reached is defined. A more detailed sustainability review is included in following sections of the AMP.

**Table 8: Rate Funded Assets - Condition by Replacement Value**

Condition	% of Total	Replacement Value
N/A	1.30%	\$48,424,135
PAST DUE	4.73%	\$175,844,790
VERY POOR	17.04%	\$633,791,650
POOR	18.94%	\$704,553,831
FAIR	21.28%	\$791,379,454
GOOD	20.90%	\$777,278,208
VERY GOOD	15.82%	\$588,241,872

**Figure 12: Rate Funded Assets - Condition by Replacement Value**



**Tax-Funded Assets**

The tax-funded assets and services include all the transportation assets plus the non-core assets (except parking). Because the roads, bridges and all related assets comprise about 30% of the City’s overall inventory the condition of those assets skews the results of the tax-funded asset condition review greatly with those needs. Likewise, a majority of the tax-funding available for renewal work is directed towards transportation assets. Road right-of-way construction projects which also include renewals of water, wastewater and stormwater assets normally comprise the majority of the capital projects completed each year by the City.

Most of the tax-funded assets – 67% - are in “fair” or better condition. This is very good, however, there remains about \$628M or 19% of the assets identified in “past due” or “very poor” condition.

There are five (5) reserve funds that can be used to fund the renewal needs of the assets in this category:

- Infrastructure Renewal Fund
- Canada Community Building Fund
- Dedicated Gas Tax Fund
- Guelph Public Library Fund
- Guelph Police Services Fund

Contributions to these funds is predominantly from the collection of property taxes. The Canada Community Building Fund and Dedicated Gas Tax Fund receive contributions from Provincial or Federal Government grants.

In 2017, the City implemented a strategy to begin to close the gap between the funding available and the funding required for infrastructure renewal as identified in the Asset Management Plan. The strategy was an annual increase in capital funding equal to 1 per cent of the overall tax levy, with the goal of reaching a sustainable level of funding by 2032. Since 2017, the amount of the annual increase has fluctuated from 0 per cent to 1 per cent, with some years including the full increase under the strategy, and others including half or no increase. On the cost side of the equation, asset management data updates, inflation, the completion of service delivery master plans, have also factored into the updated projected date of reaching a sustainable level of funding for tax funded services.

Historically, the amount of funding allotted annually to each tax funded service has been based on the percentage of the overall assets used by each service. While this is a simple approach to allocating available funds, it does not allow for asset condition across all services to be the determining factor in allocating the available resources. As the asset management program continues to mature, the ability to better prioritize renewal needs across all City services has improved, and allocation of infrastructure renewal funding is now able to be based on the highest priority assets across all service areas.

Infrastructure renewal funding for tax supported services is not limited to property tax funding. As outlined in the Infrastructure Renewal Strategy document included with the 2024 – 2027 multi-year budget, additional sources of funding are the Canada Community-Building Fund (federal gas tax), Dedicated Gas Tax Funds for Public Transportation (provincial gas tax), and dividends from the City’s two wholly owned subsidiaries.

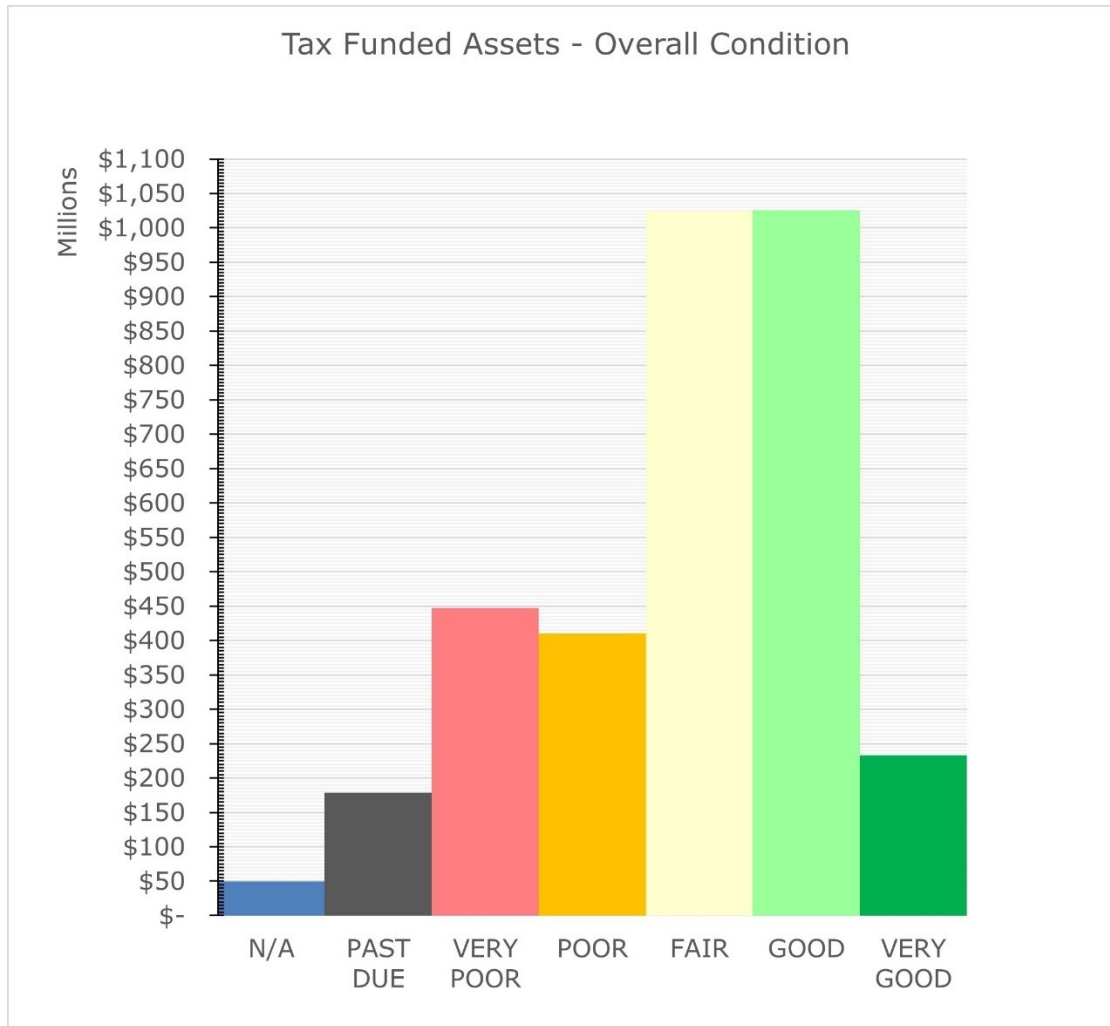
The Guelph Public Library and Guelph Police Services each have a dedicated capital reserve fund for their renewal needs. Oversight and budget planning for these two services is managed by their Boards, but the funding to support them is provided from property tax collection.

**Table 9: Tax Funded Assets - Condition by Replacement Value**

Condition	% of Total	Replacement Value
N/A	1.48%	\$49,776,153
PAST DUE	5.30%	\$178,470,863
VERY POOR	13.28%	\$447,300,512
POOR	12.18%	\$410,155,345
FAIR	30.41%	\$1,024,182,557
GOOD	30.44%	\$1,025,268,340
VERY GOOD	6.92%	\$232,943,551

While there is no defined sustainability target date for the tax-funded services the desire and intent is that all the forecast needs can be fully funded, therefore ensuring that all the assets function at their full levels of service as they are intended to. This topic will be explored in more detail in following sections.

**Figure 13: Tax Funded Assets - Condition by Replacement Value**



**Forecast Needs vs. Available Funding**

**General Info**

The identification of asset renewal needs was done by analysing the condition of the individual assets and predicting when they should be fully replaced. Refer to the Infrastructure Renewal and Lifecycle Management section for more details on this methodology. The forecast reserve fund values were provided from the City’s Finance department and represent the forecast values based on the 2024-2027 Multi-year Capital Budget that was approved in November 2023.

As discussed previously, the AMP does not identify specific needs or specific projects. However, by comparing the total value of forecast needs per year for all services against the total value of forecast available funding per year it is possible to review if the City will be able to complete all required and recommended work or not. From this high level analysis it is possible to review the results and establish strategies to address the needs.

Table 10 presents a summary of the renewal needs for funding forecast and Table 11 and Figure 14 present the year-by-year forecast.

**Renewal Needs vs. Funding**

The following table summarizes the forecast renewal needs and funding for the 10-year period from 2024-2033.

**Table 10: 10-Year Renewal vs Funding Summary**

<b>10-Year Total Renewal Forecast</b>	<b>10-Year Total Funding Forecast</b>	<b>10-Year Forecast Total Gap</b>
\$1,995,083,824	\$1,562,555,416	-\$432,525,408
<b>10-Year Annual Average</b>	<b>10-Year Annual Average</b>	<b>Average Annual Gap</b>
\$199,508,382	\$156,255,542	-\$43,252,841

The chart clearly demonstrates that despite an annual increase in the funding availability there remains insufficient funding to address all the forecast needs. Part of the reason for this is the existing \$354M backlog. However, even if the existing deferred renewal work backlog did not exist there would still be a net negative gap in the funding, and a new deferred work backlog would exist.

When the cumulative annual renewal needs are compared to the annual forecast funding there are no



years in the next ten years where the forecast funding is greater than the forecast needs. The implications of this are:

- Needed work will not be done; assets already in “poor” or “very poor” condition will continue to deteriorate
- Levels of service provided by some assets will decline
- The risk of increased expensive unplanned repairs will increase
- Future renewal needs will be greater than what is forecast in 2024 due to an increasing volume of assets requiring renewal

More details on the effects of insufficient funding for infrastructure renewal needs are described in a document prepared during the 2024-2027 Multi-year Capital Budget approval process titled “Identified Investments deferred, delayed or removed from the budget (2024-2027) that connects insufficient funding to staff proposed and identified projects. Some of the highlights in the document include:

- Added repair and maintenance costs (examples: Fire Station 3 expansion, Corporate building maintenance facility renovations, Calico water pumping station upgrades)  
Increased risk of infrastructure failure as infrastructure age and deterioration increases (examples: cast iron water pipe replacement program, Glasgow St. reconstruction)

- Risk of not being able to meet the City’s housing pledge as a result of being unable to complete needed infrastructure work (examples: York Rd. reconstruction, Victoria Rd. widening, Exhibition Area reconstruction)
- Declining quality of community spaces as a result of being unable to replace or renew existing infrastructure (example: Recreation trails renewals, playground equipment Replacement)

In addition to the points raised in the “Identified Investments Deferred” and other documents there are other risks associated with insufficient funding.

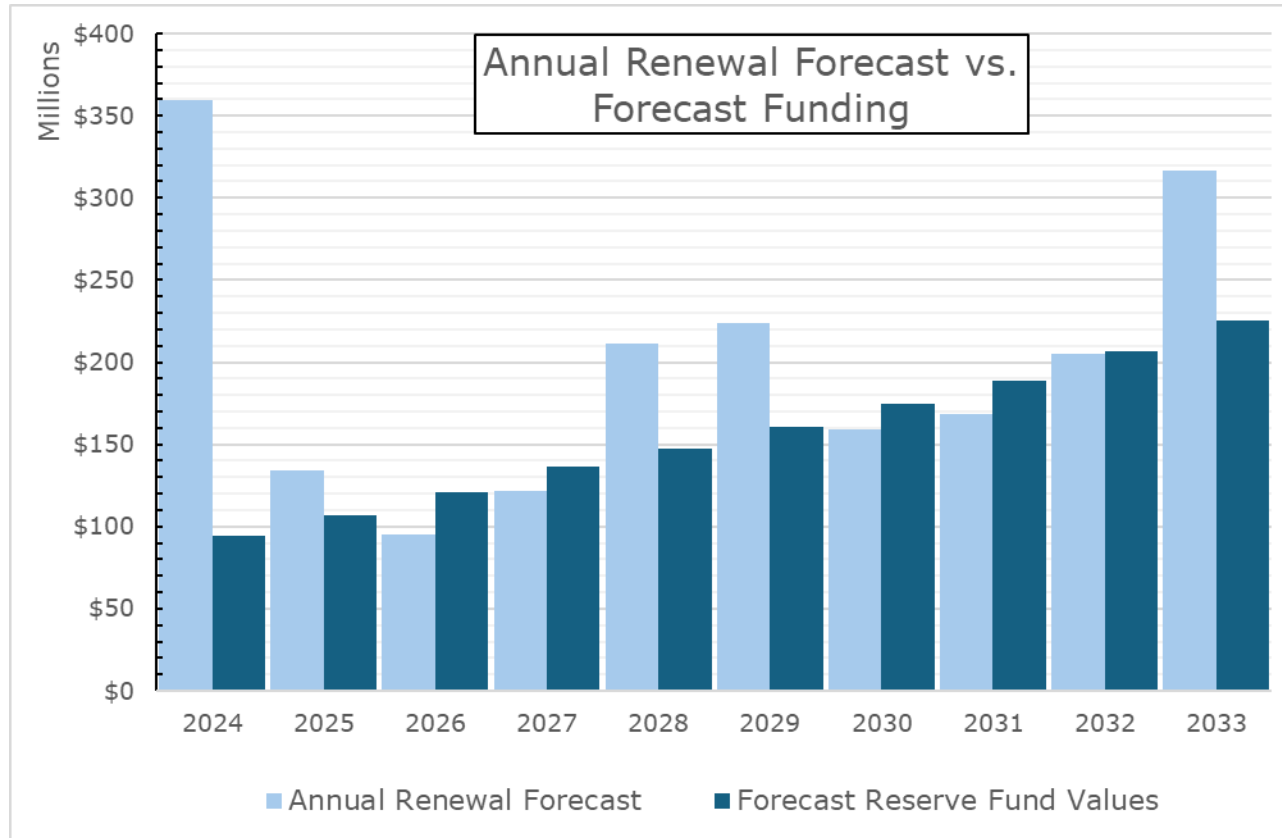
- Many of the forecast renewals would address some of risks associated with climate change as outlined in the 2023 Climate Adaptation Plan. By not funding those activities there is an increased risk to the City due to the potential negative impacts of climate change. Some of the consequences of climate change actions can be predicted and possibly mitigated through other non-infrastructure actions, but many of the recommended mitigation actions to address climate change impacts directly affect assets with no alternate approach.
- Asset that have been identified as “past due” or in “very poor” condition are predicted to reach a failure point in the 10-year time period of the renewal vs. funding forecast in this AMP, some of those assets may remain functioning at some level of service. The quality of that

service will not be at the ideal functional performance level, and it will continue to decline with the passage of time, negatively impacting the residents and businesses of the community.

**Table 11: 10-Year Annual Renewal Forecast vs. Funding Summary**

Year	Forecast Annual Renewal Need	Carry Over (Inflated)	Cumulative Renewal	Forecast Funding	Annual Gap (Cumulative)
2024	\$359,841,890		\$359,841,890	\$94,637,927	-\$265,203,963
2025	\$133,827,541	\$273,160,082	\$406,987,623	\$106,623,821	-\$300,363,802
2026	\$95,348,805	\$309,374,716	\$404,723,521	\$120,731,333	-\$283,992,188
2027	\$121,764,551	\$292,511,953	\$414,276,504	\$136,819,910	-\$277,456,594
2028	\$211,203,450	\$285,780,292	\$496,983,742	\$147,645,475	-\$349,338,267
2029	\$224,124,984	\$359,818,416	\$583,943,399	\$160,743,475	-\$423,199,924
2030	\$158,823,834	\$435,895,922	\$594,719,756	\$174,754,475	-\$419,965,281
2031	\$168,255,742	\$432,564,239	\$600,819,981	\$189,021,000	-\$411,798,981
2032	\$205,043,934	\$424,152,950	\$629,196,884	\$206,320,000	-\$422,876,884
2033	\$316,849,094	\$435,563,190	\$752,412,284	\$225,258,000	-\$527,154,284

**Figure 14: 10-Year Annual Renewal Needs vs. Forecast Funding**



## Sustainable Funding Targets

Since 2017, the City has been using asset management data to make better informed decisions on achieving sustainable capital renewal funding levels – the point where the available annual funding equals the annual forecast needs. The sustainable targets use the forecast renewal and replacement needs of the assets only and do not include maintenance. New assets built to provide services to our growing community or enhance service levels for the whole community, or which are assumed as part of the local service policy development process add to the inventory of assets that the City must maintain in perpetuity, including eventual replacement as they reach the end of their lifecycles. These assets have been factored into the plan to the extent that they are forecast in Service Delivery Master Plans and capital budgets and forecasts. The sustainable funding analysis is completed with close cooperation of the City Financial Department staff.

Previous sustainability analysis work presented as part of the review work for the 2024-2027 Multi-year budget predicted that by the year 2037 the target would be reached. This was based on the value of forecast renewals predicted in the 2020 AMP and the funding strategies in place at that time.

Since 2020 several factors have occurred that have pushed the forecast sustainability to the following target years according to asset category:

- 2044 when considering all City services.
- 2038 rate-funded services only
- 2056 tax-funded services only

One reason for the extension of the target year is the unforeseen high inflation that has affected all sectors of the economy since 2020 and the beginning of the COVID pandemic with the related restrictions that were enacted to limit the spread of the virus. The construction industry was greatly affected by the rapidly increased and high rates of inflation. This impact is most directly seen in the unit costs used to calculate the value of the City's assets.

General improvements in the quality of the asset data have also contributed to the target timeline extension. Combined with the inflation factors the 2024 unit costs have been calculated based on actual contract and tender costs received by the City of Guelph since 2019 whereas in the 2020 AMP data the source of the unit costs was not as specific, and so not as accurate.

The number of assets included in the 2024 review is greater than 2020 and the additional assets simply add to the total value of renewal work needed. These assets did exist in 2020 but there was insufficient information about them at that time to include their values and needs in a full renewal needs review.

Finally, as has been discussed previously the recommendations in many of the various services master plans included major capital renewal projects and these were directly incorporated into the AMP renewal analysis. In 2020 this level of detail was not available.

The quality of the asset inventory is considered much more accurate than in previous years and unfortunately this accuracy has combined with other

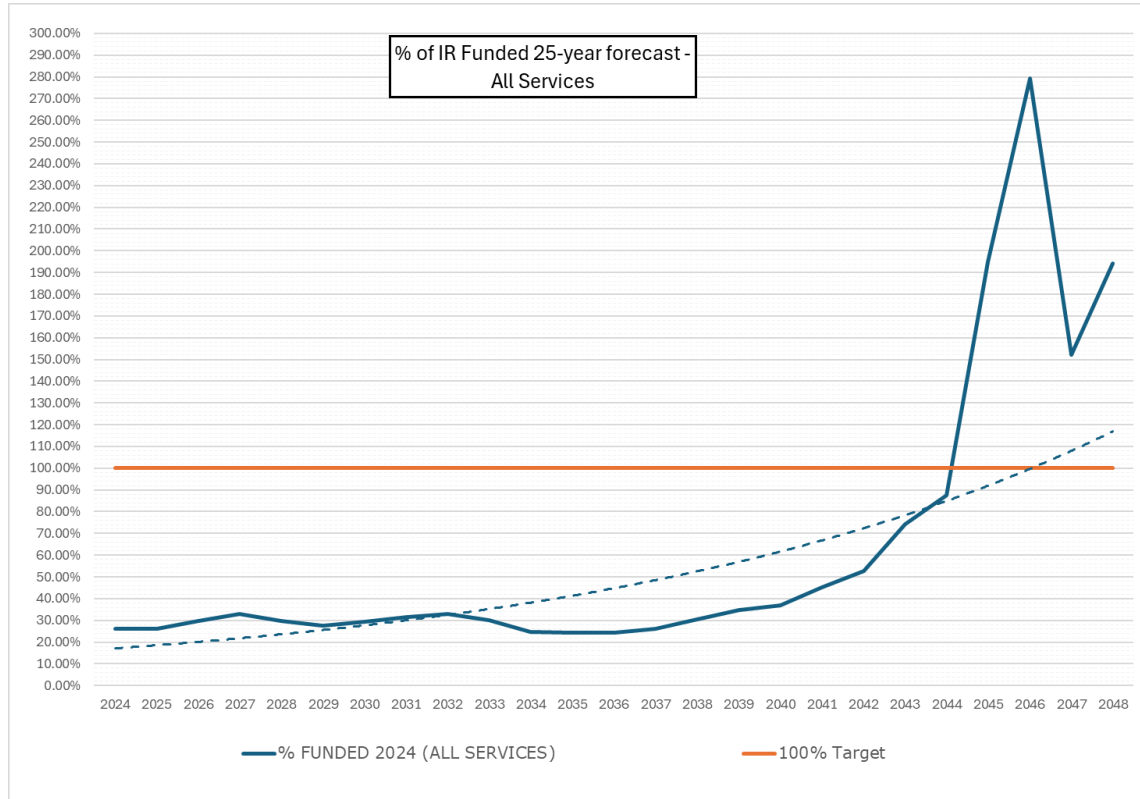
factors to push the sustainability target later than earlier plans had identified.

Other factors like changes mandated by the Provincial Government to Development Charge rates, changes to the City Infrastructure Levy and a requirement for Guelph (like all municipalities) to construct more new housing have also meant the financial strategies used in 2020 have changed.

### **All Services**

The following two charts present the sustainability review results for the combined tax-funded and rate-funded services i.e. all city assets. The 100% target ratio between forecast needs and funding is shown by the orange line in Figure 15. The solid blue line represents the ratio between needs and funding where the dashed line represents a calculated trend line. The IR Funding ratio line reaches the 100% target around 2044 when predicted funding becomes greater the forecast renewal needs.

**Figure 15: All City Services Percent of Renewal Needs Funded per year**



**Figure 16: All City Services 25-Year Renewal Needs Forecast vs. Funding Forecast**

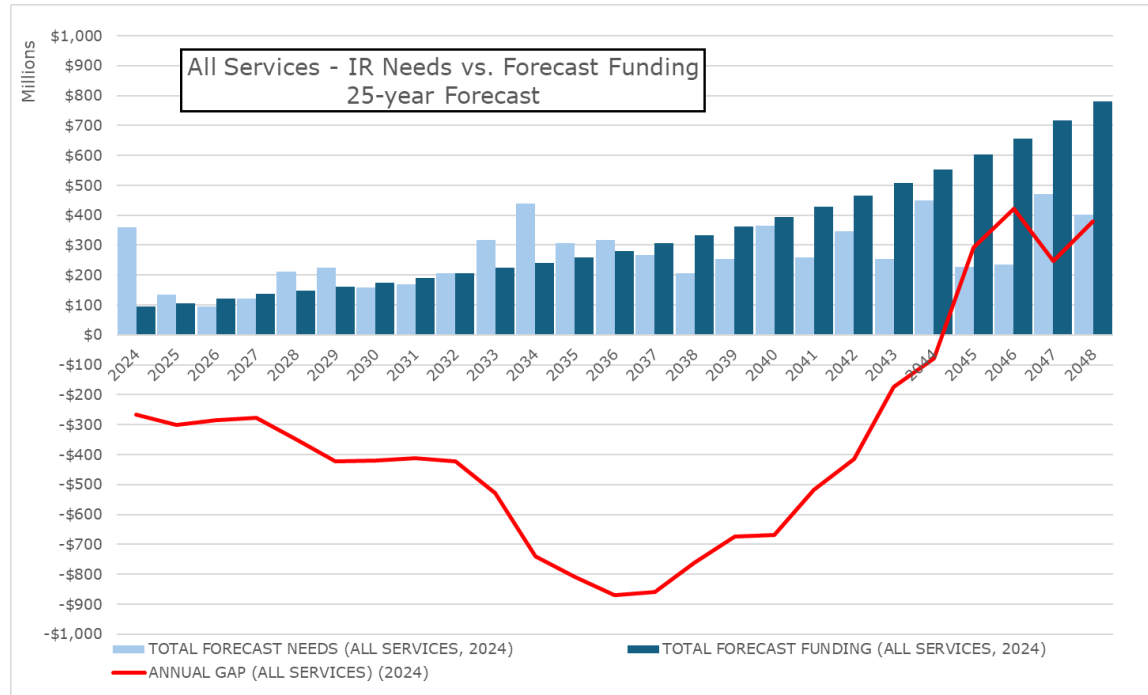


Figure 16 presents the forecast annual dollar values for both funding and renewal needs. The solid red-line shows the calculated annual funding gap. Sustainability is predicted to be reached by 2044 provided that:

- The forecast funding values in years beyond 2024 equal the predictions in the AMP.
- Any positive balance in funding from one year is carried over and applied to clear the deferred work backlog.

If neither of those situations occurs the sustainable target date will be pushed further outwards.

### Rate Funded Services

The renewal needs for the rate funded services – water, wastewater, stormwater and parking – are funded from a dedicated reserve funds to be used exclusively for infrastructure renewal. The value available in each fund is directly dependant on the revenue from user fees.

To calculate the predicted sustainable target date a 100 year analysis was completed. The 100-year renewal needs were determined by extending the analysis period for the general IR needs analysis. In 2024 the value of available funding in the reserve funds was provided only until 2035. Beyond 2035 future reserve fund values were calculated by inflating the annual value of the fund by a rate equal to the average rate of change for the 2024-2035 values that were provided. For the rate services this average rate of change was approximately 10% per year for the four services.

Based on this review it is forecast that the rate funded services will collectively achieve sustainability around 2038.

Figure 17 represents the 100% mark where funding equals needs and the blue line represents the ratio of forecast needs to funding. In Figure 18 the actual dollar values of needs and available funding are charted.

The results indicate the 100% sustainable target will be reached in 2038 for the rate funded services. There is a short time period between 2030 and 2034 where the available funding exceeds the forecast needs but this is followed by another period of less than 100% funding until 2038 when the ratio remains positive.

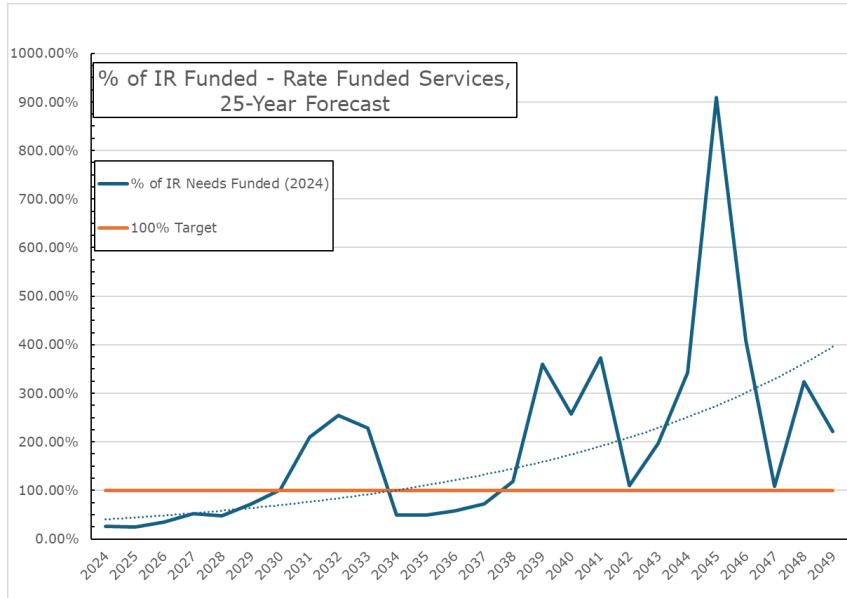
If the available funding continued to increase at the same rate beyond the sustainability target year as it did in the years previous the positive funding gap would remain as far forward as the available data was able to be used reaching exponentially high positive ratios of funding to needs.

The modelling assumes that the rate of increase in available funding will continue to change at the same average rate of change that was based on the 2024-2035 forecast reserve fund balances. Following the idea that once sustainability is reached, in practice the user rates should provide only enough funding to maintain that 100% funding target (i.e. no positive or negative funding gap),

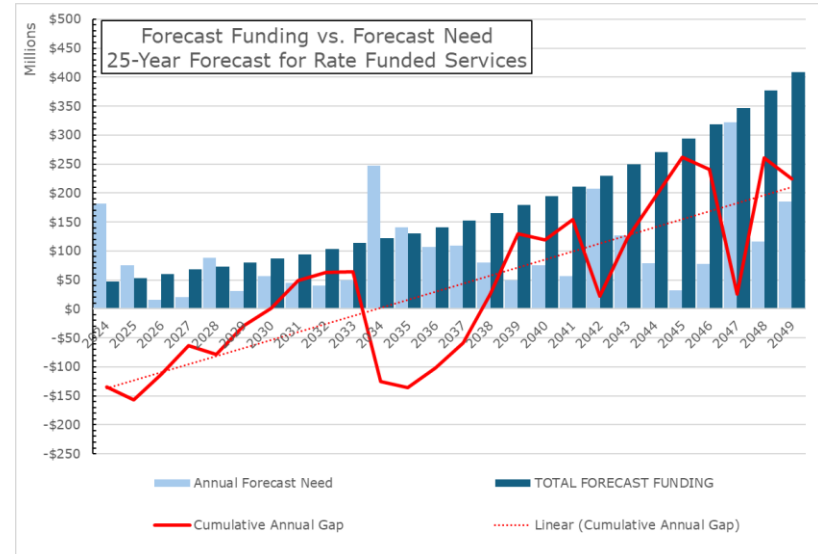
The modelling also represents the results of the renewal analysis work. In practice the value of work completed each year will not be the same as is shown on the charts but is expected to be more evenly distributed year by year. This will alter the actual sustainability target date, possibly moving it earlier to 2035 if the funding gap trend-line is followed.



**Figure 17: Rate Funded Services: Percent of Renewal Funding**



**Figure 18: Rate Funded Services 25-Year Annual Forecast Renewal vs. Forecast Funding**



Important to note in the sustainability review is that the forecasts are based on the funding strategies in place as of Q1 2024. Any change in these strategies will have consequences. If, for example, user fees decrease, the revenue being added to the reserve fund accounts decreases, the time to reach sustainability will be extended and the infrastructure gap will continue to grow.

The model also assumes that the funding strategy employed means that any positive funding gap per year will be applied to the deferred work backlog, and not re-committed to other needs. Failure to follow this strategy will also alter the target year, moving it further into the future.

**Tax Funded Services**

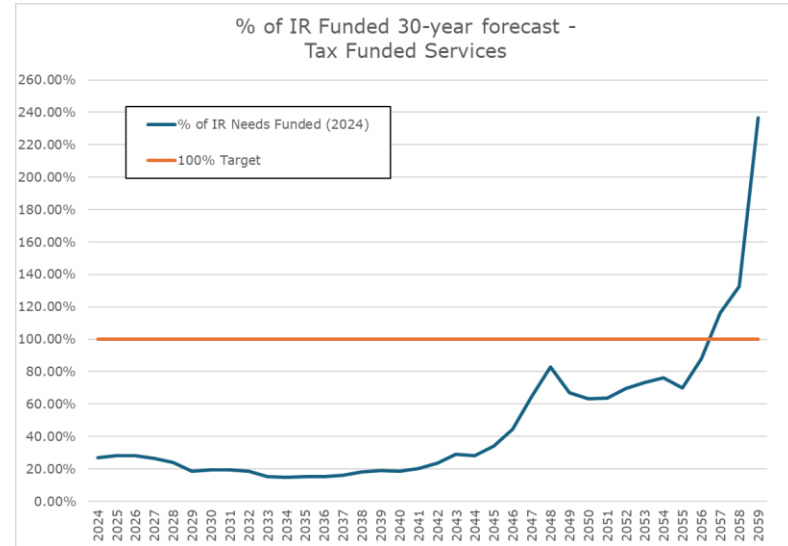
The methodology used to determine the target year to reach sustainability for the tax-funded services was the same as that used for the rate-funded services including the reduction in the annual funding rate increase once sustainability is reached.

Notably, the 100% target is not predicted to be reached until around year 2056. Until that time, despite years where the forecast funding is predicted to be greater than the forecast needs, the cumulative effect of previous years insufficient funding means that the sustainability target will not be reached.

Figure 19 presents the ratio of funding to needs and presents the actual renewal cost forecast and funding values. Note that to be able to represent the year when sustainability is reached these two figures both use a 30-year forecast instead of the 25-year period in previous charts.

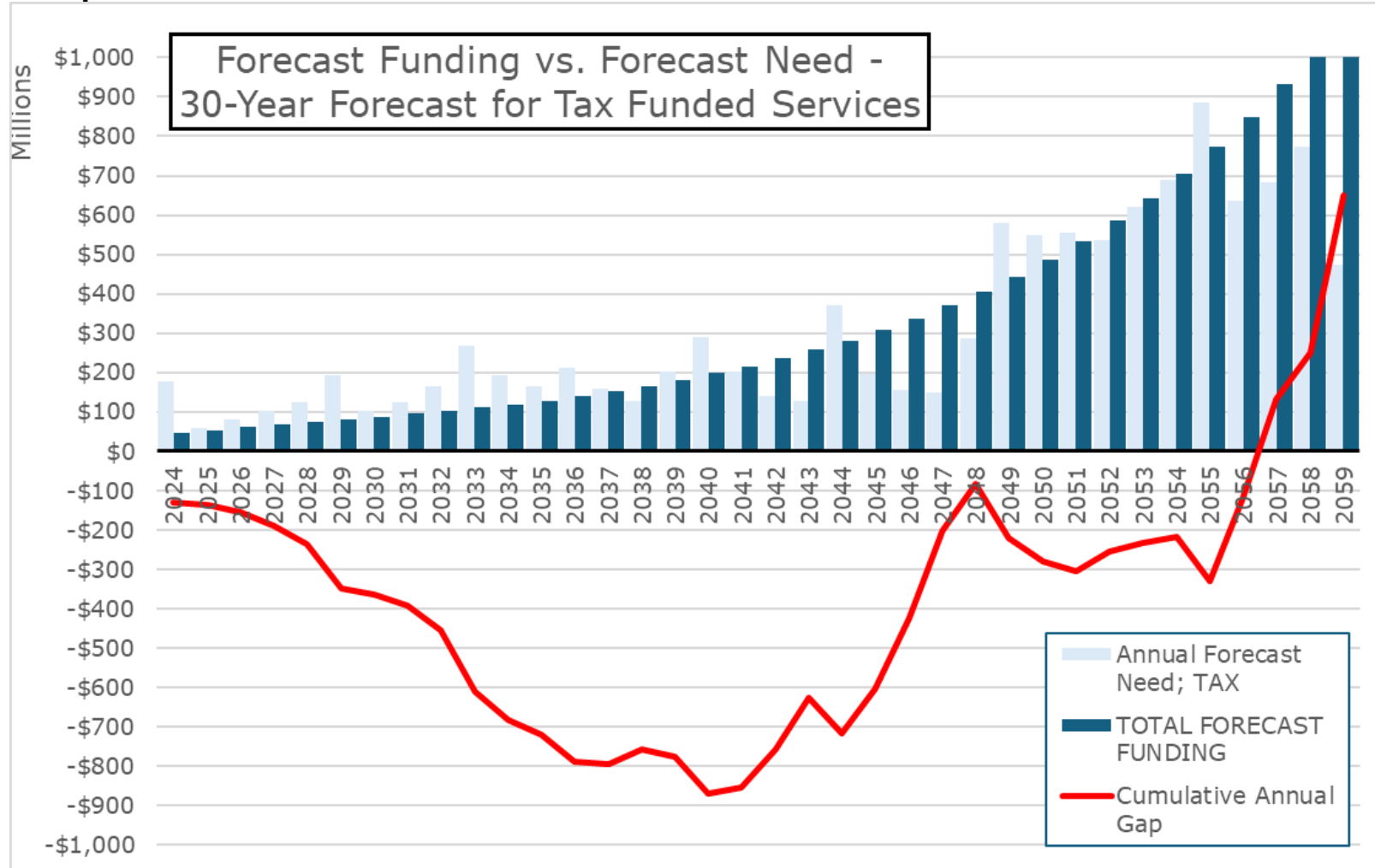
With the current funding strategies being used the services will be underfunded through the next 25-years accumulating a negative funding gap that reaches a nadir around year 2039. This is a result of the cumulative effect of the 2024 deferred work backlog and the needs outweighing the funding until around 2048 when the funding is predicted to continuously be greater than the needs. After that time the available funding is sufficient to begin closing the gap and by 2056 it remains positive.

**Figure 19: Tax-Funded Services: Percent of Renewal Funding. Note: 35-year time period**



The same caveats outlined for the rate funded services apply to the tax funded services: if the collected tax revenue is lower than the values predicted in this analysis and/or if any extra IR funding per year is not committed to closing the deferred work backlog the sustainability target date will be extended further beyond 2056.

**Figure 20: Tax-Funded Services 25-Year Annual Forecast Renewal vs. Forecast Funding. Note: 35-year time period.**



## Sustainability Review Summary

The review done for the 2024 AMP shows that the previously identified target sustainability year of 2037 will not be met.

With the current funding strategies and known information about the City's assets the new target sustainability year is about 2044 when all City services are considered. There are a number of factors that have contributed to this change. They have been previously identified on page 53 and are re-presented here in brief:

- Higher than expected inflation since 2020 increased costs in all sectors of the economy especially the construction industry which serves the City's infrastructure renewal needs
- A much more complete inventory based on recent accurate costing data presents a fuller picture of the value of any single asset and their future needs
- The inclusion of specific renewal projects included in various master plan documents presents a more accurate needs forecast

Another factor contributing to the delayed target date is the initial value of deferred work in 2024. The value of the backlog is much greater than the available funding in 2024. The financial implications are:

- Not all needed work in 2024 will be done: the value of uncompleted work will be carried over to future years (continuing an annual negative funding gap)

- It will take many years for the carry-over of uncompleted work to be cleared with the available funding strategies in 2024
- Once the backlog is cleared and the funding gap turns positive the sustainability review shows the available funding will be adequate to maintain a positive funding gap.

Any future changes to the funding strategy and values used for the forecast available funding will affect the sustainability target again. If the forecast funding values are reduced compared to what was used in the review the target date will be delayed further and the infrastructure funding gap will continue to grow. The consequence of this is a risk of falling levels of service.

If the available funding is continually decreased – whether through property tax rates that are less than inflation or by lowering user rates - it is possible, though unlikely that there will never be sufficient funding to complete recommended future renewals and clear the backlog of deferred work, never achieving sustainable infrastructure management. The impacts of this on the levels of service could be very serious and should never be considered acceptable. This scenario is not likely but is a potential risk that should be analysed further to identify mitigation strategies.

Increasing the amount of funding for infrastructure will close the funding gap sooner. However, reaching sustainability much earlier than the forecast year of 2044 without new revenue sources would require

increasing taxes and user rates at percentage levels that would not be feasible to implement.

However, through careful and strategic planning using the identified forecast needs and desired services that the City intends to deliver it will be possible to ensure that the needs will be met, the service delivery levels will not be negatively affected, and the quality of the assets will remain good.



## Chapter 2: Transportation Assets: Roads, Sidewalks, Bridges and Other Structures



**Quick Facts: City of Guelph Transportation Assets**

Total Value of Portfolio	\$2,137,150,717
Total length of roads	546km
Average condition of roads	Fair
Total Length of sidewalks	705km
Average sidewalk condition	Fair
Vehicle Bridges	17
Average Condition of Vehicle Bridges	Fair
Major Structural Walls	237
Average Wall Condition	Good
Other Structures	115
Average Structure Condition	Fair



### Inventory and State of the Assets

The City of Guelph has nearly 600km in a mix of arterial, collector and local roads with related support assets like street-lighting, traffic control signals and directional signage. There are 17 vehicle bridges, 42 major culverts, 705km of sidewalks and numerous other ancillary assets that are part of the City’s transportation asset portfolio.

In recent years the City has increased its attention to providing alternate transportation facilities and routes and there are now a mixture of on-road cycling lanes and multi-use pathways available to cyclists, pedestrians and other non-motorized users.

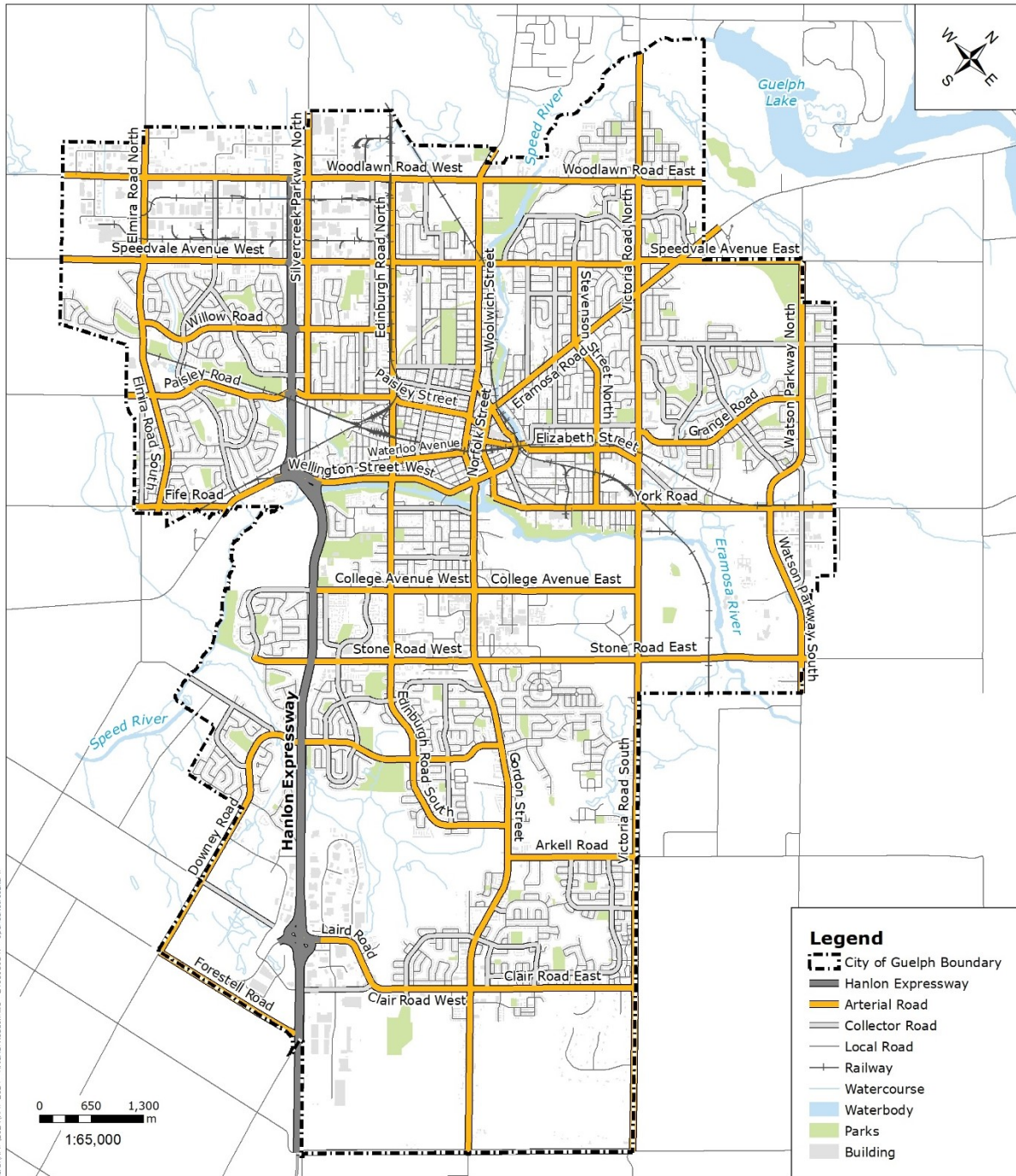
Within the boundaries of the City are the Provincially owned roads that provide connections beyond the City. -Ontario Provincial Highway 6 – the Hanlon Expressway - provides direct access to Highway 401 to the south of the city which in turn allows Guelph to connect globally. Ontario Highway 7 crosses the City in an east-west orientation while Highway 6 also extends northwards as a 2-lane highway. The values and capital or maintenance needs of the Provincially owned roads are not included in this plan except in situations where a City owned roadway doubles as the highway route and the City has an agreement with the Province of Ontario to be responsible for maintenance.

The total estimated replacement value of the assets included in the Transportation Category is \$2,148,923,708. The types of assets and their respective values and conditions are summarized in the following tables. Figure 21 presents a map of the Guelph roadway network with the primary arterial road highlighted.

**Table 12: Summary of Transportation Asset Types**

Asset Type	Quantity	Replacement Value
Roads - Arterial	124 km	\$376,337,272
Roads - Collector	69 km	\$271,043,852
Roads - Local	353 km	\$955,246,342
Sidewalks	706 km	\$352,796,080
Vehicle Bridge	17	\$63,293,063
Pedestrian bridge	20	\$6,079,149
Culvert	42	\$32,018,518
Structural Wall	237	\$26,595,957
Stairway or other structure	115	\$7,300,000
Traffic Signs	21,282	\$21,282,000
Streetlighting	~19,000	\$11,772,962
Pavement Marking	8,181	\$3,833,503
Traffic Controls	4,060	\$21,325,000
<b>Total Value:</b>		<b>\$2,148,923,698</b>

**Figure 21: City of Guelph Roadway Network**



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**City of Guelph  
Arterial Roads**



Produced by the City of Guelph  
Infrastructure, Development & Enterprise  
Engineering and Transportation Services  
May 13, 2024

**Table 13: Condition of Transportation Assets by Replacement Value**

<b>Asset Condition</b>	<b>ROADS</b>	<b>OTHER</b>	<b>STRUCTURES</b>	<b>SUB-TOTALS</b>	<b>OVERALL TOTAL</b>
<b>TOTAL CRV</b>	<b>\$1,602,627,466</b>	<b>\$411,009,545</b>	<b>\$135,286,684</b>		<b>\$2,148,923,695</b>
<b>N/A</b>	\$ 16,683,060	\$792,000	\$1,690,286	\$ 19,165,345	0.89%
<b>PAST DUE</b>	\$33,745,666	\$4,533,265	\$16,408,136	\$ 54,687,068	2.54%
<b>VERY POOR</b>	\$402,726,602	\$11,194,638	\$3,636,516	\$417,557,756	19.43%
<b>POOR</b>	\$260,569,948	\$ 12,610,937	\$ 11,335,914	\$284,516,800	13.24%
<b>FAIR</b>	\$399,543,803	\$277,887,510	\$ 35,777,086	\$713,208,399	33.19%
<b>GOOD</b>	\$489,358,387	\$ 85,284,760	\$63,058,645	\$637,701,792	29.68%
<b>VERY GOOD</b>	\$ -	\$6,933,473	\$3,380,103	\$ 10,313,576	0.48%

**Other Asset Information**

**Non-City Roads**

Within the Guelph City limits and included in the City GIS system are roads that are not owned or maintained by the City. These include the Hanlon Expressway (Provincial Highway 6) with a total indicated<sup>12</sup> length within the City limits of 31.5km and roadways within the University of Guelph campus (10.5km of roads or laneways). There are other privately owned roads that belong to organizations like condominium or townhouse complexes.

The City is not responsible for any capital needs related to these roads and apart from the University of Guelph owned roads, is also not responsible for the operations or maintenance needs.

**Non-auto Transportation**

As part of the City’s efforts to accommodate population growth and reduce greenhouse gas emissions City transportation staff have been actively investing in alternate forms of transport including public transit, cycling and walking. Several projects completed in the past few years have resulted in the

<sup>12</sup> Sum of the road segments comprising the Hanlon to Expressway

installation of cycling lanes, multi-use trails and new sidewalks. The City’s Transportation Master Plan<sup>13</sup> that was delivered in January 2022 identified projects that will help expand the network of cycling routes and close gaps in the sidewalk network ultimately making it easier for people to traverse the City. A Pedestrian Master Plan is planned to be completed within the next 6-10 years and it is expected that this plan will update priorities for completing the sidewalk network. As that new infrastructure is built it will be added to the plans for regular maintenance and included in future AMPs for the long term renewal needs.

According to the 2022 Transportation Master Plan there are approximately 130km of streets<sup>14</sup> that have cycling facilities along one or both sides of the street. details the types and quantities of cycling specific infrastructure as of December 2023. Refer to Figure 22 for a map of the City highlighting the cycling infrastructure.

Much of the infrastructure for the cycling facilities is road-paint marking and the renewal needs for these are included in the general road markings needs. Other items like curbs or bollards that provide the physical barriers are sometimes temporary in nature where they are installed during warm weather months but removed during winter months. This work is part of the Operations team work plans. Separate trails or pathways have been included in the general infrastructure renewal analysis. Off-road or non-paved

trails require minimal consideration for renewals but do require regular maintenance like grading or filling holes or grooves caused by water runoff. The paved pathways, like roads, do require renewal planning, and those needs are included in the general infrastructure renewal analysis. Pathways have a much longer lifecycle than roads, and in the overall needs of the transportation services the needs of the pathways represent a very small portion of the total needs.

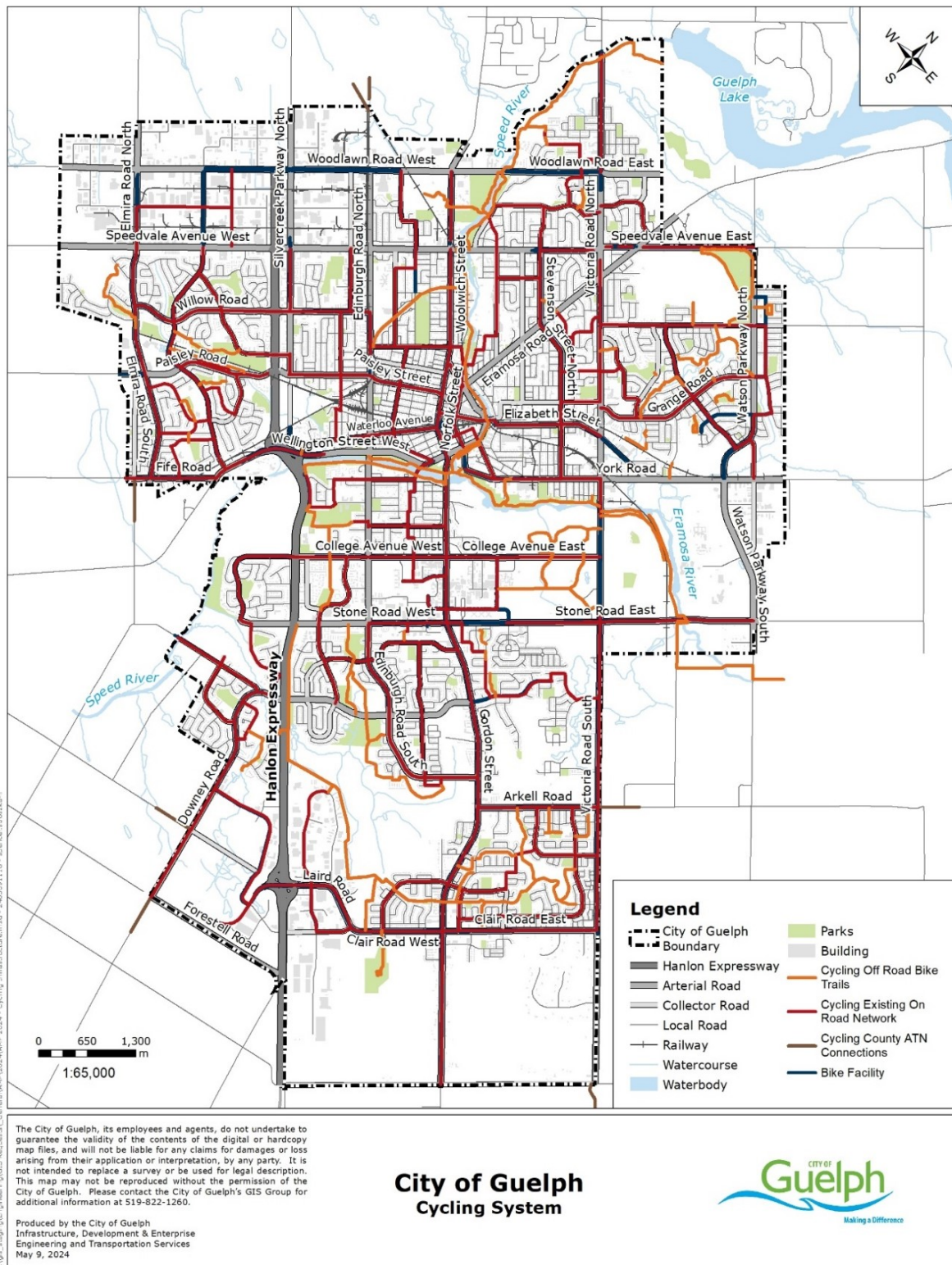
**Table 14: City Cycling Infrastructure Inventory**

Asset Type	Length (km)
On-street bike lanes	60 km
Cycle Track	1 km
Off-road bike routes	52 km
Multi-Use Pathways	10 km

<sup>13</sup> <https://guelph.ca/wp-content/uploads/Guelph-TMP-Final-Report.pdf>

<sup>14</sup> The length provided is the centreline length of the street and does not necessarily equal the actual length of cycling lanes.

**Figure 22: City of Guelph Cycling System**



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## State of the Infrastructure

### Roads

The condition of the roads in the City of Guelph are determined by engaging a specialized engineering consultant company to complete a pavement condition inspection (PCI) project which follows Ontario Good Roads Association (OGRA) best practices for evaluating roads. These are accepted as de-facto standards by the professional organizations responsible for roadway engineering.

The PCI assessment is done by utilizing a specialized vehicle with electronic and video equipment that can measure variables like smoothness as well as the frequency, size and types of deformities in the pavement. From the collected data a Pavement Condition Score (PCI) is calculated ranging from 0 (failed) to 100 (brand new), The numerical score is then converted to a text condition rating as per Table 15.

The last pavement assessment was completed in the spring of 2019<sup>15</sup>. From that information a 2024 pro-rated PCI score was calculated using mathematical deterioration models based on a normal lifecycle for roads. Other information – such as the completion of any renewal work on roads since 2019 – was factored into the adjusted PCI.

The consultant defined PCI scores from 0-100 are converted to a 0-5 score to be consistent with the

condition rating methodology used for all other asset types.

From this review about 2.1% of the roads are determined to be in “past due” condition (or failed according to the PCI) but 25% are considered in “very poor” condition” and another 16.2% in “poor” condition.

Roads in these condition states should be renewed within the next 0 to 5 years. The value of the forecast renewal needs for the roads in the worst three condition ratings is approximately \$453M. In total about 70% of the roads have a PCI score less of “fair” or worse. The values of roads in each PCI condition category are presented in Table 16, this provides a more detailed summary of the condition and value of the roads by road class.

Perhaps more important than the physical condition, roads are often used as an informal metric by the media and general public as an indicator of the condition of the City as a whole. Because the road network is integral to the City and the asset or service type that the most people would make use of on a day-to-day basis the condition of the roads can be a liability to the perception of the City: many complaints and questions are presented to City Hall asking about the condition of the roads.

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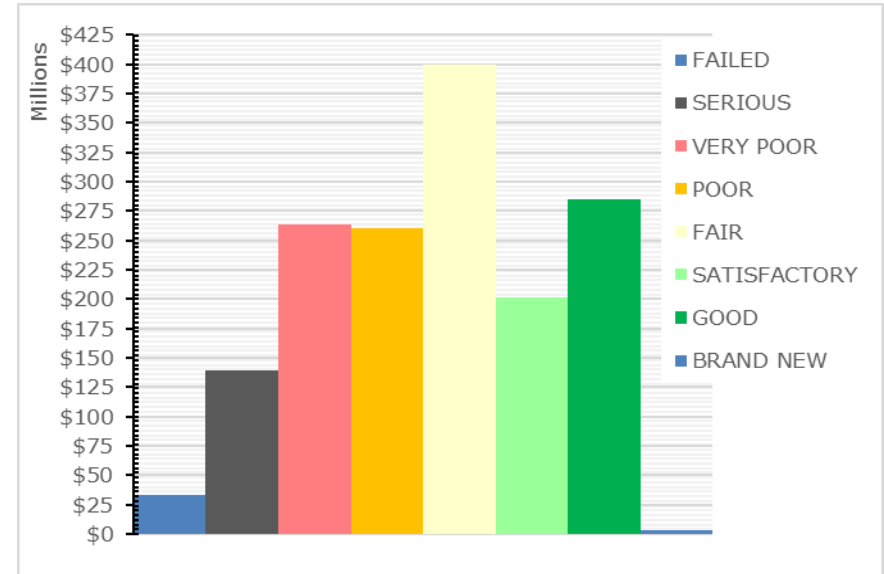
<sup>15</sup> CAM normally completes a PCI study about once every 4 years. The next study is scheduled to be

completed in April-May 2024 but the results will not be available in time to include in this AMP.

**Table 15: PCI Score and Condition Rating**

PCI score	PCI Rating
0-9	Failed
10-24	Serious
24-39	Very Poor
40-54	Poor
55-69	Fair
70-84	Satisfactory
85-98	Good
99-100	Brand New
PCI score	Guelph Rating
<= 0	Past Due
1-19	Very Poor
20-39	Poor
40-61	Fair
61-80	Good
81-100	Very Good

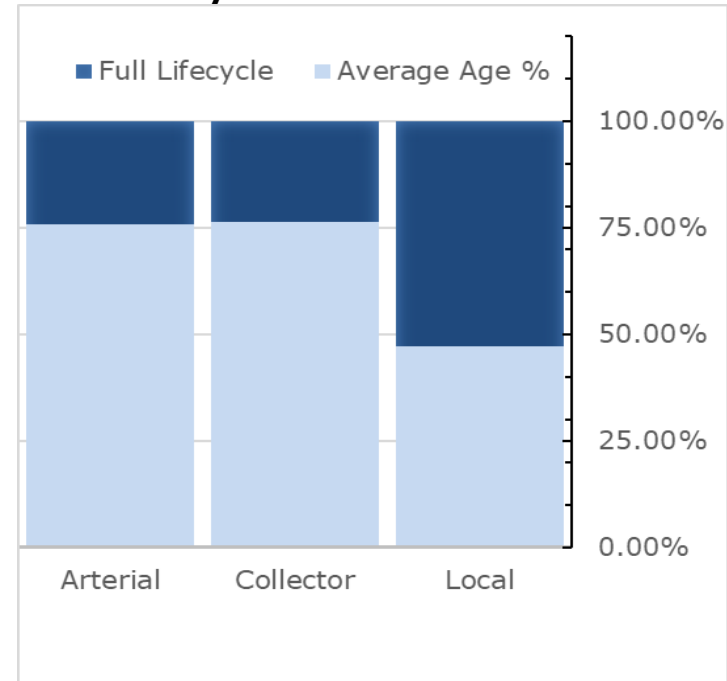
**Figure 23: Overall Condition of Roads**



**Roadway Ages**

For the purposes of asset planning arterial and collector roads are expected to have a full lifecycle equal to 25 years while a local road will have a 40 year lifecycle. This is related to the volume and types of traffic that use each respective type of road. The full lifecycle is contingent on regular maintenance and minor-capital renewals being done on a road surface. Work like crack sealing, pothole filling and mid-life re-surfacing should be done or the roadway surface will not last the expected lifecycle. Figure 24 provides a simple graphical representation of the average age of each class of roadway as a percentage of the full lifecycle of that class. The majority of arterial and collector roads are at about 75% of their full lifecycle while local roads are on average about 50% through their lifecycles. These age results coordinate with the PCI condition scores.

**Figure 24: Average Age of Roads as a Percentage of Full Lifecycle**





**Table 16: Condition of Guelph Roads**

CONDITION	Arterial	Length (km)	Collector	Length (km)	Local	Length (km)	Total Value	Total Length
FAILED	\$6,981,300	3.14	\$11,731,410	3.10	\$15,032,957	5.57	\$33,745,673	11.80
SERIOUS	\$45,715,721	15.26	\$27,554,347	6.96	\$66,141,666	24.50	\$139,411,756	46.72
VERY POOR	\$86,391,797	27.72	\$28,641,788	7.37	\$148,281,282	54.94	\$263,314,903	90.03
POOR	\$72,710,383	22.76	\$38,462,693	9.57	\$149,396,873	55.35	\$260,569,981	87.68
FAIR	\$83,033,628	25.60	\$93,800,833	23.51	\$222,709,342	82.32	\$399,543,852	131.43
SATISFACTORY	\$23,754,587	8.61	\$21,627,286	5.66	\$156,222,217	57.59	\$201,604,104	71.86
GOOD	\$49,882,168	18.47	\$49,061,909	12.77	\$185,998,502	68.66	\$284,942,609	99.90
BRAND NEW	\$2,310,286	0.73	\$0	0.00	\$501,433	0.19	\$2,811,720	0.92
	\$370,779,869		\$270,880,266		\$944,284,273		\$1,585,944,407	

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## Roads Renewal Forecast

Between 2024 and 2033 it is forecasted that approximately \$529M of road renewal work should be planned for. This does not include the daily operations type activities that are also essential to ensuring that the roads can remain functional for a full lifecycle.

A deferred backlog work value equal to approximately \$34M (12km) has been identified in 2024 with an additional \$140M (46.7km) having a PCI rating of “serious” implying that the roadway may reach a failure stage in the next 2-3 years without proper repair or renewal work.

The renewal forecast for the roads is included as part of the overall transportation services renewal forecast presented in more detail in following sections.

## Sidewalks

The City Operations staff assess the sidewalks each summer by conducting visual inspections of the sidewalks and using a 1 (very poor) to 5 (very good) condition rating using the criteria described in the General Info section as a guide. The rating is established by assessing the physical condition of the sidewalks, identifying items like cracks, concrete spalling or vertical misalignment of adjacent sidewalk panels.

On average the City’s sidewalks are considered in “fair” condition with any major deficiencies noted often repaired very soon after being identified.

Most of the City sidewalks are constructed of concrete and have a very long lifecycle. The available information regarding the original installation dates for

the sidewalks is not good enough to use to complete an age analysis. However, it can be stated with certainty that a large majority of the sidewalks have many years of a useful functional life remaining. For asset planning purposes it is assumed that on average most sidewalks are about 50% through an expected lifecycle.

Since sidewalks are one of the asset types found in a roadway corridor they are often replaced as part of a larger project where the main driver for the project would be the needs of other assets.

## Ancillary Assets

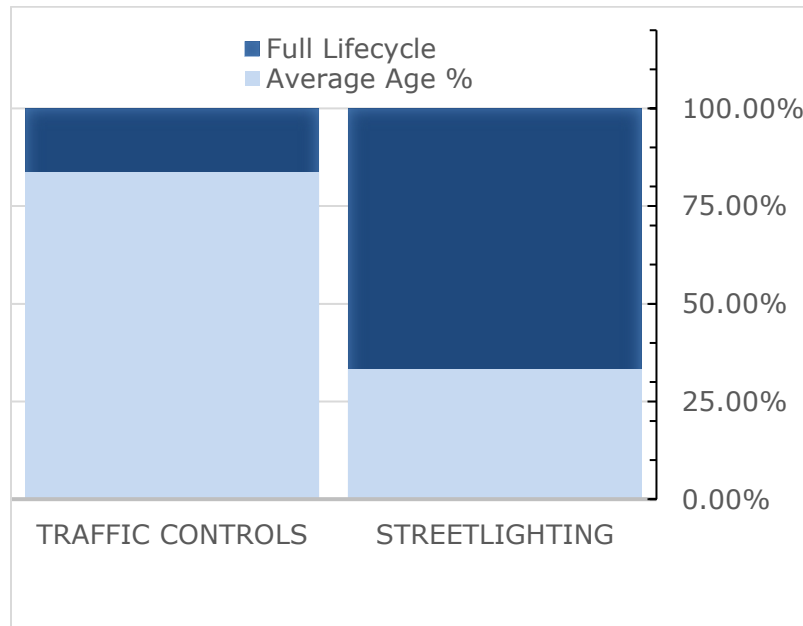
Most other transportation assets including streetlighting, traffic control lighting and control systems, roadway signage, roadway paint markings and curbs are generally given a condition rating based on their age.

These types of assets tend to have short lifecycles of less than 10 years but are also inspected regularly as part of the City’s Road Patrol Program. Any deficiencies noted in these assets are quickly corrected and so they rarely reach a condition worse than fair. With some exceptions replacement of these types of assets are normally done on an as-needed basis (for example if they are damaged as a result of a vehicle collision) or as part of a larger roadway rehabilitation project.

The traffic control systems – traffic lights, poles and the related control systems – have a lifecycle that is estimated at 20 years or more. Despite the age of any single asset. due to the critical function of these assets and their regular inclusion in road patrol inspections

these assets are all considered in “good” condition. The traffic control systems are considered part of the corridor right-of-way assets and so are often included in a right-of-way renewal project.

**Figure 25: Average Age of Traffic Controls as a Percentage of Expected Full Lifecycle**



**Streetlighting**

Approximately 90% of the City’s streetlighting was installed in 2019 or 2020 as part of a major initiative to convert streetlighting to LED lighting fixtures. Since that time normal maintenance activities have been completed by Alectra Power Services – the unregulated branch of Alectra Utilities, the

organization responsible for electrical power distribution in the Guelph area. The City has a streetlight maintenance agreement with Alectra Power Services that defines the maintenance requirements the City expects. The cost of this service is approximately \$300,000 per year.

The switch to the LED streetlighting has resulted in an annual reduction of about \$900,000 in electricity costs and an additional annual \$200,000 savings in maintenance costs due primarily to the longer lifecycles of LED fixtures.

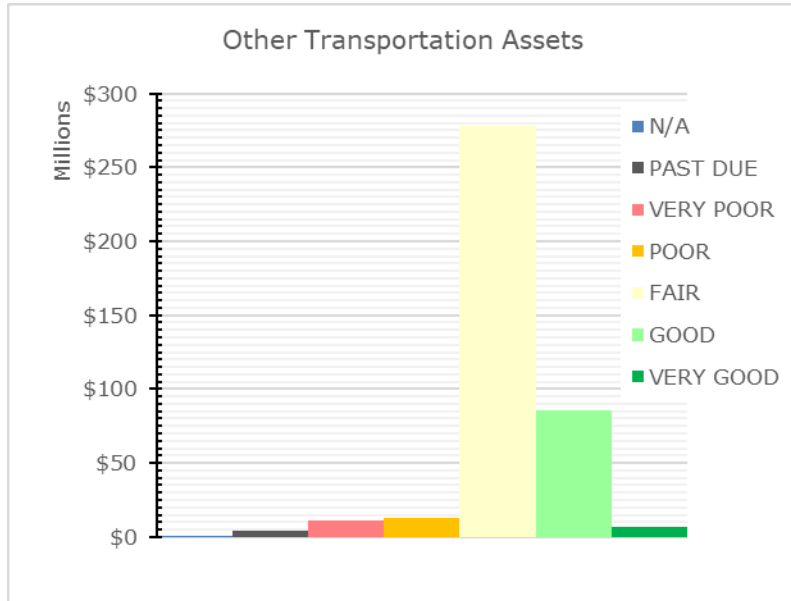
The LED fixtures and the support poles are expected to remain in “good” condition with a forecast lifecycle of at least 20 years.

**Summary**

The ancillary traffic assets perform a critical function in the safe use of the City’s roads. Because they are regularly inspected as part of the City’s mandated Road Patrol activity any deficiencies noticed are normally rapidly repaired and seldom progress beyond a “fair” condition (where condition is based on the age of the asset).

The following chart presents the values of the ancillary assets in each condition category. The very heavy emphasis of “fair” assets is mostly due to the condition of the sidewalks and their relative higher value compared to the other types of assets in this sub-group of transportation assets.

**Figure 26: Condition by Replacement Value:  
Other Transportation Assets**



**Bridges, and Major Culverts**

The City is mandated by the Ontario Ministry of Transport (MTO) to complete visual inspections on all bridges and major structures<sup>16</sup> on a biennial cycle. These assessments are completed by an engineering consultant hired by the City who follows the guidelines of the Ontario Structures Inspection Manual (OSIM), an MTO published document that specifies the details to be assessed during an inspection. Typically, all of the individual elements of a bridge from the piers to the main beams and girders as well as the driving surface and guardrails are assessed on their own merits and a final Bridge Condition Index (BCI) score is calculated as an indication of overall condition. The City bridges were last assessed in 2022 and will re-assessed in autumn 2024.

The 2022 BCI program included assessments of:

- 17 vehicle bridges
- 21 pedestrian bridges
- 42 major culverts

Compared to previous BCI inspections the average BCI score for the bridges has improved from 69, or Fair, in 2018 to 74, or good, in 2022. During the same time period the average BCI score for the culverts has remained the same.

**Table 17: Summary of 2022 BCI Inspection Program**

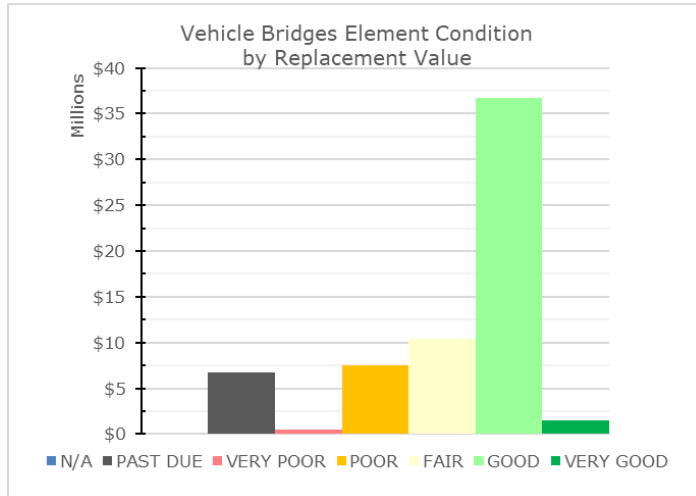
Item	Bridges	Culverts
Number of structures assessed	38	42
Average Age	48 years	50 years
Total Replacement value (\$2022 inflated to \$2023)	\$80,783,907	\$32,106,424
Average BCI score	74 (Good)	70 (Good)

The overall condition by replacement value for the vehicle bridges is presented in Figure 27. Note that the values on this chart represent each element that is part of a whole bridge that was assessed and not the total value for individual bridges.

<sup>16</sup> In accordance with the MTO requirements Culverts with a span or diameter greater than 3m are included in the OSIM assessments. Other culverts with a

shorter span or diameter may be included in this grouping if they are determined to have a high consequence of failure.

**Figure 27: Condition of Bridge Elements by Replacement Value**



**Bridge Renewal Forecast**

Due to their function all bridges are considered critical structures: in the event of catastrophic failures the consequences are severe. Loss of life is likely, and there would also be major impacts to traffic flow around the City. For these reasons the needs of the bridges are given high priority when compared to other assets.

The 2022 BCI program identified a list of recommended capital works for the next 10 years (2023-2032) with a prioritized list of work actions. This resulted in a total 10-year recommended bridge work capital program estimated at \$18.4M. The capital plan identified specific actions where in years 2023-2028 the work was given priority as “major

rehabilitation” work and in the following years was considered “minor rehabilitation”.

Ten of the structures included in the 2022BCI program were recommended for replacement due to reaching or predicted to reach the end of their lifecycles prior to 2033. Some of these recommendations have already been incorporated into projects as part of the 2024-2027 capital budget program while the remaining will be considered as future budgets and priorities are established.

The next BCI program is scheduled for the fall of 2024. When the results of that work are received all the recommendations and forecast capital needs will be updated.

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### **Retaining Walls and Other Structures**

Major structures like retaining walls and large stairways or ramps are treated similarly to bridges and are required to be inspected on a 2-year cycle. The OSIM requirements for these types of structures are similar to that for bridges where an assessment will evaluate the condition of each element of a structure and assign wall condition index score.

The last full wall assessment program was in 2020: the recommended 2022 program was not funded, however during 2022-2023 the City engaged a specialized structural consultant to review the 2020 information and provide any updates and recommendations needed. This included field work to review and validate the 2020 info. The result of this exercise was an updated and more detailed inventory of structures, and a refinement of the recommendations made in 2020 including a capital investment program recommendation.

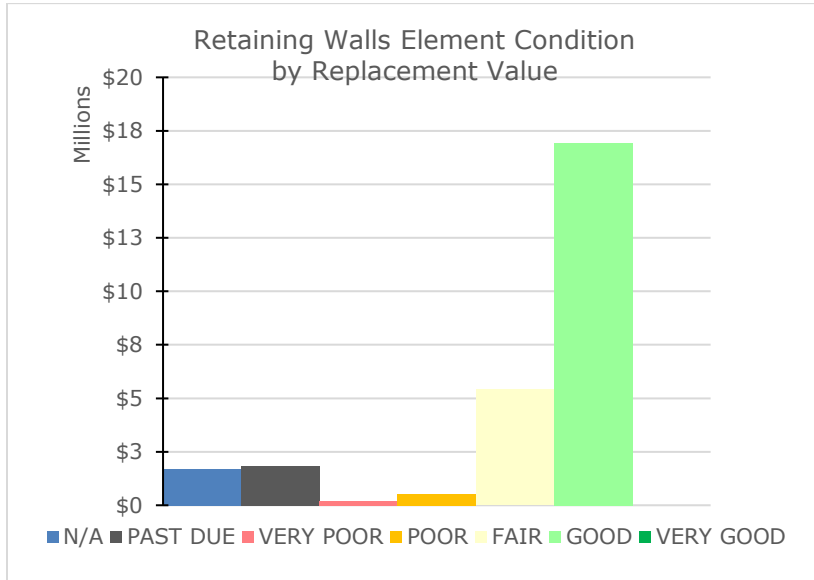
Note that many of the stairways and pedestrian ramps identified as single assets were assessed in conjunction with the wall they are attached to or located near to. Because of this there are few assessment scores for many of the City's structures: the results are included with the walls.

Similar to bridges, the potential failure of a wall could have critical consequences depending on the variables of each wall. Retaining walls can fail by tilting outwards from the vertical plane due to high pressure built up in the material behind the wall, or due to failure of the wall material. Walls over 2m high and those immediately next to a sidewalk or roadway

where failure could cause loss of life or severe injury are assigned a higher priority than shorter walls or walls set-back from an area where people would be. With normal regular inspections potential critical failures can be discovered with enough time to make needed repairs or renewals before catastrophic failure occurs, and this is what the wall asset management goals are.

The majority of the retaining wall structure elements are considered in "good" condition. However, there are 18 of 237 walls that have been identified in "poor" or worse condition with a forecast replacement value of approximately \$2.6M. These were identified on a priority list as needing to be renewed before 2029 and have been given priority attention for capital project planning. Some of the projects included in the 2024-2027 multi-year capital budget are to address these walls.

**Figure 28: Condition of Wall Elements by Replacement Value**



Many of the larger stairways and ramps are attended to by operations staff due to their being used regularly by members of the public. The operations work would address issues like minor damage to concrete or to steel railings, snow clearing, ensuring that pedestrian paths remain clear of debris etc. Because of this any potential deficiencies are often identified early and can be repaired at a relatively low cost. This does not entirely prevent major repairs or renewals being required but it is a good initial step in ensuring these assets can continue to function safely for many years.

The accuracy of much of the available data on the ages of the walls is not considered good: initial construction dates are not available in all cases.

Therefore, it is not possible to complete an age review of the wall assets. Most retaining walls can be expected to remain in good functional condition for 50 years or more provided that regular minor maintenance needs are done and any minor deficiencies repaired as quickly as possible.

The next wall assessment program is scheduled to be completed in the spring of 2024 and the results presented in this AMP will be updated accordingly.



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**Summary & Major Concerns**

Though the analysis of the asset information did not provide a detailed analysis of every individual asset, there were no major areas of concern identified. The majority of transportation assets are functioning well within their intended levels of service and will continue to do so. The roads, sidewalks, signs, traffic control systems, streetlights and many other assets are inspected on a nearly daily basis as part of the City's road patrol program which helps with the identification of potential problems before they became a major risk to safety.

Despite this generally positive overall state of the transportation assets there are several roadways that have been identified in serious condition. City transportation services staff are aware of these roads and they have been given priority ranking for inclusion in renewal plans. The 2024-2027 multi-year budget has identified projects that include some of these roads while others will be included in projects beyond 2027. The timing of when a particular road can be renewed is dependant on its current state, what other projects are being planned, and available funding.

Critical assets that would present a major consequence in the event of failure - like bridges and major arteries - are considered to be well within acceptable condition parameters with no immediate or short term risks identified to those assets.

Like all physical assets the roads and bridges deteriorate in condition with use and age. The City of Guelph staff responsible for managing these assets work to ensure that they remain in acceptable functional condition while managing available resources.

There will be normal maintenance and repair issues that will require attention, but these are mostly minor in nature and corrected with relatively minor impact to the City. Larger projects such as road resurfacing or rehabilitation occur on planned cycles.

The lack of major concerns with respect to the transportation assets indicates that they are being well managed.

**Levels of Service – Transportation Services**

O. Reg. 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as “Customer” or “Technical” LOS in alignment with the O. Reg. 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

<b>Strategic Theme</b>	<b>LOS Type</b>	<b>Performance Measure</b>	<b>Current Performance</b>
Foundations	Technical	Percentage of bridges in the municipality with loading or dimensional restrictions.	Zero (0) – no bridges are indicated as having loading or dimensional restrictions
Foundations	Technical	Length of cycling facilities	On-road bike lanes: 60km Off-road bike routes: 52km Signed routes: 30km Multi-use paths: 10km Cycle tracks: 1km
Foundations	Customer	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	All of the vehicle bridges are capable of supporting all classes of vehicles. None of the bridges have load limit capacity restrictions.

<b>Strategic Theme</b>	<b>LOS Type</b>	<b>Performance Measure</b>	<b>Current Performance</b>
Foundations	Customer	1. Description or images of the condition of bridges and how this would affect use of the bridges.	City of Guelph follows the standards and best practices outlined in the Ontario Structure Inspection Manual in order to determine the condition of the bridges and their component parts. Third party consultants who are expert in the design and assessment of bridges are engaged to complete these assessments.
Foundations	Customer	2. Description or images of the condition of culverts and how this would affect use of the culverts.	Culverts larger than 3m diameter (or those considered to present high risks to the City of Guelph are treated as bridges and so the condition assessments follow the standards and best practices outlined in the Ontario Structure Inspection Manual in order to determine the condition of the bridges and their component parts. Third party consultants who are expert in the design and assessment of bridges are engaged to complete these assessments.
Foundations	Customer	Map of the active transportation network	See Figure 7
Foundations	Customer	Description, which may include maps, of the road network in the municipality and its level of connectivity.	The City’s road network covers approximately 546km and all sections of the City. Major highway connections to Provincial highways include Highway 6 to Highway 401, and Highway 7. Refer to the “Transportation Assets – State of the Assets” section for more details and Figure 21 for a map presenting the City road network.

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Customer	Description or images that illustrate the different levels of road class pavement condition.	The City of Guelph adheres to and follows the standards and best practices described in the Ontario Good Roads Association (OGRA) when defining pavement condition. The definitions provided by OGRA are followed by the third-party consultants engaged by the City to perform the pavement inspections. Ratings provide from those inspections are converted to a five point scoring system that is consistent with the asset management analysis tools used by the CAM team.
City Building	Technical	1. For bridges in the municipality, the average bridge condition index value.	74 (Good)
City Building	Technical	2. For structural culverts in the municipality, the average bridge condition index value.	70 (Good)
City Building	Technical	1. For paved roads in the municipality, the average pavement condition index value.	2.58 (Fair)
City Building	Technical	2. For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor).	N/A
People & Economy	Technical	Collisions by mode of transportation	Cyclist: 30 Motorcycle: 10 Pedestrian: 38 Vehicle Only: 1550

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## Renewal Needs vs. Funding Analysis

In addition to following the details in the “General Information and Methodology” section the following points provide additional information regarding how the renewal and replacement values and forecast replacement years for the transportation assets was determined.

### Lifecycle Renewal Planning and Replacement Costs

The majority of the asset types in the transportation services inventory are valued by referencing historical cost information that Engineering and Transportation Services records. Details on this are in the General Info section of the AMP.

### Roads

Forecast replacement years for roads were determined by reviewing the current PCI score that was determined and applying a Weibull deterioration model based on the lifecycle of each road class. The Weibull model predicts that assets age slowly at first, reach a state of steady deterioration during the middle 80% of their lifecycle and then in the final years of their lifecycle reach a near failure condition that slowly continues to full deterioration.

The replacement year for the other assets in a roadway corridor like signs, curbs traffic signals etc. was determined by using a linear deterioration model based on their current condition and expected lifecycles. It is acknowledged that this method does

not fully represent the true replacement dates: many of these types of assets will be replaced during a general road reconstruction project regardless of their condition. For the purposes of the long-term forecast that the AMP provides this is a suitable solution.

Forecast renewal needs for the roads were based on the calculated replacement values but also took into account known annual needs.

- A recommended \$650,000 per year specific to wall and structure rehabilitation
- A recommended \$3M per year for cyclical pavement re-surfacing (not full reconstruction)

### Bridges and Structures

The replacement values for bridges, walls and other structures were provided by the consultants that were engaged to complete the assessment work on those assets. In most cases bridge or wall assessment reports also clearly stated a recommended renewal date: this value was used in the AMP analysis.

### Funding Availability

Transportation services renewal needs are funding almost entirely from property tax revenue and the associated infrastructure levy Guelph property owners pay into. A portion of the funding available is provided by the Canada Community Building Fund<sup>17</sup>, a Federal government grant program that provides funding to

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<sup>17</sup> <https://www.infrastructure.gc.ca/plan/gtf-fte-eng.html>

Provincial Governments who in turn provide a portion to municipalities.

Forecast available funding values for the two sources were provided by staff from the City Finance Department for the years 2024-2035. These were compared to the forecast renewal needs calculated as part of the AMP analysis with the following criteria:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation
- A 15% contingency was added to the 2024 replacement values to account for infrastructure

renewal soft costs like design fees, construction mobilization and unforeseen construction issues

- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results are summarized in the following table and charts.

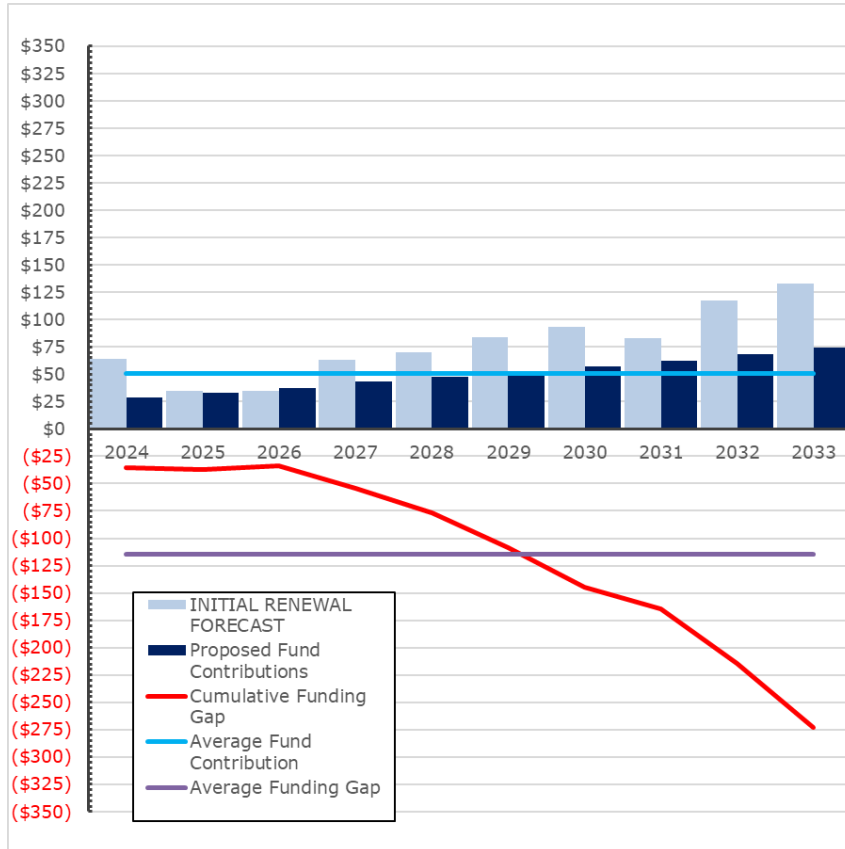
**Table 18: Transportation Services 10 Year Infrastructure Renewal Forecast Summary (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Forecast Renewal Costs	(\$64.45)	(\$34.54)	(\$34.54)	(\$63.36)	(\$70.26)	(\$83.69)	(\$93.05)	(\$82.78)	(\$117.48)	(\$132.76)
Planned Reserve Fund Contributions	\$28.85	\$32.92	\$37.73	\$43.21	\$47.48	\$52.17	\$57.07	\$62.41	\$67.99	\$74.06
Cumulative Gap	(\$35.61)	(\$37.23)	(\$34.04)	(\$54.19)	(\$76.96)	(\$108.48)	(\$144.47)	(\$164.83)	(\$214.32)	(\$273.03)

**Table 19: Renewal Forecast Summary Information (in \$ millions)**

Average Annual Renewal Need	(\$77.69)
Average Annual Fund Contribution	\$50.39
Average Annual Gap (cumulative)	(\$114.32)
Forecast Renewals	(\$776.91)
Forecast Res. Funds	\$503.89
10-Year Funding Gap	(\$273.03)

**Figure 29: Transportation Assets Renewal Needs Compared to Reserve Fund Contribution**



Reviewing the renewal needs vs. funding table and chart it is clearly demonstrated that there will be insufficient funding available to cover all of the identified needs for the transportation services assets.

An average annual funding gap of \$114M is forecast for the period between 2024-2033 with a total 10-year renewal need calculated at \$776M against a forecast funding value of \$503M. This predicts a \$273M backlog at the end of 2033.



### Operations and Maintenance Activities

Operations and maintenance activities on transportation assets are arguably among the most visible activities performed by the City and have a major impact on most residents and community members. Typical operations for transportation assets include:

- Snow and ice control during winter months (vehicle fuel costs, salt, sand and other treatment material)
- Line painting
- Traffic control monitoring
- Street sweeping
- Hydro costs to operate traffic control devices and street lighting
- Utility costs for the facilities that support the required operations activities (hydro, natural gas, potable water)
- Landscape maintenance along rights-of-way
- Vehicle and equipment fuel and maintenance costs
- Utility cost (natural gas, hydro, water) for the garages and workshops required by Operations Department staff to support these activities.
- Etc.

Typical maintenance activities associated with transportation assets include:

- Pothole patching and roadway crack sealing

- Repairs to assets in response to vehicle accidents
- Regular roadway surface condition inspections
- Bi-annual bridge and structure inspections (mandated by Provincial government)
- Sign maintenance
- Etc.

The budget for operations activities included actual values requested for 2024-2027. The average rate of change between those years was used to extrapolate needed operations funding until 2033. This showed that for the period 2024-2033 an average of \$18M per year has been identified as required. In 2023 the actual value of the operations budget was \$15.7M. Extrapolating from that value and using an annual inflation rate of 3% to increase the value of the operations spending resulted in an annual average of \$18.5M over the same time period – a net \$0.5M per year positive gap.

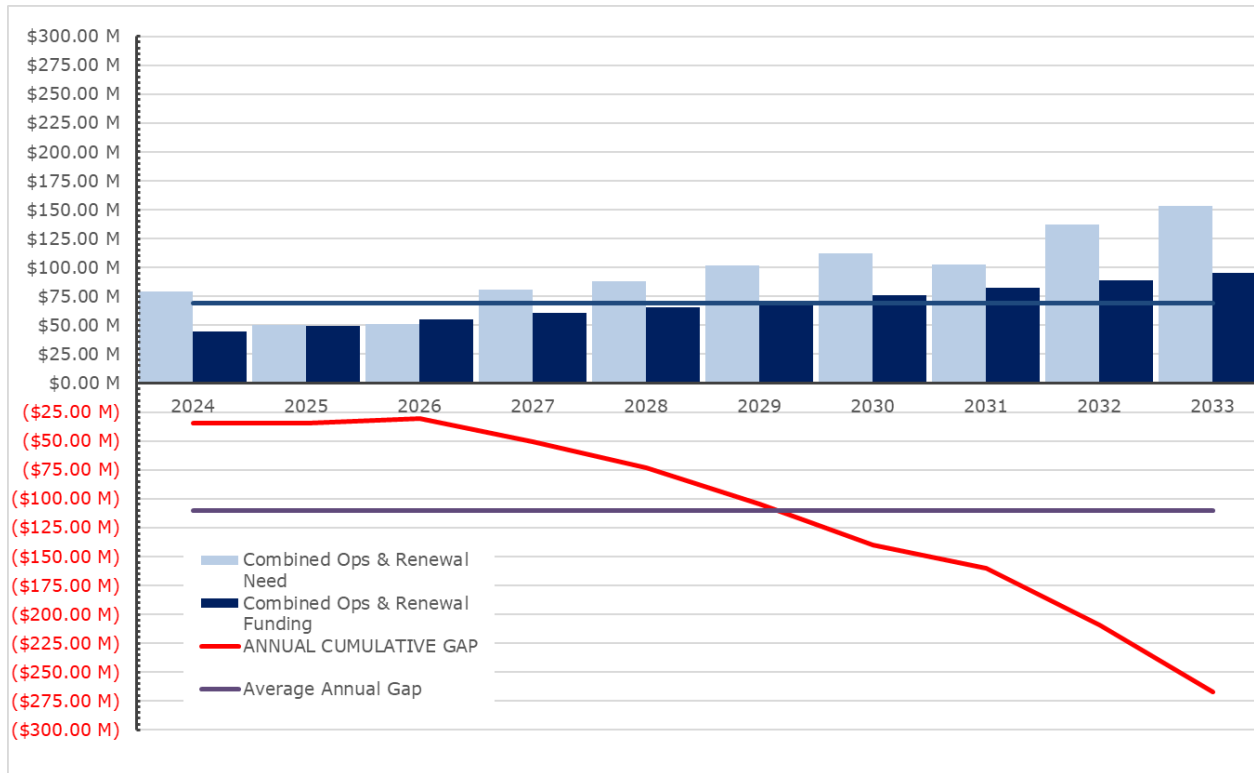
The true costs of the operations can vary greatly depending on a number of factors but the models show that the operations and maintenance needs of the transportation services should be met.

The combined results of the renewal and operations needs vs. available funding are shown in the table and chart below.

**Table 20: Combined Renewal & Operations Needs vs. Funding (in \$ millions)**

	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Renewal Forecast	(\$64.45)	(\$34.54)	(\$34.54)	(\$63.36)	(\$70.26)	(\$83.69)	(\$93.05)	(\$82.78)	(\$117.48)	(\$132.76)
Operations Forecast	(\$14.89)	(\$15.60)	(\$16.36)	(\$17.45)	(\$17.94)	(\$18.44)	(\$18.95)	(\$19.48)	(\$20.02)	(\$20.58)
Combined Ops & Renewal Need	(\$79.34)	(\$50.15)	(\$50.90)	(\$80.81)	(\$88.20)	(\$102.13)	(\$112.00)	(\$102.26)	(\$137.50)	(\$153.34)
Capital Reserve Fund Contribution	\$28.85	\$32.92	\$37.73	\$43.21	\$47.48	\$52.17	\$57.07	\$62.41	\$67.99	\$74.06
Operations Budget Contribution	\$16.17	\$16.66	\$17.16	\$17.67	\$18.20	\$18.75	\$19.31	\$19.89	\$20.49	\$21.10
Combined Ops & Renewal Funding	\$45.02	\$49.58	\$54.89	\$60.88	\$65.68	\$70.92	\$76.38	\$82.31	\$88.48	\$95.16
Annual Cumulative Gap	(\$34.32)	(\$34.89)	(\$30.90)	(\$50.83)	(\$73.34)	(\$104.55)	(\$140.17)	(\$160.13)	(\$209.15)	(\$267.33)

**Figure 30: Combined Renewal & Operations Needs vs. Funding**



The positive gap for operations funding provides only a very small improvement to the overall funding forecast for the transportation assets. The analysis shows that by 2033 there will be a negative funding gap of approximately \$267M meaning several needed renewal works will not be able to be completed. In practice this will show most notably as roads in worsening condition as the number of km of roads that

can be repaved or fully replaced each year will be reduced.

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**Impact of Climate Change**

Recent history shows a trend of an increased number of freeze-thaw cycles through winter months in the Guelph region. When these occur moisture in or on the road surface will freeze and melt with each of these events causing pavement surfaces to experience distress which reveals in the form of potholes or cracking of the pavement surface. This type of damage can be described as a “breakdown” requiring unplanned repair work to mitigate. There will likely be an increased frequency of preventive crack sealing during summer months as an attempt to reduce the unplanned work during winter months.

There has also been a trend of more extreme summer and winter weather vents. The increasing intensity of winter storms (at less frequency compared to historical trends) may require increased snow and ice control operations for short periods of time while stronger rainstorms may increase the risk of flooding. Roads at low elevations relative to a body of water nearby might be susceptible to this risk in the form of water washing out the road base structure or covering the entire roadway surface. The risk of roadway flooding is also dependant on the quality of the stormwater services. It is possible that future rainstorms may deliver volumes of water that could overload the capacity of the stormwater system. This risk is aggravated by the intensity of a storm: short intense storms can overload stormwater services more quickly than long duration storms of lower intensity. The result of any flooding is an immediate impact to traffic flow requiring emergency operations to manage

and risk of physical damage to the roadway and underlying base layers.

A formal risk assessment that identifies specific roads or areas prone to potential flooding has not been completed, but staff responsible for managing the roads are familiar with the needs and maintain a list of risk areas that is used to help plan future work.

Climate change risks to many of the City roads and bridges are directly related to the risks associated with the other asset classes due to the installation of those other assets underneath the road base. These will be addressed in the following sections.

As another way of addressing the changing climate the City is also encouraging non-auto modes of transportation for the community including cycling. Cycling specific infrastructure is already in place along many of the roadways, and more is planned to be constructed in the future.

The net result of climate change on the roads and bridges will likely be an increased volume of unplanned repair work during winter months that will negatively impact the operations and maintenance resources required.

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## Summary and Risk Assessment

The analysis of the needs of the transportation services assets shows that by year 2033 there will be a \$273M gap between the renewal needs and the available funding detailed in the 2024-2027 budget. This presents many risks to the City.

Sound operations and maintenance planning will help alleviate future capital needs, provided that the funding for these two essential activities is adequate. The current low backlog value suggests this is probably the case, but as assets age the maintenance needs especially tend to increase. The current average age of the transportation assets is slightly less than 50% of the average EUL – this implies that in future

years the City should expect an increase in maintenance needs.

With insufficient funding all required work cannot be done, and so the backlog of renewal needs will grow. While the transportation assets do not presently have a significant backlog compared to the other asset types the best strategy is to ensure that the backlog does not grow.

There are no indications that any of the assets – in particular bridges – are at risk of catastrophic failure. Sound operations and maintenance planning combined with timely lifecycle replacements will help maintain the current levels of service that the transportation assets deliver.

### Chapter 3: Water Services



**Quick Facts: City of Guelph Water  
Collection, Treatment and Distribution Services Assets**

Total Value of Portfolio	\$ 1,658,687,280
Distribution Mains	574km
Average Condition	Fair
Fire Hydrants	3,346
Average Condition	Fair
Groundwater Wells	21
Average Condition	Good
Water Storage Towers	3
Average Condition	Fair
Natural Groundwater Aquifers	\$245 million
Metered connections to City water system	~44,000
Average Daily Demand for Potable Water	49,254 m <sup>3</sup>

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## Introduction

The City of Guelph's potable water is sourced by extracting groundwater from numerous water sources and treated thereafter for safe consumption. The primary treatment plant – the F.M. Woods facility treats 60 to 80 percent of the City's daily water supply. Water for this treatment plant is collected from the Arkell Spring Grounds and Carter Well. Water treatment equipment is also located at the Burke well and other urban well sites, where water is treated and directed to the distributed to the system. In total, the City has 21 Permit to take Water approvals for groundwater sources in the City. There are approximately 570km of water distribution pipes which distribute treated water to 3 pressure zones and the approximately 44,000 metered customers connected to the City water system.

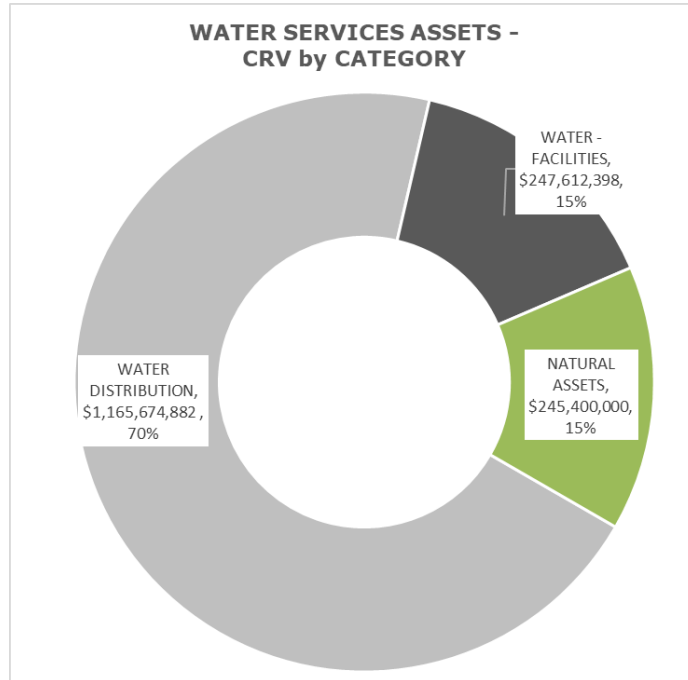
## Assets in the Water System

The water system assets can be broadly classified into three categories:

- The Distribution System: the pipe network, including the connectors, valves, meters and related parts required in such a pipe network. All of the distribution pipes operate under pressure from either booster pumps, or due to the effects of gravity. In addition, distribution assets also include the Arkell Aqueduct consisting of just over 6km of gravity flow raw water piping that transmits water collected at the Arkell spring groundswell sites to the F.M. Woods Station for later treatment.
- Facilities & Treatment: the buildings and equipment at the F.M. Woods facility, the multiple wells, pump stations, three (3) above ground storage towers, two (2) below grade storage reservoirs and four (4) booster stations. Also included in this category are any specialized or needed support vehicles or equipment.
- Natural Assets: the City of Guelph relies on groundwater for nearly all of its domestic water supply. In 2022 the Water Services and CAM team completed a landmark study that identified the aquifers as a formal asset including a replacement value and condition, thus emphasizing the importance of protecting and managing these water sources effectively

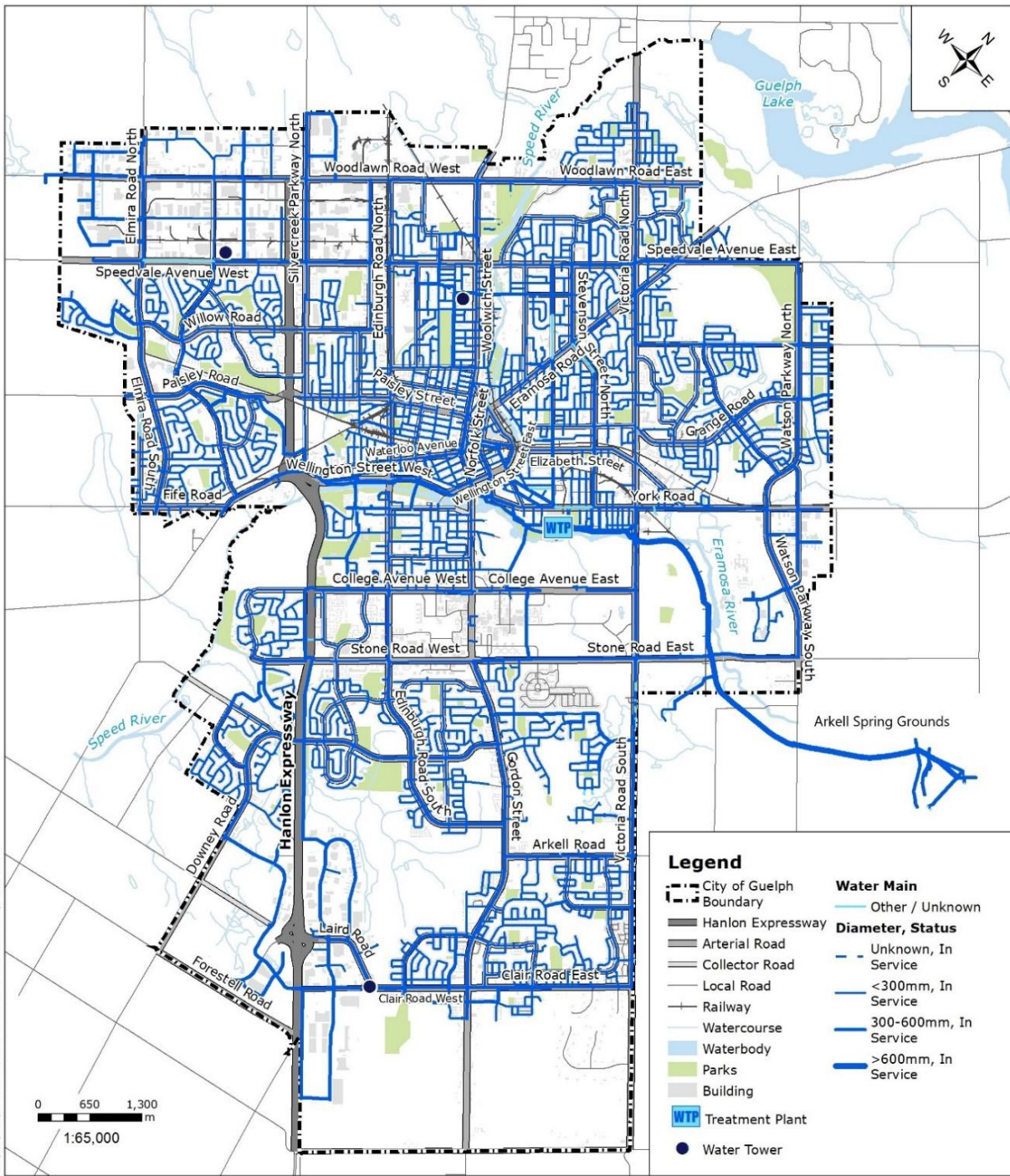


**Figure 31: Replacement Value of Water Services Assets by Category**



The current estimated total replacement value of the City’s water system is \$1.66B with 70% of that value represented in the distribution network and the remaining 30% split nearly evenly between the facilities and natural assets.

**Figure 32: City of Guelph Water Collection & Distribution Network**



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 Produced by the City of Guelph  
 Infrastructure, Development & Enterprise  
 Engineering and Transportation Services  
 May 9, 2024

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**City of Guelph  
Water Distribution System**



### State of the Water Assets

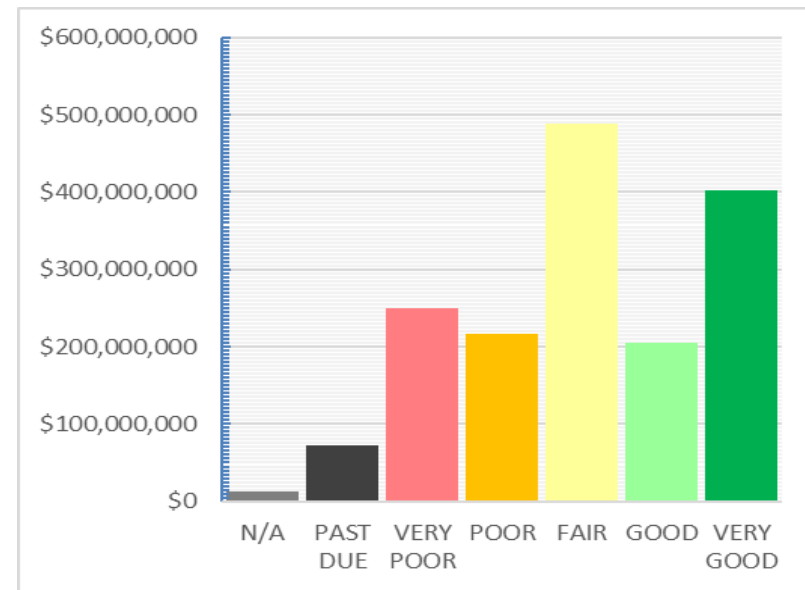
Slightly more than half of the assets in the Water Services portfolio – 66%- are considered in “fair” or better condition with 28% considered in “poor” or “very poor” condition. These values include assets across all three sub-categories of the Water Services assets types. The asset condition split should enable a balanced infrastructure renewal plan to be developed in future years instead of needing to focus a significant resource effort on a portfolio that is mostly in “poor” condition or worse.

The remainder of the Water Services assets<sup>18</sup> are considered as part of the renewal backlog - the value of the assets that according to the analysis should have been replaced in 2024 or earlier. About 4.4% of the assets equalling \$72.6M in value are in this category and include a mix of distribution and facility types.

The value and condition of each asset was determined according to the methods described in the “Determining Asset Condition” section of the Introduction chapter with details specific to assets that are unique in the Water Services portfolio described in the following sections. An asset rated in “past due” or “very poor” condition does not necessarily mean that it is no longer delivering some level of service or that the asset has already failed. This is particularly true of pipe assets that have a long theoretical expected lifecycle – there are examples of water distribution

pipes older than their expected lifecycle that are still in working service. But assets in these poorer condition states are highly likely to be not functioning at their full intended capacity (or level of service) and they should also be considered at higher risk of sudden failure.

**Figure 33: State of the Water Assets Portfolio**



It is also generally true that as an asset ages and deteriorates through normal use it will require more maintenance and repairs to continue to deliver any service so while renewal might be delayed, increased

<sup>18</sup> A very small percentage of assets have no condition info do not have recorded condition info and are represented in Figure 2 as “not applicable”.

maintenance costs should be planned for. The “past due” and “very poor” assets represent those that should be given highest attention to renewal in the immediate to short term future. For Water Services this represents a value of about \$322M of renewal needs.

A summary of the types and condition of the asset types in the Water Services portfolio is included in the following table and chart in Figure 33. The chart demonstrates a relatively even distribution of assets by value at each condition rating level.<sup>19</sup> A review of the condition of each asset category follows.

### **Distribution Assets Condition**

In 2021, the City began a pilot project to better identify the condition of the pipe assets by engaging Rezatec<sup>20</sup>, a specialist consultant that uses a geospatial artificial intelligence program to analyze multiple types of information about each pipe. In particular, Rezatec uses machine learning algorithm(s) on data, including earth observations from satellite (e.g., ground movement, land cover change, vegetation conditions, and weather patterns), geospatial data (e.g., soil type, topography, and geology), pipe attributes (e.g., age, material, length, diameter, depth, flow, pressure), and historic attributes (e.g., location and date of watermain break) to compute a likelihood of failure score for each pipe. Furthermore, for watermain a consequences of failure

model considering economic, social, and environmental factors has been developed and included in Rezatec which then computes the total risk score (or criticality) as a combination of the likelihood of failure and the consequence of failure of each pipe. Hence, the most at-risk and critically impactful assets are identified in the water distribution network. The City staff are satisfied with this program, and the likelihood of failure identified by Rezatec was adapted as the condition rating for the pipe.

For pipe assets that were not included in the Rezatec analysis an age-based condition was used (i.e. current age as a ratio of an expected full lifecycle). The same method was applied to the majority of the ancillary assets like hydrants and valves. These types of assets are not normally the determining variable in the overall condition of the distribution network nor are they of high replacement value compared to pipe assets so despite the assumptions regarding their condition the impact to the overall analysis is minimal.

The overall condition of the distribution assets shows that there is a higher volume of assets in “very poor” and “poor” condition compared to the value of assets in “fair” or “good” condition. There is a large volume considered “very good”.

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<sup>19</sup> About half of the value of assets in “fair” condition is represented by the aquifers and will be discussed in further detail

<sup>20</sup> Rezatec.com

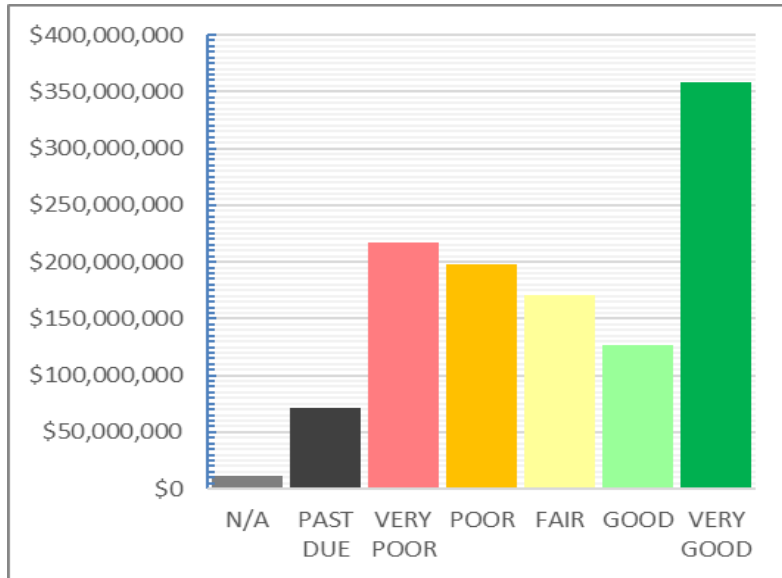
**Table 21: State of the Water Assets - Summary**

<b>Asset Category</b>	<b>WATER DISTRIBUTION</b>			<b>WATER - FACILITIES</b>		<b>NATURAL ASSETS</b>	<b>OVERALL TOTAL</b>	
	<b>Replacement Value</b>	<b>Length (km)</b>	<b>% of portfolio</b>	<b>Replacement Value</b>	<b>% of portfolio</b>	<b>Replacement Value</b>		<b>% of portfolio</b>
TOTAL CRV	\$1,165,674,882	570		\$247,612,398		\$245,400,000	\$ 1,658,687,280	
% of portfolio	70.28%			14.93%		14.79%		
N/A	\$12,016,060	0.29	1.03%	\$0	0.00%		\$12,016,060	0.72%
PAST DUE	\$71,382,317	51.23	6.12%	\$1,245,586	0.50%		\$72,627,903	4.38%
VERY POOR	\$217,471,461	142.41	18.66%	\$32,090,369	12.96%		\$249,561,829	15.05%
POOR	\$197,376,520	121.86	16.93%	\$18,707,580	7.56%		\$216,084,101	13.03%
FAIR	\$170,305,289	64.13	14.61%	\$72,570,377	29.31%	\$245,400,000	\$488,275,666	29.44%
GOOD	\$126,659,868	62.66	10.87%	\$78,463,538	31.69%		\$205,123,406	12.37%
VERY GOOD	\$358,436,008	127.65	30.75%	\$44,534,959	17.99%		\$402,970,967	24.29%

The ancillary distribution asset types like valves, connectors, distribution chambers, flow meters and fire hydrants are assessed by staff on a continuous basis through day-to-day operations work to ensure

they are working as intended and able to provide their expected level of service delivery. For longer-term asset management planning and analysis purposes an age-based condition rating was used.

**Figure 34: State of the Water Distribution Assets**



The analysis done has determined that 42% or 190km of the distribution network assets with a value of \$485M are considered in “good” or “very good” condition. These assets represent a value of renewal work that should not require prioritizing until 2074 given an estimated lifecycle of water pipes of 80 years.

The combination of “poor”, “very poor” and “past due” assets represent a total of \$415M or 36% of the water distribution network that is in the last 1/3 or less of their expected service life. This includes part of the Arkell Aqueduct.

This is a significant value of work that needs to be planned for in the immediate to 10 or 15 year timeframe.

An additional 51km or \$71.4M worth of distribution network assets are considered “past due” meaning there were identified as needing renewal in 2024 or in previous years.

An alternate way to review the state of the distribution assets is to examine the condition of the assets by the material they are constructed from. For reference this information is summarized in Table 22 and shows a clear relation between age and material used.

**Table 22: Pipe Material vs. Condition**

Material	Length (km)	Avg, Condition	Value	Avg. Age (Years)	
Asbestos Cement	0.98	FAIR	\$1,801,953	68.07	0.17%
Cast Iron	184.80	VERY POOR	\$268,362,791	75.52	32.45%
Concrete	21.06	GOOD	\$53,615,183	31.98	3.70%
Copper	2.96	GOOD	\$2,805,206	66.94	0.52%
Cured In Place	3.07	FAIR	\$4,487,732	61.97	0.54%
Ductile Iron	86.76	POOR	\$133,084,092	46.24	15.24%
Ductile Iron (Cement Lined)	61.46	FAIR	\$124,829,269	35.92	10.79%
Galvanized Iron	0.08	VERY GOOD	\$75,973	122	0.01%
Polyethylene (High Density)	3.40	GOOD	\$5,943,420	25.44	0.60%
Polyvinyl Chloride	204.93	GOOD	\$452,390,567	17.9	35.98%
Stainless Steel	0.00	GOOD	\$4,480	14	0.00%

According to the data available there are approximately 270km of water mains constructed of cast iron or ductile iron and the average condition of these pipes is “very poor” and “poor” respectively. These pipes represent \$401M or 48% of the network. A further 61.4km equal \$125M or 10.8% of the network are made of “ductile iron (cement lined)”. These materials are no longer commonly used in new construction and while they are functional in their ability to deliver water, they are more susceptible to

partial or complete failures in the form of reduced flow due to build up of scaling material on the inside of the pipes, material deterioration causing cracks in the pipe surface wall or at joints between pipes, and corrosion. All of these present risks to delivering the service intended. Water Services has been focusing on replacing cast iron pipes in the North West Industrial area of the water distribution system to date and much more work has been done already to address service risks of critical failure in this area of the

system to date. In addition the 2023 Linear Servicing Master Plan also recommended a dedicated program from Cast Iron/Ductile Iron replacements across the water system. In the future, when potential road right-of-way corridor projects are being evaluated the existence of iron pipes increases the priority of a given corridor. However, with the volume of iron pipes remaining in the network it will be many years before all of them can be renewed.

The distribution system contains asset types that are not pipes but are integral to the proper functioning of the system. These are detailed in Table 23. In general, these assets are assigned a condition rating based on their age. While important to the distribution network these assets will not be the prime variable in deciding if a particular segment of pipe will require replacing or not: sometimes these assets are replaced regardless of their condition due to the nature and logistics of reconstruction work. Separately each of the assets would be given proper attention in the event of a problem.

Many of these ancillary assets will receive preventive maintenance actions as part of normal operations activities. In particular, fire hydrants are regularly checked to ensure there will be adequate water flow during an emergency in accordance with requirements of the Ontario Fire Code.

**Table 23: Distribution Network Ancillary Assets**

Common Name	Average Condition Rating	Total CRV	Total # records
CHAMBER		\$1,820,000	91
FLOW METER	GOOD	\$2,600,000	52
HYDRANT	FAIR	\$41,825,000	3346
MONITORING WELL	FAIR	\$4,150,000	415
VALVE	FAIR	\$59,820,000	11964

**Water System Facilities**

The condition of the various water facilities has been determined based on information provided by 3<sup>rd</sup> party consultants engaged by the City for formation and update of Water Services Vertical Asset Management Plan. This includes a combination of facility condition assessments that review the physical and functional condition of the equipment comprising a facility and a long-term needs analysis where the Water Services capital plan includes recommended major work for both renewal of existing infrastructure and new facilities that will be required to ensure that as Guelph grows the Water Services will keep pace.

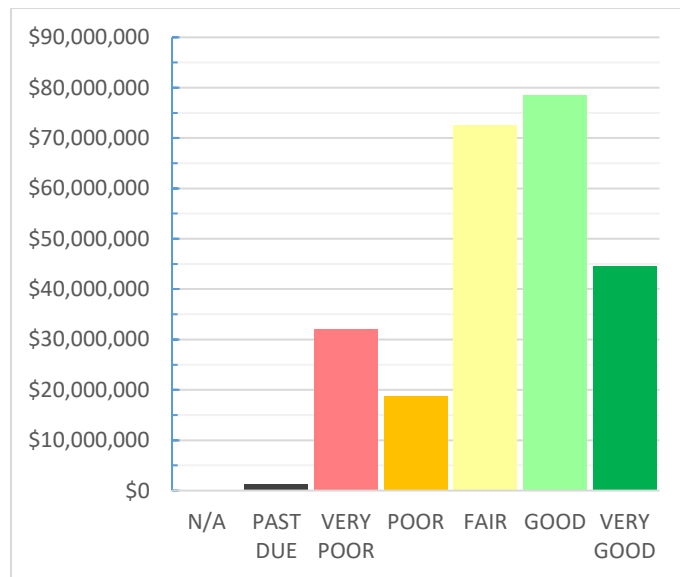
Much of the renewal and repair or maintenance work done on staffing facilities and general building envelope is the responsibility of the City’s Facility and Energy Management team. Working together with Water Services they ensure that the buildings remain in good functional service.



The types of assets included in the facility category include:

- Building structural assemblies
- Building envelope assemblies (exterior wall finishes, roofs, windows, doors etc.)
- Mechanical equipment for heating, cooling and plumbing
- Electrical equipment
- Life safety equipment (fire detection & alarms etc.)
- Interior finishes
- Site features like sidewalks, landscaping, parking & roadways, fencing etc.

**Figure 35: State of the Water Facility Assets**



Also included in the facility category are specific process equipment assets that are installed inside a building but are not part of the base-building equipment. This would include items like pumps and motors, water treatment equipment, flow monitoring devices and sensors, etc., which are maintained by Water Services.

The majority of the facility assets – 79% or \$195M – are considered in “fair” or better condition. This is a very good situation for the City to be in as it implies a low-risk of unexpected failures that may impact the network and a good program of regular maintenance and renewal to the facility assets.

A list of the Water Services facilities, their total replacement values, and average conditions is presented in Table 24. Note: the average condition rating is based on the condition of each building or process element that was assessed and is not a weighted average, nor is the consequence of failure of any single asset a factor in the average condition. Therefore, an item in poor condition that may not play a major function in the performance of a building (like interior carpet) is treated with the same level of importance as a major element that performs a critical function (like a heating unit). Within the original reports that this info was summarized from the consultants have done that prioritization and it is represented in the renewals plans in the assessment reports, which have been used in the AMP work.

**Table 24: Water Services Facilities**

Main Facility	Building	Facility Total CRV	Building CRV	Avg. Condition
F.M. Woods WTP		\$106,714,303		FAIR
	Water Works Building		\$89,781,399	POOR
	Woods Chlorine Building		\$4,307,013	FAIR
	Woods Distribution Building		\$2,481,452	VERY GOOD
	Woods Heritage Building		\$2,787,534	VERY GOOD
	Woods Sample Building		\$1,071,287	FAIR
	Woods UV Building		\$6,285,616	GOOD
Arkell Spring Grounds		\$15,032,735		FAIR
	Arkell Diversion Chamber		\$940,109	GOOD
	Arkell Recharge System		\$1,377,369	FAIR
	Arkell Spring System		\$43,726	FAIR
	Arkell Well #1		\$1,213,397	FAIR
	Arkell Well #14		\$1,989,534	GOOD
	Arkell Well #15		\$3,235,726	GOOD
	Arkell Well 6		\$1,956,739	FAIR
	Arkell Well 7		\$1,956,739	FAIR
	Arkell Well 8		\$1,934,876	FAIR

Main Facility	Building	Facility Total CRV	Building CRV	Avg. Condition
Burke Well Station		\$19,458,082	\$0	VERY GOOD
Calico Well Station		\$3,028,027	\$0	FAIR
Carter Well Station		\$4,689,616	\$0	GOOD
Clair Road Water Tower		\$8,439,123		FAIR
	Clair Tower Grounds		\$295,150	GOOD
	Clair Tower Process		\$7,947,205	FAIR
	Clair Tower Underground		\$196,767	GOOD
Clythe Well & Pumping Station		\$4,317,945	\$0	POOR
Dean Well Station		\$2,284,684	\$0	FAIR
Downey Well Station		\$2,798,465	\$0	FAIR
Emma Well Station		\$3,137,342	\$0	GOOD
Helmar Well Station		\$3,148,273	\$0	POOR
Membro Well Station		\$3,115,479	\$0	VERY GOOD
Paisley Well & Pumping Station		\$28,498,438	\$0	POOR
Park Well Station		\$6,285,616	\$0	FAIR
Queensdale Well Station		\$3,355,972	\$0	FAIR
Robertson Booster Station		\$2,951,506	\$0	VERY POOR
Scout Camp Well Station		\$2,437,726	\$0	FAIR

Main Facility	Building	Facility Total CRV	Building CRV	Avg. Condition
Smallfield Well & Booster Station		\$1,585,068	\$0	POOR
Speedvale Tower		\$7,630,191	\$0	GOOD
University Well Station		\$5,706,246	\$0	POOR
Verney Tower		\$9,576,000	\$0	GOOD
Water Street Well Station		\$3,421,561	\$0	GOOD

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**Natural Assets**

In 2022 Water Services in conjunction with CAM completed a project to identify natural assets within the City's responsibility. The project goal was to inventory these assets, assign them a replacement value, and assign a condition rating using methods similar to what would be done for built or engineered assets.

One of these natural assets types was the underground aquifers that are the source of the majority of the drinking water used by the City.

To be clear, no one person or organization "owns" the water or the aquifers. Many of the aquifers are wholly or partly outside the official City boundary and are also accessed by neighbouring municipalities for their drinking water needs. Guelph relies almost exclusively on groundwater and as there is an increasing risk of periods of drought affecting the groundwater supply. As a result of climate change and community growth anticipated in the future, including them as City assets emphasizes their importance to the City and helps to better identify what risks exist to water supply. Identifying the aquifers as an asset with a value, condition and risks help quantify what alternate solutions would be required to replace that water supply if needed.

The value of the aquifers was established by reviewing what would be required to provide alternate water sources for Guelph in the

event that the aquifers are no longer able to supply some or all of the City's water needs. The 2022 Water Supply Master Plan Update explored this question and defined two primary alternate sources:

- Guelph Lake surface water
- Pipeline connection to Lake Erie

Complete details of the options and the costing methodology are included in the report titled City of Guelph Natural Assets – Incorporating Guelph's Aquifers as Natural Assets from Aug. 2022. In summary the report recommended a combination of the two options with an estimated cost of \$245M to provide the equivalent supply of water currently planned for from the aquifers. This is a very preliminary estimate that could be further refined with more detailed analysis, however, for the purpose of assigning a value to the aquifers it is considered suitable. More details related to the aquifers, water supply and potential risks and mitigation strategies are discussed in following sections.

**Asset Ages**

In normal use watermain pipes have long service lifecycles. Modern pipes made of PVC or similar material are expected to remain in service for a period of 70 years or longer. In general pipes constructed of iron based materials are modelled with the same lifecycle as modern materials such as PVC, or polyethylene (80 years). In practice it is not unusual for pipes to remain in use longer than that period of

time but doing so will bring increased failure risks to the network.

Other asset types in the water system like hydrants and valves in distribution network or facility assets have shorter lifecycles (50 years) but because these types of assets tend to receive more preventive maintenance attention the risk of sudden failure of these assets is low.

In a facility, building elements and process treatment equipment system have expected normal lifecycles ranging from 5 to 100 years depending on if the element is a small mechanical device or the structural assemblies. With the large number of asset types involved in a facility it is impractical to list them individually but the age of every asset was considered individually and compared to the expected normal lifecycle of that asset's type.

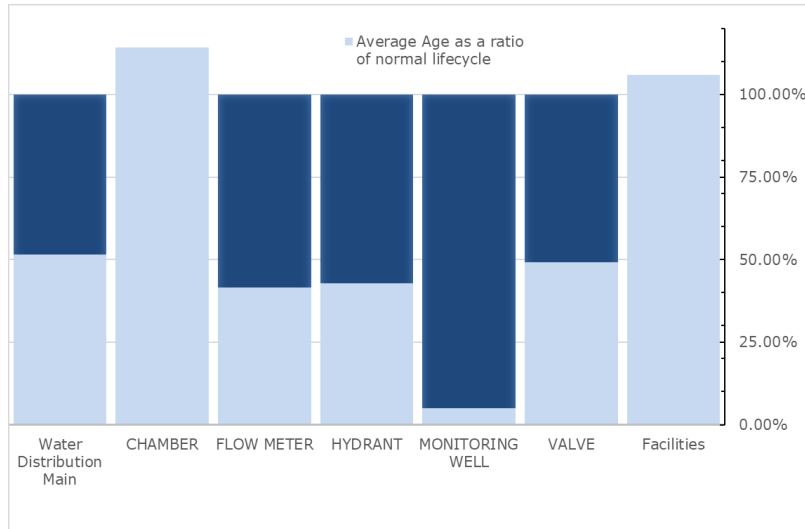
The Age Ratio chart shows that the majority of the water asset types are on average about mid-way through the average expected lifecycle. This relates to a normal distribution pattern where there is an approximately equal number of older and newer assets with the majority in between. Water chambers and facility assets on average are older than the normal lifecycle. This pattern can be explained by:

- There are 91 chambers in the water network: it is unclear why they are noted as being on average older than their expected normal lifecycle. Their age and deterioration are not considered to have a major impact to the functionality of the water network as a whole,

and as future road right-of-way work that includes Water Services renewals occurs these assets will be replaced as needed.

- The facilities assets class contains about 300 different individual asset types ranging from the concrete and steel structural components of a building to HVAC equipment and other components found in a building. Many of these assets use a normal planning lifecycle that is shorter than their actual in-use service lives. These types of assets also receive regular maintenance attention and are assessed at regular intervals so the risk of failure of these assets is considered low. For example, a building HVAC unit is normally modelled with a 20-25 year useful lifecycle but with regular preventive maintenance these units can remain in service 40 years or more. As a consequence, the older the asset – especially mechanical equipment - generally means increased maintenance costs and higher risks of breakdowns.

**Figure 36: Average Age of Water Services Assets as a Ratio of Normal Lifecycles**



**Distribution Network Age**

Because the watermains encompass such a large percentage of the overall value of the Water Services portfolio it is worth examining their age in more detail. Figure 37 presents a histogram that identifies the lengths of distribution mains in ten-year age blocks. The histogram shows that the about half of the pipe assets are less than 40 years old where 40 years represents half an expected lifecycle.

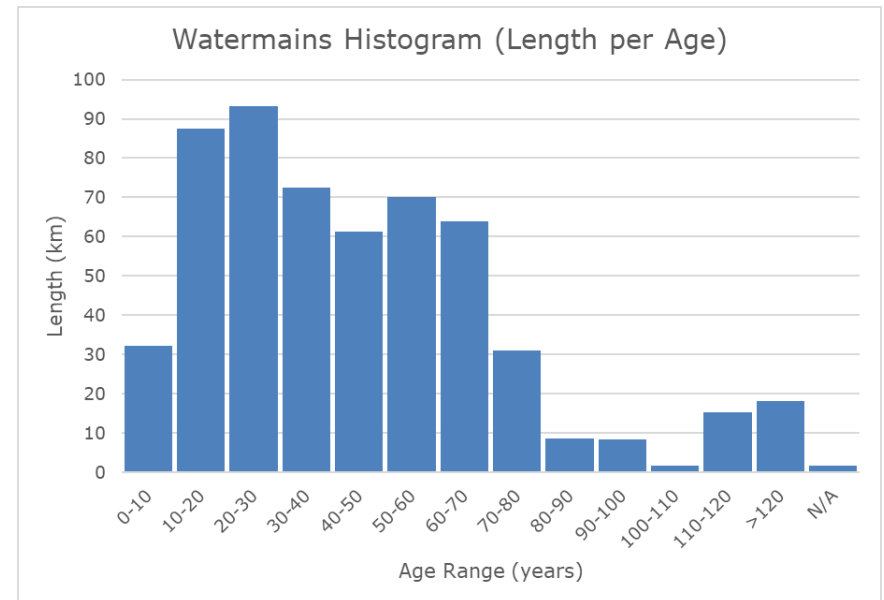
The age histogram corresponds with the info in Table 22 where the age of the pipe by material is presented. Based on the average ages the older assets are those pipes made of cast iron or ductile iron while the newer

pipes are those constructed of materials like PVC and polyethylene.

The age histogram can also be used to estimate when a block of renewal work might be required using the ages compared to expected lifecycle. Between ages 10-70 the percentage of pipes in ten year age ranges is nearly equal suggesting that the rate of renewals should remain steady from 2024 to 2084.

The length of pipes older the 80 years is very low – only 8% of the total suggesting that the 80 year planned lifecycle is effective for long term planning.

**Figure 37: Age Histogram of Pipe Assets**



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## Renewal Needs vs. Funding Analysis

In addition to information shared in the “General Information and Methodology” section of this report, the following points provide additional information regarding how the replacement values and forecast replacement years for Water Services assets were determined.

### Lifecycle Renewal Planning and Replacement Costs

The Water Services portfolio contains several facility and equipment types that are unique – water storage towers, pumping stations and water processing equipment for example. City staff worked with available historical information combined with input from consultant reports and inspections related to these types of assets to finalize details about these assets and refine their forecast needs.

The Water Linear Servicing Master Plan and other 3rd party assessment were used to help refine the forecast needs especially when determining in what year that work should occur.

As discussed earlier in the report, Water Services engaged a consultant to complete a Functional Needs Assessment (FNA) that explored the current physical condition of the water system facilities, the functional and capacity performance, and provided recommendations and cost estimates for capital upgrades to various assets. Final recommendations from this work were directly incorporated in the infrastructure renewal plan.

### Funding Availability

Water Services infrastructure renewal needs are funded entirely from a single dedicated reserve fund. The contributions to this fund are provided from the revenue collected as part of the City’s water user rates and service fees, as defined through the Water and Wastewater Rates and Charges Bylaw. The estimated future contributions to this fund were used as the available funding value when determining the difference between forecast needs.

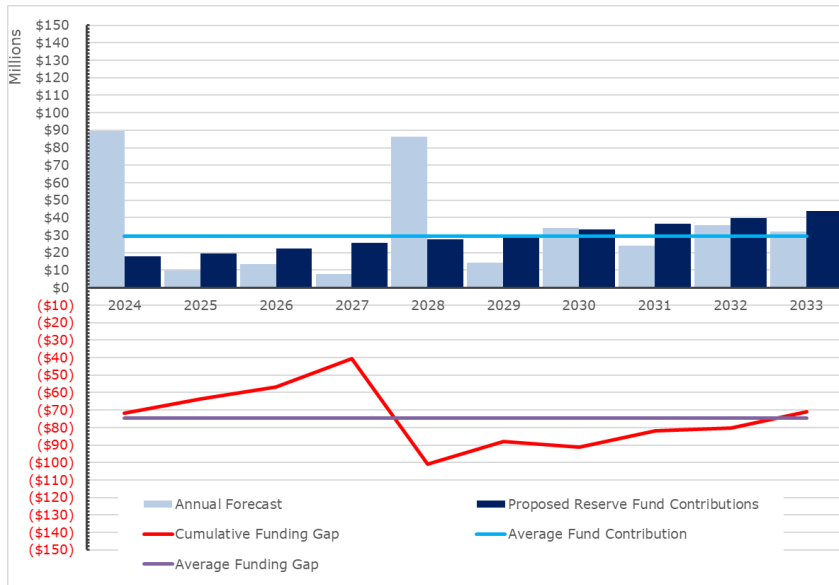
Prior to completing this review the following steps were taken:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.



The results of this review are summarized in Table 25 and Figure 38.

**Figure 38: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**



**Table 25: 10-Year Renewals vs. Forecast Funding (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Forecast Renewal Costs	(\$89.39)	(\$9.72)	(\$13.40)	(\$7.60)	(\$86.36)	(\$14.07)	(\$34.05)	(\$23.92)	(\$35.85)	(\$32.03)
Planned Reserve Fund Contributions	\$17.74	\$19.68	\$22.30	\$25.45	\$27.44	\$30.15	\$33.11	\$36.35	\$39.89	\$43.75
Cumulative Gap	(\$71.65)	(\$63.83)	(\$56.85 )	(\$40.70)	(\$100.84)	(\$87.79)	(\$91.36)	(\$81.68)	(\$80.09)	(\$70.78)

**Table 26: Renewal Forecast Summary Information (in \$ millions)**

Average Annual Renewal Need	(\$34.64 M)
Average Annual Fund Contribution	\$29.59 M
Average Annual Gap (cumulative)	(\$74.56 M)
Forecast Renewals	(\$346.40 M)
Forecast Res. Funds	\$295.87 M
10-Year Funding Gap	(\$50.53 M)

The funding gap implies that not all work that will be required in the next ten-years can be done. To remedy this will require:

- Increasing the available funding either by increasing user fees and/or using tax revenue to supplement the funding gap. Both of these options have subsequent negative consequences: raising fees will require users to pay more out of pocket for water usage while using tax revenue takes funding away from other tax funding needs
- Reducing the rate of renewal by lengthening the expected lifecycles. While feasible, this may present risks to the levels of service being delivered, and likely a need for increased maintenance as assets continue to age.

### **Operations and Maintenance Activities**

The water collection and treatment processes involve a wide variety of assets of differing types. Active operations at the water treatment plant are complex and include:

- Utility costs for the buildings and treatment equipment to function (hydro, natural gas, potable water, telephone etc.)
- Vehicle operating costs
- Labour resource costs for involved in operations activities
- Treatment chemical costs
- Analyzer maintenance and calibration

- General property maintenance (building maintenance, landscaping, snow and ice control etc.)

Operations and maintenance activities are also completed on the distribution network. Examples of these include:

- flushing and swabbing
- water quality testing
- watermain break repairs
- cathodic protection
- leak detection and repairs
- pressure monitoring
- fire flow testing
- valve exercising

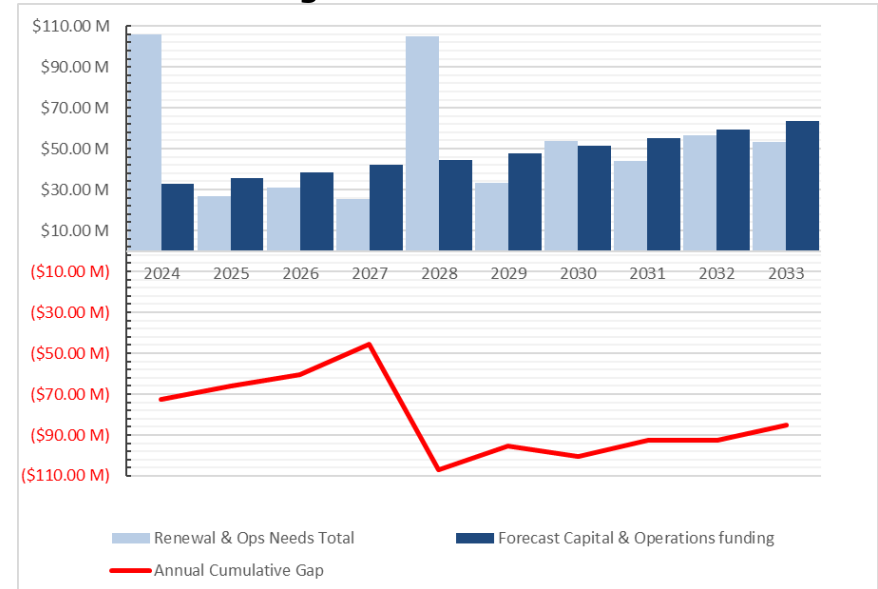
There are also occasional unplanned repairs to the water distribution network when pipes or other parts of the system fail unexpectedly.

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Budget requested values which were also inflated by 3% per year. The review shows that in 2023 the amount spent on operations needs was about 93% of the budgeted value. According to the information available over the next 10-years (until 2033) the average annual operations need is forecast at approximately \$18.8M. The total forecast needs of the Water Services infrastructure is determined by combining the renewal needs and forecast funding contributions. Refer to Figure 39 and Table 27 for this summary.

As this analysis is a summation of previously discussed information the overall result is very similar: the addition of the operations needs and the gap between those needs and forecast budget increase the funding gap at the end of ten years to \$85M.

Further discussion of these results can be found on page 125

**Figure 39: Combined Renewal and Operations Needs vs. Funding**



**Table 27: Combined Renewal and Operations Forecast vs. Funding (in \$ millions)**

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
RENEWAL FORECAST	\$89.39	\$9.72	\$13.40	\$7.60	\$86.36	\$14.07	\$34.05	\$23.92	\$35.85	\$32.03
OPERATIONS FORECAST	\$16.40	\$16.89	\$17.40	\$17.92	\$18.46	\$19.02	\$19.59	\$20.17	\$20.78	\$21.40
Renewal & Ops Needs Total	(\$105.79)	(\$26.61)	(\$30.81)	(\$25.52)	(\$104.82)	(\$33.09)	(\$53.64)	(\$44.10)	(\$56.63)	(\$53.43)
CAPITAL RESERVE FUND CONTRIBUTION	\$17.74	\$19.68	\$22.30	\$25.45	\$27.44	\$30.15	\$33.11	\$36.35	\$39.89	\$43.75
OPS BUDGET CONTRIBUTION	\$15.31	\$15.77	\$16.24	\$16.73	\$17.23	\$17.75	\$18.28	\$18.83	\$19.39	\$19.97
Funding Total	\$33.05	\$35.45	\$38.54	\$42.18	\$44.67	\$47.90	\$51.39	\$55.18	\$59.28	\$63.72
Carry Over (inflated)		(\$74.93)	(\$68.07)	(\$62.15)	(\$46.85)	(\$110.21)	(\$98.27)	(\$103.53)	(\$95.22)	(\$95.35)
ANNUAL CUMULATIVE GAP	(\$72.74)	(\$66.09)	(\$60.34)	(\$45.49)	(\$107.00)	(\$95.41)	(\$100.51)	(\$92.45)	(\$92.58)	(\$85.06)

## Master & Major Capital Plans

### City Growth

Expansion of the water system will occur to support the expansion of the City, particularly as new residential and business areas are developed.

The 2022 Water Supply Master Plan Update defined a pathway of future water supply projects to meet 2051 local growth targets. New groundwater sources identified through this Master Plan have been defined based off of local environmental data and predictive modelling of the City's groundwater model.

Development of new groundwater sources will be subject to field studies and Provincial approvals through the Class Environmental Assessment and Permit to Take Water processes. Commonly new water supply well sites would include self-contained pumping, treatment and monitoring equipment and storage reservoirs. For reference short-term (0-15 year) recommendations of the Water Supply Master Plan Update include:

- Implementation of Sulphide/Iron Treatment at Clythe Well to return well to service.
- Return to service of Arkell Lower Road Collector
- Development of the Logal, Guelph Southwest, Ironwood and Steffler Test Wells.

In 2023 the City completed an update to the 2008 Water and Wastewater Servicing Master Plan. The study modelled existing capacity constraints in the existing system, and into the future based on population assumptions from OPA 80. The preferred servicing solution for the water distribution system included a series of linear upgrades over the next 30

years to support water users today and growth in Guelph.

The Master Plan identified several broad needs and recommended some specific projects to be completed. These include:

- A proposed network of additional Zone 1 mains around Exhibition Park and the Downtown core to improve Zone 1 looping and Zone 2 supply
- Replacement of several cast iron pipes in the Downtown Core and the Old University Area neighbourhoods to support fire flow and water quality improvements
- Completion of the Clythe Feedermain along York Road (through York Road Phase 4) to connect to the future Clythe WTP
- An east-west connection across Speedvale in the near term and across Woodlawn in the long term
- A study to evaluate a second feed from Arkell Spring Grounds (with treatment) directly to Zone 3 to improve supply to the growing South End and mitigate issues around F.M. Woods related to high pressure in the future
- Minor zone boundary modifications
- New pumping station at Park Wells site to supply the east side of Zone 2
- Replace Verney booster station to improve supply security to Zone 2
- New Arkell pumping station, reservoir, and watermain to reduce risks associated with a single-feed from the Arkell Wellfield

The total water infrastructure portfolio was estimated at \$301,300,000 at the time of master plan completion, including ~\$90M across the City for the cast-iron replacement program. A handful of projects from the plan are already underway in design or construction. The remainder have been added to the City’s overall workplan, sequenced over the next 30 years.

**Levels of Service**

O.Reg 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as “Customer” or “Technical” LOS in alignment with the O.Reg 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval. All final Levels of Service will ensure that the City’s treatment of water meets the requirements of the Safe Drinking Water Act. .

**Table 28: Water Services Levels of Service**

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Technical	1. The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system.	Zero (0)
Foundations	Technical	2. The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system.	Zero (0)

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Customer	1. Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system.	Water Services is a municipally-owned and operated water utility, established in 1879. The Guelph Drinking Water System (Guelph DWS) consists of water supply and treatment facilities and a water distribution system. The Guelph DWS is a Class II Water Treatment Subsystem and Class IV Water Distribution Subsystem.
Foundations	Customer	2. Description, which may include maps, of the user groups or areas of the municipality that have fire flow.	Figure 9
City Building	Technical	1. Percentage of properties connected to the municipal water system.	There are approximately 44,000 service connections to the Guelph water system. Several properties have more than one service connection, making the ratio calculation uncertain.
City Building	Technical	2. Percentage of properties where fire flow is available.	2788/2799 or 99.61%
City Building	Customer	Description of asset replacement/rehabilitation planning and prioritization, defining end of life for assets.	City staff regularly review the state of the water network and make short- and long-term plans for replacement and rehabilitation. Review of the current asset conditions as well as needs assessments and items defined within the Water Services Master Plan are used to help forecast future needs in the water network.
People & Economy	Customer	Description of boil water advisories and service interruptions.	There were no boil water advisories or service interruptions present within the Guelph water network within 2023



Strategic Theme	LOS Type	Performance Measure	Current Performance
Environment	Technical	Water consumption L/cap/day	166 litres/cap/day
Environment	Customer	Description of environmental sustainability initiatives (e.g., GHG emission mitigation, water usage reduction).	The City is committed to saving water and meeting its target of 9,147 cubic metres of water saved in average daily production by 2038. Strategies for reducing water loss include, rebate and incentive programs, public education sessions, water use by-laws, and research initiatives.

## Risks to the Water Services

### Climate Change

Increasing average annual temperatures results in increased evaporation rates for water in lakes and rivers. During winter this trend is resulting in less ice cover on lakes and rivers, particularly in the Great Lakes, and this reduced ice cover also results in increased evaporation during winter months when compared to historical trends. Likewise, the reduced annual snowfall volumes is resulting in less meltwater being added to the lakes and rivers, and lower groundwater levels. The end result is an annual increase in the amount of water leaving the natural environment and not being replenished.<sup>21</sup> Increased temperatures also bring a risk of increased pollutants

which could impact the treatment processes that make the sourced water safe for consumption.

A warming climate, which may result in total annual reductions in rainfall and snowfall, is increasing the severity of storms<sup>22</sup> which can result in too much stormwater at one time for the infrastructure to be able to properly and safely manage. Heavy rainfall can also increase the risk of contaminants entering the water sources possibly rendering them unusable for some time periods.

The City of Guelph has already had experiences with climate change related risks to the water system. Periods of high temperatures in the summer months

<sup>21</sup> Refer to “Climate Change and Ontario’s Water Resources” for more information

[https://files.ontario.ca/environment-and-energy/aquatics-climate/stdprod\\_109241.pdf](https://files.ontario.ca/environment-and-energy/aquatics-climate/stdprod_109241.pdf)

<sup>22</sup> <https://www.oecd.org/env/resources/canada.pdf>

have resulted in the lowering of the available supply. To manage through these periods temporary water usage restrictions have been implemented. Though effective as a short-term solution to low water supply issues, these measures cause disturbances to the community which require additional City resources to address.

Water Services has implemented some of these, including development and calibration of a detailed hydrological groundwater model that was used to assess the impact of climate change<sup>23</sup> as well as introducing several programs related to ensuring the water system assets are prepared for the impacts of climate change. These include:

- Environmental Monitoring Programs that continuously monitor water quality/quantity around production wells
- Hazard Tree Inspection and Removal that identifies removes hazardous trees that may be susceptible to wind and ice damage that could impact operations
- Frozen Services Program monitors and tracks weather patterns each winter to gauge the likelihood of Water Services freezing. Customers that have had previously identified frozen services customers may be eligible for financial grants that can be used to install the water service deeper, which would improve protection against the possibility of freezing.

- Facility and Roof Inspection Program: Severe weather events with strong winds may damage roofs and cause significant damage to critical infrastructure facilities that are part of the City water system. These facilities are inspected annually
- Well Performance Testing programs monitors well quantity to identify yield trends and provide better information that can be used for making informed maintenance decisions
- Well Inspection and Rehabilitation Program is designed to maintain and restore well yield that may be related to climate change
- Eramosa River / Groundwater Recharge system monitoring: The City monitors river flows to prepare for and prevent environmental impacts or other issues that may affect downstream users
- Water Efficiency Programs that help to educate customers and lower water demand in order to prolong the life of an asset and/or defer the addition of new assets. These programs can also help lower the annual per user water usage rates, which should result in long term benefits to the City and help minimize the overall risks to the water system

These types of programs have already proven successful. According to the "Water and Wastewater

<sup>23</sup> The report from this study can be accessed at <https://www.sourcewater.ca/en/source-protection->

[areas/resources/Documents/Grand/15072-527-Climate-Change-R-2018-11-21-final-V1.0.pdf](https://www.sourcewater.ca/en/source-protection-areas/resources/Documents/Grand/15072-527-Climate-Change-R-2018-11-21-final-V1.0.pdf)

Long Range Financial Plan” prepared in Feb. 2019<sup>24</sup>  
 “Over the past 15+ years, water production has been declining despite the City growing. This is a result of the success of the water conservation program, climate change, and customer driven efficiencies encouraged by increasing rates.”

Future work directly related to managing climate change impacts to the City Water Services has been defined as part of the Water Supply Master Plan Update and 2023 Climate Adaptation Plan, including a new Drought Response Operational Plan (DROP) defining protocols and triggers for when the plan will be required to be put into effect as well as changes to the Outdoor Water Use (OWU) With regards to infrastructure recommendations include:

- Consider building redundancy in the Arkell aqueduct to redirect some water flow to the Southern area of the City
- Review the available redundancy in existing water storage facilities to determine if there would be sufficient supply in the event of drought
- Continue the Rezatec or a similar partnership for conducting advanced analysis of the condition of the water mains with other variables to pre-empt and prevent unplanned failures
- Update the automated meter reading systems to help understand in better detail water usage

needs and possible volume of water loss through delivery from source to customer

- Develop a Integrated Water Management Strategy and identify opportunities to attempt to consolidate the risks and potential mitigation measure across all of the City’s Environmental Services Departments.

As discussed previously, the inclusion of the aquifers as an asset with identified value and risks is also an action that is partly related to climate change risks. Because one possible effect of climate change will be increased periods of drought that can lower the groundwater table, it is a realistic risk that the City may have to face and it is critical to understand possible mitigation actions in advance.

Other non-infrastructure actions exist that can help alleviate the climate change risks. Water demand management programs, more efficient equipment, and potential future opportunities for treated wastewater re-use or demand substitution with stormwater/rainwater are possible options. The City has made use of public education programs in the past and these are encouraged to continue.

### **Cast Iron & Ductile Iron Pipe Replacement**

Older watermains constructed of cast iron or ductile iron do not meet the current standard performance levels. Due to the way pipes made of these materials are installed in combination with their age, they are susceptible to deterioration and water leakage as the materials age. This leakage results in lost operational

<sup>24</sup> <https://guelph.ca/wp-content/uploads/Water-and-Wastewater-Long-Range-Financial-Plan2.pdf>

investment to the City in treating and distributing water which does not meet customers.

These materials are also more susceptible to weather related damage – their resiliency to changing temperatures is not as good as modern materials such as PVC – and pipe breakages do occur without warning requiring costly emergency repairs.

There are techniques available that can extend the lifecycle of cast iron or ductile iron pipes (cathodic protection or structural lining) that do not require complete replacement and these have been effectively used by the City, but even with these rehabilitation steps these older pipes will not remain in service indefinitely. The implementation of programs that can identify negative issues such as poor water quality, reduced flow/capacity, or structural integrity of the pipes are recommended. These can result in the development of appropriate rehabilitation/renovation processes, such as lining the pipes, or plan for replacement accordingly, taking into account the criticality.

The annual capital budget plans for Water Services include an allotment specifically to address the needs of the cast iron and ductile iron pipes as informed by the 2023 Linear Servicing Master Plan.

### **Funding Gap**

The forecast gap in funding compared to a combination of the infrastructure renewal needs and a growing network presents many risks to the City, most notably the continued growing backlog of work that should be done but is delayed at this time.

With insufficient funding and normal deterioration of the assets the levels of service delivered by the City will decline. Not providing sufficient maintenance or renewal attention to the assets will likely see an increase in unplanned repairs and increased volumes of lost water. This is a normal result as infrastructure deteriorates.

Some of the risks associated with the water system can be significant to public and public health and safety. While there are no indications that the water treatment facilities are not capable of providing healthy treated potable water now, or in the future, failure of any water treatment facility can present dangerous consequences to human health if they are allowed to occur. These situations also present an increased liability risk to the City and all efforts to prevent these risks from growing need to properly prioritized.

As the City continues to grow and the water network expands the requirements for maintenance, renewal and service enhancement will increase. The initial cost of the infrastructure may in some cases be covered by revenue from development charges, but recent legislative changes in project eligibility of fees and fee collection indexing has resulted in a lower than historical revenue further reducing the funding available to the City to properly manage infrastructure.

Sound operations and maintenance planning will help alleviate future capital needs, provided that the funding for these two essential activities is adequate. The current backlog value suggests this has been a problem in the past. Without a significant increase in

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revenue to support Water Services the backlog will continue to grow. Proper risk management and attention to establishing renewal priorities will help to prevent too great a decline in levels of service and

ensure that what funding is available will be focussed on projects that provide the greatest benefit to the City.

## Summary and Recommendations

The treatment and delivery of potable water is one of the basic essential services that the City is expected to provide to the community. The Water Services department takes this responsibility very seriously and always meets the mandated standards for water quality. This will not change in the future.

There will be challenges however as the predicted volume of renewal work is forecast to outpace the available funding. Unfortunately, this has been the norm for many years. If the challenge of not mitigating the backlog and continuing with the forecast work is not accomplished it is very likely that the increased backlog will result in decreased levels of service being offered by the Water Services assets, along with potential for increased unplanned work due to asset failure, which in turn will result in greater resource challenges to be met.

Strategies to overcome the funding gap are limited and may present other types of risks. Because water services renewals are to be funded entirely from the dedicated reserve fund with revenue from user fees, increasing those fees could increase available funding.

But these increases will add a financial burden to the community that many feel is already too great. Alternative funding measures like borrowing funds to make necessary repairs early in the forecast period and possibly close the backlog of deferred work could result in a condition where the future focus of work would shift from renewals to operations. This strategy could result in reduced unplanned repair and maintenance needs, plus increase the time before more renewals would be required. However, the decision to borrow funds would affect not just water services but likely the whole city, and is a decision that would require extensive review and analysis of the potential benefits and consequences.

Water services is already engaged in leading edge practices to monitor the condition of the network and make better educated predictions on what needs will occur, thus maximizing the funding that is available. This will continue and likely improve as new techniques and technologies are developed to provide these services and further inform future decision making.

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## Chapter 4: Wastewater Services



**Quick Facts: City of Guelph Wastewater Services Assets**

Total Value of Portfolio	\$1,019,754,769
Gravity Mains	508km
Average Condition	Fair
Pressure Mains	12km
Average Condition	Fair
Water Resources Recovery Centre	\$244,138,104
Treatment Capacity	64,000m <sup>3</sup> / day
Average Condition	Fair
Pumping Stations	5
Average Condition	Fair

**Introduction**

The City of Guelph has one major wastewater treatment facility – known as the Water Resource Recovery Centre (WRRC) – where collected sanitary waste from the City of Guelph and the neighbouring community of the Township of Guelph-Eramosa is treated to enable clean water to be returned to the Speed River. More than 500km of wastewater collection mains connect to the WRRC.

The treatment of wastewater in Ontario must meet stringent requirements set by the Provincial government: these requirements have been consistently met by the City’s wastewater services.

**Assets in the Wastewater System**

The wastewater system assets is broadly classified into two categories:

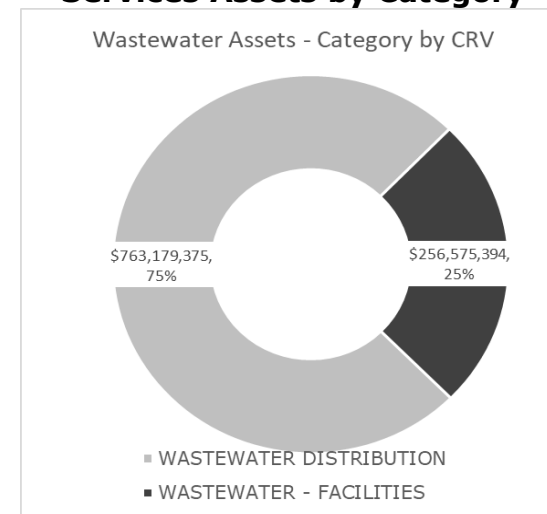
- **Collection:**  
the pipe network, consisting of approximately 508km of gravity-flow mains with an additional 12.3km of forced mains or siphon system. The network assets include all the related ancillary equipment like maintenance access holes and valves. The collection network directs flows to two main trunk sewers leading to the WRRC.
- **Facilities:**  
The WRRC includes various buildings and process equipment such as settling tanks, digestors, aerators and the necessary ancillary equipment that allows these processes to

function. The facility, located at 530 Wellington Street West, provides tertiary treatment of wastewater, with disinfected and dechlorinated effluent being discharged to the Speed River. Full details of the WRRC facility can be found in the 2023 Wastewater Services Annual Performance Report<sup>25</sup>.

There are five (5) pumping stations around the city that aid in the collection process of sanitary waste to the WRRC.

The current estimated total replacement value of the City’s wastewater system is \$1,019,754,769. About 75% of that value is represented in the collection network with the balance representing the facilities.

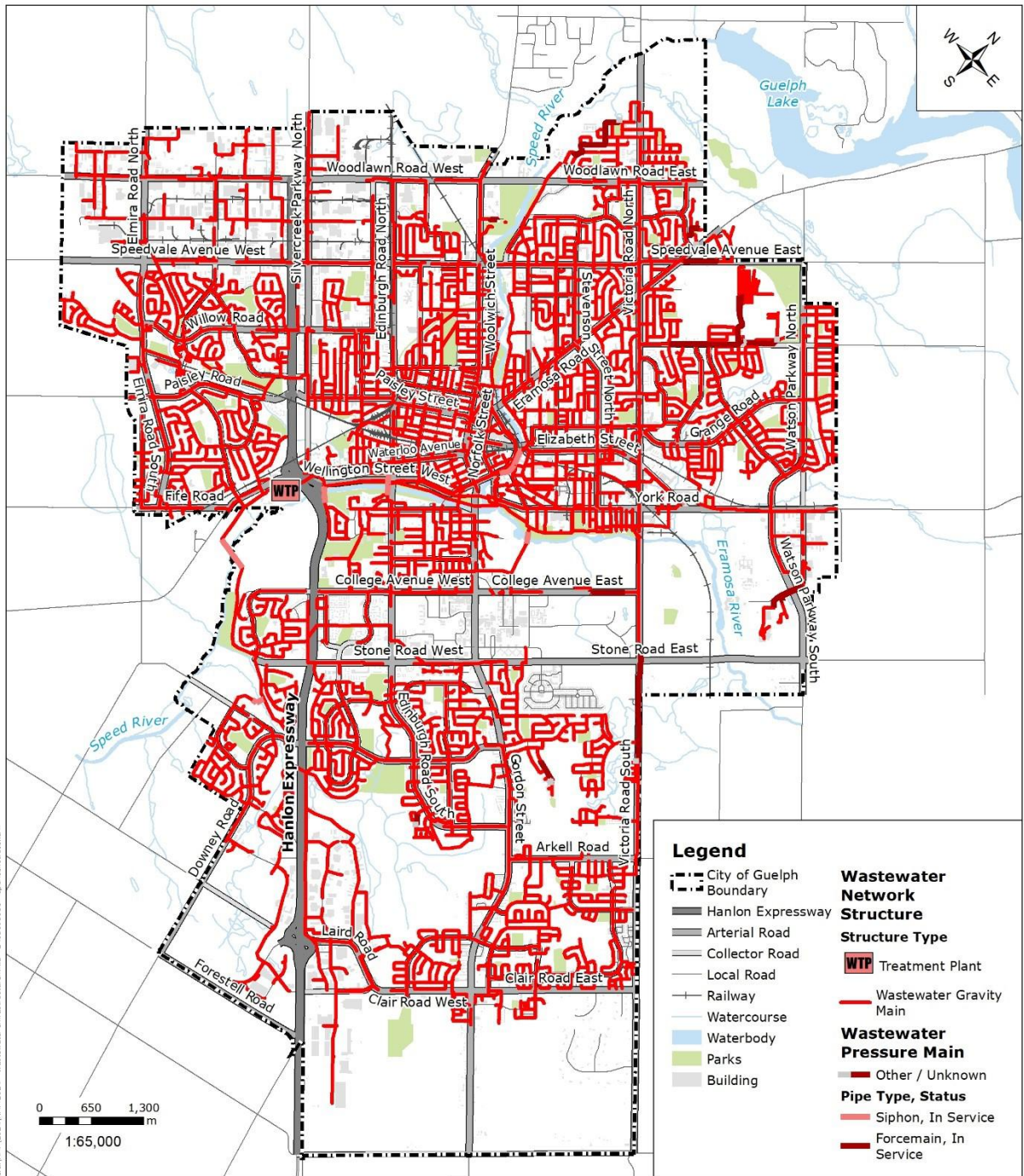
**Figure 40: Replacement Value of Wastewater Services Assets by Category**



<sup>25</sup> <https://guelph.ca/wp-content/uploads/2023-Wastewater-Services-Annual-Report.pdf>



**Figure 41: City of Guelph Wastewater Collection Network**



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Produced by the City of Guelph  
 Infrastructure, Development & Enterprise  
 Engineering and Transportation Services  
 May 9, 2024

**City of Guelph**  
**Wastewater System**



## State of the Wastewater Assets

### General Condition

The average condition of the assets in the wastewater portfolio is considered "fair".

Figure **42** presents a chart that shows the value of assets per condition rating. The results demonstrate a balanced distribution of assets from "very poor" to "good" condition with about 8% or \$80M of the assets in "very good" condition. This is a good state for the portfolio to be in.

The identified backlog or deferred renewal work represents a value of about \$75M. The assets in the backlog are assets that have been identified as

needing to be replaced in 2024 or should have already been replaced according to the analysis methodology.

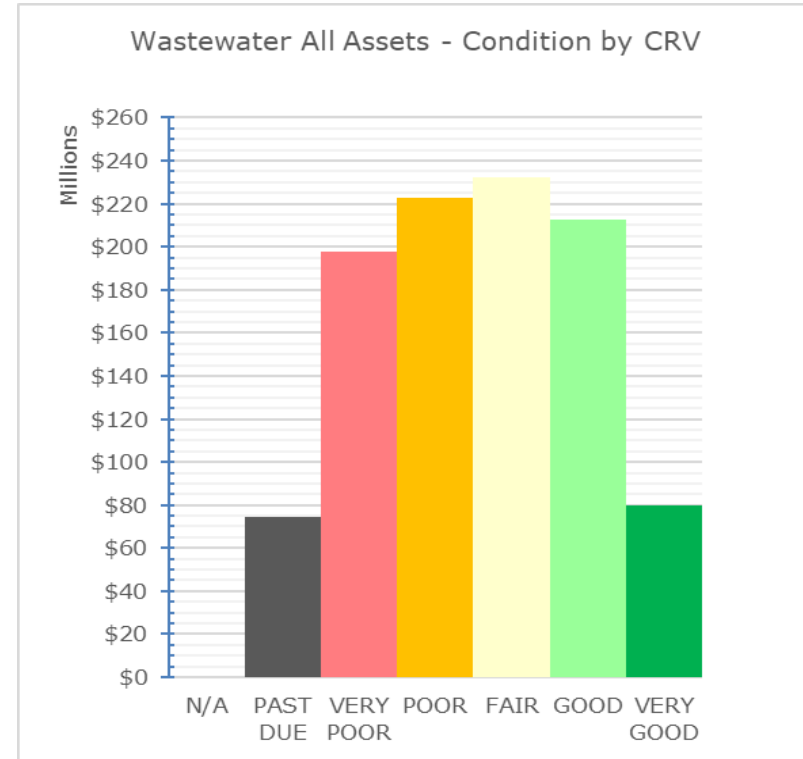
**Table 29: State of the Wastewater Assets – Summary**

Asset Category	Wastewater Distribution	Wastewater Facilities	Sub-totals	Overall Total
Total CRV	\$763,179,375	\$256,575,394		\$1,019,754,769
Past Due	\$68,627,605	\$5,631,692	\$74,259,297	7.28%
VERY POOR	\$186,020,583	\$11,797,898	\$197,818,481	19.40%
POOR	\$86,862,773	\$136,125,240	\$222,988,013	21.87%
FAIR	\$157,262,085	\$74,919,956	\$232,182,041	22.77%
GOOD	\$194,230,776	\$18,540,896	\$212,771,673	20.86%
VERY GOOD	\$70,175,552	\$9,559,712	\$79,735,264	7.82%

Assets in “very poor” condition are valued at approximately \$198M. Very poor generally means that assets are within the last 20% of their lifecycle and should be planned to be replaced in the short-term. However, with consideration that sanitary collection pipes can have very long lifecycles of 80 years or more, a “very poor” rating could mean 15+ years before replacement is recommended. An additional \$223M of assets are considered in “poor” condition, or generally in last 20-40% of their expected useful lifecycle. Combined, the total value of assets in “poor” or worse condition is approximately \$495 or 48.6% of the portfolio. This value of assets presents the largest potential sources of risks related to the wastewater infrastructure. The following sections provide a better understanding of the needs of the portfolio in the immediate and short-term future.

In general, the assets in the wastewater services portfolio were assessed following the methods outlined in the “Determining Asset Condition” section of the Introduction chapter. Specific details related to the assessment of the wastewater services assets are explained in following sections.

**Figure 42: Condition of Wastewater Services Assets by Replacement Value**



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**Collection Network**

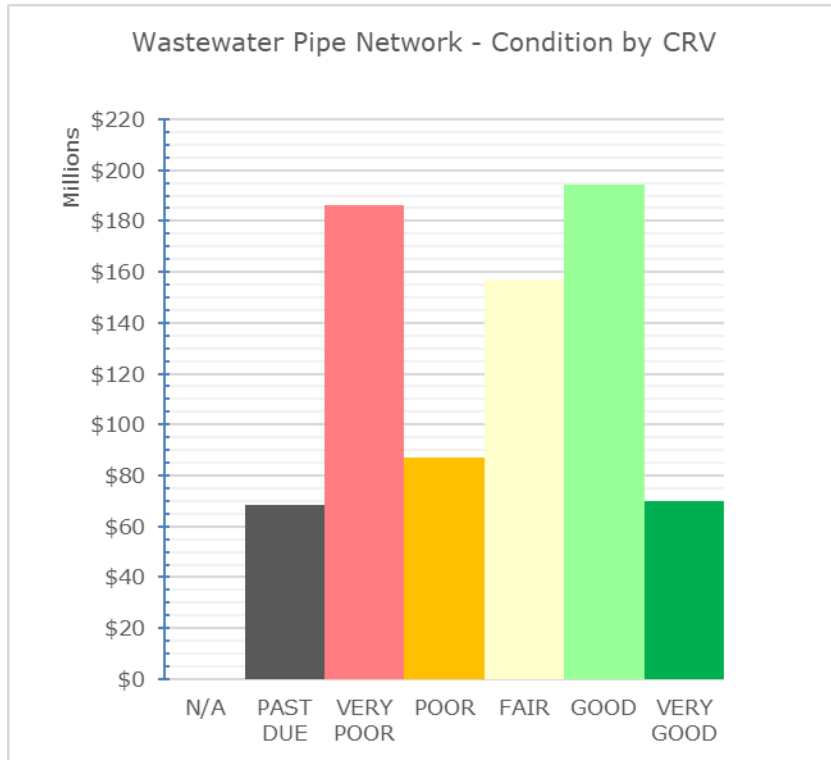
The primary method used to assess the condition of the sanitary collection pipes is to use CCTV (i.e. camera) services from 3rd party specialists. This process involves the use of remote control camera units that travel the interior of the pipes capturing the physical condition of the pipe material and identifying issues like cracking or material deterioration as well as physical blockages in the pipe as a result of things like tree-root growth or sediment and sludge accumulation. The pipes are assigned a condition rating based on the NASSCO standards for CCTV inspections which is then converted to a 1 to 5 rating used for consistency in the City's AM analysis work. When CCTV information about a pipe asset is not available an age-based assessment rating is assigned (the ratio of the actual age compared to the expected full lifecycle).

The replacement value of the pipe network assets was determined by referring to historical contract costs for City of Guelph construction projects. The historical information was used to determine a unit cost per asset type and pipe diameter which allowed a calculation of the value of the whole network.

Because the pipe network comprises the majority of the portfolio the condition rating distribution of the network closely matches the overall portfolio condition rating distribution. There is a small exception to this generalization where the percentage of the network in "poor" condition is much less than assets in the other ratings (except "very good")

provide a summary of the condition of the collection pipe network including values and lengths of pipes per condition rating. In total the pipes comprise \$627M worth of assets. Approximately 58% or 309km of the network is considered in "fair" or better condition. The remaining 42% or 210km with a value of \$268M is in less than "fair condition. While the majority of the network is in a condition state where risk of failure or declining levels of service should not be a major concern in the next ten years, there remains a significant value of work that the City should prepare to address.

**Figure 43: Condition of the Collection Pipe Network by Replacement Value**

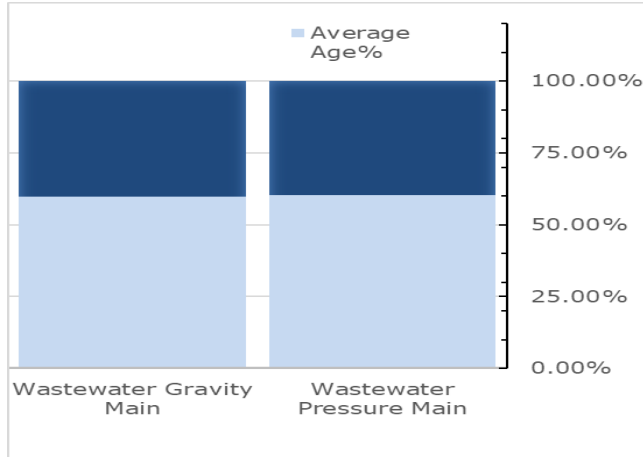


**Table 30: Condition of Wastewater Collection Mains**

Condition	Gravity Mains	Length (km)	Pressure Mains	Length (km)	Sub-totals	% of Total
PAST DUE	\$ 32,103,612	26.66	\$ 759,412	0.59	\$32,863,024	5.24%
VERY POOR	\$161,566,530	132.06	\$ 616,915	0.40	\$162,183,445	25.85%
POOR	\$ 66,806,159	49.52	\$ 2,396,187	1.49	\$69,202,347	11.03%
FAIR	\$128,717,968	110.86	\$ 5,972,668	6.08	\$134,690,637	21.47%
GOOD	\$161,279,730	137.08	\$ 3,644,912	3.33	\$164,924,643	26.29%
VERY GOOD	\$ 63,045,432	51.45	\$ 438,682	0.43	\$63,484,114	10.12%
Sub-totals	\$613,519,432	507.63	\$13,828,777	12.32	\$627,348,209	

Age can be another metric used as a variable when considering future needs for the portfolio assets. A review of the pipe ages shows that on average, most pipes are about 60% through their expected lifecycles. Another effective tool is an age histogram, such as Figure 45 which provides a count of the number of pipe assets in 10-year age groupings.

**Figure 44: Age of Pipe Assets as a Percentage of Expected Lifecycle**



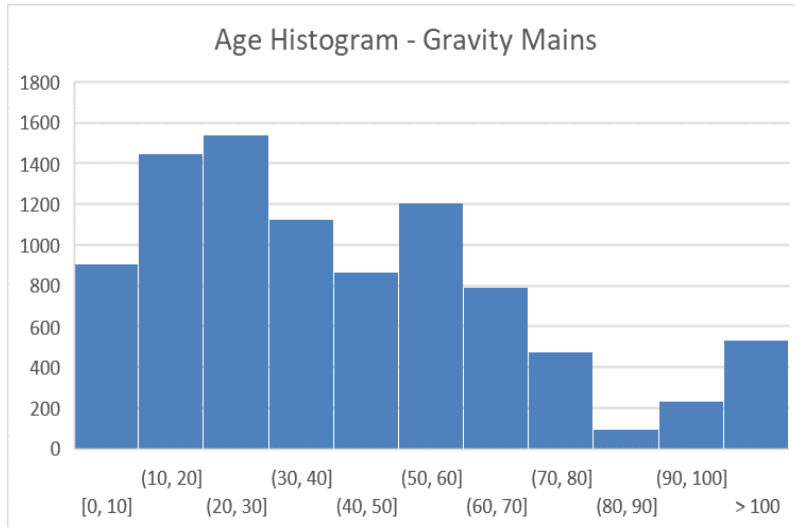
The histogram shows that the majority of the network is aged between 10-30 years. Using an expected lifecycle of 80 years for a gravity main this implies that between 2074 – 2094 an increased in pipe renewals can be expected. Prior to that, an increase in renewals should be planned for between 2044-2054 since there is a large grouping of pipe assets currently between 50-60 years old.

Age alone is not the only indicator to be used for planning renewal needs. But comparing the age histogram to the value of assets at the different condition ratings there is some correlation between the two metrics.

**Wastewater System Facilities**

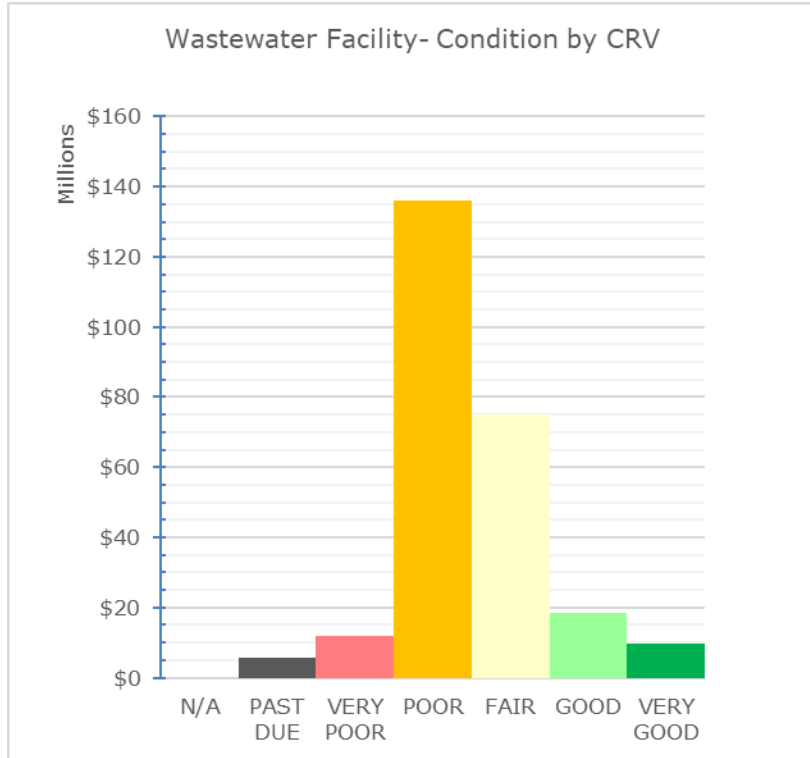
The condition of the various wastewater services facilities has been determined based on information provided by 3<sup>rd</sup> party consultants engaged by the City to complete assessments of the facilities and the process equipment. This includes a combination of facility condition assessments that review the physical and functional condition of the equipment comprising a facility and a long-term needs analysis that includes recommended major work for both renewal of existing infrastructure and new facilities that will be required to ensure the wastewater services will be able to continue to deliver current levels of service and more as Guelph grows.

**Figure 45: Age Histogram of Gravity Mains**





**Figure 46: State of the Wastewater Facility Assets by Replacement Value**



As can be seen in the pro-rated results of the 2019 assessment work show that many of the individual elements (assets) that comprise the facilities are considered in “poor” condition, however, these are predominantly lower value assets with short lifecycles that do not affect the overall condition or functional service ability of the facility they are part of.

The condition data used in this AMP for the facilities was collected in 2019. The assigned condition ratings in 2019 have been pro-rated to 2024 by using a linear deterioration model based on the expected normal lifecycle of any single asset type. Likewise, any cost information from 2019 was converted to 2023 present dollar values using StatsCan inflationary data. The 2019 assessment work included some assets that have been decommissioned since that time.

Table 31 presents a summary of the value and condition of the major facilities where the overall condition of each is identified.

**Table 31: State of the Wastewater Services Facilities**

Facility Name	Type	Replacement Value	Overall Condition
Water Resource Recovery Centre (WRRC)	Main Wastewater Treatment Facility	\$244,138,104	FAIR
Barton Estates SPS	Sanitary Pump Station	\$1,462,261	POOR
Terraview SPS	Sanitary Pump Station	\$1,569,623	FAIR
Kortright Estates SPS	Sanitary Pump Station	\$3,111,862	FAIR
Northern Heights SPS	Sanitary Pump Station	\$2,730,406	FAIR
NiMa Trails SPS	Sanitary Pump Station	\$3,000,000	VERY GOOD

As discussed elsewhere in the AMP, while the major assemblies of a facility can have lifecycles reaching 50+ years many of the types of individual assets found in a facility have lifecycles ranging from 5-20 years. Through normal use and function they will deteriorate and require renewal at more regular frequencies than pipe assets. At any given moment this may mean that numerous single assets will be considered in less than “fair” condition. This does not mean the facilities will be non-functional, but does mean those assets may not be functioning at full capacity and require more frequent maintenance and repair. Wastewater services has facility management programs in place that include regular preventive

maintenance activities completed that help to ensure the continual functioning of all the equipment and facilities.

Further to this, many of the renewal or replacement actions recommended in the 2019 assessment program were already completed or have been approved and scheduled to be completed as part of the 2024-2027 multi-year budget.

There is a risk that with insufficient funding these and other actions needed in the future may not be able to be completed. This will be discussed in following sections.

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## Renewal Needs vs. Funding Analysis

In addition to following the details in the “General Information and Methodology” section the following points provide more details regarding how the replacement values and forecast replacement years for wastewater services assets were determined.

### Lifecycle Renewal Planning and Replacement Costs

The wastewater services portfolio contains several facility and equipment types that are unique – specialized process treatment equipment such as aeration blowers and controls, anaerobic digestors, primary and secondary settling tanks, sand filters, belt filter presses etc. City staff worked with available historical information combined with input from consultant reports related to these types of assets to finalize details about these assets and refine their forecast needs.

The 2022 Wastewater Treatment and Biosolids Management Master Plan, the 2019 Facility Condition Assessment information and other 3rd party reports were used to help refine the forecast needs especially when determining in what year that work should occur.

Many wastewater linear assets are renewed as part of a larger whole corridor re-construction project where the primary driver of the project may not be the needs of the wastewater linear assets but another type of asset. For this reason the recommended replacement years for individual assets should not be accepted as absolute. They are recommendations that are one of the variables considered when the total asset renewal

needs of the City are considered as a whole in the creation of project scopes of work and budgets.

### Funding Availability

Wastewater infrastructure renewal needs are funded entirely by revenue collected from the wastewater user rates property owners connected to the network are required to pay. All of the collected revenue is deposited to a dedicated reserve fund for wastewater services. The estimated future values of annual contributions to this fund were used as the available funding value when determining the difference between forecast needs.

Prior to completing this review the following steps were taken:

- Forecast renewal needs are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a

value of needed but deferred renewal work adding to the existing renewal backlog.

The results of this review are summarized in the table and chart below.

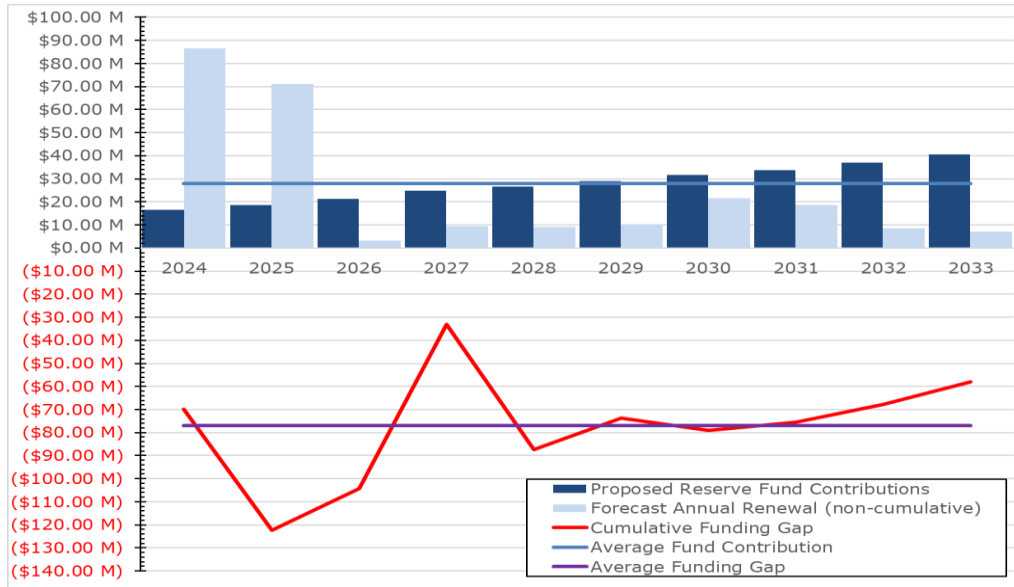
**Table 32: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Forecast Renewal Costs</b>	(\$86.45)	(\$71.02)	(\$3.19)	(\$9.34)	(\$9.22)	(\$10.41)	(\$21.56)	(\$18.48)	(\$8.60)	(\$7.17)
<b>Planned Reserve Fund Contributions</b>	\$16.51	\$18.61	\$21.38	\$24.88	\$26.55	\$29.06	\$31.80	\$33.79	\$37.06	\$40.64
<b>Cumulative Gap</b>	(\$69.94)	(\$122.35)	(\$104.16)	(\$33.04)	(\$87.19)	(\$73.73)	(\$79.19)	(\$75.42)	(\$67.72)	(\$58.03)

**Table 33: Renewal Forecast Summary Information (in \$ millions)**

Average Annual Renewal Need	(\$24.54)
Average Annual Fund Contribution	\$28.03
Average Annual Gap (cumulative)	(\$77.07)
Forecast Renewals	(\$245.45)
Forecast Res. Funds	\$280.27
10-Year Funding Gap	\$34.82

**Figure 47: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contribution**



Reviewing the table and figure it is very clear to see that the current needs vs. funding scenario will not provide adequate funding to cover all of the forecast renewal needs between 2024-2033. This is despite the total 10-year funding being forecast to be greater than the forecast 10-year needs.

The primary reason for this is the already large deferred renewal work backlog value at the beginning of 2024. One possible reason for part of the backlog value is related the inclusion of wastewater assets as part of a complete right-of-way corridor renewal project and the past practice of waiting on all funding sources to be available for that full corridor reconstruction to be done. Historically there was also

resourcing challenges with insufficient staff available to lead the work. The latter problem has been partly resolved while the former problem may still occur.

With contingency in 2024 this value is approximately \$86.5M and an additional \$71M in 2025. Conversely the funding in 2024 and 2025 is low which will prevent all renewal needs identified for those years from being completed. The result is a growth in the value of work that cannot be funded.

The approximately \$201M of assets in “very poor” condition presents another funding challenge. Since pipe assets have long lifecycles and “very poor” can be partly defined as the last 20% of an asset’s life the

recommended timeline for planning for renewal of those assets ranges from 2-15 years. Between 2025 and 2033 there is approximately \$159M of renewal work forecast – this would represent almost 80% of the “very poor” asset value.

As the 10-year forecast progresses the value of funding does increase while the forecast need drops significantly in years 2026 and beyond but with the consideration of inflation the cumulative funding gap at the end of 2033 is forecast to be approximately \$58M.

This will present risks to the level of service that some the wastewater assets may not be able to function at their intended service levels in the future: if assets cannot be renewed when recommended they may continue to function, but not with the same level of effectiveness. Maintenance and repair costs typically increase along with the risk of sudden failures that would require emergency funding to address. The risk of non compliance with the MECP’s requirements is the primary concern of underfunding critical wastewater assets.

To mitigate the above risks it may be possible that some of the forecast work in 2024 and 2025 can be postponed to future years allowing the needed work to be more evenly distributed with the available funding so that the initial large funding gap can be reduced. To determine if this is possible an in depth review of the needs identified for 2024-2025 will be required.

### **Operations and Maintenance Activities**

The wastewater collection and treatment processes involve a wide variety of assets of differing types. Active operations at the WRRC are complex and include:

- Utility costs for the buildings and process treatment equipment to function (hydro, natural gas, potable water)
- Chemical costs for treatment process
- Labour resource costs for staff to manage the facility
- General property maintenance (building maintenance, landscaping, snow and ice control etc.)

Typical maintenance activities associated with Wastewater linear assets include:

- maintenance of booster / lift pumps and other mechanical equipment
- pipe flushing and removal of any sediment material build-up on the interior of the pipes or other components to ensure uninterrupted flow
- regular monitoring and inspection of the assets to ascertain their performance levels and functionality
- repairs to any damaged pipes or other assets
- vehicle operating costs (fuel, maintenance etc.)

The operational costs that Wastewater Services staff identified include budget information from 2023 to 2026. In all years a requested funding value was identified. Using the average rate of change from 2023-2026 as an inflation factor for the years 2027 and beyond an average annual operations budget need of \$17.9M per year was identified.

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The 2023 actual operations budget expenses were used to calculate the predicted future years actual budget by inflating the 2023 value by 3% per year (the same annual inflation rate used throughout all of the AMP forecasting work). This resulted in an annual average operations budget of \$15.5M per year. Year by year these calculations predict that on average about 85% of the operations needs will be met.

The gap presents a situation where some required operations needs will not be able to be completed to the levels required.

### **Renewal & Operations vs. Funding**

When the combined needs of renewals and operations are reviewed in total the results show that around year 2032 the total funding gap will become positive, but

only in 2033 with a forecast surplus of \$11.3M. This is a result of combining the operations and renewal funding and the forecast annual renewal values becoming lower than average after the initial large values in 2024-2025.

However, the feasibility of this model where the operating funds may be able to help offset excess capital renewal needs is not certain and should not be used to formulate a funding strategy for renewal work without further review of possible funding strategies compared to all renewal and operations needs.

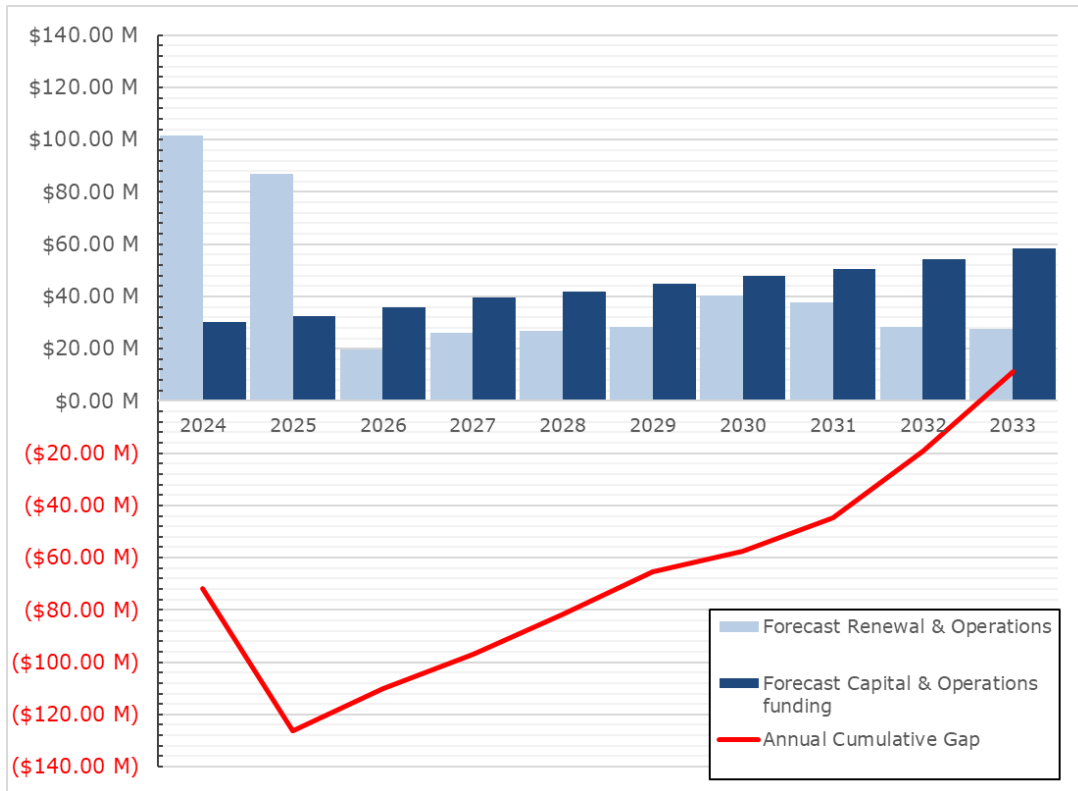
A better solution would be to distribute the work forecast in 2024-2025 more evenly in the following years so that the annual renewal needs are closer in value to the available annual funding.



**Table 34: Wastewater Services Renewal & Operations Needs vs. Funding (in \$ millions)**

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Renewal Forecast	\$86.45	\$71.02	\$3.19	\$9.34	\$9.22	\$10.41	\$21.56	\$18.48	\$8.60	\$7.17
Operations Forecast	\$15.28	\$16.04	\$16.57	\$16.87	\$17.44	\$18.03	\$18.64	\$19.27	\$19.92	\$20.59
Sub-Total	\$101.73	\$87.06	\$19.77	\$26.21	\$26.67	\$28.44	\$40.20	\$37.75	\$28.52	\$27.76
Capital Reserve Fund Contribution	\$16.51	\$18.61 M	\$21.38 M	\$24.88	\$26.55	\$29.06	\$31.80	\$33.79	\$37.06	\$40.64
Ops Budget Contribution	\$13.53	\$13.94 M	\$14.36 M	\$14.79	\$15.23	\$15.69	\$16.16	\$16.64	\$17.14	\$17.66
Sub-Total	\$30.05	\$32.55 M	\$35.73 M	\$39.67	\$41.78	\$44.74	\$47.95	\$50.44	\$54.21	\$58.29
Annual Cumulative Gap	(\$71.68)	(\$126.19)	(\$110.23)	(\$96.78)	(\$81.66)	(\$65.36)	(\$57.61)	(\$44.92)	(\$19.23)	\$11.30

**Figure 48: Wastewater Services Renewal & Operations Needs vs. Funding**



**Levels of Service**

O.Reg 588/17 requires the 2024 AMP that the City identify Levels of Service (LOS) for all asset types. The AMP identifies LOS as “Customer” or “Technical” LOS in alignment with the O.Reg 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

**Table 35: Wastewater Services Levels of Service Metrics**

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Technical	2. The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.	<ul style="list-style-type: none"> <li>• 143 Backups</li> <li>• 35,201 Total Homes</li> <li>• 32,106 Connections</li> <li>• 3,195 "Y" Connections</li> </ul>
		3. The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.	Zero (0)
	Customer	1. Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes.	The City of Guelph has no combined sewers.

Strategic Theme	LOS Type	Performance Measure	Current Performance
		2. Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches.	The City of Guelph has no combined sewers.
		3. Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes.	The City of Guelph has no combined sewers.
		4. Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid events described in paragraph 3.	The Sanitary network is buried deeper than the Stormwater and Water networks. The City of Guelph does not use combined sewers. Use of colour coded PVC pipes to avoid cross connections.
		5. Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system.	Water Resource Recovery Centre effluent, which receives advance tertiary treatment with disinfection and de-chlorination and exceeds MECP compliance prior to discharge
City Building	Technical	1. The number of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system.	The City of Guelph has no combined sewers.

Strategic Theme	LOS Type	Performance Measure	Current Performance
		Percentage of properties connected to the municipal wastewater system.	There are approximately 35,201 connections to the Guelph wastewater system. There may be several connections to one property and none to another so determining the percentage of properties connected is unclear.
	Customer	Description of asset replacement/rehabilitation planning and prioritization, defining end of life for assets.	<ul style="list-style-type: none"> <li>• CCTV and Flushing Program</li> <li>• Rezatec Technology</li> <li>• Lateral Lining Program</li> <li>• State of Good Repair Program</li> <li>• Working with Engineering Department &amp; the Wastewater Collection Team</li> <li>• Asset Management Annual Review</li> <li>• AI Risk Predicting Software</li> </ul>
People & Economy	Technical	Wastewater Related Customer Complaints / 1,000 people served	0.00004% (6 complaints)
	Customer	Description of the strategies used to keep assets and asset services safe and accessible to the public.	Wastewater facilities do not have public access. Facilities include smart-keys, Lock/Key fencing, security systems and SCADA alarming. Maintain a strategy of inspection for a state of good repair.
Environment	Technical	Energy Consumption (kWh)	1,0241,206 kWh
		Nat Gas Consumption (m <sup>3</sup> )	571,226 m <sup>3</sup>

Strategic Theme	LOS Type	Performance Measure	Current Performance
		Water Consumption (m <sup>3</sup> )	964 m <sup>3</sup>
	Customer	Description of the strategies used to mitigate GHG emissions and reduce water usage	Investigating using treated effluent in place of drinking water for sanitary flushing. Cogeneration facility utilizes captured methane gas to convert to electrical energy. Investigating possible installation of solar panels on the WRRC building roof top and vehicle charging station(s).

**Risks to the Wastewater Services**

**City Growth**

As the City continues to grow and the wastewater systems are required to expand, the requirements for maintenance, renewal and service enhancements will need to increase. The initial capital cost of new infrastructure in some cases may be covered by revenue from development charges (DC), but recent changes in how those fees are managed has resulted in future DC revenue being lower than historical trends. This will impact the availability of funding for maintaining state of good repair, as revenue from user rates that should be used to increase funding for infrastructure renewal could be redirected to fund development charge exemptions and discounts. Regardless of the DC funding scenario growing wastewater systems will result in greater operations and maintenance demands.

Sound operations and maintenance planning will help alleviate future capital needs, provided that the funding for these two essential activities is adequate. The current backlog value suggests this has been a problem in the past. Without an increase in revenue to support wastewater services the backlog of renewal work will continue to grow, meaning the risk of deteriorating levels of service increase as assets age and no longer are able to function to their original capacities. Increasing renewal backlogs also generally means increased maintenance and repair costs, with a particular higher risk of assets failing unexpectedly thus requiring emergency unplanned expenses and risk to meeting compliance requirements

**Old Assets**

As the age of a sanitary waste collection pipe increases so does the potential for damage due to issues like tree root growth breaking through a pipe

wall, build-up of sediment on the interior of the pipe that reduces flow rates, material deterioration that can lead to cracking or a reduction in the strength of the pipe and the joints between two or more pipes. All of these types of issues result in the potential for groundwater infiltration into the pipes, increasing the volume of flow in the pipe and ultimately the volume of wastewater to be treated. Conversely, damage to a pipe may allow the loss of sanitary wastewater outside of the pipes into the surrounding ground area presenting potentially serious health risks.

The CCTV program is critical to the early detection of any problems in the pipe network and prevention of these occurrences. It is a key program in the City's overall asset management plans. It is critical that rate funding for the CCTV program be maintained.

### **Climate Change**

As with all City services that operate facilities the changing climate will require changes to some of the base building equipment. Increased air-conditioning capacity to accommodate higher summer temperatures is likely. Replacing existing equipment with more energy efficient models or systems is also being planned for. These are strategies that the City's Facilities & Energy Management team are already implementing. It is recommended that no special projects be implemented to make these kinds of changes, but to complete them when the current assets reach the end of their functional lives.

As climate change effects increase the risk of more intense rainstorms there may be an impact on the wastewater assets. Higher volumes of rain may

increase the volume of ground water, thus increasing the risk of ground water infiltration to the wastewater collection pipes and sudden increase in flows received at the WRRRC. As the condition information about the linear assets improves through more CCTV and pipe flushing efforts, as well as implementing the Rezatec analysis tool for the wastewater pipes potential problem points in the pipes or connections between pipes will be found early. This will enable preventive maintenance work to be done that will mitigate the larger risks.

Other effects of climate change may result in a slight benefit to the wastewater services. If water reduction strategies for the general public become more normal the volume of wastewater being treated might not increase at as high a rate compared to traditional trends where the community was less concerned with water saving. The other side of the coin however is this means there is less velocity in the linear assets and in some areas of the system could increase the risk of blockages, while at the WRRRC less dilution results in a higher strength of influent that can cause different challenges. Additional wastewater re-use opportunities will be investigated over the next 2-5 years before a complete analysis can be determined.

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**Funding Gap**

The forecast gap in funding compared to a combination of the infrastructure renewal needs and growing wastewater systems presents many risks to the City, most notably the continued growing backlog of work that should be done but is delayed.

With insufficient funding and normal continuing deterioration of physical assets the risk of increasing unexpected failures requiring emergency repair work will increase.

Some of these long term risks to the wastewater systems can be significant to health and safety and compliance requirements. As a result of adequate funding to date, there are no indications that the wastewater systems are not capable of continuing to collect and treat 100% of the wastewater and returning it safely and within Ministry regulated compliance limits to the Speed River but the City must be always aware of the critical importance of this service and ensure that the levels of service being delivered do not decrease by ensuring continued adequate funding.

**Summary and Recommendations**

The wastewater services for the City of Guelph are meeting all of the required legislated targets for the collection and treatment of sanitary waste, and with adequate funding there are no identified risks of that

changing. In general, the majority of the assets remain in a functional state where they are currently meeting their levels of service targets. There are key assets on the biosolids side of the treatment process that are at or near end of life that have been identified to be addressed by 2028.

However, there is a many years long trend of insufficient renewal funding being available to replace aging infrastructure. This has resulted in a backlog of deferred work in 2024 equal to about \$86.5M, and another \$71M of renewal work forecast in 2025. To alleviate the stress of funding such high-value needs at once distributing the identified renewals over many years can be done so that the annual renewal project value more closely matches the available funding. But this will continue to result in some assets deteriorating past a point when they should be replaced, increasing the risk of unplanned failures, increased maintenance needs and lower functional performance and significant risk of non-compliance.

Increasing funding to the wastewater services can only be done via the user rates that provide revenue to the dedicated wastewater services reserve fund. While possible, this would directly impact residents and businesses in Guelph. Rates are planned to be increased annually but the annual rate of increase should be given careful review, weighing the benefits of the increased revenue against the impact to rate payers.



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## Chapter 5: Stormwater Services



**Quick Facts: City of Guelph Stormwater Services Assets**

Total Value of Portfolio	\$1,433,576,355
Gravity Mains	448km
Average Condition	Fair
Inlets (catch basins)	13,122
Average Condition	Fair
124 Stormwater Management Ponds	~\$1 million each
Average Condition	Good
Maintenance Holes	7,391
Average Condition	Fair

**Introduction**

In natural areas rainwater and snow meltwater would be absorbed into the ground, trees and plants and eventually follow a natural path to larger water courses. In built-up areas this is not possible and so the stormwater infrastructure exists to allow rainwater and snow meltwater to drain away from areas like roads, parking areas, building roofs etc. The collection of the stormwater helps reduce the risk of flooding and damage to other infrastructure. All the collected stormwater is eventually returned to the ground, natural water courses or wetlands.

**Assets in the Stormwater System**

The stormwater system assets is broadly classified into two categories:

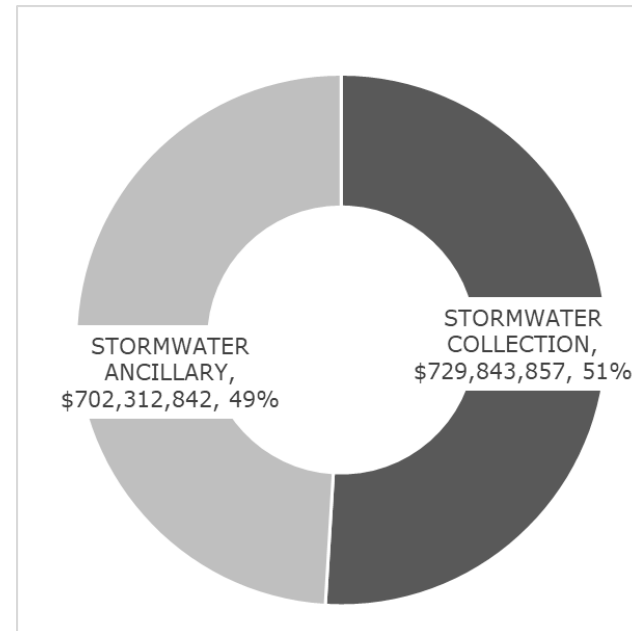
- **Collection:**  
the pipe network, consisting of approximately 448km of gravity-flow mains (pipes). The network assets include all the related ancillary equipment like maintenance access holes and clean-outs where built up silt can be removed.
- **Other Ancillary Assets:**  
To support the collection of rainwater and snow melt water before it enters the pipes there are a number of other asset types
  - Stormwater ponds: engineered water storage ponds with naturalized elements that act as a first storage point for water
  - Treatment devices that remove organic pollutants and sediments
  - Inlets – catch basins or sewer grates embedded along roadways or in low

points of land that allow water run-off to enter the pipe network

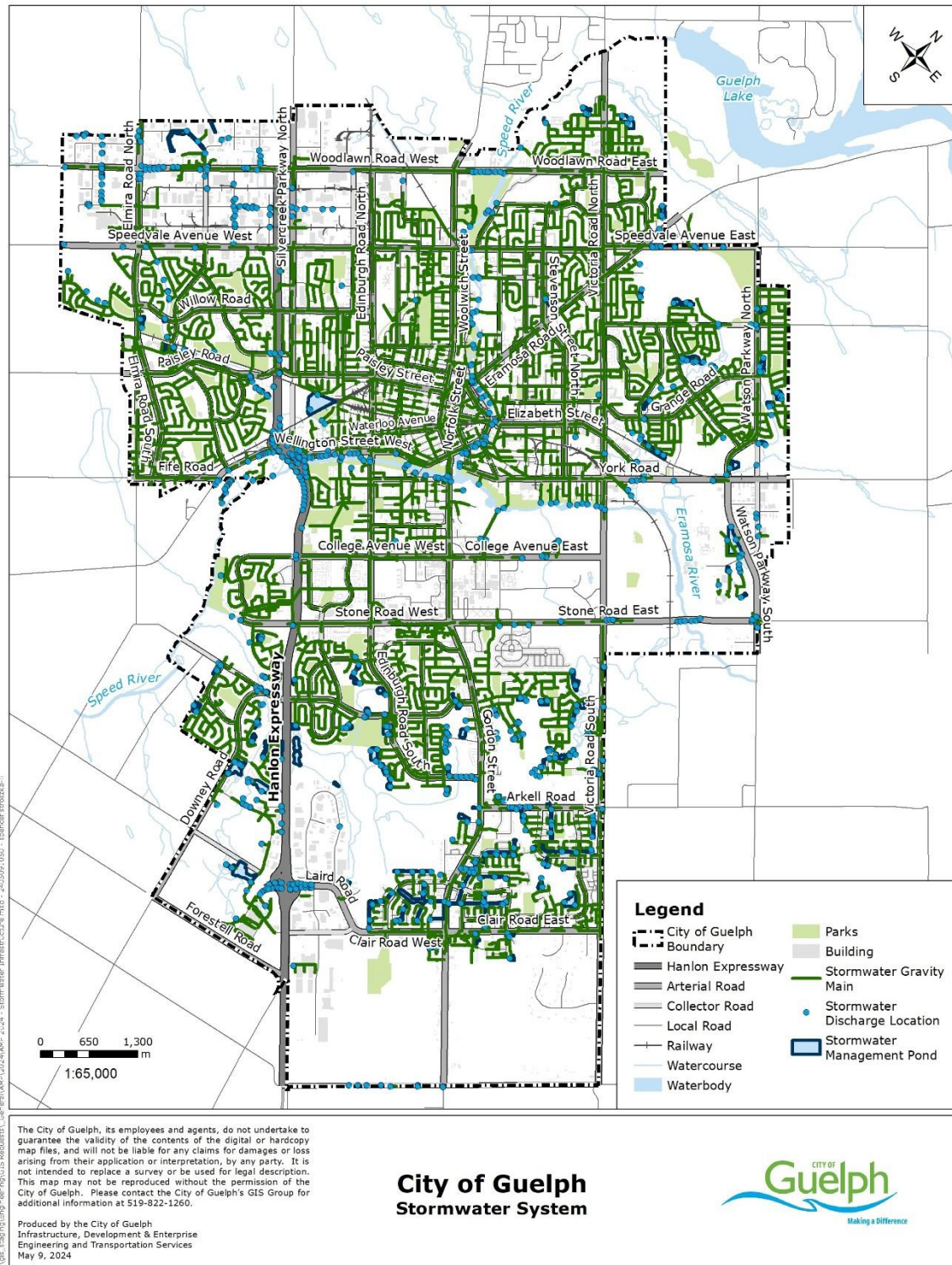
- Drainage ditches: normally built along the sides of a roadway ditches allow water run-off to pool and be directed to other destinations like pipes, or ponds, or natural water courses
- Outlets: engineered structures that help control the flow of water exiting a pipe and also prevent access into the pipes

The relative value of the pipes and other asset types is nearly evenly split between the total value of the stormwater assets.

**Figure 49: Stormwater Assets: Value by Category**



**Figure 50: City of Guelph Stormwater Management Network**



The asset types that are in the ancillary category of the stormwater portfolio are described in Table 36 which also includes the average conditions and the total replacement values of those types.

Stormwater management ponds are assigned a design lifecycle even though they are seldom replaced. Management ponds are passive assets by design – requiring little intervention to allow them to continue to operate. However, the ponds do require occasional maintenance and due to the nature of that work it can be quite costly. Assigning an estimated lifecycle to the ponds helps with estimating the future dates of that work.

**Table 36: Stormwater Ancillary Asset Types**

<b>Asset Type</b>	<b>Average Condition Rating</b>	<b>Total CRV</b>	<b>Total # records</b>
Clean out	VERY GOOD	\$50,000	0
Culvert	FAIR	\$ 57,850,000	1157
Inlet	FAIR	\$ 111,672,712	13122
Maintenance Hole	FAIR	\$ 327,115,129	7391
Oil - Grit Separator	GOOD	\$ 3,750,000	150
Stormwater Open Drain	FAIR	\$ 46,125,000	1845
Stormwater Pond	GOOD	\$ 124,000,000	124
Stormwater Sub-Drain	GOOD	\$ 11,150,000	446
Discharge Outlet	GOOD	\$ 27,600,000	552
<b>Sub-total</b>		<b>\$709,312,841</b>	

## State of the Stormwater Assets

### General Condition

The average condition of the assets in the stormwater portfolio is considered “good”. presents a chart that shows the value of assets per condition rating. The results show the majority of the assets – 65% - are in “fair” or better condition: a very good situation for the portfolio.

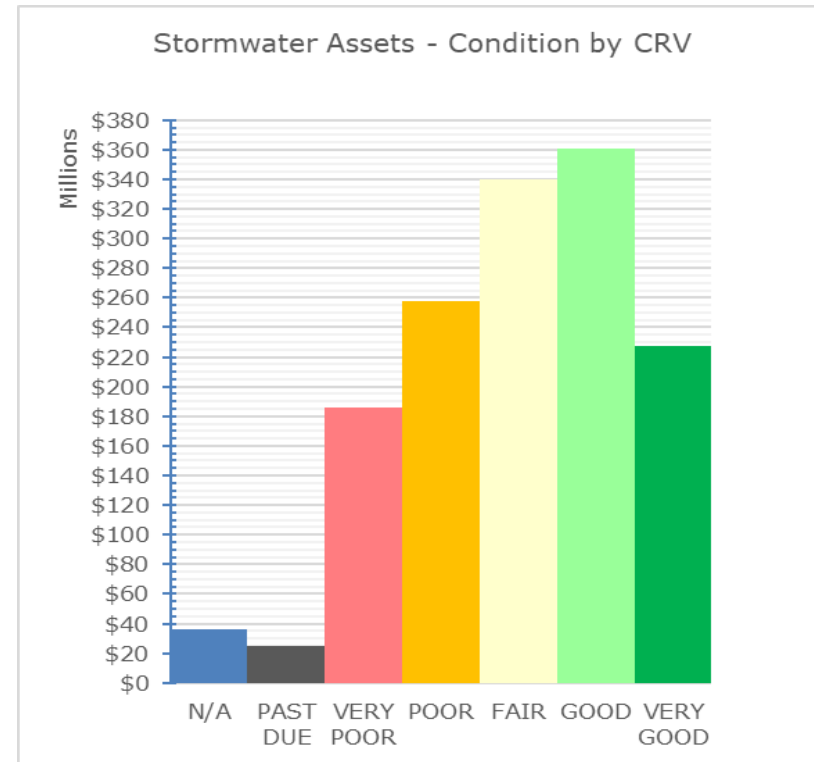
There is an existing backlog of deferred work with a value of approximately \$25M representing renewal work that was forecast as needed in 2024 or earlier. This is about 1.2% of the total portfolio, and most of the deferred work is identified in the ancillary assets, not the pipe network. Though not a small value, the backlog work consists mostly of minor assets.

Assets in “very poor” condition are valued at approximately \$186M or 13% of the portfolio. Very poor generally means that assets are within the last 20% of their lifecycle and should be planned to be replaced in the short-term. However, with consideration that collection pipes can have very long lifecycles of 80 years or more, a “very poor” rating could mean 15-16 years before replacement is recommended. The infrastructure renewal forecast presented in following sections provides a better understanding of the needs of the portfolio in the immediate and short-term future.

In general the assets in the stormwater services portfolio were assessed following the methods described in the “Determining Asset Condition” section of the Introduction chapter. Specific details related to

the assessment of the stormwater services assets are explained in following sections.

**Figure 51: Condition of Stormwater Services Assets by Replacement Value**

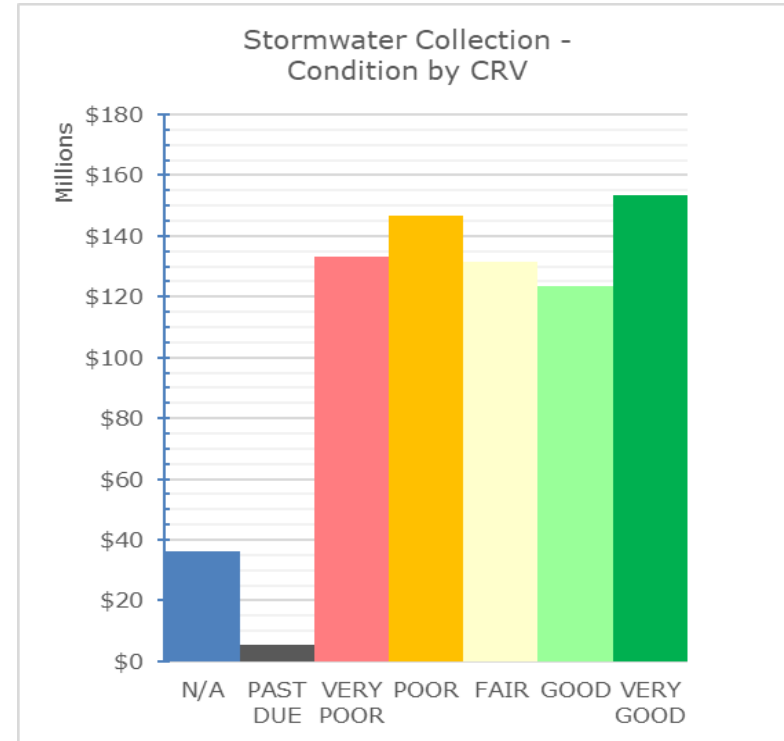


**Collection Network**

The primary method used to assess the condition of the sanitary collection pipes is to use CCTV (i.e. camera) services from 3<sup>rd</sup> party specialists. This process involves the use of remote controlled vehicles that travel the interior of the pipes while a camera records the physical condition of the pipe material and identifies issues like cracking or material deterioration as well as physical blockages in the pipe as a result of things like tree-root growth or sediment and sludge accumulation. The pipes are assigned a condition rating based on the NASSCO standards for CCTV Inspections<sup>26</sup> which is then converted to a 1 to 5 rating used for consistency in the AM analysis work. When CCTV information about a pipe asset is not available an age-based assessment rating is assigned.

The replacement value of the pipe network assets was determined by referring to historical contract costs for City of Guelph construction projects. The historical information was used to determine a unit cost per asset type which allowed a calculation of the value of the whole network.

**Figure 52: Condition of the Collection Pipe Network by Replacement Value**



Because the pipe network comprises the majority of the portfolio the condition rating distribution of the network closely matches the overall portfolio condition rating distribution.

The values of the pipe network by condition rating are presented in **Figure 52** and **Table 37**.

<sup>26</sup> <https://www.nassco.org/resources/nassco-specification-guidelines/>

**Table 37: Value and Length of Collection Pipes by Condition**

Asset Category	STORMWATER COLLECTION	Length (km)
<b>TOTAL CRV</b>	<b>\$729,843,857</b>	<b>448</b>
<b>N/A</b>	\$36,408,075	17.91
<b>PAST DUE</b>	\$5,498,283	3.32
<b>VERY POOR</b>	\$133,100,128	84.37
<b>POOR</b>	\$146,527,671	87.96
<b>FAIR</b>	\$131,575,739	82.49
<b>GOOD</b>	\$123,430,218	78.43
<b>VERY GOOD</b>	\$153,303,744	92.74

**Ancillary Assets**

All of the ancillary assets were assigned a condition rating based on their current age as a ratio of the expected normal lifecycle of each asset. These types of assets are not “assessed” regularly, however, City operations staff do inspect them and are aware of any maintenance or repair needs these assets will have. Many of these ancillary assets have regular preventive maintenance performed on them which provides staff with further information about the current condition of the assets.

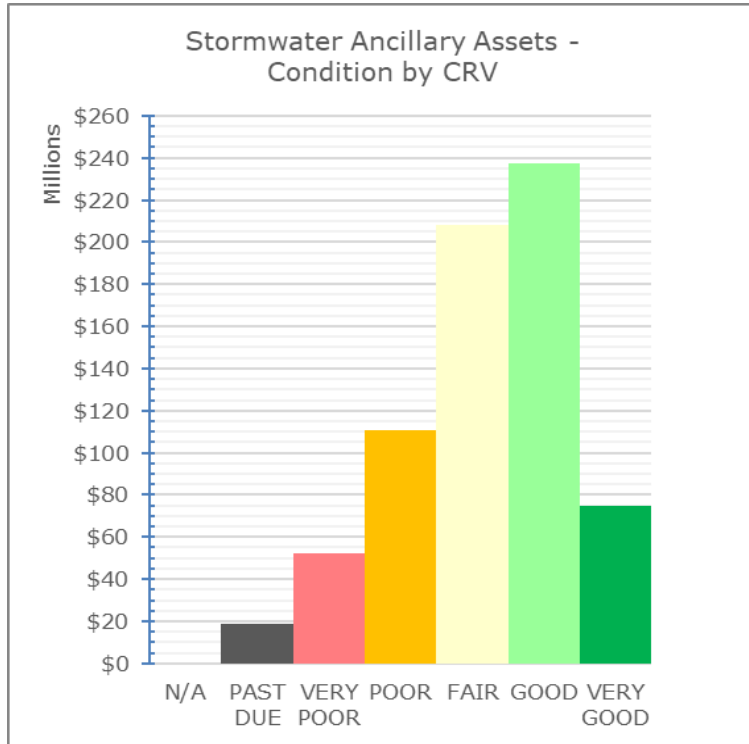
The value of the ancillary assets by condition rating is presented in **Figure 53** and **Table 38**.

**Table 38: Condition of Ancillary Assets by Value**

Asset Category	STORMWATER ANCILLARY
<b>TOTAL CRV</b>	<b>\$702,312,842</b>
<b>N/A</b>	\$0
<b>PAST DUE</b>	\$18,996,717
<b>VERY POOR</b>	\$52,506,130
<b>POOR</b>	\$110,839,709
<b>FAIR</b>	\$208,248,400
<b>GOOD</b>	\$237,224,830
<b>VERY GOOD</b>	\$74,497,057



**Figure 53: Stormwater Ancillary Assets Condition by Replacement Value**



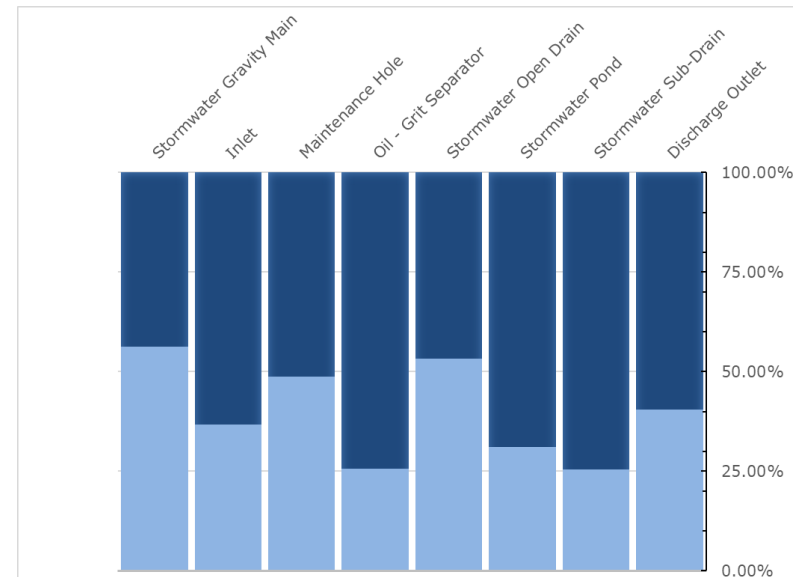
**Asset Ages**

All stormwater asset types have long lifecycles. Pipes can have useful lifecycles of 80 years or more. Management ponds and ditches can have similar lifecycles provided that proper maintenance activities are completed. The same is true of the inlet and outlet structures that are normally made of very durable materials. The long lifecycles of stormwater assets is aided by the fact that for the most part the assets are passive in nature – once built, there are few if any

mechanical or moving parts that would contribute to a more rapid deterioration.

The City’s stormwater assets have an average age of approximately 31 years. As **Figure 54** shows this means the majority of the assets have more than 50% of their lifecycles remaining.

**Figure 54: Ages of Stormwater Assets as a Percent of Full Lifecycle**

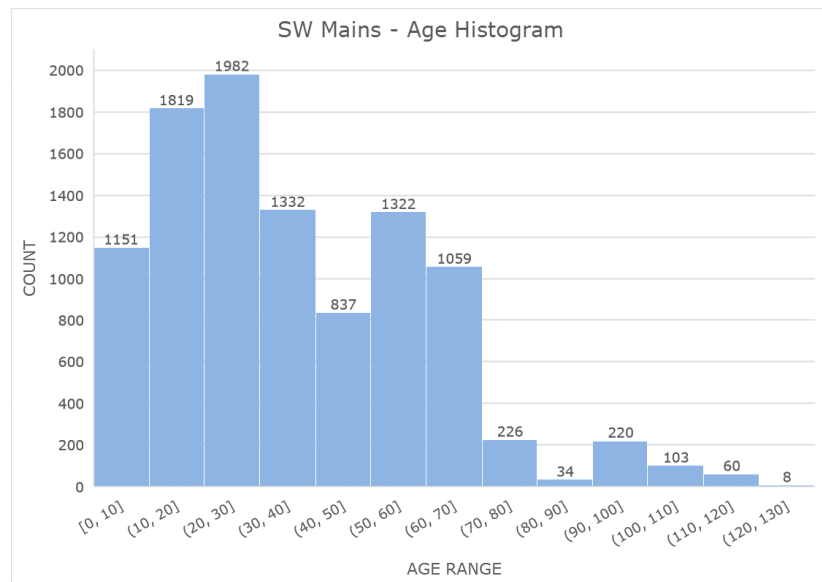


By reviewing an age-histogram of the stormwater mains a basic prediction of needs can be identified. See **Figure 55**. The largest group of stormwater mains by age are from 20-30 years old, with another large group aged from 10-20 years old. Using an approximate expected lifecycle of 80 years this implies

that between 2074-2084 the City should prepare for significant stormwater renewal expenses.

Prior to that event occurring there is another large group of stormwater mains currently between 50-70 years old, implying that from around 2034 to 2054 there will be a increase in the renewal needs compared to the current rate of renewals.

**Figure 55: Age Histogram, Stormwater Collection Mains**



In summary, the combination of age and condition information implies that the stormwater collection network is in a normal state and has many years of good service life remaining. Within the next ten-years the forecast rate of renewal is expected to be “normal” meaning no extra volume of work is forecast as a large group of assets reach the end of their lifecycle at once. However beyond the ten-year forecast this will change.

**Renewal Needs vs. Funding Analysis**

In addition to following the details in the “General Information and Methodology” section the following points provide additional information regarding how the replacement values and forecast replacement years for stormwater services assets were determined.

**Lifecycle Renewal Planning and Replacement Costs**

Stormwater collection pipes and many of the ancillary asset types are valued by using historic construction costs and developing standard unit costs per asset types which are then applied to the inventory data to generate the replacement costs per asset.

The stormwater services portfolio does contain some asset types that are unique like ditches and stormwater management ponds. For these asset types historical information was reviewed when available. City staff or subject matter experts were also contacted to confirm the values.

Many stormwater assets are renewed as part of a larger whole corridor re-construction project where the primary driver of the project may not be the needs of

the stormwater assets but another type of asset. For this reason the recommended replacement years for individual assets should not be accepted as absolute. They are recommendations that are one of the variables considered when the total asset renewal needs of the City are considered as a whole in the creation of project scopes of work and budgets.

### **Funding Availability**

Stormwater infrastructure renewal needs are funded entirely from a single dedicated reserve fund. The contributions to this fund are provided from the revenue collected as part of the City's water, wastewater and stormwater charges as outlined on the City's website. The estimated future values of annual contributions to this fund were used as the available funding value when determining the difference between forecast needs.

Prior to completing this review the following steps were taken:

- Forecast renewal needs are calculated based on 2024 replacement cost estimates and are

inflated by 3% per year in subsequent years to account for inflation

- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results of this review are summarized in the table and chart below.

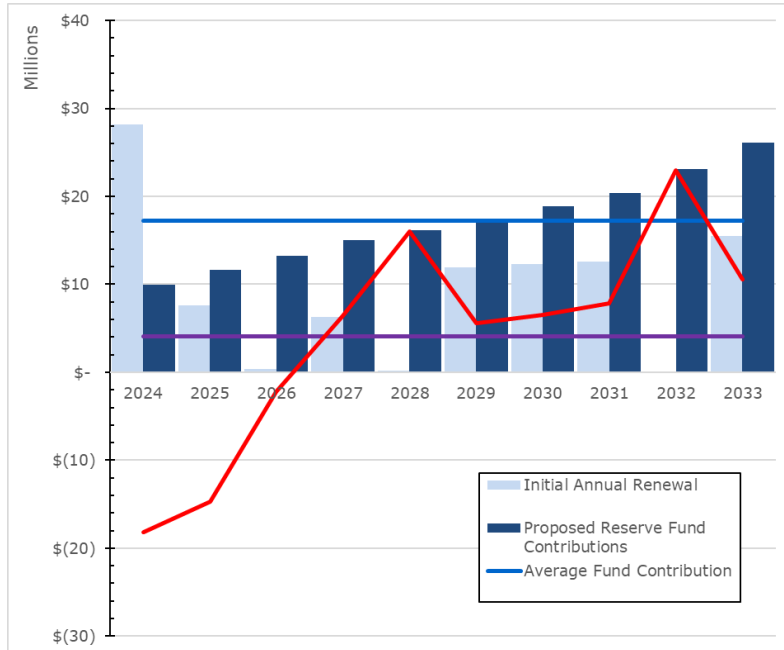
**Table 39: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Forecast Renewal Costs</b>	(\$28.17)	(\$7.60)	(\$0.38)	(\$6.33)	(\$0.19)	(\$11.88)	(\$12.33)	(\$12.54)	(\$0.07)	(\$15.51)
<b>Planned Reserve Fund Contributions</b>	\$9.97	\$11.67	\$13.25	\$15.05	\$16.18	\$17.45	\$18.87	\$20.41	\$23.08	\$26.09
<b>Cumulative Gap</b>	(\$18.20)	(\$14.67)	(\$2.24)	\$6.41	\$15.99	\$5.57	\$6.55	\$7.87	\$23.00	\$10.58

**Table 40: Renewal Forecast Summary Information (in \$ millions)**

Average Annual Renewal Need	(\$9.50)
Average Annual Fund Contribution	\$17.20
Average Annual Gap (cumulative)	\$4.09
Forecast Renewals	(\$94.99)
Forecast Res. Funds	\$172.02
10-Year Funding Gap	\$77.02

**Figure 56: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contribution**



The results of the analysis show that with the current funding forecast for the Stormwater reserve fund and the current needs analysis that by 2027 there would be a net positive funding gap – that is the value of available funding is greater than the forecast needs.

This occurs despite the 2024 backlog of work that is much larger than available funding for that year. This situation makes the stormwater services unique compared to the other services but the results should not be interpreted to mean that the stormwater user fees can be lowered. The same forecast model expanded to 2049 (25 years) suggests that in year

2034 there is a predicted large volume work that would be greater than the funding that year, causing the funding gap to become negative again. The pattern repeats on about a 10-12 year cycle. In practice these “spikes” of identified renewal work would be distributed across multiple years to better match the available funding, but in general the renewal forecast corresponds to the age histogram presented previously that suggest larger volumes of renewal work can be expected to begin around 2034 until 2054.

**Figure 57: 25-Year Forecast Renewal Needs Compared to Reserve Fund Contributions**

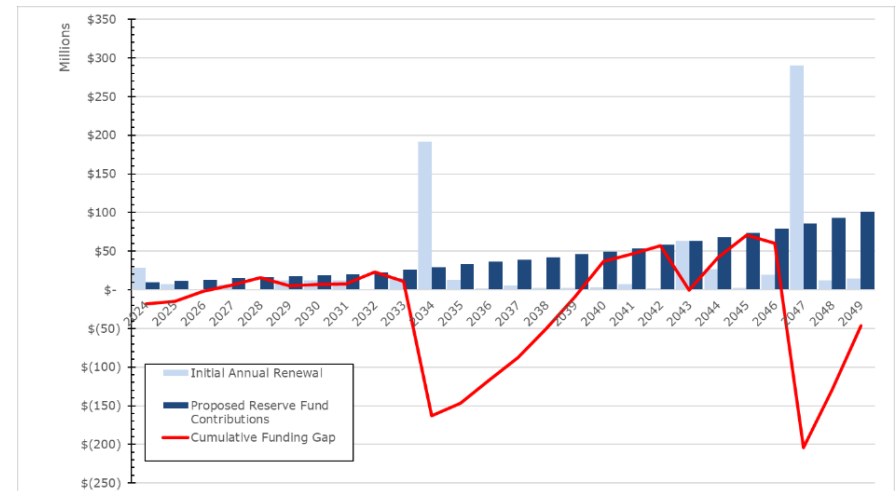


Figure 57 show two years with much higher than average forecast renewal needs. These might represent groups of stormwater assets in or near a single subdivision that was constructed as many years ago as the normal lifecycle of the assets, likely collection pipes. A detailed review of the specific

assets forecast for renewal in that time period will help prioritize those areas.

Reducing the available reserve fund values based on the 10-year results ending in 2033 would mean that the funding required for the years beyond that would be insufficient.

### **Operations and Maintenance Activities**

The stormwater assets tend to be passive in nature with minimal requirements for daily operations or monitoring. There are no facilities associated with the stormwater assets, and so operating costs that would be incurred by some of the other services would not apply.

The typical maintenance activities associated with Stormwater assets include:

- Silt and sediment or other material removal from the collection pipes
- Flushing and CCTV scanning
- Cleaning of outflow structures
- regular monitoring and inspection of the assets to ascertain their performance levels and functionality
- repairs to any damaged pipes or other assets
- other preventive maintenance activities

The largest maintenance task associated with the stormwater management ponds. There is an occasional need to remove built-up silt from the bottom of the pond to ensure the volume capacity limit of the pond is not reduced. The frequency of this task changes based on the characteristics of each pond, but in general it is an activity planned for once every 15-25 years. As discussed in the State of the

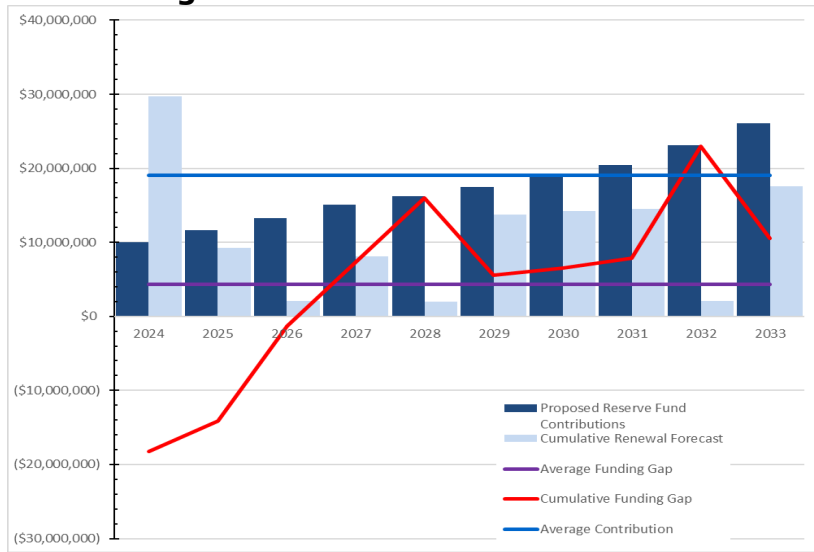
Assets section the assigned lifecycle for the ponds provides a tentative guideline to the scheduling of the silt removal activities.

Additional costs for maintenance vehicles (purchase and daily use), administration costs and utility costs are included in the total operations funding need analysis. Most of the maintenance work on the stormwater assets is completed by the City's Operations staff with the engagement of contractors to complete speciality work as needed.

The annual budget for this work in 2023 was \$1.59M. This level of operations funding resourcing does allow much of the operations needs to be met, but according to staff responsible for this work they are meeting the minimum requirements and not able to be pro-active in applying additional work that could help reduce long-term renewal needs. The desired annual operations budget for 2024 was requested to be approximately \$2.1M compared to an approval of \$1.58M – a reduction of 33%. An annual operations budget of \$3M would be considered optimum according to staff.

The additional funding could be applied to actions that will extend the longevity of the assets, thus reducing the future volume of complete asset replacements.

**Figure 58: 10-Year Renewal & Operations Needs vs. Funding**



**Table 41: 10-Year Forecast Renewal & Operations Needs vs. Funding (in \$ millions)**

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
RENEWAL FORECAST	\$28.17	\$7.60	\$0.38	\$6.33	\$0.19	\$11.88	\$12.33	\$12.54	\$0.07	\$15.51
OPERATIONS FORECAST	\$1.59	\$1.63	\$1.68	\$1.73	\$1.79	\$1.84	\$1.89	\$1.95	\$2.01	\$2.07
SUB-TOTAL	\$29.76	\$9.23	\$2.06	\$8.07	\$1.98	\$13.72	\$14.22	\$14.49	\$2.08	\$17.58
CAPITAL RESERVE FUND CONTRIBUTION	\$9.97	\$11.67	\$13.25	\$15.05	\$16.18	\$17.45	\$18.87	\$20.41	\$23.08	\$26.09
OPS BUDGET CONTRIBUTION	\$1.58	\$1.62	\$1.67	\$1.72	\$1.78	\$1.83	\$1.88	\$1.94	\$2.00	\$2.06
SUB-TOTAL	\$11.55	\$13.30	\$14.92	\$16.77	\$17.96	\$19.28	\$20.76	\$22.35	\$25.07	\$28.15
ANNUAL CUMULATIVE GAP	(\$18.21)	(\$14.14)	(\$1.28)	\$7.42	\$15.98	\$5.56	\$6.53	\$7.86	\$22.99	\$10.57



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## Master & Major Capital Plans

### City Growth

Expansion of the Stormwater system will occur with the expansion of the City, particularly as new residential and business areas are developed. While many of the capital costs associated with constructing those new assets will be covered by developers directly or by Development Charge revenue once the new assets are operational the City will assume responsibility for the annual operations and maintenance needs of the assets and the eventual renewal needs. The timing of the renewal needs is very challenging to predict, but for most stormwater assets that timeline is beyond the time period scope of this AMP. The increased operational costs are represented using an estimated rate of growth in the total portfolio and determining an appropriate ratio of the increasing value of the portfolio as a baseline minimum operational budget.

There are no indications that the City will not be able meet the increased demand due to this growth, however, as discussed in the "Operations and Maintenance Activities" section there is a concern that there is insufficient funding being provided today that limits the implementation of proactive maintenance programs that would help extend the lifecycle of the assets. As the network expands, if the operations budgets do not increase accordingly in size the level of operations funding will not be sufficient to cover the minimum activities done today.

Other factors that will affect future stormwater renewal needs will be the need to up-size existing pipes to accommodate increased flow – a key mitigation strategy against the risks of climate change and the trend of more intense storms more frequently. Pipe upsizing is not considered infrastructure renewal but is instead considered service enhancement and those types of project are eligible for other sources of funding to implement them. However, the need to up-size pipes may in some cases override the physical needs of other pipes. All of these and other variables are considered when future project planning takes place.

**Levels of Service**

O.Reg 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as “Customer” or “Technical” LOS in alignment with the O.Reg 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

**Table 42: Stormwater Services Level of Service Metrics**

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Technical	1. Percentage of properties in municipality resilient to a 100-year storm.	Our 2023 Stormwater Management Master Plan included a quasi-calibrated major/minor system hydrologic and hydraulic model. This model demonstrated that climate change and intensification pose a risk to the level of service provided by the storm system. Low Impact Development strategies were recommended to try and mitigate this risk and build climate change resiliency into the system. It’s also recommended we calibrate the existing sewer network model via flow monitoring. The model calibration will permit the City to more accurately evaluate and select the preferred remedial approaches to improve the level of service. It was further recommended that upcoming capital roads projects consider the outputs of the calibrated model when sizing storm sewer upgrades.

Strategic Theme	LOS Type	Performance Measure	Current Performance
		<p>2. Percentage of the municipal stormwater management system resilient to a 5-year storm.</p>	<p>Our 2023 Stormwater Management Master Plan included a quasi-calibrated major/minor system hydrologic and hydraulic model. This model demonstrated that climate change and intensification pose a risk to the level of service provided by the storm system. Low Impact Development strategies were recommended to try and mitigate this risk and build climate change resiliency into the system. It's also recommended we calibrate the existing sewer network model via flow monitoring. The model calibration will permit the City to more accurately evaluate and select the preferred remedial approaches to improve the level of service. It was further recommended that upcoming capital roads projects consider the outputs of the calibrated model when sizing storm sewer upgrades.</p>
	Customer	<p>Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.</p>	<p>The City storm water network covers approximately 448 km of storm water pipes, 25 storm water channels, 916 storm water culverts, 187 oil and grit separators and 124 storm water management ponds.</p>

Strategic Theme	LOS Type	Performance Measure	Current Performance
City Building	Technical	% of community with stormwater quality control	<p>The 2023 SWM-MP provides a summary of existing conditions based on available information extracted from background reports such as watershed studies and monitoring programs, GIS mapping and City databases. Guelph covers approximately 88 km<sup>2</sup> of land.</p> <p>The City is composed of 23 sub watersheds with approximately 90 km of watercourses, and is characterized by a mixture of land-uses. SWM facilities within the City provide various levels of control to 2,899 ha (46.6 percent) of the City. Of this area, approximately 1,746 ha (28.1 percent) are controlled for water quality, and 2,335 ha (37.6 percent) are controlled for water quantity.</p> <p>Accordingly, there are approximately 3,318ha (53.4 percent of urban area) that do not have either water quality or quantity control, with much of this area built before current SWM requirements/ policies.</p>
People & Economy	Technical	Number of service requests	2021: 102 SR, 771.7mm rainfall 2022: 113 SR, 438.5mm rainfall 2023: 96 SR, 813.1mm rainfall
	Customer	Description of the strategies used to keep assets and asset services safe and accessible to the public	storm sewer flushing, catch basin cleaning, sediment removal (OGS and ponds), street sweeping, erosion and sediment control, leaf pick-up and removal, cross connection control, public education, business education and awareness, snow plowing and storage

Strategic Theme	LOS Type	Performance Measure	Current Performance
Environment	Customer	Description of environmental sustainability initiatives (e.g., GHG emission mitigation, water usage reduction).	The 2023 SWM-MP included two new policy documents including Stormwater Infiltration Policy Recommendations and Stormwater Design Criteria and Targets. As recommended in the MP, the City updated its Development Engineering Manual in 2023 to account for these new policy documents.

## Risks to the Stormwater Services

### Climate Change

Stormwater management assets already play an essential role in the mitigation of risks associated with rainwater and snow meltwater in the built-up areas of the City. As climate change effects are expected to bring more intense and more frequent storms this role will become more critical and the stormwater assets will need to be ready for this.

This may mean that some stormwater pipes may need to be upsized to be able to manage increased water flow regardless of the current condition of the pipes. Stormwater ponds may need to be enlarged or more ponds may be required. Areas where stormwater currently drains into open ditches may require a buried pipe and related inflow assets to prevent erosion along roadway edges as a result of larger and faster volumes water flowing in a ditch. Inlet and outflow structures may need reinforcing and culverts may need enlarging.

All of these activities represent renewing assets not due to their condition, but due to their functional

performances and their abilities to manage future predicted increases in stormwater volumes.

Other alternatives to mitigate the risks of climate change can be done on lands to be developed in the future. With proper design, new materials and use of natural type assets and landscaping much of the initial stormwater volume might be able to be deviated away from the stormwater collection network thus reducing the impact to the assets. These are situations that would be site specific but are actions that are encouraged to be explored.

### Old Assets

As the age of a collection pipe or a structure like a culvert increases so to does the potential for damage due to issues like tree root growth breaking through a pipe wall, build-up of sediment on the interior of the pipe that reduces flow rates, and material deterioration that can lead to cracking or a reduction in the strength of the pipe and the joints between two or more pipes. All of these types of issues result in the

potential for groundwater infiltration into the pipes which increases the volume of flow but the damage to the pipe itself reduces functionality and capacity.

The CCTV program is critical to the early detection of any problems in the pipe network and prevention of these occurrences. It is a key program in the City's overall asset management plans. Funding for the CCTV program must be maintained to allow staff the ability to detect and repair small problems before they become larger.

### **Funding Gap**

The analysis for the AMP is predicting a positive funding gap at the end of the 10-year forecast period but extending the forecast beyond that period suggest a negative funding gap. The current financial strategies in use to calculate the future funding availability should retain the status-quo as a balance against the up and down pattern of negative to positive annual funding gaps in the future.

As the City continues to grow and the stormwater network expands the requirements for maintenance, renewal and service enhancement will increase. The initial cost of the infrastructure may in some cases be covered by revenue from development charges, but recent changes in how those fees are managed has resulted in a lower than historical revenue further reducing the funding available to the City to properly manage infrastructure.

Sound operations and maintenance planning will help alleviate future capital needs, provided that the funding for these two essential activities is adequate. The current backlog value suggests this has been a

problem in the past. Despite the current analysis showing a positive funding gap for the stormwater services this may change in the future if revenue from stormwater usage rates does not meet current expectations.

### **Summary and Recommendations**

Failure to complete necessary work often results in the backlog or deferred work values increasing, and historical trends indicate this has been the norm for many years. If the challenge of not mitigating the backlog and continuing with the forecast work is not accomplished it is very likely that the increased backlog will result in decreased levels of service being offered by the stormwater services assets, along with potential for increased unplanned work due to asset failure, which in turn will result in greater resource challenges to be met.

This concern is not new but is growing in importance. The ability to complete proactive maintenance and operations tasks that can extend the lifecycle of assets and reduced long-term renewal needs is already a concern that will grow as the stormwater network expands and an increase in renewals can be expected as groups of assets age together towards their expected normal lives.

To prepare for these future expectations CAM will work with stormwater operations staff to identify areas and asset types that would benefit most from mid-life maintenance and repairs. These would include the assets that are about halfway through their lifecycle – in the case of stormwater mains this means those constructed between 1980-1990 with additional

consideration for those constructed between 1970-1980. Assets that are older than this would not benefit from the normal type of midlife renewals that can be done and are best considered for complete replacement.

To successfully complete this work will require increased investment in the operations funding provided. Combined with maintaining the current capital renewal funding strategies in place the results will be a stormwater network that will be able to continue to deliver the expected levels of service for many years.

## Chapter 6: City of Guelph Facilities Management





**Quick Facts: City of Guelph Administration & Operations Facilities Services Assets**

Total value of facilities	\$1,298,071,595
Number of facilities & buildings	73 Properties 195 Buildings
Average Condition of the Facilities	Fair

## Introduction

### Overview of Real Estate Holdings

The City's Facility and Energy Management group is responsible for the capital rehabilitation and daily operations needs of the various facilities, buildings, and parcels of land that are owned or leased by the City.

As of Oct. 2019 the City owned approximately 2,428Ha (6,000 acres) of real estate assets. This includes over 3,350 properties that are used for a variety of purposes including:

- approximately 141Ha (350 acres) of facilities (73 properties including infrastructure and buildings),
- 195 buildings
- approximately 971Ha (2,400 acres) of natural area (568 properties including ponds, spillways, parks, forest, wetland, walkways, and trails),
- approximately 61Ha (150 acres) of industrial/commercial (13 properties including business park, etc.)
- approximately 1,214Ha (3,000 acres) of land for roads (2,666 properties including road widenings and reserves), and
- approximately 40Ha (100 acres) of land consisting of 49 properties for Guelph Junction Railway lands.

To maximize the use of some of the City's landholdings, the City leases and licenses approximately 50 of its properties. These include parking areas, buildings, bus bays, solar facilities, and land for communications towers.

In other situations, the City is the leasee, renting property space from 3<sup>rd</sup> party facility owners. Each lease is different but in most cases the City is responsible for some of the maintenance and renewal needs of equipment or component assets at the leased space. Most often these would be assets that are required over and above the base building requirements to support the City services at that space.

All facilities related major capital projects including needs assessments, design and planning for renovations and new buildings, energy efficiency upgrades, building equipment replacement and lease management is directed by staff from the Facilities team. Third party service providers are engaged to complete most of these projects through public procurement and tendering processes.

The Corporate Building Maintenance team is responsible for the scheduled and unscheduled maintenance activities as well as activities like janitorial services and work with facility security. City staff occupy these roles with procured assistance if and when needed.

Combined the two groups are active at all of the facilities and buildings across the City, regardless of the service area or function of the facility. However, for the purposes of the AMP reporting the majority of the facility information is associated with the service area occupying the buildings. For example, most of the information regarding the fire stations will be

found in the chapter describing the Guelph Fire Services assets. Likewise for all the other services.

There are several facilities or properties that do not fit neatly with one of the defined asset service areas. The summary of these properties is included with the Administration & Operations facilities.

Major facility needs assessments and detailed functional requirements studies are the responsibility of the Facilities and Energy Management group. In recent years the Corporate Asset Management team (CAM) has been managing annual building condition assessment programs. The information from the two sets of information is reviewed by staff in both the service areas and the Facilities team to develop specific needs and project plans to satisfy the needs of the City.

### **Value and Age of the Facilities**

The replacement value of the facilities has been estimated using unit costs based on recent historic trends for construction in the Guelph region. These costs represent an estimated value to replace the existing facilities with a new version that is the same size and provides the same services built to modern standards. The values do not include any land acquisition costs or costs that would be incurred by changing the size or functions of the buildings. The following table presents the values of the facilities organized by asset category.

The newest building was constructed in 2022 (Hanlon Creek Washrooms) while the oldest in the portfolio was originally constructed in 1810 (Guelph Civic Museum building). Between these two extremes are

facilities of all ages. The original construction date is not a clear metric that defines the needs of a particular building because through the course of their lifecycle all buildings are renovated by replacing single elements at a time or in larger projects that incorporate major changes and element or whole system replacements, however, the average age of the facilities by asset category does provide a simple indication of a preliminary understanding of the condition of the facilities and the levels of service they could be delivering.

Note that the information provided in the table only includes those facilities with buildings and does not include vacant lands, including the Denver Rd. stockyard used by operations for bulk material storage. Additionally, there are several buildings in the City's inventory that were originally constructed prior to 1920. While most of these have been significantly upgraded from their original form their individual old ages greatly weighs the average age results towards the high side.

**Table 43: City of Guelph Facilities: value by category**

<b>Asset Category</b>	<b>Sub-Total Replacement Value</b>	<b>Average Age</b>
Admin / Operations / Other	\$162,787,558	82
Culture	\$150,926,340	98
Emergency Services (Combined)	\$26,785,500	13
Fire Services	\$33,844,300	40
Guelph Public Library	\$30,219,900	64
Guelph Wellington Paramedics	\$9,268,000	38
Parking	\$60,165,558	29
Parks	\$12,563,304	48
Guelph Police Services	\$32,088,750	See notes
Recreation	\$164,884,992	46
Solid Waste	\$94,327,373	54
Transit	\$16,022,243	32
Water	\$247,612,398	28
Wastewater	\$256,575,379	30
<b>Total Facilities Replacement Value</b>	<b>\$1,298,071,595</b>	

**Renewal Needs**

The average age of the facilities is provided only as a method to provide a general overview of the state of the facilities. However, in recognition of the ageing

facilities and that in particular many of the operations facilities that were built in the 1960s there is a recognition that many of the, the Facilities have reached the end of their useful life. In partnership with staff in each service area the Facilities team has been completing various needs assessments that aim to identify how well the existing facilities are meeting expectations and what is recommended to improve the City’s service delivery. A summary of some of the major recommendations that will impact current and future facility infrastructure are listed below.

**Operational Needs**

A 2019 Operational Needs Assessment identified that several of the existing facilities do not have adequate space to accommodate existing staff levels and fleet inventory. Additionally, due to the age of some of the facilities the layout or individual elements in the facility are no longer suitable to support modern operations. Problems or new needs identified include:

- The growing City will require additions to the operating fleet and staff to support those tasks
- the electrification of the Guelph Transit bus fleet requires new facilities to support charging functionality
- existing vehicle maintenance bays are too small or otherwise inadequate to service modern heavy fleet vehicles
- insufficient indoor space for storage leading to higher maintenance and shorter lifecycles
- constrained yard and facility compound space limits vehicle flow
- limited or insufficient bulk storage
- limited parts inventory storage space

The 2019 assessment has resulted in the design process currently in progress of a new main Transit Service garage and administration building to be envisioned at the City owned property at Stone Road East and Watson Parkway South. The new facility is also intended to provide a new space for I Fleet services maintenance and administration services.

A revised Operations Facilities Long-Term Plan will examine the existing Operational facilities at 45 Municipal St., 50 Municipal St., 170 Watson Rd. South, 69 Marilyn Drive (Parks Operations) and 186 Eastview Rd. to determine how to best use these sites for the various operations functions and needs of Public Works, Parks, Solid Waste and Corporate Building Maintenance. This timing and sequence of work will be a function of the capital budget process.

### **Guelph Fire Services and Guelph Wellington Paramedics**

A 2022 needs assessment examined what Guelph Fire Services and Guelph-Wellington Paramedic Services require. Guelph Fire Services has six (6) stations located within the City boundaries, all of which are City owned buildings. The Paramedics services ambulance bases are mostly in leased buildings with locations within the City boundary but also in the surrounding Wellington County. The following points are the major highlights of the assessment:

- replace eight (8) of the existing Paramedics stations that are located in leased spaces by 2025/2026
- Replace Paramedic station 12 at 34 Gordon St. before 2033

- Consolidate the two Paramedics warehouse facilities to one
- Identify a potential training facility for Paramedics
- Replace Fire Station 1 before 2033
- Expand and revise layout of Fire Station 3 prior to 2028
- Replace Fire Station 2 prior to 2043
- Construct a permanent 'burn tower' for fire fighter training to replace an existing portable trailer unit.

Seven of the eight recommended Paramedic stations would be funded by County of Wellington while the eighth would be the responsibility of the City with an estimated capital cost of \$21.5M (2023).

The total capital cost estimate for the recommended work on the fire stations was \$32M in 2023. It is likely that this will increase to more than \$40M as final needs and details are resolved.

### **Water Services**

Facilities & Energy Management is working with Water Services to manage the construction of a new Operations / Administration building with construction expected to begin in 2027. This new facility with an estimated total capital project cost of \$19.2M will replace the existing administration facility at the F.M. Woods Water Treatment Plant providing increased space and improved layout for staff.

### **Recreation**

Construction of the South End Community Centre project is underway with the facility expected to open in late 2026. When this major project is completed

there will be extensive renovations at the other recreation facilities based on the needs identified in the various building condition assessment reports and functional needs assessments. At this time no definite project or financial requirements have been identified. Refer to the Recreation chapter for information on the expected facility renewal needs.

### **Parks**

As described above there are plans to improve the Parks Operations facilities as part of the larger Operations Facilities Long-Term Plan. Ideally Parks operations staff will be located in facilities at various locations around the City to allow staff to access the various parks with minimal travel time from one location to another. The current Parks operations facilities have been recognized as being too small and the buildings having inadequate layouts to allow efficient working processes. A preliminary estimate of \$32.4M over the next ten-years has been identified in the Capital Forecast for this work which may involve a combination of renovating existing facilities and

construction of new additional spaces attached to or separate from existing buildings. Work is being done to identify a suitable location for the facility.

Most of the Parks buildings are small structures with simple construction like picnic shelters, washrooms or canteen buildings. Several renovation projects per year are completed to ensure the buildings remain in good functional condition.

### **More Information**

To present a complete picture of the status of the assets by service category (i.e. function) and the costs forecast in future years per service category more information on facilities is included in the chapters for each service area. This includes more details on the values, current conditions and renewal needs, combined with forecasts for capital funding per service category to address the identified renewals. The information in those chapters has been prepared with a combination of input from CAM and Facilities and Energy Management data.

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## Corporate Administration and Operations Facilities

### Introduction

The City of Guelph, like any municipality, has a workforce that manages and provides various services to the City residents and businesses. The City government requires a space where the public is welcome to attend and conduct business. Operations and maintenance crews require work shops and garages where equipment can be maintained. The City also is responsible for some facilities that are used by non-City occupants.

To provide these services the City owns and manages a number of facilities at different sites across the City. Collectively these are categorized as Administration and Operations Facilities. As described in the previous chapter the City's Facilities & Energy Management department is generally responsible for capital needs renewal for all City facilities regardless of which service area is using a facility. However, following the requirements of O.Reg 588/17 and general AM best practices the review of asset information and identification of needs for a particular facility is included in the AMP category for that service area (i.e. fire station buildings are include in the asset inventory for the Guelph Fire Department).

### State of the Administration & Operations

#### Facilities Assets

The condition of the assets in the Administration & Operations Facilities services portfolio was obtained by engaging consultants to complete Building Condition Assessments (FCA). This is standard practice for owners of facilities. At the end of a FCA project the

City receives a report for each building detailing the findings of the consultants. As discussed elsewhere in the AMP, CAM manages FCA programs with a goal to inspect each facility and building at approximately a 5-year period between inspections. This means that some of the assessment data used in the AMP dates to 2018 or 2019. All FCA condition data is pro-rated to a 2024 value using linear deterioration models that adjust the original assessment rating to a 2024 value. A similar step is applied to the recommended action costs: all costs in the AMP have been inflated to 2024\$ values from the original year they were identified using published StatsCan Consumer Price Index factors.

A small number of smaller or lower priority buildings have not yet been assessed through these programs.

A FCA assessment consists of visual non-destructive testing and observations of the individual components and systems (i.e. the assets) in each building. Each asset is assigned a physical condition based on criteria defined by the City of Guelph that the consultants are directed to follow. The assessments also include recommended "actions" – any type of work on an asset ranging from full or partial replacement or minor cyclical repairs - and a timeline for those actions to occur.

As part of each assessment every asset is assigned a replacement value. Consultants generally make use of published construction industry costing reference material like R.S. Means or Marshall and Swift

combined with knowledge of building construction cost trends in the Guelph region to determine these values. Upon receipt of the data City staff review the recommendations and develop project plans based on those recommendations in combination with other priorities or logical groupings of work.

The total replacement cost of each facility is not a sum of each individual asset the facility is comprised of - past experience has shown this to be inaccurate. Staff in the City's Facilities & Energy Management department regularly monitor the current costs of building construction in Guelph and the surrounding region and from this information they use average construction unit costs that are adjusted for each unique building type. The unit cost multiplied by the area of the building is then used to establish an overall facility replacement value. This overall calculated replacement cost has also been used by the City's Finance department as part of the data in the recently approved Development Charges Background Study.

Table 44 presents a list of each facility and the buildings at those facilities that are included in the Administration and Operations Facilities category and have also been assessed<sup>i</sup>. The average condition of the

assets at the facility has been calculated and is used to represent the average condition of each building

The 2024 calculated backlog of deferred work was calculated to be approximately \$9.5M. The majority of this value is represented by three buildings – the Drill Hall, Carter Farm and Forestell House – all of which are unoccupied and would require very extensive renovations to be able to be occupied but are being retained primarily because of heritage reasons. Staff are aware of the needs and condition of these assets.

The value of “very poor” or “poor” assets is estimated at a further \$28.6M. These include buildings at the 45 Municipal Rd. site and the Riverside Park Cottage, and individual elements at other facilities. All of the buildings at 45 Municipal and the Riverside Cottage are included in the Operations needs future plans previously discussed and initial renewal cost estimates are included in the 10-year renewal forecast for the Admin & Operations portfolio.

The state of the portfolio is well understood by the Facilities team staff and planning efforts at improving the status of the assets to address the fulfill the needs of the service area staff have begun.



**Table 44: Summary of Administration and Operations Facilities**

Facility	Building	CONDITION	Year Built	Calculated CRV	Comments
45 Municipal Street	45 municipal admin / stores / garage	FAIR	1967	\$15,557,400	
45 Municipal Street	45 municipal asphalt storage building	POOR	2007	\$ 1,165,500	
45 Municipal Street	45 municipal gravel storage building	POOR	1984	\$533,250	
45 Municipal Street	45 municipal road sign storage building	POOR	1984	\$ 1,180,800	
45 Municipal Street	45 municipal salt / sand domes / calcium dispenser (3 domes)	FAIR	2016	\$ 4,778,839	
50 Municipal Street	50 Municipal St	FAIR	1970	\$16,650,000	
The Boathouse	The Boathouse	FAIR	1875	\$ 1,033,465	
Royal City Lawn Bowling	Royal City Lawn Bowling Main Building	GOOD	1960	\$250,000	
Royal City Lawn Bowling	Royal City Lawn Bowling Storage Building	POOR	1975	\$ 45,801	
Guelph City Hall	City Hall	GOOD	2010	\$70,875,000	
Guelph City Hall	City Hall Annex	POOR	1810	\$ 1,890,000	
Guelph City Hall	Market Square Pavilion	FAIR	2012	\$ 1,529,529	
Provincial Offences Courthouse	Provincial Offences Courthouse	FAIR	1856	\$33,625,000	

Facility	Building	CONDITION	Year Built	Calculated CRV	Comments
Guelph Farmer's Market	Farmer's Market	FAIR	1911	\$ 3,681,721	
Riverside Park	Riverside Park Cottage	POOR	1970	\$500,000	
Eastview	Eastview Facilities Building	FAIR	1970	\$843,000	
Drill Hall	Drill Hall	PAST DUE	1866	\$ 8,418,750	See Note 1
Forestell House	Forestell House (a.k.a. Parker House)	PAST DUE	1860s	\$525,000	See Note 2
Carter Farm	Carter Farm	PAST DUE	1840s	\$875,000	See Note 2
<b>Total Replacement Value</b>				<b>\$163,958,055</b>	

Note 1: The Drill Hall is unoccupied and in an unusable condition. Recent renewal work has stabilized the structure but further renewal needs would be dependant on a potential future tenant's requirement.

Note 2: Forestell House and Carter Farm are unoccupied. The physical condition of these buildings prevents them from being used however due mostly to heritage concerns they are to be retained. Each building has been structurally stabilized but very extensive renovation work would be required before they could be safely occupied.

**Table 45: Value of Administration & Operations Portfolio by Condition**

Condition	Asset Value	% of Portfolio
PAST DUE	\$9,506,235	5.80%
VERY POOR	\$7,557,236	4.61%
POOR	\$21,107,124	12.87%
FAIR	\$80,099,925	48.85%
GOOD	\$45,687,548	27.87%
VERY GOOD	\$ -	0.00%

### Renewal Needs Vs. Funding Analysis

#### Notes on Asset Values and Renewal Needs

The CAM team used data from FCA reports in order to present the condition and needs of facilities by component. The annual renewal forecasts have been supplanted by information provided by Facilities when available. In some cases more recent needs assessments recommend alternative courses of action compared to the FCA reports but with insufficient levels of detail to formulate specific annual renewal projections. Future AMPs will be evaluated using the most recent information about the facilities that is available combining the data about the facilities that both CAM and the Facilities and Energy Management team use. This work will continue through 2024 and a new state of the facilities will be reported in 2025.

Future renewal years are, whenever possible, identified in the AMP renewal plan using the actual action dates recommended by the consultant's FCA

reports. In some cases, the FCAs did not identify a recommended year and so the condition or age of the asset compared to its expected useful lifecycle was used to identify the renewal year. In other cases the forecast renewal year was directly identified by staff preparing specific project plans.

Some of the facilities were not assessed recently and the identified condition and renewal needs are established based on information from Facilities staff.

Facilities and Energy Management also provided a ten-year capital forecast that identified projected needs at some of the facilities. These have been incorporated into the final total renewal needs that have been identified. There is constant attention paid to balance annual capital budget expenses against the impact to taxpayers when developing recommendations and project plans for the facilities. This results in some

work being delayed regardless of its priority or importance to the City.

Some of the facilities are reaching an age where it may not be economical to continue to do interim type repair or renewal work while changing functional requirements or other reasons mean the current facilities cannot provide the same levels of service they did when they were new. The Operations buildings at 45 Municipal St. and the Riverside Park Cottage are two examples. Other considerations like the heritage value of a given building or its unique functional use may sometimes mean that despite the age the facility cannot be replaced. These and other variables are given careful consideration when renewal needs are being reviewed and future capital projects developed.

### **Funding Availability**

Administration & Operations Facilities infrastructure renewal needs are funded from the City's general tax revenue. Historically the value of the funding allotted to each service area was equal to the ratio of the value of the assets in each portfolio value compared to the total value of tax-funded assets. For 2024 for the Administration & Operations Facilities this equals approximately 2.3% of the annual tax revenue is allotted to the facility renewal needs. This percentage value of the estimated future values of annual contributions to the Infrastructure Renewal fund #150 was used as the available funding value when determining the difference between forecast needs.

Prior to completing this review the following steps were taken:

- The needs identified in FCA reports have been used by staff to develop recommended projects. Those project values have been used to identify the future renewal needs
- The 2024 cost estimates are inflated by 3% per year in subsequent years to account for expected inflation
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results of this review are summarized in the table and chart below and they show that with the current funding forecast for the Administration & Operations Facilities and the current needs analysis that at the end of 10 years there is estimated to be a net negative total funding gap of approximately \$23.8M as a result of approximately \$13.4M in forecast funding vs. a renewal need of \$36.6M over the 10-years. Note that these are estimated only for the facilities listed in Table 44 and not all the facilities from all portfolios.

The forecast is based on an assumed allotment from the general tax revenue and infrastructure renewal levy contributions to the Infrastructure Renewal Reserve Fund. Unlike the rate funded services that have dedicated reserve funds this allotment can

change. When this same analysis methodology was applied to the other tax-funded portfolios – most of which include facilities that the Facilities and Energy Management team is responsible for – some of those portfolios were forecast to have a net positive funding gap at the end of 2033. When all of the Facilities needs and allotted funding across all the service areas is considered together the negative and positive differences in the annual cumulative funding gap will offset each other to some degree, but at this time it is unclear if the net 10-year result would be positive or negative.

Additionally there are FCA programs currently in progress at the time of preparing the AMP, and more will be scheduled in following years. These FCAs are certain to identify needs beyond what has already identified. It is also probable that needs will develop that are currently not forecast as potential new legislation, code requirements, and societal expectations change and require the facilities to adapt.

The negative funding gap predicted is concerning, but with consideration for the needs of the City’s facilities as a whole, the priority renewal needs will be addressed.

**Table 46: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions (in \$ millions)**

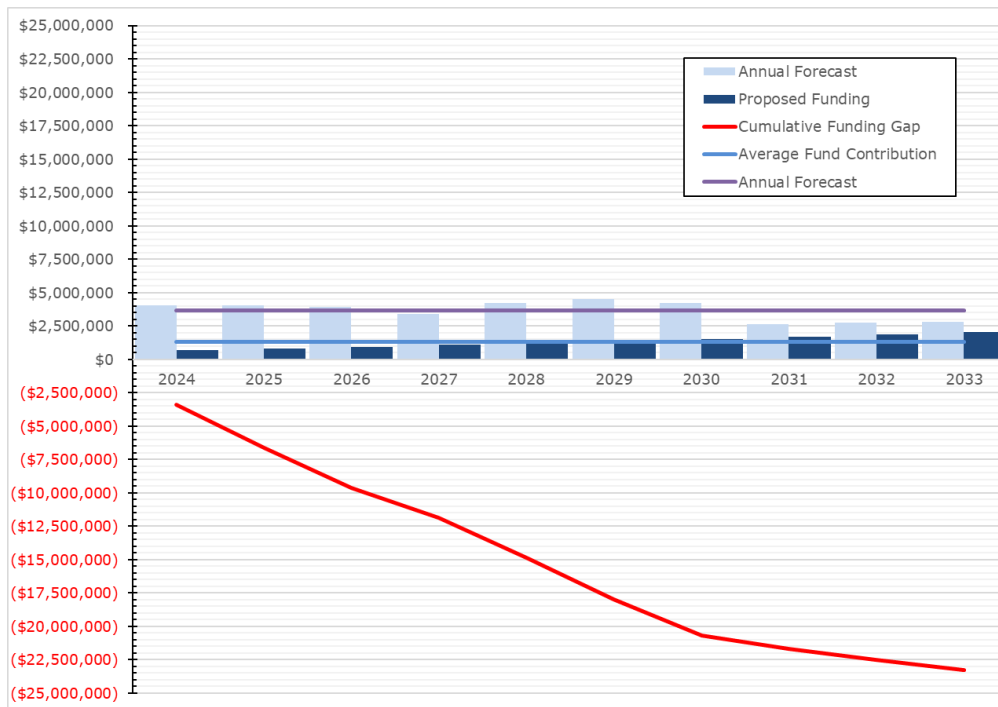
Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Forecast Renewal Costs	(\$4.05)	(\$4.04)	(\$3.97)	(\$3.38)	(\$4.25)	(\$4.51)	(\$4.23)	(\$2.67)	(\$2.73)	(\$2.82)
Planned Reserve Fund Contributions	\$0.68	\$0.81	\$0.95	\$1.12	\$1.25	\$1.39	\$1.54	\$1.70	\$1.87	\$2.05
Cumulative Gap	(\$3.36)	(\$6.60)	(\$9.62)	(\$11.88)	(\$14.88)	(\$18.00)	(\$20.69)	(\$21.65)	(\$22.51)	(\$23.28)

\*Note: the reserve fund contributions are calculated at 2.3% of the forecast total of the general Infrastructure Renewal Fund

**Table 47: Renewal Forecast Summary Information (in \$ millions)**

Average Annual Renewal Need	(\$3.66)
Average Annual Fund Contribution	\$1.34
Average Annual Gap (cumulative)	(\$15.25)
Forecast Cumulative Renewals	(\$36.64)
Forecast Funding	\$13.36
10-Year Funding Gap	(\$23.28)

**Figure 59: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contribution**



**Operations and Maintenance Activities**

The operations costs associated with facilities consist of the following tasks and more:

- Hydro fees for lighting and powering equipment
- Natural gas fees for heating equipment
- Water user fees
- Snow clearing of roads and sidewalks,
- Grass cutting and other vegetation management
- Interior and exterior janitorial work
- Office space re-fitting
- Etc.

Maintenance activities at the Administration and Operations facilities are performed by the Corporate Building Maintenance (CBM) team. The members of this team work at all City facilities where they are responsible for the following and more:

- Preventive maintenance on mechanical and electrical equipment
- Unplanned repairs in response to equipment breakdown or items like broken windows, graffiti or complaints from users
- Facility security
- Etc.

The costs associated with operations and maintenance are an essential part of owning facilities and should

not be avoided. Proper maintenance programs can help extend the lifecycle of assets, in some cases many years beyond a theoretical lifecycle value. This results in reduced number of replacements for the same asset, and therefore long term cost savings.

Good maintenance on equipment can also help minimize operating costs by ensuring that the equipment is functioning to maximum efficiency.

CBM works in partnership with staff in Facilities & Energy Management and is responsible for the daily maintenance at all City facilities. Because of this it is difficult to say with certainty what an exact forecast ideal funding need for maintenance and operations tasks should be. However, it is commonly discussed among staff that the funding that is made available allows a minimum amount of maintenance work to be completed while more funding would enable expansion of preventive maintenance programs and other benefits.

Consideration should be given to ensure that Operations budgets that are used to provide the funding for CBS activities are equally as important as capital renewal needs and increased to support this.

**Levels of Service**

O.Reg 588/17 requires the identification of levels of service (LOS) for all asset types and an indication of the City’s performance against those LOS. The O.Reg further requires that the LOS metrics include the identification of both “Customer” and “Technical” categories. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City engaged a third party specialist. An environmental scan was completed against other municipalities with similar

operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

The 2024 metrics represent a baseline of service level delivery. In 2025 the City will be required to identify future target LOS levels and the costs to attain those compared to the current costs to deliver those same services today.

The following table presents the LOS metrics that have been adopted for the Administration and Operations Facilities portfolio and the current performance levels

**Table 48: Administration & Operations Facilities Levels of Service**

Strategic Theme	LOS Type	Performance Measure	Current Performance
City Building	Technical	% of facility assets in poor or less condition	9%
Environment	Technical	Energy Consumption (kWh)	2,993,457 kWh
Environment	Technical	Natural Gas Consumption (m <sup>3</sup> )	333,176 m <sup>3</sup>
Environment	Technical	Water Consumption (m <sup>3</sup> )	26,982 m <sup>3</sup>
Environment	Customer	Description of the environmental sustainability initiatives implemented in administration and operations facilities	Design standards for new facilities have been updated to be more energy efficient. As facility elements are identified for renewal, more energy efficient options are chosen.



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## **Risks to the Administration & Operations Facilities Services**

### **Climate Change**

Administration & Operations Facilities assets will require several different types of mitigation measures to address the potential risks resulting from climate change impacts. This has already been recognized by all staff who are involved with managing the buildings and is a major focus of the City's 100RE (100% Renewable Energy) strategy whose goal is to have all City facilities energy needs delivered by renewable sources by the year 2050.

The trend of increasing average annual temperatures and more days per year of very hot temperatures will require increased air conditioning capacity for buildings. Since City buildings often act as temporary or emergency cooling centres on hot days this requirement should be given proper attention in future renewal needs analysis. Other measures like installing shade structures or planting trees to provide a passive cooling effect should also be considered.

Increasing severe rainstorms may cause the current stormwater management assets at the facilities to become over charged presenting an increased risk of flooding or damage to building components as a result of excess water accumulating.

Mechanical equipment that uses fossil fuels will continue to be used. Facilities & Energy Management has already made several changes to equipment to reduce the greenhouse gas emissions from this equipment and these efforts should continue.

### **Old Assets, Condition and Function**

As discussed previously each individual asset type that can be found in a building or at a facility site has a different expected normal lifecycle. Depending on the asset these may range anywhere from 5 to 100 years. Many of these normal lifecycles are routinely surpassed in real use because the assets receive regular maintenance work, or, such as the case with building structural assemblies, the lifecycle can be indefinite. The Boathouse building is an example of this. Originally constructed in 1875 the original fieldstone foundation remains fully functional for its purpose. Mechanical assets are often modelled with a lifecycle of 20-25 years but often remain in service beyond that timeframe if they have been maintained well. An "old" facility asset as a whole will in truth be a collection of individual element assets of varying ages.

Therefore, just because a facility is old does not provide a truly accurate picture of its physical needs. The functional needs of an asset often drive renewal priorities and these are related to the age of an asset because the purpose for which a facility was originally built changes over time as new technologies, activities and expectations of users evolve. Some of these can be planned for with careful planning and consultation with the user of facilities but this is beyond the scope of this AMP.

There are often functional changes dictated by legislation that are less easy to plan for. The health and safety and accessibility requirements for a facility in 2024 are greatly different from even only 20 years

ago, but those changes have required functional renewals to assets often earlier than only the physical condition of the asset would have required. Changes in legislation regarding the types of chemicals allowed to be used in air conditioning equipment dictated some expensive equipment changes that were done earlier than originally planned for.

All of these factors exist, but some are more difficult to plan for or predict. The City will need to remain flexible to be able to adapt the renewal plans as needed if and when future requirements like this occur.

### **Critical Assets**

Many of the facilities in the Administration & Operations Facilities portfolio can be considered critical assets, each for separate reasons. The identification of critical assets is one of the variables that is used to help prioritize multiple renewal needs with available funding.

**City Hall:** The seat of City administration. During emergency situations City Hall can be used as a central command or headquarters type facility to allow the coordination of responses. It can also act as a shelter for the general public if needed.

**45 & 50 Municipal St.:** Both of these facilities are sites where essential City maintenance equipment and vehicles are stored and maintained. Staff that work from these sites provide essential services at all times of the year and would play vital roles during storm events or other emergencies.

All of the facilities have individual assets like fire detection and security systems or back-up power

generators that would also be considered critical to ensuring the health and safety of staff and visitors to the buildings and the uninterrupted continuation of City business.

### **Stranded Assets**

A stranded asset is defined as “real estate holdings that are not being utilized or are under-utilized and that have no plans for future City use.” Despite not being used these assets still require maintenance and renewals to protect the City from potential liability issues related to failures and also to enhance the asset for potential disposal to others.

The following list of facilities represent those stranded properties that have buildings on the sites.

**Drill Hall (72 Farquhar St.):** A designated heritage building. Stabilization work was completed in 2020/2021 to protect the building from further deterioration. The City is currently seeking a tenant and new use for the site. Regular monitoring and minor maintenance is foreseen in the immediate to mid-term (0-5 years).

**341 Forestell Rd,:** . Vacant lands and building with a heritage designation. Complete renovation interior and exterior would be required for the building to be considered useable – a 2018 FCA report estimated this cost at \$1.3M. The land may be suitable for a future water well. No actions forecast in the immediate future while this is being studied.

**880 Victoria Rd. S.(Carter Farm):** 40Ha (100Acre) property with an unoccupied farmhouse that has an informal heritage designation from the Township of Puslinch. A 2018 FCA identified approximately \$1.2M

of renewal work would be required to enable the house to be used. The property will be retained as it is a source of groundwater for the City. Options to relocate the house have been explored with no resolution finalized.

More information on other stranded properties is available from the Facilities and Energy Management team. Most of these would be vacant lands purchased or inherited by the City for reasons that may no longer be valid. Annual costs associated with minor maintenance needs and site monitoring are included in annual operations budgets.

### **Summary and Recommendations**

The status quo condition of the Administration & Operations portfolio facilities is at a state where the main operations facilities that house essential staff and vehicles are approaching the end of their functional life, as well as having condition issues that require attention. This is not an unknown problem and Facilities staff and council have previously been made aware of the need to improve and expand the facilities that support City operations for all services. Planning work has begun that will involve multiple service

areas, but no final recommendations have yet been approved.

The main City administration type buildings – City Hall and the Provincial Courthouse – are both functioning well but alterations will be required (and in some cases are underway) that are a result of changing work situations. Both of these large buildings have some elements that are aging towards replacement – this is normal and provided that the condition issues are addressed in a timely manner there should be no impact to continued use of these buildings for the long term foreseeable future.

The primary need of the portfolio is continued attention to operations and maintenance needs that can help support the long term continued usage of the buildings. Preventive maintenance programs are essential.

Buildings and facilities will be affected by climate change but the Facilities and Energy Management team is ahead of the trend on this subject. As current equipment ages and requires replacement it will be replaced with equipment capable of managing the predicted increased needs. The Facilities team is well prepared for these challenges.

## Chapter 7: Culture



**Quick Facts:****City of Guelph Culture Assets**

Total value of facilities	\$150,926,339
Number of facilities	8
Average condition of facilities	GOOD
Total building area	22,426 m <sup>2</sup> (241,390 f <sup>2</sup> )
Total value of vehicles & equipment	\$1,523,690
Number of vehicles & equipment	7
Average condition of vehicles & equipment	PAST DUE
Total value of Culture assets	\$152,450,029

### Introduction

Cultural services provided by the City of Guelph are a key part of an offering to encourage healthy living and community interaction. Guelph’s Culture department operates under Culture & Recreation and is responsible for the operation of a variety of facilities. Large venues like the Sleeman Centre and the River Run Centre provide sports and entertainment options to residents and visitors alike while smaller cultural facilities showcase Guelph’s heritage or focus on youth programming.

Culture assets included in this plan are Sleeman Centre, River Run Centre, the Guelph Civic Museum, John McCrae House, Guelph Youth & Music Centre, Guelph Community Pottery Centre and Wyndham House Youth Emergency Shelter. Fleet and equipment assets operated in and around these facilities and have been included in this plan.

One additional unique asset type for Culture is public art installations around the city. The acquisition, funding and maintenance of these assets are outlined in the Public Art Policy, which recognizes that art enhances the quality of life for Guelph citizens. Twenty-nine (29) public art installations are included as assets in this plan.

### Assets in the Culture System

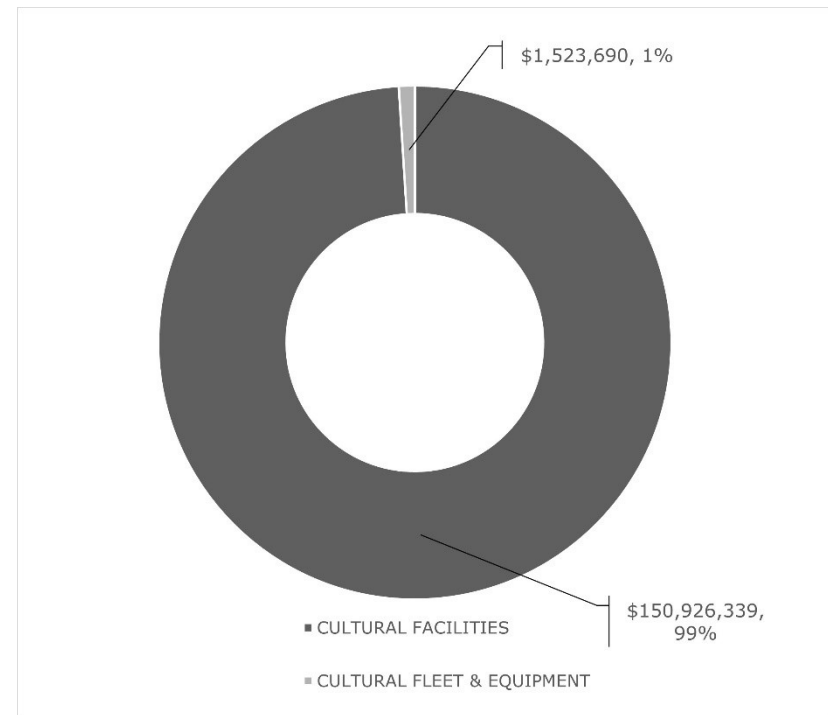
Culture assets can be broadly classified into two categories:

- **Facilities:** Large facilities like the Sleeman Centre & River Run Centre and smaller facilities like John McCrae House and Guelph Youth & Music Centre.

- **Fleet and Equipment:** Vehicles and motorized support assets, mostly serving the Sleeman Centre.

The current estimated total replacement value of these Culture assets is \$152.4M with 99% of that value represented by Cultural facilities. The remaining 1% of assets are fleet are equipment.

**Figure 60: Replacement Value of Culture Assets by Category**



Of the assets in the cultural portfolio, 93% (by current replacement value) are in fair or better condition while the remaining 7% are in poor condition or worse. The

public art pieces belonging to Culture do not have an evaluated condition as of the time of this plan.

Culture assets have a deferred renewal backlog of \$1.27M comprised of assets that are past due for replacement as of 2024.

Locations of City of Guelph Culture and Recreation facilities are displayed in Figure 62 below.

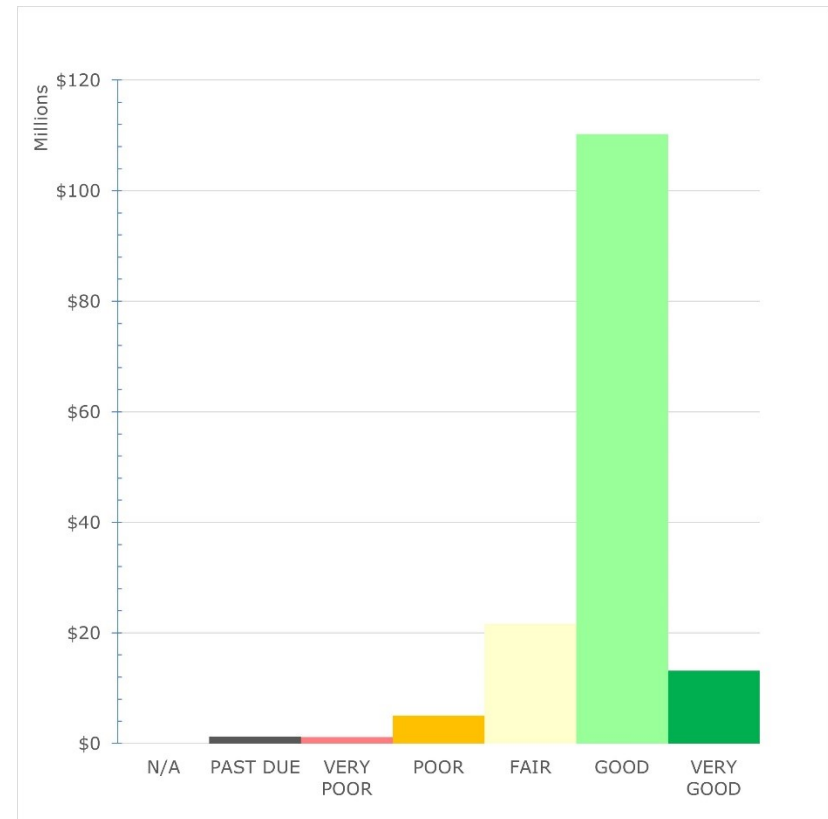
**State of the Culture Assets**

The value and condition of each asset was determined according to the methods described in the “Infrastructure Renewal and Lifecycle Management” section of this report.

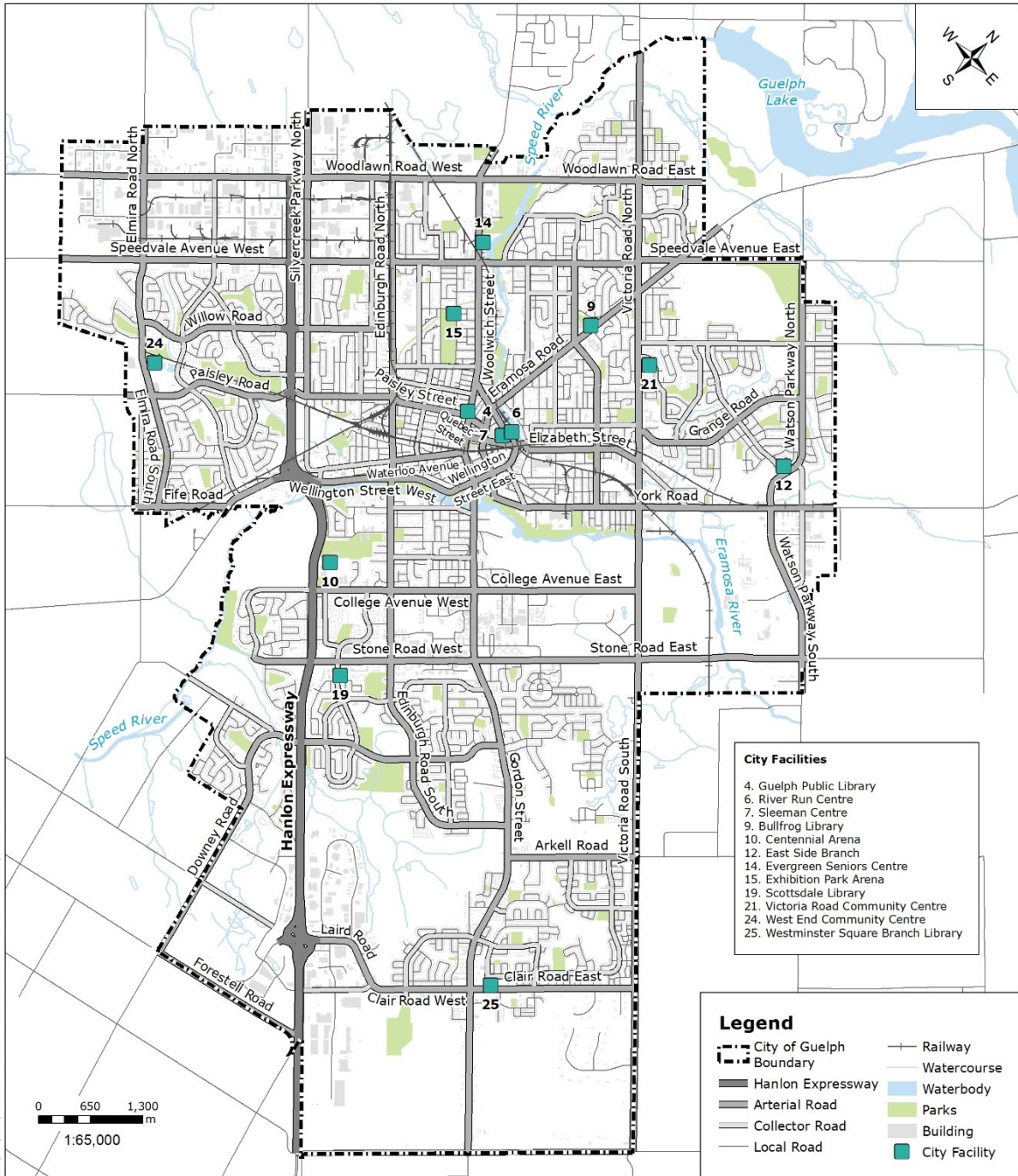
An asset rated in past due or very poor condition does not mean that it is no longer delivering its intended service or has already failed. For example, some of the identified and assessed fleet assets have reached or are close to the end of their expected useful lifecycles. That these assets remain in service shows the value of consistent maintenance, but Culture should make note of these assets and consider prioritizing their rehabilitation or replacement as they continue to age.

Likewise, an asset in “very good” condition may not be functioning 100% perfectly. Condition ratings assigned to assets are based on best practices and standards and are a tool that enables long term needs assessment at the whole portfolio level.

**Figure 61: State of the Culture Asset Portfolio**



**Figure 62: Culture & Recreation Facility Locations**



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 Infrastructure, Development & Enterprise  
 Engineering and Transportation Services  
 May 10, 2024

**City of Guelph**  
 Recreation and Culture





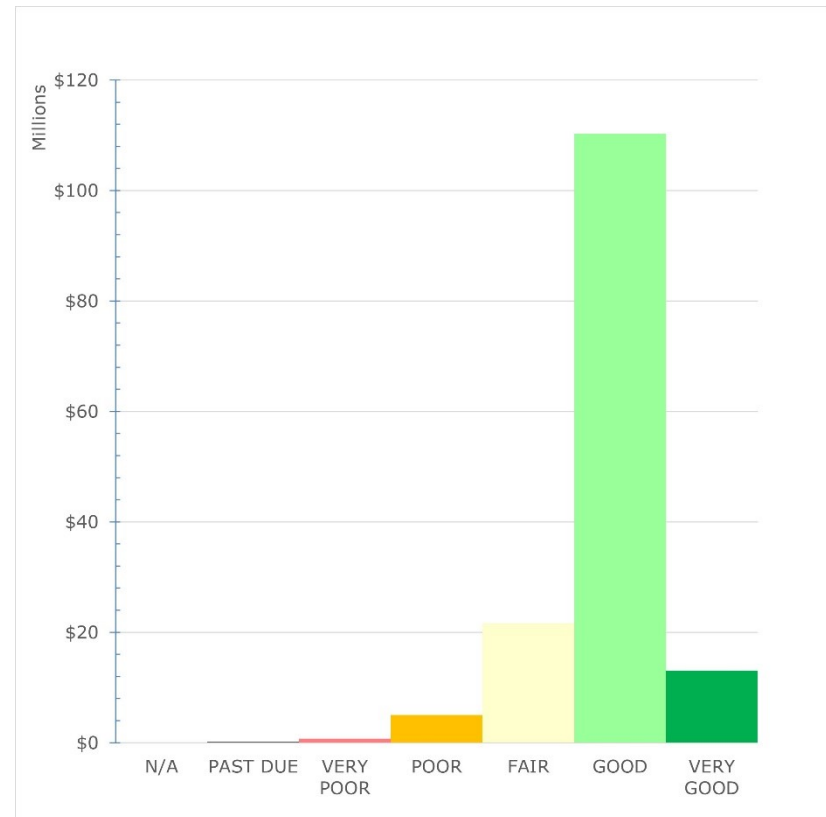
**Culture Facilities Asset Condition**

The facilities operated by Culture include major assets like Sleeman Centre, River Run Centre and Guelph Civic Museum along with smaller buildings like Guelph Youth and Music Centre and John McCrae House. Worth noting is that while Guelph Youth and Music Centre and Wyndham House Youth Emergency Shelter are included in this plan, Culture has leased these buildings and is not responsible for interior asset renewal or maintenance. The condition of Cultural facilities has been determined based on information provided by 3<sup>rd</sup> party consultants engaged by the City. This includes a combination of facility condition assessments that review the physical and functional condition of the equipment comprising a facility and a long-term needs analysis with recommended major renewal or growth work. Sleeman Centre is the newest facility asset operated by Culture, having been constructed in 2000 while John McCrae House is a heritage designated building dating back to 1858.

All the facility assets operated by Culture have a combined replacement value of \$150.9M. 95% of these (by replacement value) are in fair or better condition, while the remaining 5% are in poor condition or worse. On the surface, this data indicates a low risk of unexpected failures, but Culture staff have indicated that maintenance costs have been increasing dramatically, both due to asset failure and inflation of costs. This doesn't match the asset condition summary and highlights that Culture assets may not be performing as well as their assessed conditions show they should be. Regular inspections should be scheduled to verify assessed conditions,

monitor aging assets and identify rehabilitation actions.

**Figure 63: State of the Culture Facilities Assets**



**Culture Fleet Asset Condition**

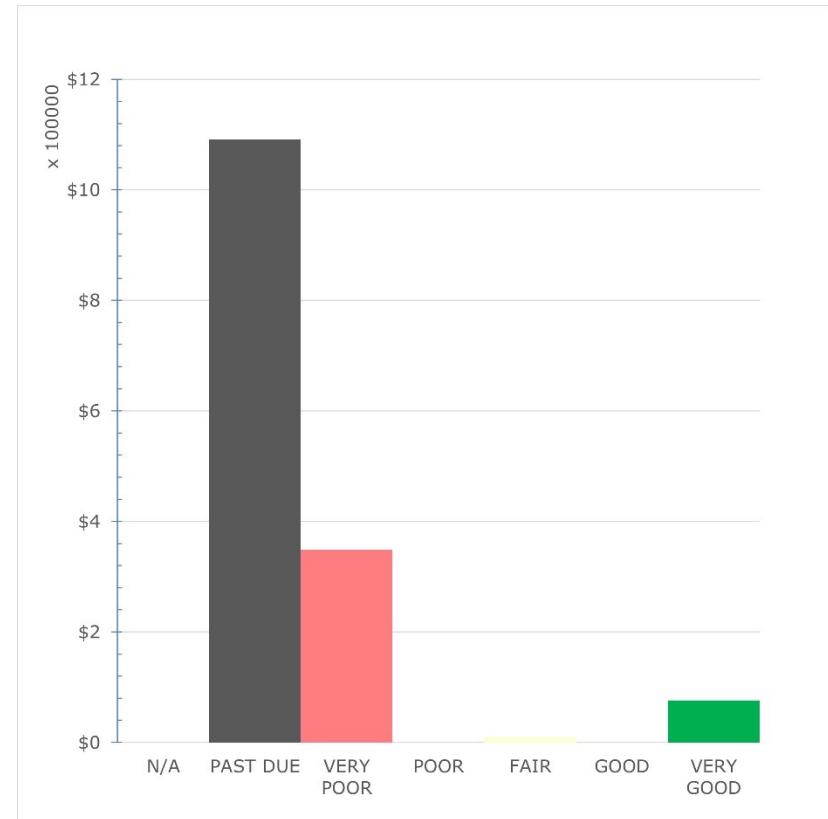
Fleet and equipment assets operated by Culture as of 2024 are based out of the Sleeman Centre and include ice maintenance equipment, a forklift and two support

vehicles. For the purposes of this plan, the condition of these assets is determined based on age and expected useful lifecycle, which ranges from 5-10 years depending on asset type.

Analysis of these assets shows that 6% of the Culture fleet and equipment with a replacement value of \$85K are in fair or better condition. Assets rated as poor and very poor account for 23% of the portfolio while the remaining 71% are rated past due. These assets have reached the end of their expected useful lifecycle prior to 2024. This is the value of the deferred backlog, assets that should have been replaced based on age but may not have been partly due to inadequate funding in previous years.

Culture should consider a standing item in the capital budget to help address this backlog. Replacement fleet and equipment assets could also address energy efficiency needs by considering electric or hybrid options. While there is an age-based need identified for Culture fleet and equipment, it is worth noting that vehicles can remain in service beyond their expected useful lives with regularly scheduled maintenance and rehabilitation interventions.

**Figure 64: State of the Culture Fleet Assets**



**Table 49: State of the Culture Assets - Summary**

	<b>CULTURE FACILITIES</b>	<b>CULTURE FLEET &amp; EQUIPMENT</b>	<b>SUBTOTALS</b>	<b>OVERALL TOTAL</b>
<b>TOTAL CRV</b>	<b>\$150,926,339</b>	<b>\$1,523,690</b>		<b>\$152,450,029</b>
<b>N/A</b>	\$0	\$0	<b>\$0</b>	<b>0.00%</b>
<b>PAST DUE</b>	\$185,355	\$1,090,721	<b>\$1,276,076</b>	<b>0.84%</b>
<b>VERY POOR</b>	\$753,203	\$348,113	<b>\$1,101,317</b>	<b>0.72%</b>
<b>POOR</b>	\$5,015,381	\$0	<b>\$5,015,381</b>	<b>3.29%</b>
<b>FAIR</b>	\$21,657,324	\$8,657	<b>\$21,665,981</b>	<b>14.21%</b>
<b>GOOD</b>	\$110,240,652	\$0	<b>\$110,240,652</b>	<b>72.31%</b>
<b>VERY GOOD</b>	\$13,074,425	\$76,198	<b>\$13,150,623</b>	<b>8.63%</b>

**Asset Age Profile**

Culture assets have a variety of expected useful lifecycle values. Assets identified as part of the eight (8) facilities operated or leased by Culture are assigned individual lifecycle values ranging from 5-100 years. Fleet vehicle and equipment expected useful lifecycle values are in the 5-10 year range.

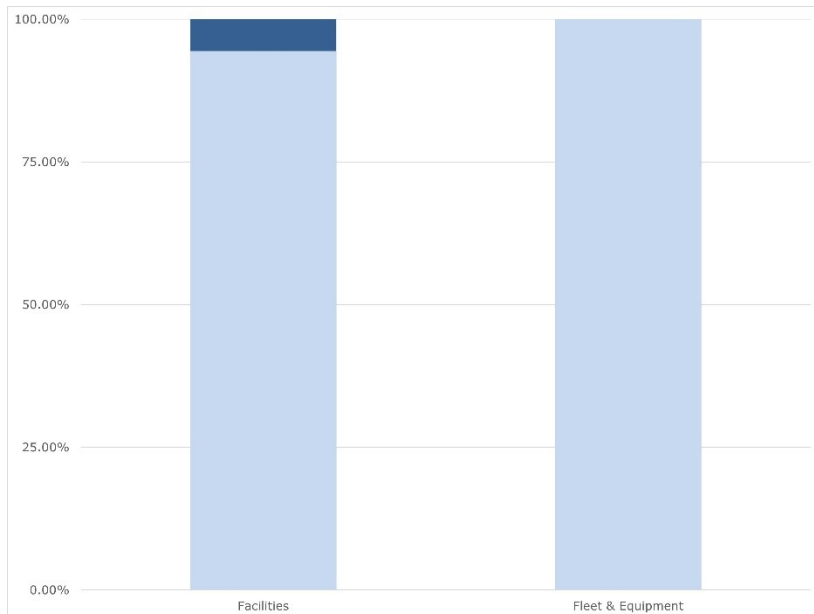
As shown in the Table 49 above, 0.8% of Culture assets have a condition rating of past due meaning that they have reached the end of their expected useful lifecycles. Most of these assets are fleet and

equipment but, on the facilities side, there are several identified needs for the aging assets. Overall, most assets operated by Culture have been assessed to be in good condition. As mentioned above, a regular assessment program should be continued to verify and update these conditions as the assets continue to age.

Comparing the current ages of assets to their expected normal lifecycle allows for a general understanding of which assets may require increased maintenance attention and possibly replacement in future years.

This age review for the Culture assets is described below.

**Figure 65: Average Age of Culture Assets as a Ratio of Normal Lifecycles**



The age ratio chart shows that most Culture assets are reaching the end of their average expected lifecycles. Considering the condition of these assets is reported to mostly good or better, it can be concluded that Culture assets are outperforming age-based expectations.

**Renewal Needs vs. Funding Analysis**

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for Culture assets were determined.

**Lifecycle Renewal Planning and Replacement Costs**

Assets in the Culture portfolio are valued based on Facility Condition Assessments (FCAs), historic construction costs and fleet replacement schedules. These methodologies are used across all service areas to ensure consistency in the Asset Management Plan.

**Funding Availability**

Capital renewal funding for Culture comes from a single source, property tax. The estimated future contributions from the tax-funded Infrastructure Renewal Fund were used as the available funding value when determining the difference between planned contributions and forecast needs.

Prior to completing the review, the following steps were taken:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation.
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues.
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

**Table 50: Culture 10-Year Infrastructure Renewal Forecast (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Forecast Renewal Costs</b>	(\$2.54)	(\$2.77)	(\$0.40)	(\$0.39)	(\$7.66)	(\$1.60)	(\$2.36)	(\$0.25)	(\$1.34)	(\$0.88)
<b>Planned Reserve Fund Contributions</b>	\$1.39	\$1.64	\$1.94	\$2.28	\$2.55	\$2.83	\$3.14	\$3.47	\$3.81	\$4.19
<b>Cumulative Gap</b>	(\$1.15)	(\$2.31)	(\$0.83)	\$1.03	(\$5.11)	(\$4.03)	(\$3.37)	(\$0.26)	\$2.21	\$3.31

**Table 51: Culture Renewal Forecast Summary (in \$ millions)**

<b>Average Annual Renewal Need</b>	(\$2.02)
<b>Average Annual Fund Contribution</b>	\$2.72
<b>Average Annual Gap (Cumulative)</b>	(\$1.05)
<b>10 Year Forecast Renewal Total</b>	(\$20.18)
<b>10-Year Forecast Reserve Fund Contributions</b>	\$27.24
<b>10-Year Funding Gap</b>	\$7.06

**Figure 66: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**

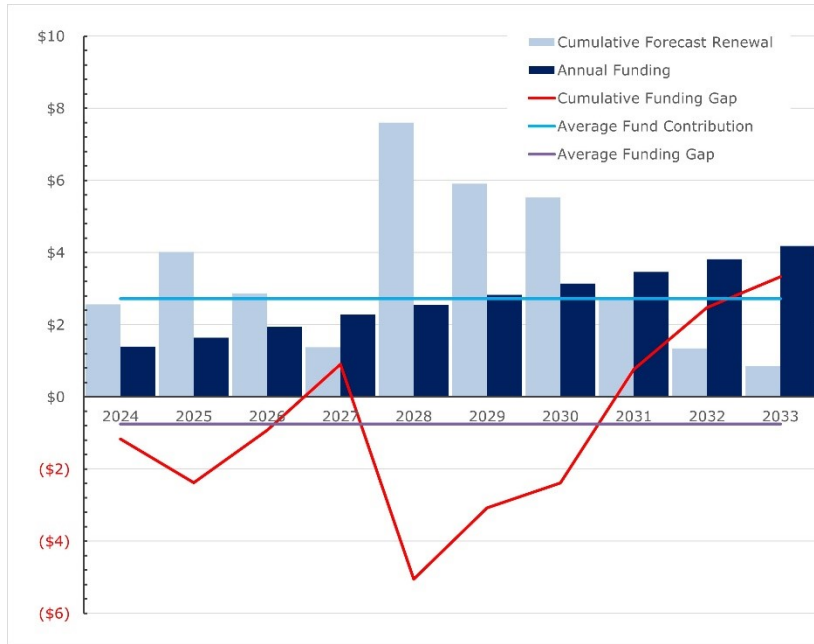


Table 50 above comparing forecast renewal needs to forecast reserve fund contributions identifies that the proposed funding will exceed to projected needs of Culture assets over a 10-year period.

The average annual funding gap of \$1.05M is caused by a few years of higher need but overall, the 10-year renewal need of \$20.18M is more than covered by projected reserve fund contributions of \$27.24M. This predicts a surplus of \$7.06M 2033, meaning that some projected rehabilitation or replacement needs could be scheduled early to ensure optimal asset functionality and availability.

Most of the renewal needs for the next 10 years can be attributed Culture facilities. There are standing capital projects in the budget to address equipment replacement in these facilities to maintain sales revenues, ensure service and create energy efficiencies. Along with maintaining client expectations and levels of service, both age and condition of the existing assets should be considered when determining priorities for replacement.

Approximately \$246K of renewal needs over the next ten (10) years were estimated for Guelph Community Pottery Centre. Staff indicate that pottery classes will be moving to the West End Community Centre in 2024, leaving the building temporarily empty. While this move doesn't necessarily reduce the renewal needs of the Pottery Centre, it lowers their priority and could remove them from this graph entirely if the intent is to sell or lease the building.

The projected renewal need of Culture fleet and equipment assets is \$1.1M over the next 10 years. Due to the short expected useful lifecycle values of fleet and equipment assets, some assets are projected to be replaced multiple times over this 10-year period. As with other service areas, vehicles and equipment are replaced based on their condition, usage, age, cost, safety, reliability and operational requirements. There is an opportunity for electrification of the fleet during this period, both for ice-resurfacing equipment and support vehicles.

**Operations and Maintenance Activities**

Daily operation of Cultural services involves the use of facilities and fleet assets. The annual operating budget covers items such as:

- Utility costs for the Culture facilities (hydro, natural gas, potable water, telephone service, internet, etc.)
- Vehicle operating costs (fuel, hydro, etc.)
- Labour costs for staff involved in daily operations activities.
- Supplies and materials to support program delivery.
- General property maintenance (building maintenance, landscaping, winter control, etc.)

Also included in the annual operations and maintenance budgets are allowances for making unplanned repairs to Cultural assets and equipment when required.

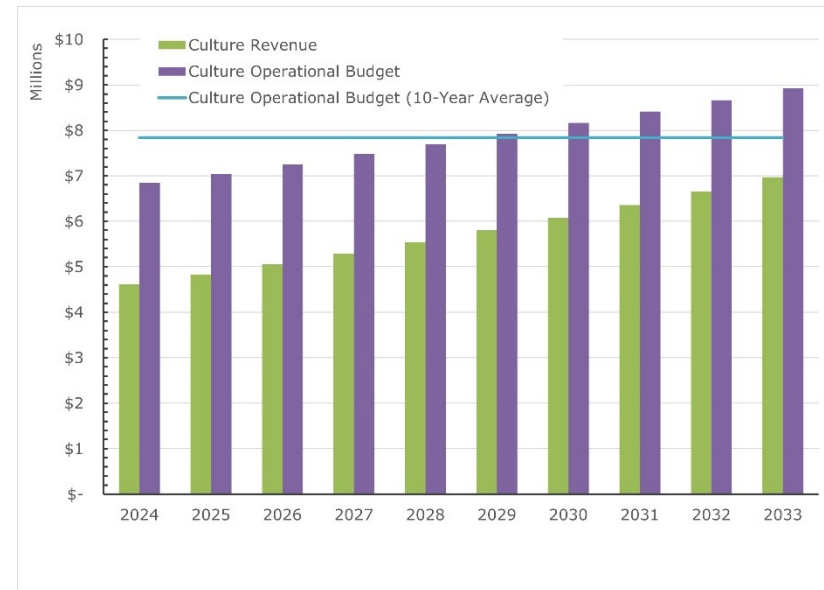
Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Budget requested values which were also inflated by 3% per year. While these projected figures attempt to account for the increasing cost of goods and services, they do not reflect increasing maintenance needs for aging assets or projected growth to the operational budget as assets are added to the Culture portfolio.

The review shows that in 2023 the amount spent on operations needs was about 106% of the budgeted value. Over the next ten (10) years (until 2033) the average annual operations need is forecast at approximately \$7.8M. Some of those needs are offset by revenue-generating activities like food and beverage sales at events hosted by Culture facilities. In 2023, that revenue was approximately \$4.4M and this value was used to predict future revenue.

Projected revenue has been inflated at the same rate as operating expenses. The values shown are not meant to represent revenue targets for Culture but only to visualize continued revenue against increasing operating expenses.

Of note in this budget is \$28.5K for annual maintenance of Public Art assets, which shows that art is being preserved for future generations. This budget is projected to increase as the collection grows.

**Figure 67: Forecast Operational Budget Needs 2024-2033**



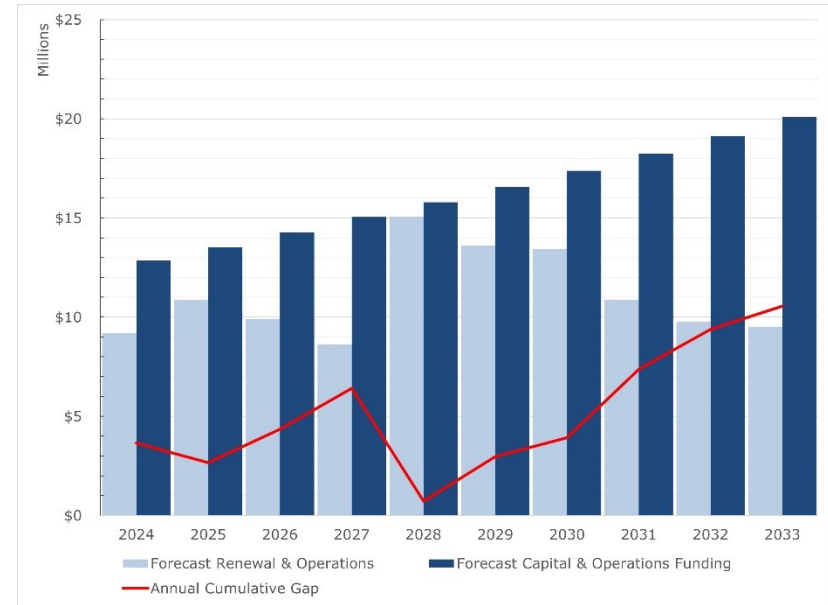


**Total Annual Forecast – Renewal and Operations**

The total forecast needs of assets operated by Culture is determined by combining the renewal needs and forecast funding contributions. Refer to Figure 68 and Table 52 for this summary.

As this analysis is a summation of previously discussed information the overall result is very similar. A low amount of asset replacement or rehabilitation needs is offset by annual capital and operating funding as well as incoming revenue. Over the next ten (10) years, an annual funding surplus averaging \$4.9M is projected.

**Figure 68: Combined Renewal and Operations Forecast & Funding**



**Table 52: Combined Renewal and Operations Forecast vs. Funding (in \$ millions)**

	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Renewal Forecast	\$2.54	\$3.95	\$2.77	\$1.25	\$7.66	\$6.87	\$6.51	\$3.72	\$1.60	\$0.88
Operations Forecast	\$6.64	\$6.84	\$7.04	\$7.25	\$7.47	\$7.69	\$7.93	\$8.16	\$8.41	\$8.66
Subtotal	<b>\$9.18</b>	<b>\$10.79</b>	<b>\$9.82</b>	<b>\$8.50</b>	<b>\$15.13</b>	<b>\$14.56</b>	<b>\$14.44</b>	<b>\$11.88</b>	<b>\$10.01</b>	<b>\$9.54</b>
Capital Reserve Fund Contribution	\$1.39	\$1.64	\$1.94	\$2.28	\$2.55	\$2.83	\$3.14	\$3.47	\$3.81	\$4.19
Operations Budget Contribution	\$6.84	\$7.04	\$7.26	\$7.47	\$7.70	\$7.93	\$8.17	\$8.41	\$8.66	\$8.92
Revenue	\$4.61	\$4.83	\$5.06	\$5.29	\$5.54	\$5.80	\$6.07	\$6.36	\$6.66	\$6.97
Subtotal	<b>\$12.85</b>	<b>\$13.52</b>	<b>\$14.25</b>	<b>\$15.04</b>	<b>\$15.78</b>	<b>\$16.56</b>	<b>\$17.38</b>	<b>\$18.23</b>	<b>\$19.13</b>	<b>\$20.08</b>
Annual Funding Gap	<b>\$3.66</b>	<b>\$2.73</b>	<b>\$4.44</b>	<b>\$6.54</b>	<b>\$0.66</b>	<b>\$2.00</b>	<b>\$2.94</b>	<b>\$6.35</b>	<b>\$9.12</b>	<b>\$10.54</b>

## Master and Major Capital Plans

### City Growth

Culture has multiple guiding documents to address both the growth of the City of Guelph and the nurturing of the local culture community. Most recent among these is the Culture Plan 2030, released in 2023. This document is intended to guide investment, collaboration, promotion, and growth aspirations of the local culture sector. It notes that the City has invested significantly in cultural facilities, public art, cultural programming, and grant funding for artists and arts and heritage organizations. Guelph has benefited from a return on this investment through citizen satisfaction, tourism, talent attraction, creative industry development, profile, and reputation. Continued investment in Culture with an emphasis on equity and accessibility will provide more benefit to residents and visitors alike.

Additional documents addressing cultural growth include the Parks & Recreation Master Plan, Guelph's Community Plan, the 2022-2026 Economic Development and Tourism Strategy, Guelph Museums & Culture Strategic Operating Plan and the Public Art Policy. Culture should continue to update these

documents and follow their guidance to accommodate increased demand for services from growth.

### Levels of Service

O. Reg. 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as "Customer" or "Technical" LOS in alignment with the O. Reg. 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

**Table 53: Culture Levels of Service**

Strategic Theme	LOS Type	Performance Measure	Current Performance
City Building	Technical	# of Arts and Culture Centres per one thousand (1000) residents	0.05 Centres/1000 Residents (8 Centres total)
People & Economy	Customer	Description of the strategies used to keep assets safe and accessible to the public	Ensure that assets follow both AODA and FADM guidelines as well as keeping the facilities organized and accessible.
Environment	Technical	Energy Consumption (kWh)	3,510,733 kWh
Environment	Technical	Water Consumption (m <sup>3</sup> )	26,498 m <sup>3</sup>
Environment	Technical	Natural Gas Consumption (m <sup>3</sup> )	195,645 m <sup>3</sup>

**Risks to the Culture Assets**

**Climate Change**

The 2023 Climate Adaptation Plan identifies four (4) action items which involve the cultural asset portfolio.

- 1) Work with Facilities to ensure adequate air conditioning in offices and recreation facilities, continue with routine maintenance on these systems.
- 2) Periodically review, maintain, and update use of recreation facilities as emergency shelter buildings. Review with an equity lens. This includes co-ordination with the County of Wellington and Emergency Services.
- 3) Itemize culture and recreation buildings components for their resilience to climate

- hazard impacts and plan with Asset Management for itemization and replacement.
- 4) Work with Parks to design and upgrade low impact development features around the culture and recreation facilities.

These actions would help prepare Culture assets for extreme weather events and emergency situations and contribute to Guelph’s greenhouse gas emissions reduction targets in the Race to Zero.

**Aging Assets**

As the age of assets increase, so to does the potential for unexpected failures. The large Cultural assets like Sleeman Centre, River Run Centre and the Guelph Civic Museum are a considerable source of revenue for the City and their availability for events is critical to maintaining that revenue. Sound operations and

maintenance planning will help to ensure that availability, provided that the funding for these two essential activities is adequate.

The main Cultural facilities should also be part of a regular and repeated FCA process, to keep a close eye on the condition of critical assets whose failure could lead to temporary facility closures. While the expected useful lifecycles of facility assets vary, the true lifecycle of a facility is only as long as the lifecycle of its critical assets.

### **Insufficient Funding (Funding Gap)**

While projected funding for Culture is meeting the projected needs of the portfolio, the risk of reduced funding still exists. Years with higher renewal needs than available funding can be balanced with those that over-funded but potential reductions to budgets may leave necessary renewals undone. With insufficient funding and normal continuing deterioration of physical assets the risk of increasing unexpected failures requiring emergency repair work will increase.

### **Asset Data Tracking**

There is currently no central system used to track asset management data across the City of Guelph. The ongoing Enterprise Resource Planning (ERP) project will provide opportunity for Culture to enhance the tracking of maintenance and rehabilitation processes of the assets they operate as well as forecast maintenance costs. This valuable data will help to shape capital investments, operational processes and future asset management plans by associating work

with assets, providing a more accurate picture of the total cost of ownership over the expected useful lifecycle.

### **Summary and Recommendations**

Cultural assets provide popular services to the public and contribute to a sense of a healthy and vibrant City of Guelph. From that perspective, these are essential facilities even if they are not formally defined as such in O. Reg. 588/17.

In general, the condition of the Cultural portfolio is such that no immediate major needs are required, and the 10-year funding forecast appears more than adequate to manage the forecast needs. There will be some large value expenses expected to cover renewals as some building element assets age and require replacement, but this is normal for a portfolio mostly composed of facilities.

At the time of the preparation of the AMP, there are no full replacements forecast for the facilities in the portfolio in the next ten years. There are several vehicle and equipment replacements forecast but this is normal due to their shorter expected useful lifecycles.

At a high level, the Cultural asset portfolio is in good condition. The forecast excess funding identified could be used to ensure proper operation of critical assets or assigned to another portfolio using the identified priorities for each asset as a guide in determining exactly where that funding should go.

## Chapter 8: Recreation



**Quick Facts:****City of Guelph Recreation Assets**

Total value of facilities	\$166,771,625
Number of facilities	7
Average condition of facilities	FAIR
Total building area	27,163 m <sup>2</sup> (292,367 f <sup>2</sup> )
Total value of vehicles & equipment	\$1,921,073
Number of vehicles & equipment	14
Average condition of vehicles & equipment	FAIR
Total value of Recreation assets	\$168,692,699

### Introduction

Recreation is a vital public service that contributes to the overall health and well-being of the City of Guelph’s residents. As stated in the City of Guelph’s Parks and Recreation Master Plan, recreation provides numerous benefits including opportunities for individuals to play, relax and learn new skills. These community benefits are realized through the operation of assets, primarily facilities like arenas, pools and community centres.

Included in this chapter are recreation facilities around the City of Guelph that provide access to ice surfaces, pools, gyms and community rooms. Fleet and equipment assets operated in support of Recreation activities have also been accounted for.

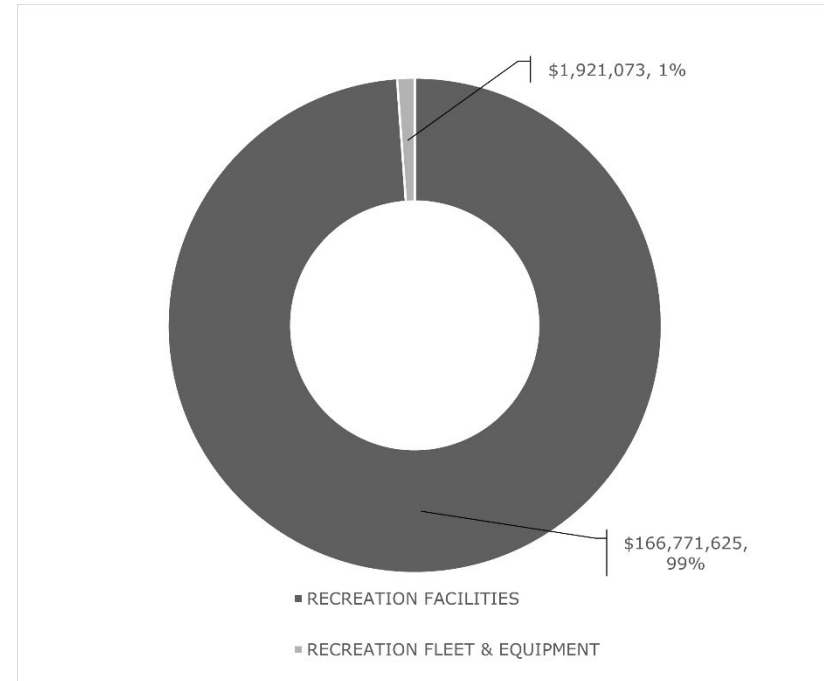
### Assets in the Recreation System

Recreation assets can be broadly classified into two categories:

- **Facilities:** Arenas, pools and community centres as well as other facilities focused on recreation programming.
- **Fleet and Equipment:** Vehicles and motorized support assets.

The current estimated total replacement value of these Recreation assets is \$168.8M with 99% of that value represented by Recreation facilities. The remaining 1% of assets are fleet are equipment.

**Figure 69: Replacement Value of Recreation Assets**



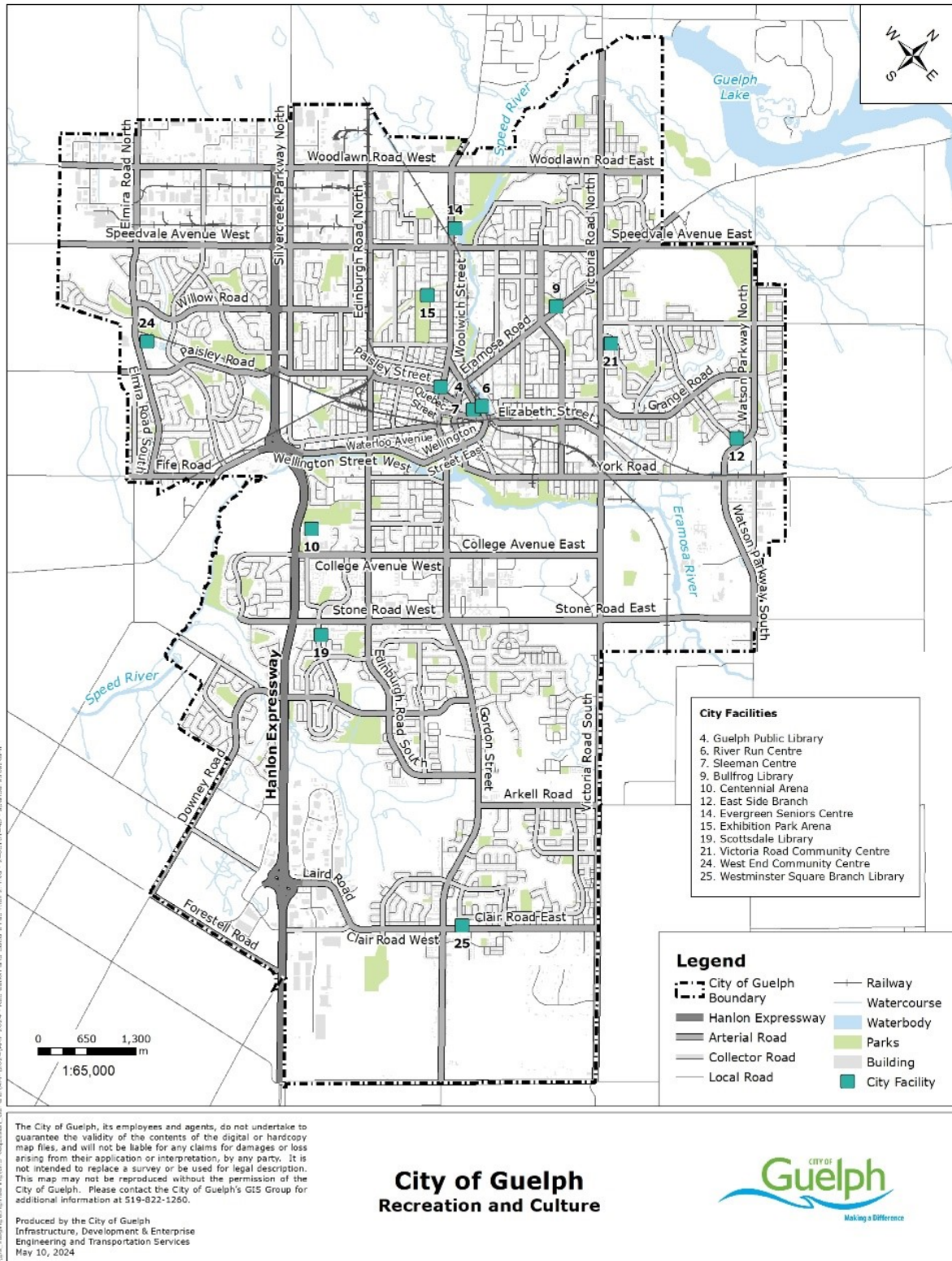
Of the assets in the Recreation portfolio, 76% (by current replacement value) are in fair or better condition while the remaining 24% are in poor condition or worse.

Recreation assets have a deferred renewal backlog of \$10.6M comprised of assets that are past due for replacement as of 2024.

Locations of City of Guelph Recreation and Culture facilities are displayed in Figure 70 below.

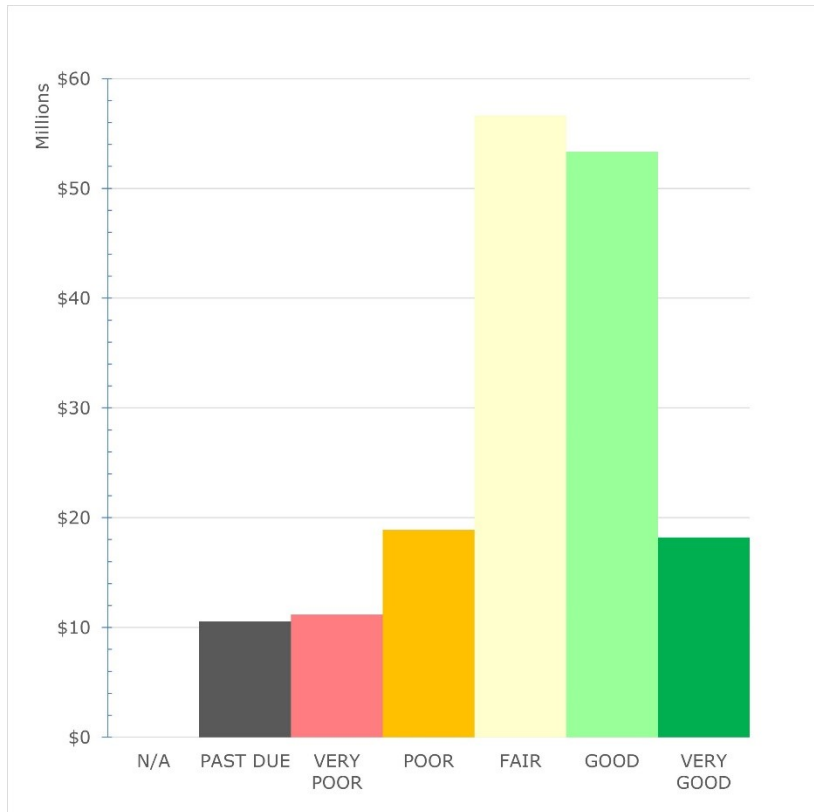


**Figure 70: Recreation & Culture Facility Locations**



## State of the Recreation Assets

**Figure 71: State of the Recreation Asset Portfolio**



The value and condition of each asset was determined according to the methods described in the “Infrastructure Renewal and Lifecycle Management” section of this report.

An asset rated in past due or very poor condition does not mean that it is no longer delivering its intended service or has already failed. For example, there are

several facility components at recreation centres that have reached or are close to the end of their expected useful lifecycles. That these assets remain in service shows the value of consistent maintenance, but Recreation should make note of these assets and consider prioritizing their rehabilitation or replacement as they continue to age.

Likewise, an asset in “very good” condition may not be functioning 100% perfectly. Condition ratings assigned to assets are based on best practices and standards and are a tool that enables long term needs assessment at the whole portfolio level.

### Recreation Facilities Asset Condition

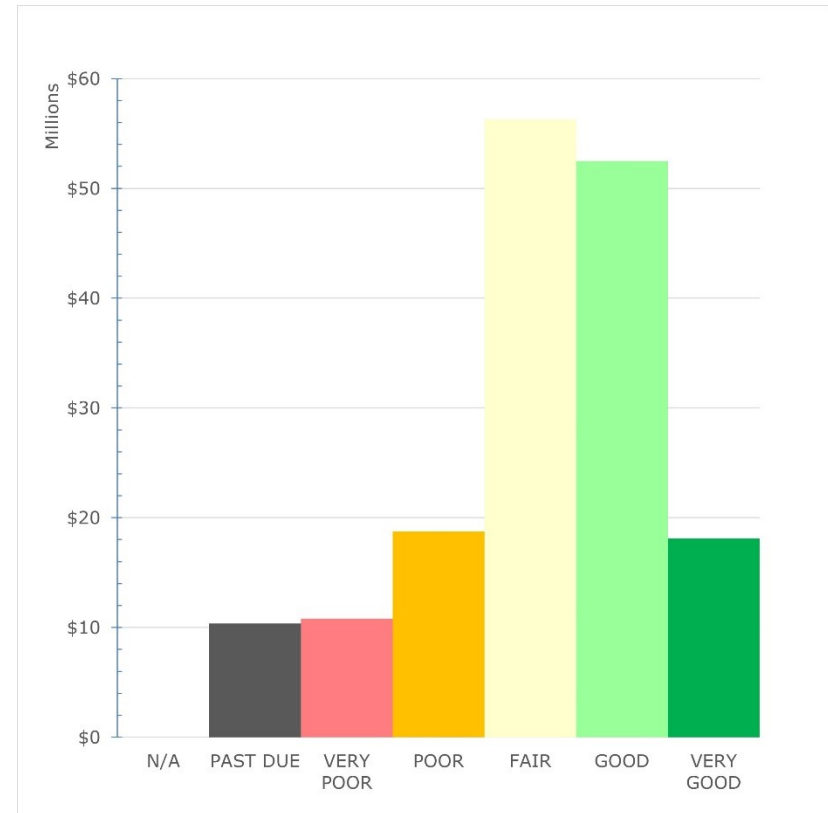
The facilities operated by Recreation include major assets like Centennial Park Arena, Exhibition Park Arena, Victoria Road Recreation Centre and West End Community Centre as well as smaller facilities like Evergreen Seniors Community Centre, Guelph Sports Dome and Lyon Pool. The condition of these facilities has been determined based on information provided by 3<sup>rd</sup> party consultants engaged by the City. This includes a combination of facility condition assessments that review the physical and functional condition of the equipment comprising a facility and a long-term needs analysis with recommended major renewal or growth work. Guelph Sports Dome is the newest facility asset, having been constructed in 2008 while Lyon Pool dates to 1950.

All the facility assets operated by Recreation have a combined replacement value of \$166.8M. 76% of these (by replacement value) are in fair or better condition, while the remaining 24% are in poor condition or worse. On the surface, this data indicates

a moderate risk of unexpected failures and increasing need for maintenance. Many Recreation facility assets are performing better than their age-based condition would indicate and regular inspections should be scheduled to verify assessed conditions and monitor aging assets.

One Recreation facility in the portfolio worth highlighting is Lyon Pool. While a beloved community facility, this pool has reached the end of its expected useful lifecycle and is in dire need of replacement or rehabilitation. Lyon Pool only accounts for a small percentage of the Recreation asset portfolio but capital investment in the facility will address assets in both the past due and very poor condition groups shown in Figure 72 to the right.

**Figure 72: State of the Recreation Facilities Assets**



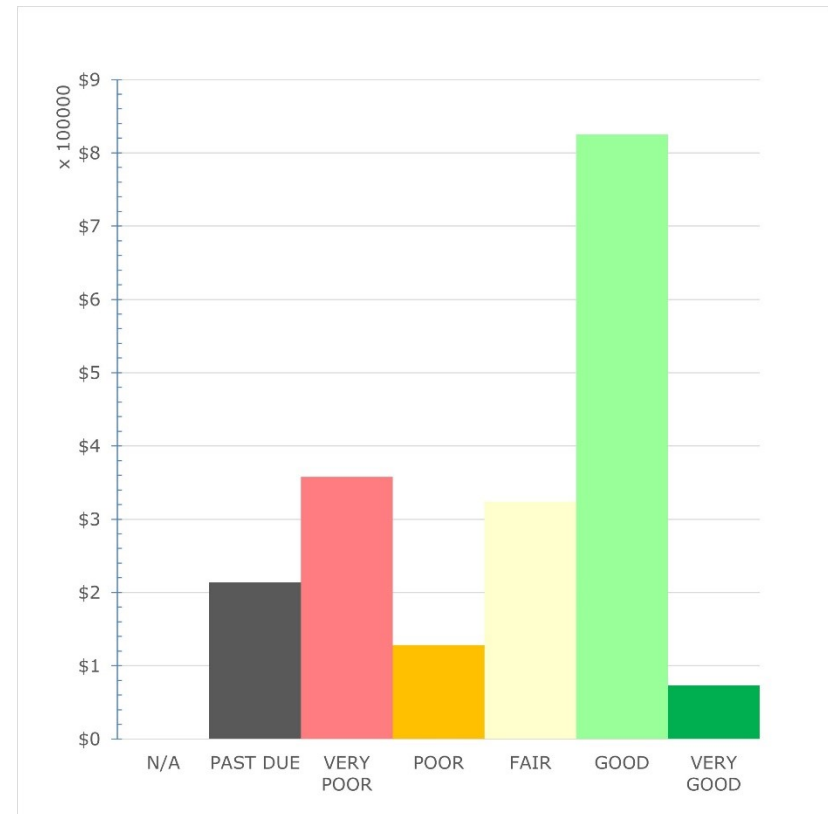
**Recreation Fleet Asset Condition**

Fleet and equipment assets operated by Recreation include ice maintenance equipment, small utility vehicles and 5 (five) on-road vehicles. For the purposes of this plan, the condition of these assets is determined based on age and expected useful lifecycle, which ranges from 5-10 years depending on the asset type.

Analysis of these assets shows that 64% of the Recreation fleet and equipment with a replacement value of \$1.2M are in fair or better condition. Assets rated as poor or worse account for 25% of the portfolio while the remaining 11% (replacement value \$213K) of assets are past due. These assets have reached the end of their expected useful lifecycle prior to 2024. This is the value of the deferred backlog, assets that should have been replaced based on age but may not have been partly due to inadequate funding in previous years.

Recreation should consider a standing item in the capital budget to help address this backlog. Replacement fleet and equipment assets could also support the City’s efforts to mitigate climate change by considering electric or hybrid options. While there is an age-based need identified for Recreation fleet and equipment, it is worth noting that vehicles can remain in service beyond their expected useful lives with regularly scheduled maintenance and rehabilitation interventions.

**Figure 73: State of the Recreation Fleet Assets**



**Table 54: State of the Recreation Assets - Summary**

	<b>RECREATION FACILITIES</b>	<b>RECREATION FLEET &amp; EQUIPMENT</b>	<b>SUBTOTALS</b>	<b>OVERALL TOTAL</b>
<b>TOTAL CRV</b>	<b>\$166,771,625</b>	<b>\$1,921,073</b>		<b>\$168,692,699</b>
<b>N/A</b>	\$0	\$0	<b>\$0</b>	<b>0.00%</b>
<b>PAST DUE</b>	\$10,345,844	\$213,649	<b>\$10,559,492</b>	<b>6.26%</b>
<b>VERY POOR</b>	\$10,791,182	\$357,564	<b>\$11,148,745</b>	<b>6.61%</b>
<b>POOR</b>	\$18,733,039	\$127,910	<b>\$18,860,949</b>	<b>11.18%</b>
<b>FAIR</b>	\$56,295,847	\$323,767	<b>\$56,619,614</b>	<b>33.56%</b>
<b>GOOD</b>	\$52,491,785	\$825,126	<b>\$53,316,910</b>	<b>31.61%</b>
<b>VERY GOOD</b>	\$18,113,930	\$73,058	<b>\$18,186,988</b>	<b>10.78%</b>

**Asset Age Profile**

Recreation assets have a variety of expected useful lifecycle values. Assets identified as part of the 7 facilities operated by Recreation are assigned individual lifecycle values ranging from 10-75 years. Fleet vehicle and equipment expected useful lifecycle values are 5 years.

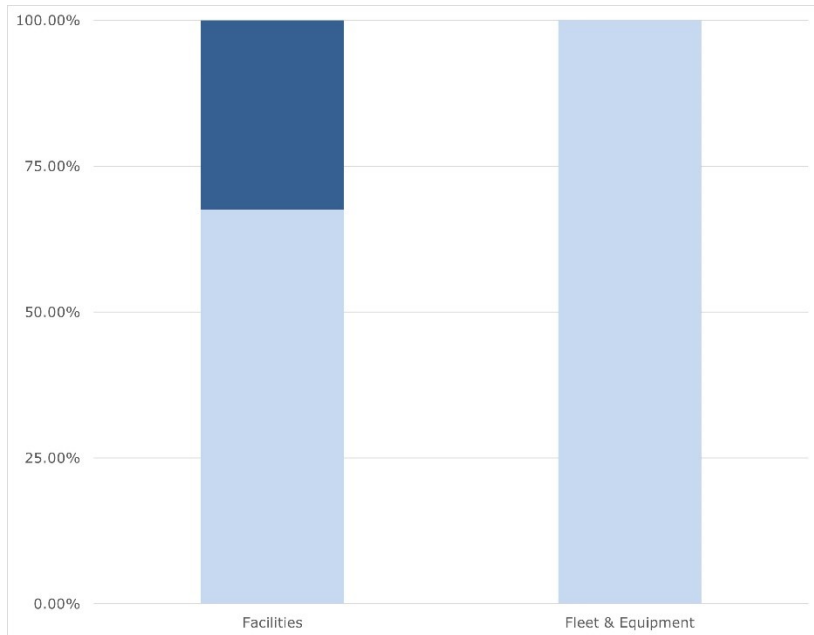
As shown in Table 54 above, 6.5% of Recreation assets (by replacement value) have a condition rating of past due meaning that they have reached the end of their expected useful lifecycles. Most of these assets are facility components, but there are also a few needs identified for the fleet and equipment. Overall, most assets operated by Recreation are in fair condition. As mentioned previously, a regular assessment program

should be undertaken to verify and update these conditions as the assets continue to age.

Comparing the current ages of assets to their expected normal lifecycle allows for a general understanding of what assets may require increased maintenance attention and possibly replacement in future years.

The age ratio chart below shows that most Recreation assets are reaching the end of their average expected lifecycles. Considering the condition of these assets is reported to mostly fair or better, it can be concluded that Recreation assets are outperforming age-based expectations.

**Figure 74: Average Age of Recreation Assets as a Ratio of Normal Lifecycles**



**Renewal Needs vs. Funding Analysis**

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for Guelph Transit assets were determined.

**Lifecycle Renewal Planning and Replacement Costs**

Assets in the Recreation portfolio are valued based on Facility Condition Assessments (FCAs), historic construction costs and fleet replacement schedules.

These methodologies are used across all service areas to ensure consistency in the Asset Management Plan.

**Funding Availability**

Capital renewal funding for Recreation comes from a single source, property tax. Estimated future contributions from the tax-funded Infrastructure Renewal Fund were used as the available funding values when determining the difference between planned contributions and forecast needs.

Prior to completing the review, the following steps were taken:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation.
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues.
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results are summarized in Table 55 and Figure 75 below.

**Table 55: 10-Year Infrastructure Renewal Forecast Summary for Recreation (in \$ millions)**

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Forecast Renewal Costs</b>	(\$12.68)	(\$5.67)	(\$2.54)	(\$5.52)	(\$1.05)	(\$14.55)	(\$5.90)	(\$2.94)	(\$6.40)	(\$0.73)
<b>Planned Reserve Fund Contributions</b>	\$1.52	\$1.79	\$2.12	\$2.48	\$2.77	\$3.09	\$3.42	\$3.78	\$4.16	\$4.56
<b>Cumulative Gap</b>	(\$11.16)	(\$15.37)	(\$16.25)	(\$19.78)	(\$18.65)	(\$30.67)	(\$34.08)	(\$34.26)	(\$37.54)	(\$34.83)

**Table 56: Recreation Renewal Forecast Summary (in \$ millions)**

<b>Average Annual Renewal Need</b>	(\$5.80)
<b>Average Annual Fund Contribution</b>	\$2.97
<b>Average Annual Gap (Cumulative)</b>	(\$25.26)
<b>10 Year Forecast Renewal Total</b>	(\$57.98)
<b>10-Year Forecast Reserve Fund Contributions</b>	\$29.68
<b>10-Year Funding Gap</b>	(\$28.30)

**Figure 75: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**

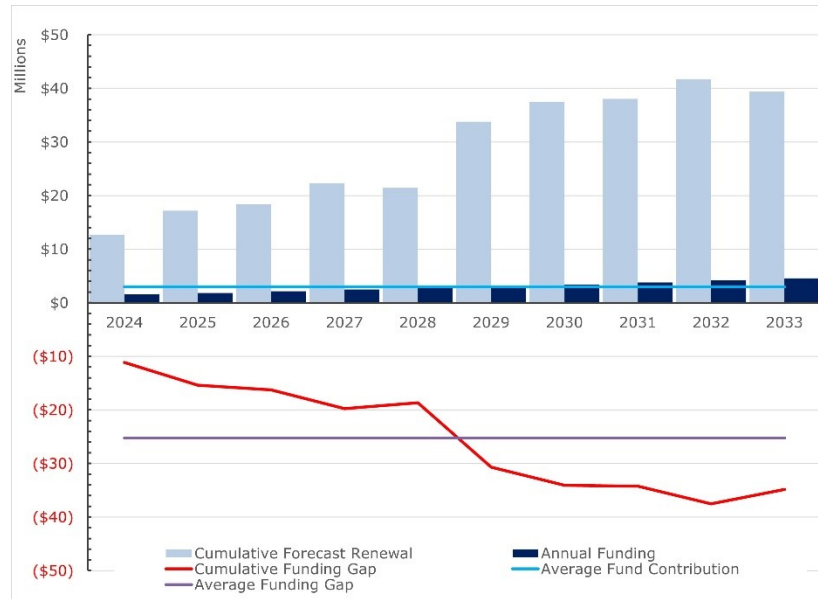


Table 55 above comparing forecast renewal needs to forecast reserve fund contributions identifies that the proposed funding will not meet the projected needs of Recreation assets over a 10-year period.

The average annual funding gap of \$25.3M is forecast for the next ten (10) years with a total 10-year renewal need calculated at \$58M against a forecast reserve fund contribution of \$29.7M. This predicts a \$34.8M backlog by the end of 2033, an increase of more than 300% from the current (2024) backlog of \$11.2M.

Most of the renewal needs for the next ten (10) years can be attributed to components of Recreation

facilities that are approaching the end of their expected useful lifecycles. As with other facilities, the risk of deferring these replacements or rehabilitations is a potential decrease to level of service in terms of availability of amenities to the public. Infrastructure renewal capital projects involving Recreation assets should be considered based on the projected requirements outlined in this plan.

The projected renewal need of Recreation fleet and equipment assets is \$1.4M over the next ten (10) years. Due to the short expected useful lifecycle values of fleet and equipment assets, some Recreation assets are projected to be replaced multiple times over this 10-year period. As with other service areas, vehicles and equipment are replaced based on their condition, usage, age, cost, safety, reliability and operational requirements. There is an opportunity for continued electrification of the fleet during this period both ice resurfacing equipment and support vehicles.

**Operations and Maintenance Activities**

Daily operation of Recreation services involves the use of facilities and fleet assets. The annual operating budget covers items such as:

- Utility costs for the Recreation facilities (hydro, natural gas, potable water, telephone service, internet, etc.).
- Vehicle operating costs (fuel, hydro, etc.)
- Labour costs for staff involved in daily operations activities.
- Supplies and materials to support program delivery.
- General property maintenance (building maintenance, landscaping, winter control, etc.).

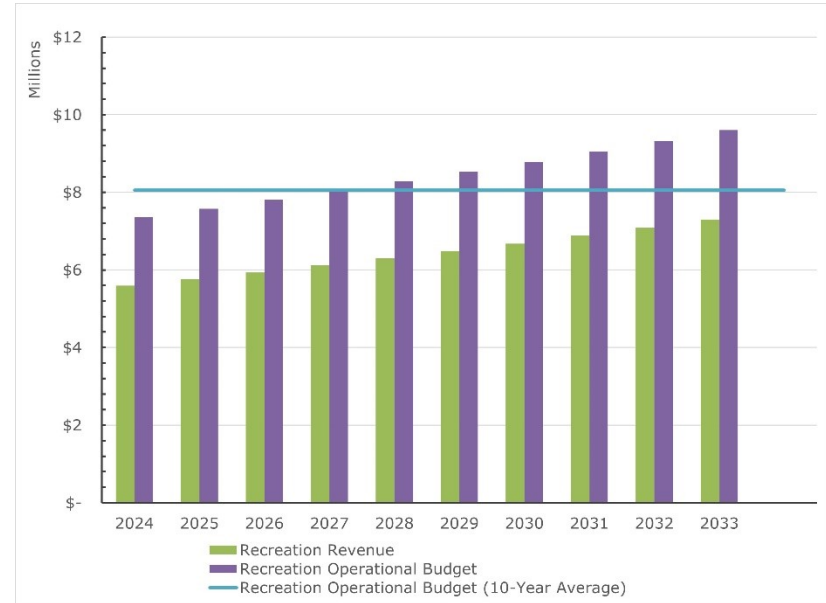


Also included in the annual operations and maintenance budgets are allowances for making unplanned repairs to Recreation assets when required.

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Budget requested values which were also inflated by 3% per year. While these projected figures attempt to account for the increasing costs of goods and services, they do not reflect increasing maintenance needs for aging assets or projected growth to the operational budget as assets (i.e. South End Community Centre) are added to the Recreation portfolio.

Review of the budget shows that in 2023 the amount spent on operations needs was about 96% of the budgeted value. Over the next 10-years (until 2033) the average annual operations need is forecast at approximately \$8.05M. By enabling the operation of programs, recreation facilities contribute to City revenue which helps to offset their operational budget needs. In 2023, that revenue was approximately \$5.4M and this value was used to predict future revenue. Projected revenue has been inflated at the same rate as operating expenses. The values shown are not meant to represent revenue targets for Recreation but only to visualize continued revenue against increasing operating expenses.

**Figure 76: Forecast Operation Budget Needs 2024-2033**

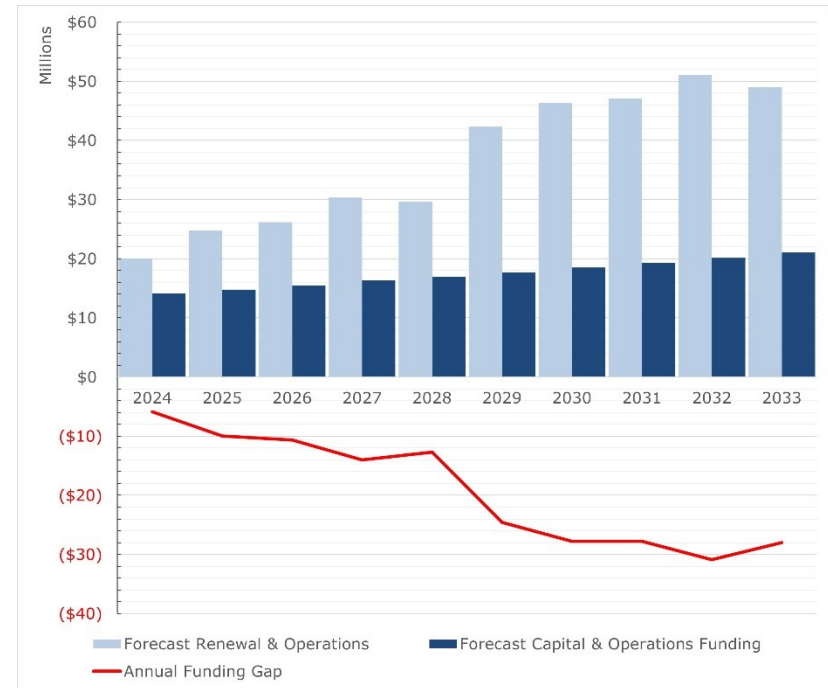


**Total Annual Forecast – Renewal and Operations**

The total forecast needs of assets operated by Recreation is determined by combining the renewal needs and forecast funding contributions. Refer to Figure 77 and Table 57 for this summary.

As this analysis is a summation of previously discussed information the overall result is very similar. There is an annual funding gap averaging \$19.2M over the next ten (10) years. This is largely due to the existing renewal backlog in 2024 and the funding not matching the increased renewal needs from 2024-2033.

**Figure 77: Combined Renewal and Operations Forecast & Funding**



**Table 57: Combined Renewal and Operations Forecast vs. Funding (in \$ millions)**

	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
<b>Renewal Forecast</b>	\$12.68	\$17.16	\$18.37	\$22.26	\$21.42	\$33.76	\$37.50	\$38.04	\$41.69	\$39.39
<b>Operations Forecast</b>	\$7.36	\$7.58	\$7.81	\$8.04	\$8.28	\$8.53	\$8.79	\$9.05	\$9.32	\$9.60
<b>Subtotal</b>	<b>\$20.04</b>	<b>\$24.74</b>	<b>\$26.17</b>	<b>\$30.30</b>	<b>\$29.70</b>	<b>\$42.29</b>	<b>\$46.28</b>	<b>\$47.09</b>	<b>\$51.01</b>	<b>\$48.99</b>
<b>Capital Reserve Fund Contribution</b>	\$1.52	\$1.79	\$2.12	\$2.48	\$2.77	\$3.09	\$3.42	\$3.78	\$4.16	\$4.56
<b>Operations Budget Contribution</b>	\$7.03	\$7.24	\$7.45	\$7.68	\$7.91	\$8.15	\$8.39	\$8.64	\$8.90	\$9.17
<b>Revenue</b>	\$5.59	\$5.76	\$5.93	\$6.11	\$6.29	\$6.48	\$6.68	\$6.88	\$7.08	\$7.30
<b>Subtotal</b>	<b>\$14.14</b>	<b>\$14.79</b>	<b>\$15.50</b>	<b>\$16.27</b>	<b>\$16.98</b>	<b>\$17.71</b>	<b>\$18.49</b>	<b>\$19.29</b>	<b>\$20.14</b>	<b>\$21.03</b>
<b>Annual Funding Gap</b>	(\$5.90)	(\$9.95)	(\$10.7)	(\$14.0)	(\$12.7)	(\$24.6)	(\$27.8)	(\$27.8)	(\$30.9)	(\$27.9)

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## Master and Major Capital Plans

### City Growth

The Parks & Recreation Master Plan includes allowances for the Guelph's growth and presents multiple suggestions to accommodate a growing need for Recreation services. Key recommendations like evaluating the City's facility allocation policy and developing a data collection plan for facility bookings will help to balance use while identifying areas for future investment.

The Recreation asset portfolio will soon be increased with the planned commissioning of the South End Community Centre in Q4 2026. This new facility will support the growing south end including the growth proposed in the Clair-Maltby Secondary Plan. While this new facility will lead to increased operating needs, it's availability may shift the burden of use away from existing Recreation assets and allow for needed repairs without impacting planned programming.

### Levels of Service

O. Reg. 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as "Customer" or "Technical" LOS in alignment with the O. Reg. 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

**Table 58: Recreation Levels of Service**

<b>Strategic Theme</b>	<b>LOS Type</b>	<b>Performance Measure</b>	<b>Current Performance</b>
City Building	Technical	Total Recreation facility rental hours (not including City programming)	49,867 hours
City Building	Customer	Participation in Recreation drop-in opportunities	106,291 people
City Building	Customer	Participation in registered Recreation programs	17,609 people
Environment	Technical	Energy Consumption (kWh)	5,470,143 kWh
Environment	Technical	Water Consumption (m <sup>3</sup> )	78,244 m <sup>3</sup>
Environment	Technical	Natural Gas Consumption (m <sup>3</sup> )	688,485 m <sup>3</sup>

## Risks to the Recreation Assets

### Climate Change

The 2023 Climate Adaptation Plan identifies four (4) action items which involve the recreation asset portfolio.

- 1) Work with Facilities to ensure adequate air conditioning in offices and recreation facilities, continue with routine maintenance on these systems.
- 2) Periodically review, maintain, and update use of recreation facilities as emergency shelter buildings. Review with an equity lens. This includes co-ordination with the County of Wellington and Emergency Services.
- 3) Itemize culture and recreation buildings components for their resilience to climate hazard impacts and plan with Asset Management for itemization and replacement.
- 4) Work with Parks to design and upgrade low impact development features around the culture and recreation facilities.

Continuing implementation of these actions would help prepare Recreation assets for extreme weather events and emergency situations while contributing to Guelph's greenhouse gas emissions reduction targets in the Race to Zero.

### Aging Assets

As the age of assets increase, so to does the potential for unexpected failures. The large Recreation assets like the community centres are a considerable source of revenue for the City and their availability for recreation programming is critical to maintaining that revenue. Sound operations and maintenance planning will help to ensure that availability, provided that the funding for these two essential activities is adequate.

Recreation facilities should also be part of a regular and repeated FCA process, to keep a close eye on the condition of critical assets whose failure could lead to temporary facility closures. While the expected useful lifecycles of facility assets vary, the true lifecycle of a facility is only as long as the lifecycle of its critical assets.

### Insufficient Funding (Funding Gap)

Existing funding for Recreation assets is not meeting the projected needs of the portfolio, resulting in an increasing backlog and infrastructure gap. This trend is projected to worsen over the next ten (10) years with a cumulative projected backlog of \$192.3M. With insufficient funding and normal continuing deterioration of physical assets the risk of increasing unexpected failures requiring emergency repair work will increase.

### Asset Data Tracking

There is currently no central system used to track asset management data across the City of Guelph. The ongoing Enterprise Resource Planning (ERP) project will provide opportunity for Recreation to enhance the tracking of maintenance and rehabilitation processes

of the assets they operate as well as forecast maintenance costs. This valuable data will help to shape capital investments, operational processes and future asset management plans by associating work with assets, providing a more accurate picture of the total cost of ownership over the expected useful lifecycle.

### **Summary and Recommendations**

Recreation assets provide many well-loved services to the public and contribute to a sense of a healthy and vibrant City of Guelph. From that perspective, these are essential facilities even if they are not formally defined as such in O. Reg. 588/17.

In general, the condition of the Recreation portfolio is such that a backlog of infrastructure renewal needs has accumulated and is only projected to grow as the assets age. Most assets remain in a functional state (i.e. fair condition) and are meeting their level of service targets but continued underinvestment in Recreation asset renewal will only increase the risk of unexpected failures. Increasing funding to Recreation assets could be done at the expense of other asset portfolios but careful consideration of the benefits and consequences of that action is required before a decision is made.

At the time of the preparation of the AMP, only Lyon Park Pool is a candidate for facility replacement. There are multiple vehicle and equipment replacements forecast but this is normal due to their shorter expected useful lifecycles.

At a high level, the Recreation asset portfolio is in fair condition, but the forecast funding gap presents an increasing risk to the City if not properly addressed and funded. Sound operations and maintenance planning should be put into place to help alleviate future capital needs, while concurrently prioritizing infrastructure renewal projects to ensure the safety and continued operation of the assets operated by Recreation.

## Chapter 9: Parks





**Quick Facts:****City of Guelph Parks Assets**

Total value of assets	\$268,464,371
Total number of assets	50,641
Number of Parks	123
Number of Trees <sup>27</sup>	39,631
Length of Trails	201 km
Average condition of assets	FAIR

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<sup>27</sup> Trees included in this plan are park and street trees owned by the City of Guelph, same as those evaluated as part of the Urban Forestry Master Plan. Woodlots and natural area trees have not been inventoried.

## Introduction

Parks are essential to every life in Guelph, encouraging people to connect with each other, be mindful of their health and respect the environment. The City’s Parks department operates under Public Services and is responsible for the management and maintenance of many types of assets including buildings, playgrounds, trails, trees, gardens and park furniture. This wide variety of assets highlights the many services provided to City of Guelph residents by dedicated Parks staff. At a high level, the Parks asset portfolio is in fair to good condition. Further analysis and detail are presented below.

### Assets in the Parks System

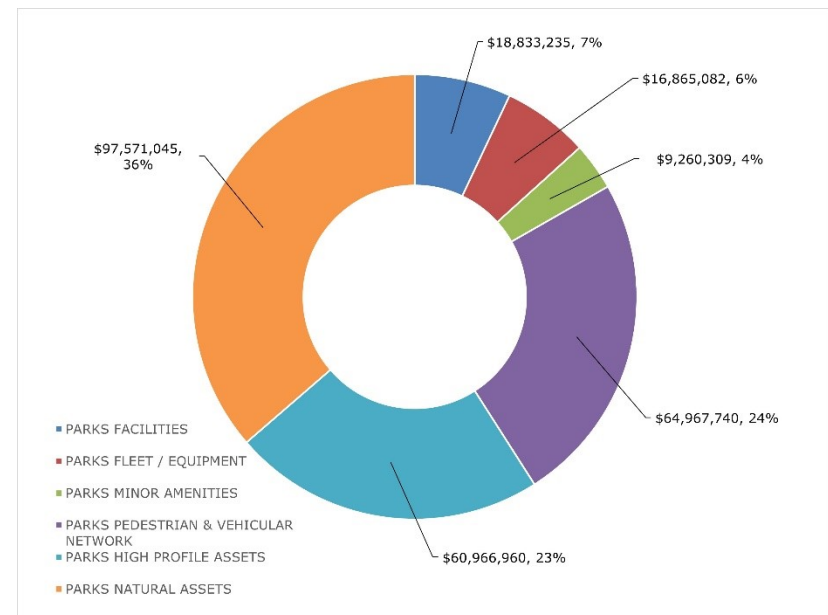
Parks assets included in this plan can be broadly classified into six (6) categories:

- **High-Profile Assets:** Park buildings, courts, electrical panels, leash-free facilities, playgrounds & play equipment, bookable shelters, skateboard facilities, splash pads and sports fields.
- **Pedestrian & Vehicular Network:** Impervious surfaces, parking lots, pervious surfaces and trails.
- **Minor Amenities:** Park furniture (i.e. benches, tables, trash receptacles), bicycle racks, gates, grills, lights, plaques, signs and storage containers.
- **Natural Assets:** Community gardens, landscaped beds, wildlife gardens and park/street trees.
- **Facilities:** Parks buildings that have been previously included in Facility Condition

Assessment (FCA) programs – Storage buildings, shelters, washroom buildings, heritage buildings, bandshells, gazebos and David E. Hastings stadium.

- **Fleet & Equipment:** Vehicles and equipment operated by Parks staff including trucks, mowers, utility vehicles, landscaping equipment, trailers, forestry equipment and small equipment.

**Figure 78: Replacement Value of Parks Assets**



The current estimated total replacement value of the Parks asset portfolio is \$268.5M, with the most of that value represented in the high-profile assets, pedestrian and vehicular network and natural asset groups. Overall, 93% of Parks assets (by current replacement value) are in fair or better condition while

3% are in poor condition or worse. This indicates a low risk of unexpected failure for Parks assets.

Locations of City of Guelph Parks are displayed in Figure 80 below.

### State of the Parks Assets

The average condition of the assets in the Parks portfolio is fair to good. Figure 79 below summarizes this data and shows the value of all Parks assets by condition rating. The results show a distribution weighted towards the top end of the scale, indicating that Parks assets are aging well.

The value and condition of each asset was determined according to the methods described in the “Infrastructure Renewal and Lifecycle Management” section of this report.

An asset rated in past due or very poor condition does not mean that it is no longer delivering its intended service or has already failed. For example, a sports field or court that has reached the end of its expected useful lifecycle can remain in service to the community with rehabilitation intervention(s) and a consistent maintenance program. At the same time, Parks should make note of these assets and consider prioritizing their rehabilitation or replacement as they continue to age.

Likewise, an asset in very good condition may not be functioning 100% perfectly. Condition ratings assigned to assets are based on best practices and standards and are a tool that enables long term needs assessment at the whole portfolio level.

**Figure 79: State of the Parks Asset Portfolio**

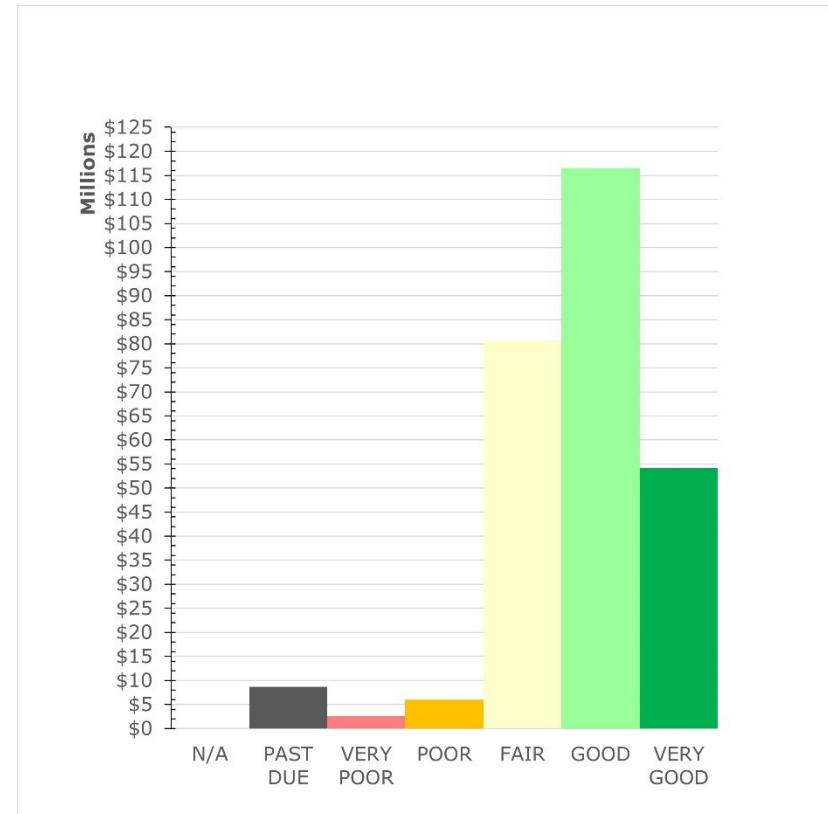
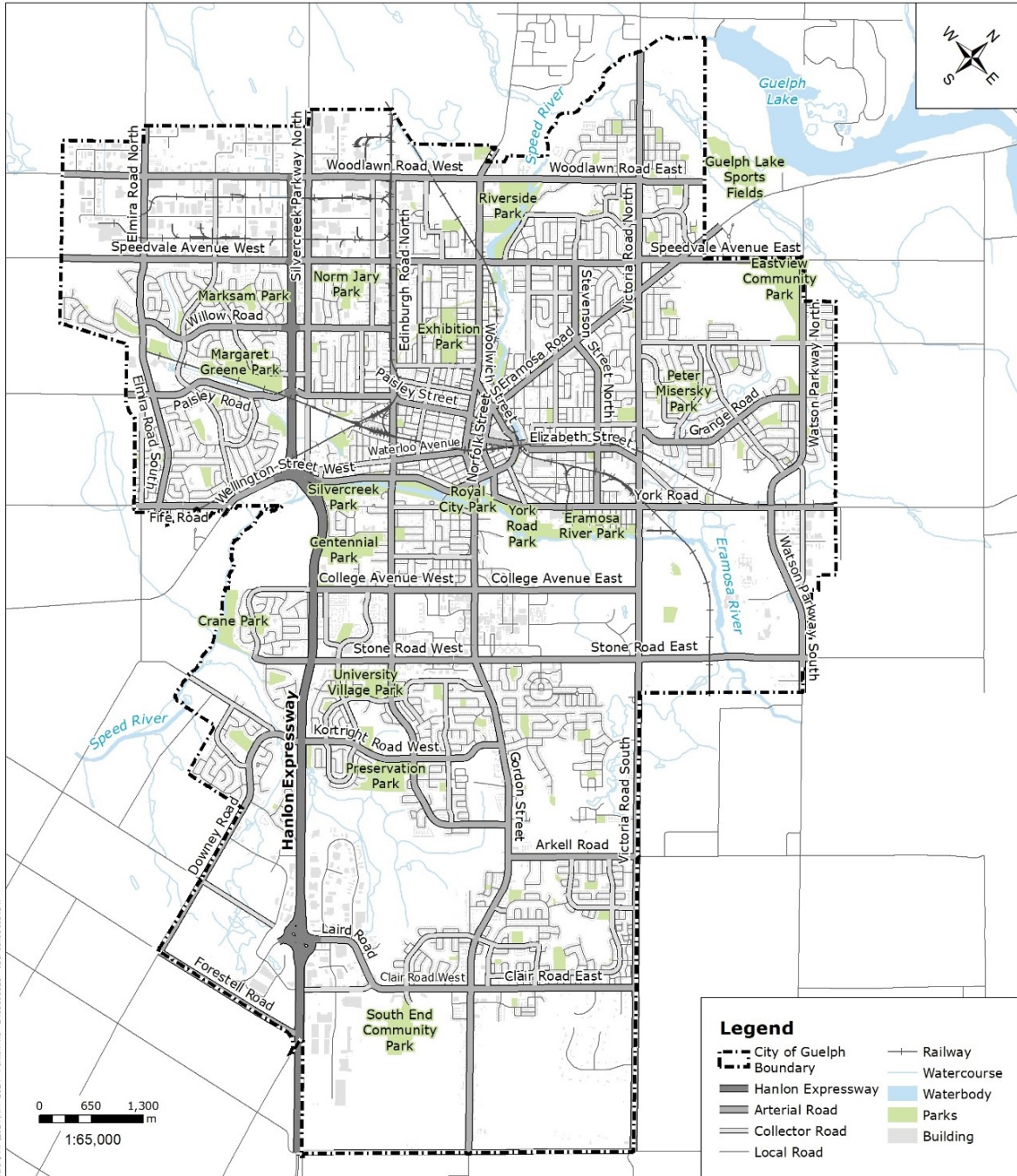


Figure 80: City of Guelph Park Locations



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Produced by the City of Guelph  
Infrastructure, Development & Enterprise  
Engineering and Transportation Services  
May 9, 2024

**City of Guelph**  
Parks

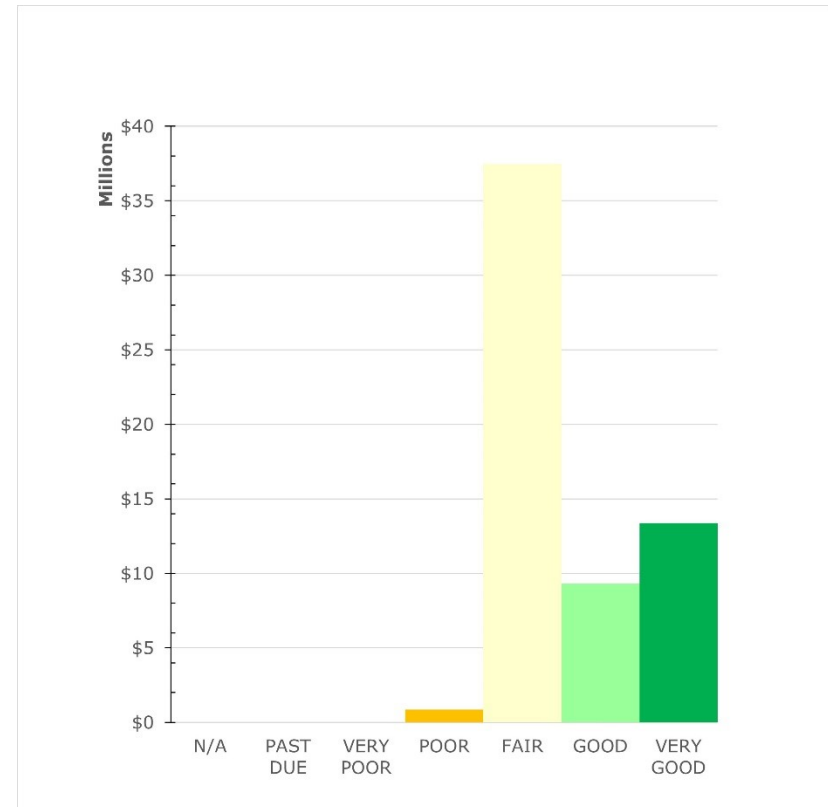


### High-Profile Assets Condition

The High-Profile category consists of assets that are highly visible and popular with the public (i.e. buildings, courts, playgrounds and equipment, splash pads, skateboard facilities and sports fields) as well as supporting assets like electrical panels. The condition of these assets was determined via inspections conducted by Parks staff. For assets that had not been inspected recently, a condition based on age and expected useful lifecycle was assigned. Assets in the High-Profile category have expected useful lifecycles that range from 15-40 years. Replacement costs for these assets assume like-for-like replacement although there’s always consideration for community needs, changing standards and plan recommendations when replacing an asset.

Analysis of these assets shows that 99% of the portfolio, a value of \$60.1M, is in fair condition or better. Assets in poor condition make up the remaining 1%, while no assets are identified as very poor or past due. This data indicates a low risk of unexpected failures and highlights the benefits of ongoing asset inspections, rehabilitation and maintenance. While the overall condition of the high-profile assets is fair to good, there were some with assigned condition or determined age.

**Figure 81: State of the Parks High Profile Assets**



For the purposes of this plan, those assets were assigned the condition of fair. Parks should continue to refine their asset management data and inspect these assets regularly to ensure accurate condition ratings.

To further ensure the service of these high-profile assets, there are proposed projects in the multi-year budget to replace park amenities at Sunny Acres Park, Exhibition Park and Margaret Greene Park among others. Considering the current condition of the assets

and the planned work, these assets should continue to meet the needs of the community for years to come.

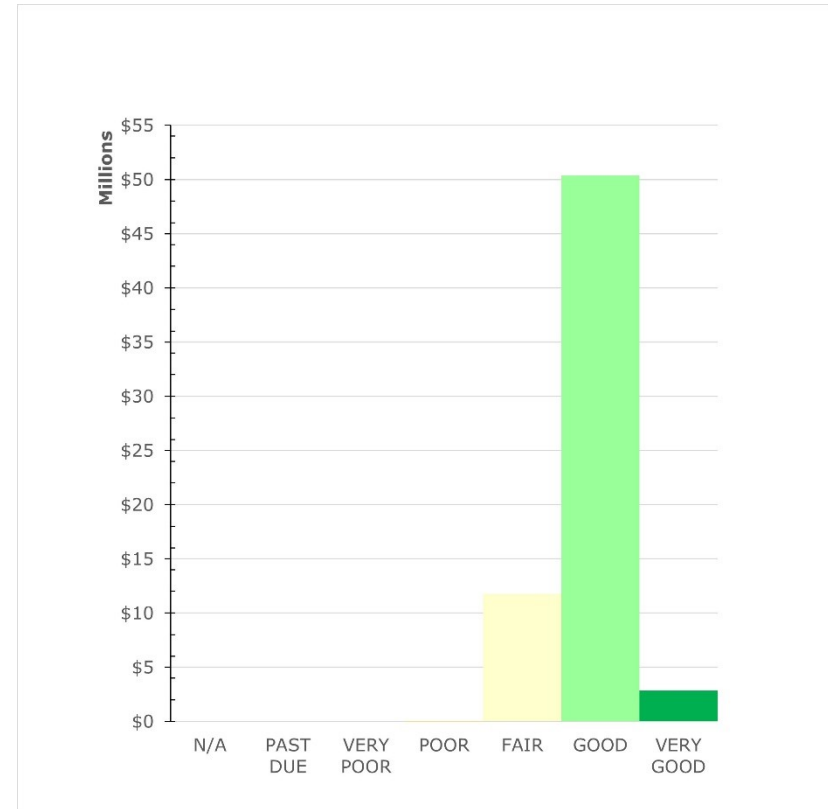
**Pedestrian & Vehicular Network Asset Condition**

The Pedestrian & Vehicular Network category consists of assets that enable all forms of transportation and accessibility in and around Parks. This includes trails, parking lots and driveways as well as pervious and impervious surfaces within Parks. The condition of these assets was determined via inspections conducted by Parks staff. For assets that had not been inspected recently, a condition based on age and expected useful lifecycle was assigned. Assets in the Pedestrian and Vehicular Network category have expected useful lifecycles between 10 and 25 years.

Analysis of these assets shows that 100% of the portfolio, a value of \$64.9M is in fair condition or better. This data indicates a low risk of unexpected failures and highlights the benefits of ongoing asset inspections, rehabilitation and maintenance.

The largest asset group within the Pedestrian and Vehicular Network is trails, which connect the community and provide opportunities for health and wellness. The trail network makes up 76% of this portfolio by value and its condition drives the overall condition shown in Figure 82 above. The Parks department continues to follow the recommendations in the Guelph Trail Master Plan to maintain and preserve these assets for residents and visitors alike.

**Figure 82: State of the Parks Pedestrian & Vehicular Network Condition**



**Minor Amenities Asset Condition**

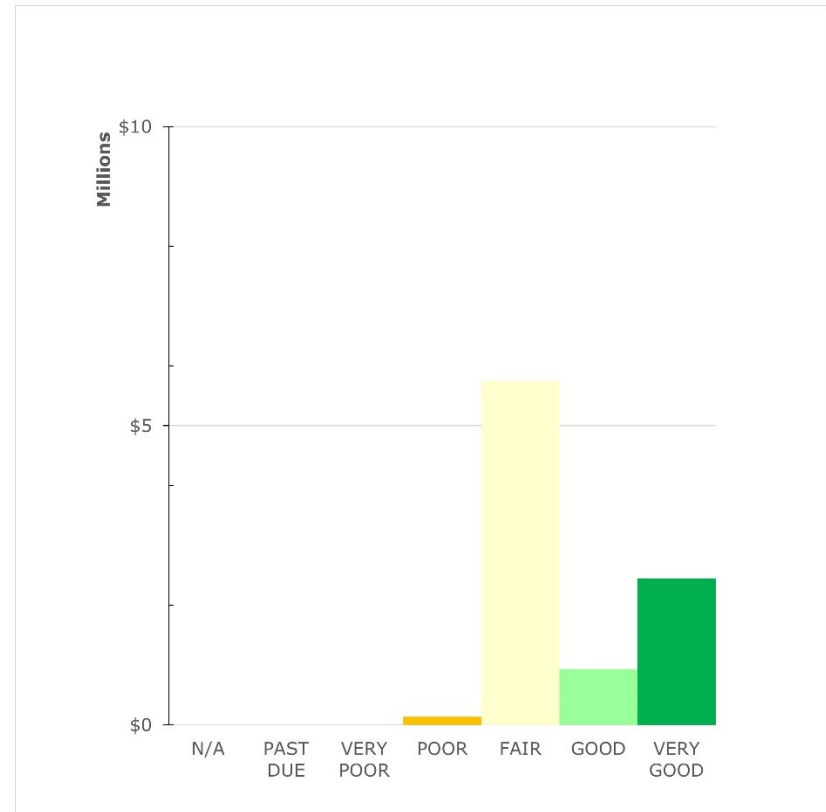
The Minor Amenities category consists of smaller assets like park furniture, grills, lights, signs and storage containers. As individual assets, these are relatively inexpensive but combined, the portfolio has tangible value. The condition of these assets was determined via inspections conducted by Parks staff. For assets that had not been inspected recently, a condition based on age and expected useful lifecycle was assigned. Assets in the Minor Amenities category have expected useful lifecycles between 5 and 50 years.

Analysis of these assets shows that 99% of the portfolio, a value of \$9.1M, is in fair condition or better. While this presents a picture of a healthy asset category, these assets are not assessed regularly due to their low individual cost. Parks should implement a cyclical replacement program to maintain the overall health of these assets.

**Natural Assets Condition**

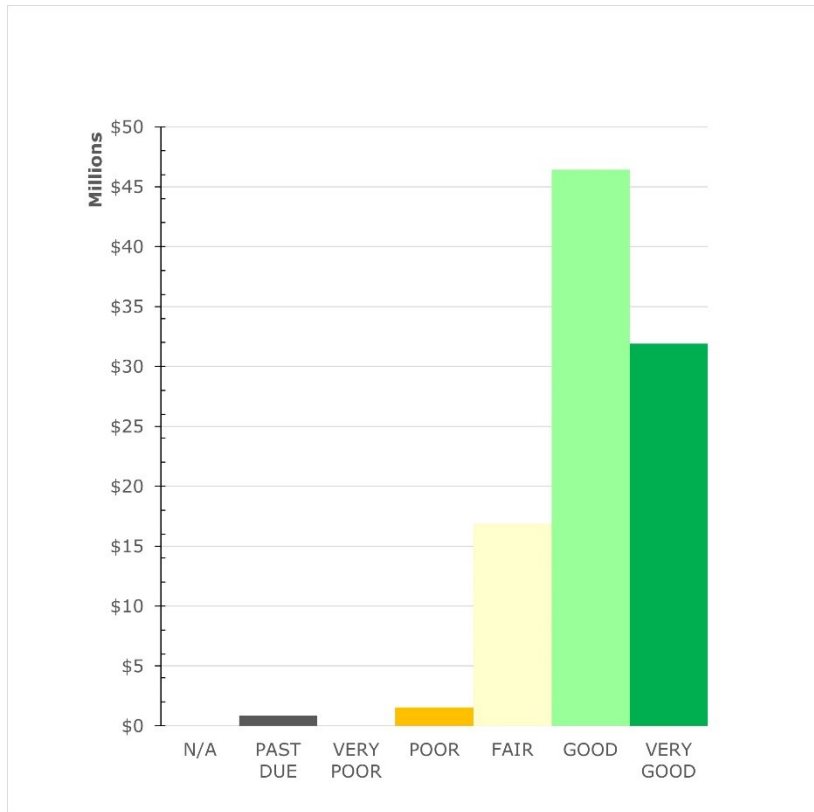
The Natural Assets category consists of assets that contribute to a greener City of Guelph. This includes various gardens (community gardens, landscaped beds and wildlife gardens) as well as the managed park and street tree canopy. Trees in woodlots and natural areas have not been included in this plan as the condition of these assets was determined via inspections conducted by Parks staff. For assets that had not been inspected recently, a condition based on age and expected useful lifecycle was assigned.

**Figure 83: State of the Parks Minor Amenities**



Natural assets are unique, as they have a tangible value but also provide additional benefits like contributions to air and water quality, shade and cooling in the summer and increased property values. They are also not subject to the same replacement schedules as other physical assets and as such, they are counted in the overall value of the portfolio but not as part of the forecast renewal needs.

**Figure 84: State of the Parks Natural Assets**



Analysis of these assets shows that 98% of the portfolio, a value of \$95.1M, is in fair condition or better. Approximate replacement cost of the park and street trees was drawn from the Urban Forestry Management Plan. Via the capital and maintenance budgets, Parks continues to implement recommendations from this plan for the ongoing maintenance, care and growth of these natural assets.

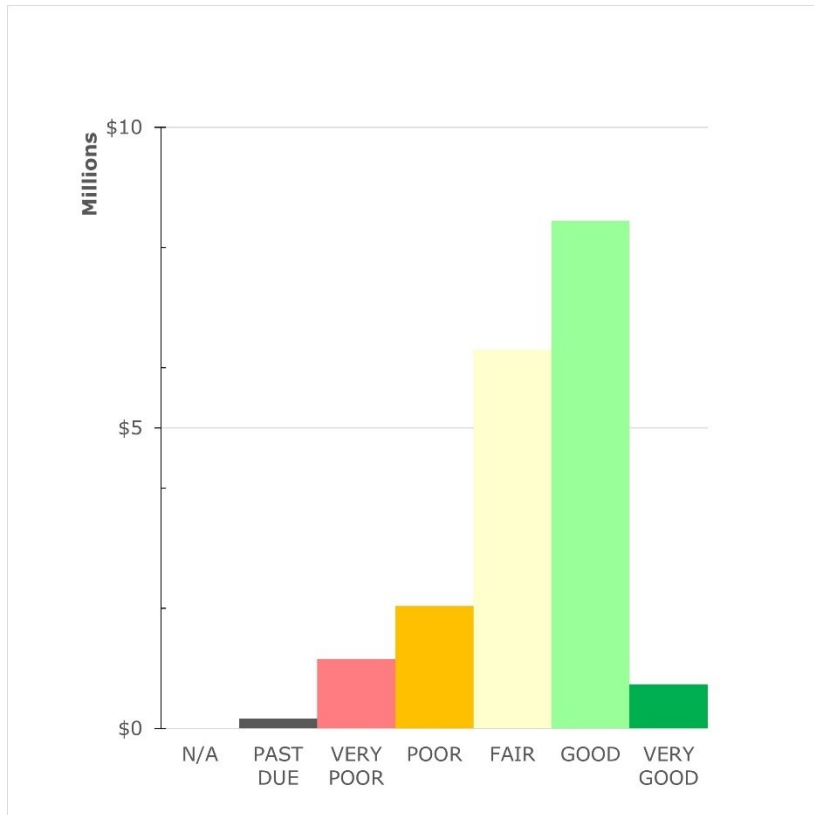
**Parks Facilities Condition**

Facilities operated by Parks are typically small buildings and structures like washrooms, concession stands, shade structures, bandstands and storage buildings. Also contained in this category are heritage assets like Allan’s Mill Ruins and Goldie Mill Ruins, as well as a large baseball diamond, Hastings Stadium. The condition of these facilities has been determined based on information provided by 3<sup>rd</sup> party consultants engaged by the City. This includes a combination of facility condition assessments that review the physical and functional condition of the equipment comprising a facility and a long-term needs analysis with recommended major renewal and growth work.

All the facility assets operated by Parks have a combined replacement value of \$18.8M with an overall condition of fair to good. Only 17% of facility components are in poor or very poor condition, indicating a low risk of unexpected failures. However, many Parks facility assets are performing better than their age-based condition would indicate and regular inspections should be scheduled to verify assessed conditions and monitor aging assets.



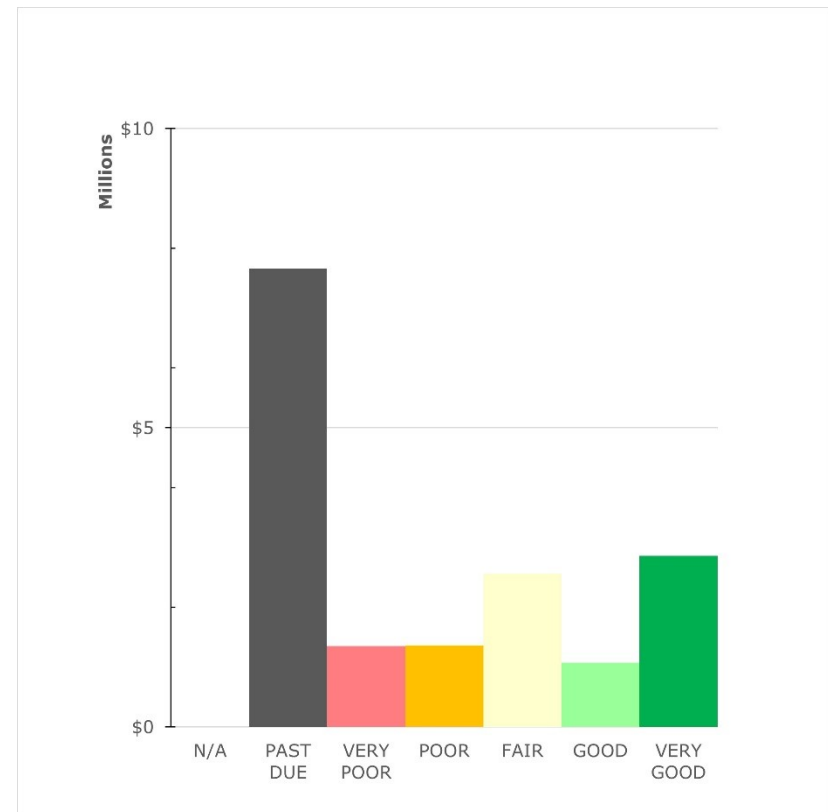
**Figure 85: State of the Parks Facilities**



**Parks Fleet Condition**

Fleet and equipment assets operated by Parks are used to support Parks operations across the city. For the purposes of this plan, the condition of these assets is determined based on age and expected useful lifecycle, which ranges from 5-10 years depending on asset type.

**Figure 86: State of the Parks Fleet and Equipment Assets**



Analysis of these assets shows that 39% of the Parks fleet and equipment with a replacement value of \$6.5M are in fair or better condition. Assets rated as poor and very poor account for 16% of the portfolio while the remaining 45% are rated past due. These assets have reached the end of their expected useful lifecycle prior to 2024. This is the value of the deferred backlog, assets that should have been replaced based on age but may not have been partly due to inadequate funding in previous years.

Parks should consider a standing item in the capital budget to help address this backlog. Replacement fleet and equipment assets could also address energy efficiency needs by considering electric or hybrid options. While there is an age-based need identified for Parks fleet and equipment, it is worth noting that vehicles can remain in service beyond their expected useful lives with regularly scheduled maintenance and rehabilitation interventions.

**Table 59: State of the Parks Assets - Summary**

	PARKS FACILITIES	PARKS FLEET / EQUIPMENT	PARKS MINOR AMENITIES	PARKS PEDESTRIAN & VEHICULAR NETWORK	PARKS HIGH PROFILE ASSETS	PARKS NATURAL ASSETS	SUBTOTALS	OVERALL TOTAL
TOTAL CRV	\$18,833,235	\$16,865,082	\$9,260,309	\$64,967,740	\$60,966,960	\$97,571,045		\$268,464,371
N/A	\$0	\$0	\$0	\$0	\$0	\$0	\$0	0.00%
PAST DUE	\$166,208	\$7,655,577	\$0	\$0	\$0	\$864,000	\$8,685,785	3.24%
VERY POOR	\$1,158,448	\$1,351,008	\$0	\$0	\$0	\$0	\$2,509,456	0.93%
POOR	\$2,034,093	\$1,362,974	\$135,244	\$24,629	\$845,400	\$1,526,400	\$5,928,740	2.21%
FAIR	\$6,293,267	\$2,563,870	\$5,744,627	\$11,752,208	\$37,469,271	\$16,868,645	\$80,691,888	30.06%
GOOD	\$8,445,607	\$1,072,038	\$933,408	\$50,348,218	\$9,297,735	\$46,411,200	\$116,508,206	43.40%
VERY GOOD	\$735,613	\$2,859,616	\$2,447,030	\$2,842,685	\$13,354,554	\$31,900,800	\$54,140,296	20.17%

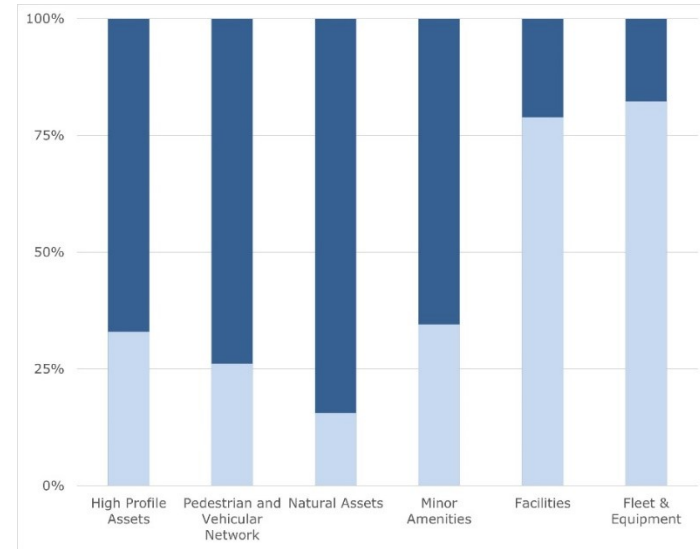
**Asset Age Profile**

Parks assets have a variety of expected useful lifecycle values, even within the defined categories.

As shown in the table above, only 3.2% of Parks assets have a condition rating of past due meaning that they have reached the end of their expected useful lifecycles. Most of these assets are fleet and equipment but needs exist for facilities as well. Overall, most assets operated by Parks have been assessed to be in fair or good condition, but regular assessment programs should be continued to verify and update these conditions as the assets continue to age.

Comparing the current ages of assets to their expected normal lifecycle allows for a general understanding of what assets may require increased maintenance attention and possibly replacement in future years. This age review for the Parks assets is displayed in the Figure 87 below.

**Figure 87: Average Age of Parks Assets as a Ratio of Normal Lifecycles**



As asset management practices evolve at the City of Guelph, this data will continue to be refined. One good example of this is the average age of the street and park trees shown above, which fall under the Natural Assets group. Most of these assets don't have an assigned age, so the average age appears to be very low despite the mature tree canopy. This will be resolved in future iterations of the plan in consultation with Parks staff.

## Renewal Needs vs. Funding Analysis

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for Parks assets were determined.

### Lifecycle Renewal Planning and Replacement Costs

Assets in the Parks portfolio are valued based on Facility Condition Assessments (FCAs), development charge study costs, historic construction costs, strategic plan estimates and fleet replacement schedules. These methodologies are used across all service areas to ensure consistency in the Asset Management Plan.

### Funding Availability

Capital renewal funding for Parks comes from a single source, property tax. Estimated future contributions from property tax were provided by the City’s Finance Department for the years 2024-2035 and used as the available funding value when determining the difference between planned contributions and forecast needs.

Prior to completing the financial analysis, the following steps were taken:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation.
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues.
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results are summarized below in Table 60 & Figure 88.

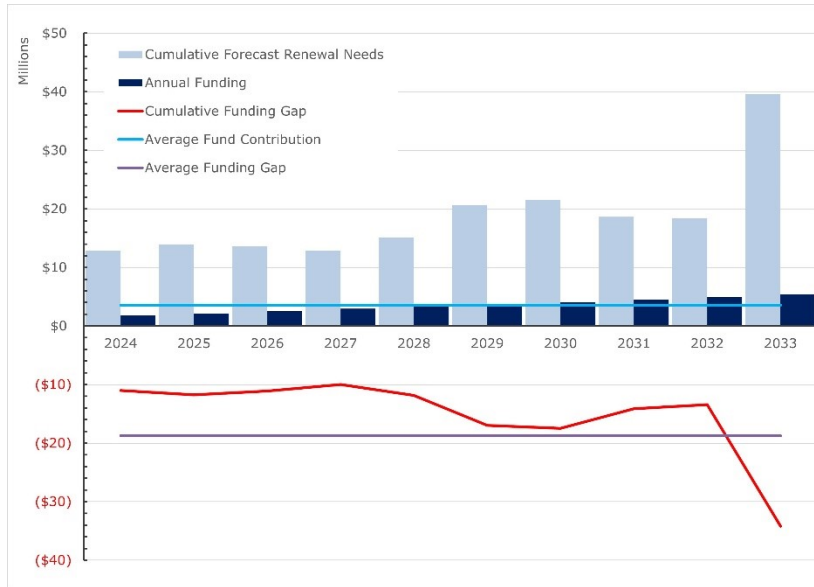
**Table 60: Parks 10-Year Asset Renewal Forecast Summary (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Forecast Renewal Costs	(\$12.8)	(\$2.55)	(\$1.51)	(\$1.49)	(\$4.89)	(\$8.42)	(\$4.08)	(\$0.62)	(\$3.81)	(\$25.8)
Planned Reserve Fund Contributions	\$1.81	\$2.13	\$2.52	\$2.95	\$3.30	\$3.67	\$4.07	\$4.49	\$4.94	\$5.43
Cumulative Gap	(\$11.0)	(\$11.8)	(\$11.1)	(\$9.9)	(\$11.9)	(\$16.9)	(\$17.5)	(\$14.1)	(\$13.4)	(\$34.2)

**Table 61: Parks Renewal Forecast Summary (in \$ millions)**

<b>Average Annual Renewal Need</b>	(\$6.6)
<b>Average Annual Fund Contribution</b>	\$3.53
<b>Average Annual Gap (Cumulative)</b>	(\$15.19)
<b>10 Year Forecast Renewal Total</b>	(\$65.98)
<b>10-Year Forecast Reserve Fund Contributions</b>	\$35.31
<b>10-Year Funding Gap</b>	(\$34.2)

**Figure 88: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**



As can be seen, the Parks forecast renewal needs are not met by forecast renewal contributions over a 10-year period. By 2033, the projected cumulative funding gap is approximately \$34.2M as the need for renewals continues to increase.

Most of the renewal needs for the next 10 years can be attributed to Parks fleet and equipment assets. With an existing backlog of \$7.6M and relatively short useful lives, some of these assets are projected to be replaced multiple times within the 10-year window. The additional spike in forecast renewal needs in 2033 is caused by some high-profile assets reaching the end of their projected useful lifecycles. As mentioned above, assets can remain in service beyond their

expected useful lifecycle so these renewals could be balanced over multiple years to reduce this projected need.

### Operations and Maintenance Activities

Daily operation of Parks services involves the use of many types of assets. The annual operating budget covers items such as:

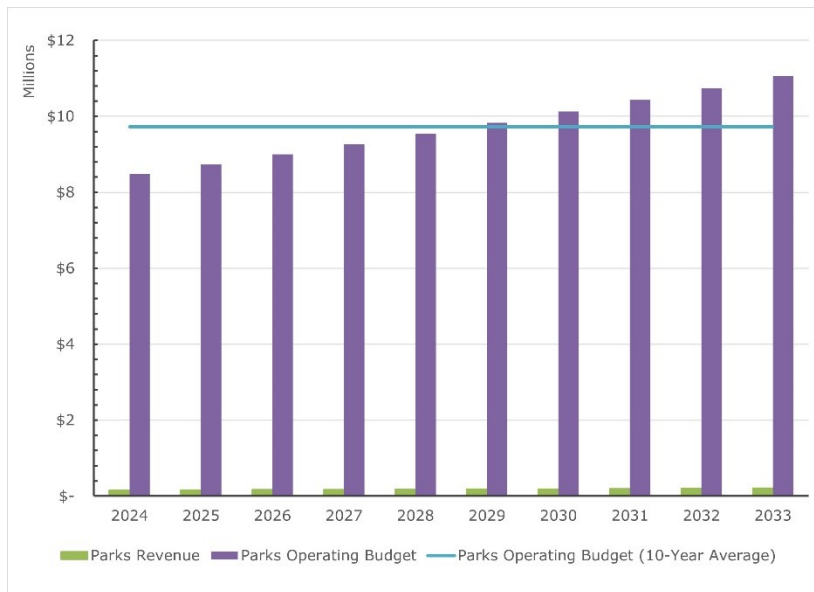
- Utility costs for the Parks facilities (hydro, natural gas, potable water, telephone service, internet, etc.).
- Vehicle operating costs (fuel, hydro, etc.).
- Labour costs for staff involved in daily operations activities.
- Supplies and materials to support program delivery.
- General property maintenance (building maintenance, landscaping, winter control, etc.).

Also included in the annual operations and maintenance budgets are allowances for making unplanned repairs to Parks assets and equipment when required.

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Budget requested values which were also inflated by 3% per year. While these projected figures attempt to account for the increasing cost of goods and services, they do not reflect increasing maintenance needs for aging assets or projected growth to the operational budget as assets are added to the Parks portfolio.

Review of the budget shows that in 2023 the amount spent on operations needs was about 93% of the budgeted value. Over the next 10-years (until 2033) the average annual operations need is forecast at approximately \$9.7M. Parks assets also provide the City with revenue which helps to offset the operational budget needs. In 2023, that revenue was approximately \$157K and that value was used to predict future revenue. Projected revenue has been inflated at the same rate as operating expenses. The revenue values shown are not meant to represent targets for Parks but only to visualize continued revenue against increasing operating expenses.

**Figure 89: Forecast Operational Budget Needs 2024-2033**



**Total Annual Forecast – Renewal and Operations**

The total forecast needs of assets operated by Parks is determined by combining the renewal needs and forecast funding contributions. Refer to Figure 90 and Table 62 below for this summary.

As this analysis is a summation of previously discussed information the overall result is very similar. While the addition of the operating budget increases the overall funding, the cumulative gap remains and increases over a 10-year period.

**Figure 90: Combined Renewal and Operations Forecast & Funding**





**Table 62: Combined Renewal and Operations Forecast vs. Funding (in \$ millions)**

	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
<b>Renewal Forecast</b>	\$12.82	\$2.55	\$1.51	\$1.49	\$4.89	\$8.42	\$4.08	\$0.62	\$3.81	\$25.79
<b>Operations Forecast</b>	\$9.15	\$9.42	\$9.71	\$10.0	\$10.30	\$10.61	\$10.92	\$11.25	\$11.59	\$11.94
<b>Subtotal</b>	<b>\$21.97</b>	<b>\$11.97</b>	<b>\$11.22</b>	<b>\$11.49</b>	<b>\$15.19</b>	<b>\$19.02</b>	<b>\$15.00</b>	<b>\$11.87</b>	<b>\$15.40</b>	<b>\$37.73</b>
<b>Capital Reserve Fund Contribution</b>	\$1.81	\$2.13	\$2.52	\$2.95	\$3.30	\$3.67	\$4.07	\$4.49	\$4.94	\$5.43
<b>Operations Budget Contribution</b>	\$8.48	\$8.74	\$9.00	\$9.27	\$9.55	\$9.83	\$10.13	\$10.43	\$10.74	\$11.07
<b>Revenue</b>	\$0.16	\$0.17	\$0.17	\$0.18	\$0.18	\$0.19	\$0.19	\$0.20	\$0.21	\$0.21
<b>Subtotal</b>	<b>\$10.45</b>	<b>\$11.03</b>	<b>\$11.69</b>	<b>\$12.40</b>	<b>\$13.03</b>	<b>\$13.69</b>	<b>\$14.39</b>	<b>\$15.12</b>	<b>\$15.89</b>	<b>\$16.70</b>
<b>Annual Funding Gap</b>	(\$11.5)	(\$12.4)	(\$11.9)	(\$11.0)	(\$13.2)	(\$18.5)	(\$19.1)	(\$15.9)	(\$15.4)	(\$36.4)

## Master and Major Capital Plans

### City Growth

The popularity of Parks services will only increase as Guelph grows, placing an additional burden upon existing assets like sports fields, courts and playgrounds and requiring the expansion of the portfolio. Many of the capital costs associated with constructing new assets were traditionally covered by developers directly or by Development Charge revenue. However, Bill 23, the More Homes Built Faster Act, has reduced municipal revenues from development charges, parkland dedication fees and community benefit charges. These changes increase the portion of growth-related costs funded through taxes and significantly reduces the amount of land municipalities can acquire through development for parks. Understanding the ongoing changes and impacts of Bill 23 will be an important part of future budget planning.

Parks has several guiding documents to help account for growth and managing assets, including the following:

- Parks & Recreation Master Plan
- Parks & Recreation Needs Assessment
- Park Plan
- Guelph Trail Master Plan
- Urban Forest Management Plan

Parks should continue to follow the recommendations in these plans to shape capital investments and meet the needs of a growing City of Guelph.

Currently, the Parks department is working on an Outdoor Sport Facility Strategy to guide the

development, management and maintenance of Guelph's outdoor sports fields and courts. This plan puts an emphasis on high demand assets and is an opportunity to refine existing data on sports fields, contributing to better asset management. From a growth perspective, the plan will consider community needs and desires to help shape future decisions.

### Levels of Service

O. Reg. 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types.

The AMP identifies LOS as "Customer" or "Technical" LOS in alignment with the O. Reg. 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

**Table 63: Parks Services Levels of Service Metrics**

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Customer	Description of the quantity of parkland owned and/or managed by the City	The City of Guelph owns and manages a total of 437.75 hectares of parkland. This consists of 355.15 hectares of parkland that is owned by the City, 47.27 hectares of parkland that is managed by the City but owned by other organizations, and 35.33 hectares of school shared-use facilities.
City Building	Technical	Parkland/1000 People	3.05 hectares/1000 residents
City Building	Customer	Description of asset replacement/rehabilitation planning and prioritization, including community engagement	Asset management tools are in the early stages of utilization to inform budget and resource allocation. This includes capital and operational budget creation, forecasting, and implementation. Community engagement is a component of many Parks capital projects, operational initiatives, and long-term planning.
People & Economy	Customer	Description of the quantity of parkland owned and/or managed by the City	Parks staff abide by applicable standards, legislation, and industry best practices in our capital projects and operations. Asset management tools are beginning to be used in resource allocation towards particular asset life cycle needs.
Environment	Technical	Fuel Consumption (L)	40,116 L Diesel, 120,585 L Gasoline

Strategic Theme	LOS Type	Performance Measure	Current Performance
Environment	Technical	Nat Gas Consumption (m <sup>3</sup> )	42,155 m <sup>3</sup>
Environment	Technical	Energy Consumption (kWh)	547,555 kWh
Environment	Technical	Water Consumption (m <sup>3</sup> )	55,749 m <sup>3</sup>
Environment	Customer	Description of the strategies used to mitigate GHG emissions and reduce water usage	Parks staff collaborate with relevant partner departments who lead these corporate strategies. Departmental specific opportunities (electrification of medium sized tool fleet for instance) are engaged by the Parks team in collaboration with partner departments.

## Risks to the Parks Assets

### Climate Change

The 2023 Climate Adaptation Plan identifies a series of action items which involve the Parks asset portfolio, including these suggestions for Parks:

- Create a plan for handling and removal of felled trees within parks and public rights-of-way with Public Works, University of Guelph, and others as necessary.
- Update and keep current the Memorandum of Understanding with GRCA
- Actively update a data log of damages by location and hazard, and work with Parks and Public Works to pinpoint best locations for tree plantings for long-term growth and wind protection of assets.
- Work with Parks to design and upgrade low impact development features around the culture and recreation facilities.
- Continue invasive species management (e.g., buckthorn)
- Develop a sports field strategy including a mowing (and potential irrigation) strategy that accommodates a changing climate, including shared use (e.g., for stormwater management)
- Follow the guidelines put forth in the Urban Forest Management Plan (e.g., types of trees to plant, how long to monitor new trees, Tree Planting strategy for Guelph)

Specifically for natural assets, the Climate Adaptation Plan suggests the following:

- Maintain a log of trees and vegetation within the floodplain as an additional criterion of the conditions reports as part of the Natural Asset Inventory. Coordinate with Asset Management; refer to Tree Technical Manual for any new or replacement trees or vegetation within the floodplain.
- Consider planting additional shade trees around City-owned emergency buildings.
- Expand upon the Natural Assets Inventory to identify vulnerable areas and ways in which to improve the area (like corridor fixes for hard infrastructure)
  - Continue to undertake tree planting initiatives.

As the owner of many green and natural assets, Parks is already very visible in the effort to mitigate the effects of climate change. Continuing to implement the actions above would help to further reduce greenhouse gas emissions move closer to the City of Guelph's Race to Zero goals.

### Aging Assets

As the age of assets increase, so to does the potential for unexpected failures. Parks assets are among the most visible owned by the City, so age-based degradation is noticed quickly and often. Sound operations and maintenance planning will help to ensure that availability, provided that the funding for these two essential activities is adequate.

Parks facilities and high-profile assets should continue to be part of a regular and repeated assessment process to keep a close eye on the condition of critical

assets whose failure could lead to temporary closures and reduction of service. While the expected useful lifecycle values of these assets vary, the true lifecycle is only as long as the lifecycle of its critical components.

When a Parks asset is reaching the end of its expected useful lifecycle, it does not necessarily need to be replaced like-for-like. Consideration should be given to existing master plans, needs assessments, community demand, accessibility regulations and more. For example, a wading pool could be replaced with a splash pad to reduce water usage while increasing safety and accessibility. Decisions like these on major assets would have a large collective impact on the Parks asset portfolio.

### **Insufficient Funding (Funding Gap)**

Existing funding for Parks assets is not meeting the projected needs of the portfolio, resulting in an increasing backlog and infrastructure gap. This trend is projected to worsen over the next ten (10) years with a cumulative projected backlog of \$34.2M. With insufficient funding and normal continuing deterioration of physical assets the risk of increasing unexpected failures requiring emergency repair work will increase.

### **Asset Data Tracking**

There is currently no central system used to track asset data across the City of Guelph. The ongoing Enterprise Resource Planning (ERP) project will provide opportunity for Recreation to enhance the tracking of maintenance and rehabilitation processes of the assets they operate and forecast maintenance costs. This valuable data will help to shape capital investments, operational processes and future asset management plans by associating work with assets, providing a more accurate picture of the total cost of ownership over the expected useful lifecycle.

### **Summary and Recommendations**

Parks assets provide many well-loved services to the public and contribute to a sense of a healthy and vibrant City of Guelph. From that perspective, these are essential assets even if they are not formally defined as such in O. Reg. 588/17.

In general, the condition of the Parks portfolio is such that a backlog of infrastructure renewal needs has accumulated and is only projected to grow as the assets age. Most Parks assets are currently in fair to good condition and are meeting their level of service targets but continued underinvestment in renewal will only increase the risk of unexpected failures. Increasing funding to Parks assets could be done at the expense of other asset portfolios but careful consideration of the benefits and consequences of that action is required before a decision is made.

As of the preparation of this plan, the bulk of the renewal needs for Parks assets over the next ten (10) years are for fleet & equipment. This is normal due to their shorter expected useful lifecycles but should be prioritized as these assets support the daily operation and level of service of parks. Renewal needs of high-profile playground assets are projected for 2033 but these can be planned over multiple years to ease the projected burden on the capital budget.

At a high level, the Parks asset portfolio is in fair to good condition, but the forecast funding gap presents an increasing risk to the City if not properly addressed and funded. Sound operations and maintenance planning should be put into place to help alleviate future capital needs, while concurrently prioritizing infrastructure renewal projects to ensure the safety and continued operation of the assets operated by Parks.

## Chapter 10: Guelph Public Library





**Quick Facts:****Guelph Public Library Assets**

Total value of facilities	\$26,621,924
Number of facilities	1
Additional leased facilities	4
Average condition of facilities <sup>28</sup>	PAST DUE
Total value of vehicles & equipment	\$130,011
Number of vehicles & equipment	1
Average condition of vehicles & equipment	FAIR
Total value of collection	\$20,242,145
Total value of Guelph Public Library assets	\$46,994,080

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<sup>28</sup> Condition rating does not include leased facilities.

### Introduction

Guelph Public Library (GPL) provides ways for people to explore their world, enrich their lives and connect with their community. With six (6) branches and a bookmobile, GPL offers a variety of services including physical and digital catalogues, book clubs, technology resources, family programming, speaker series and community meeting spaces.

GPL is managed by a local board operating under the terms of the Public Libraries Act, R.S.O 1990, c. P.44. The board presents their own budget to the City of Guelph annually and governs the affairs of the public library in service to the community.

### Assets in the Guelph Public Library System

Guelph Public Library assets can be broadly classified into three (3)

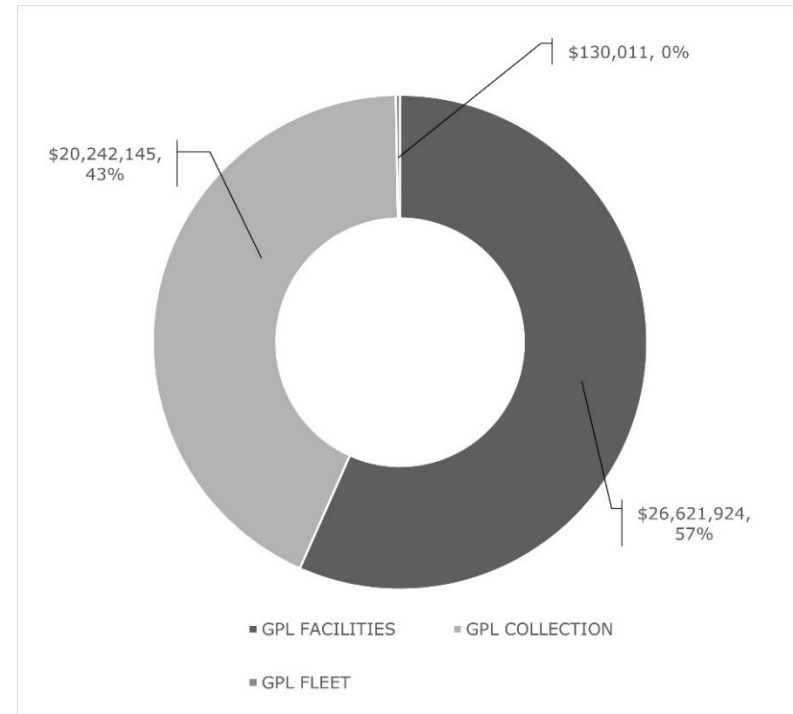
categories:

- **Facilities:** Guelph Public Library’s Main branch.
- **Collection:** Physical and digital collections available for borrowing, as well as software to administer the collections.
- **Fleet and Equipment:** The GPL Bookmobile, considered a mobile branch.

Four (4) of the GPL branches are leased facilities and are not included in the City’s Facility Condition Assessment (FCA) program. As such, the City lacks asset information on these facilities, and they are not included in this plan. The West End Branch is included in the Recreation chapter of this plan as it exists within West End Community Centre.

The current estimated total replacement value of Guelph Public Library’s asset portfolio is \$47.1M, with most of that value represented by the facility assets and collection. Overall, 0.2% of GPL assets (by current replacement value) are in fair condition or better while 3% are in poor condition or worse. The 43% of the portfolio with no condition rating is the collection, which is managed through the operational budget based on number of circulations.

**Figure 91: Replacement Value of Guelph Public Library Assets by Category**



The remaining 53% of the of GPL assets (\$25.3M by current replacement value) are rated past due, meaning that they have reached the end of their expected useful lifecycles. This is the value of the deferred renewal backlog.

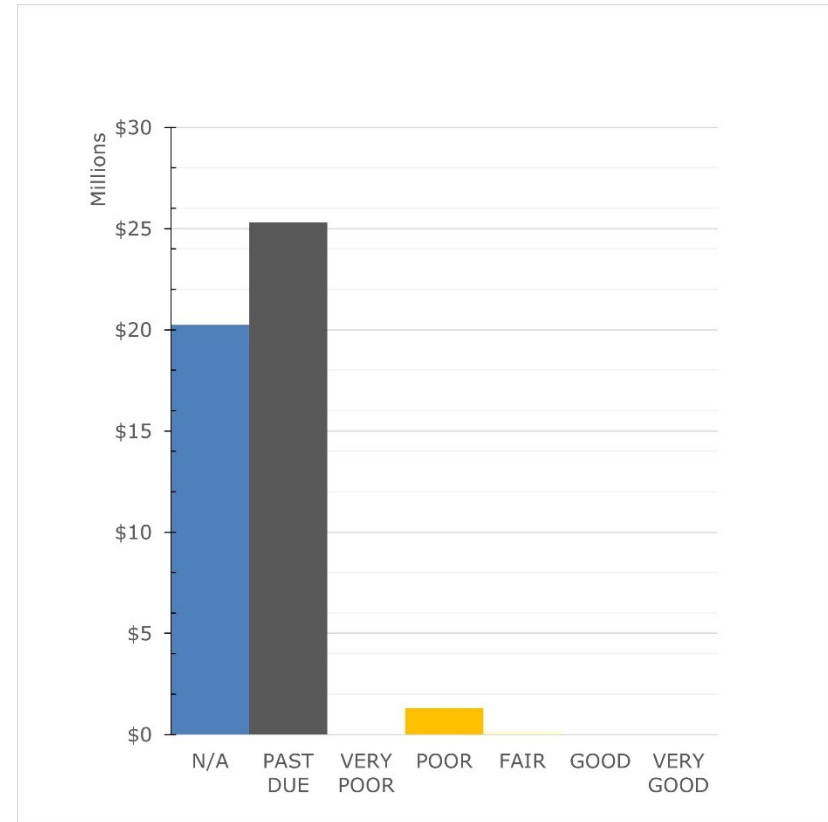
**State of the Guelph Public Library Assets**

The value and condition of each asset was determined according to the methods described in the “Infrastructure Renewal and Lifecycle Management” section of this report.

As seen in Figure 92 below, the average condition of the assets in the GPL portfolio is past due. All these past due assets are facility components at the Main Branch, which was constructed in 1960. The condition of this facility is addressed further in the next section of this chapter. Also included in the GPL asset portfolio is the collection. These assets have all been rated N/A because these items are either renewed annually or replaced as part of the library’s operating budget. Including these assets accounts for ownership and helps to establish a value for the portfolio but they aren’t treated the same as facilities or fleet. Again, this is explained further below.

An asset rated in past due or very poor condition does not mean that it is no longer delivering its intended service or has already failed. For example, a facility component that has reached the end of its expected useful lifecycle can remain in service to the community with rehabilitation and a consistent maintenance program. At the same time, GPL should make note of these assets and consider prioritizing their rehabilitation or replacement as they continue to age.

**Figure 92: State of the Guelph Public Library Asset Portfolio.**



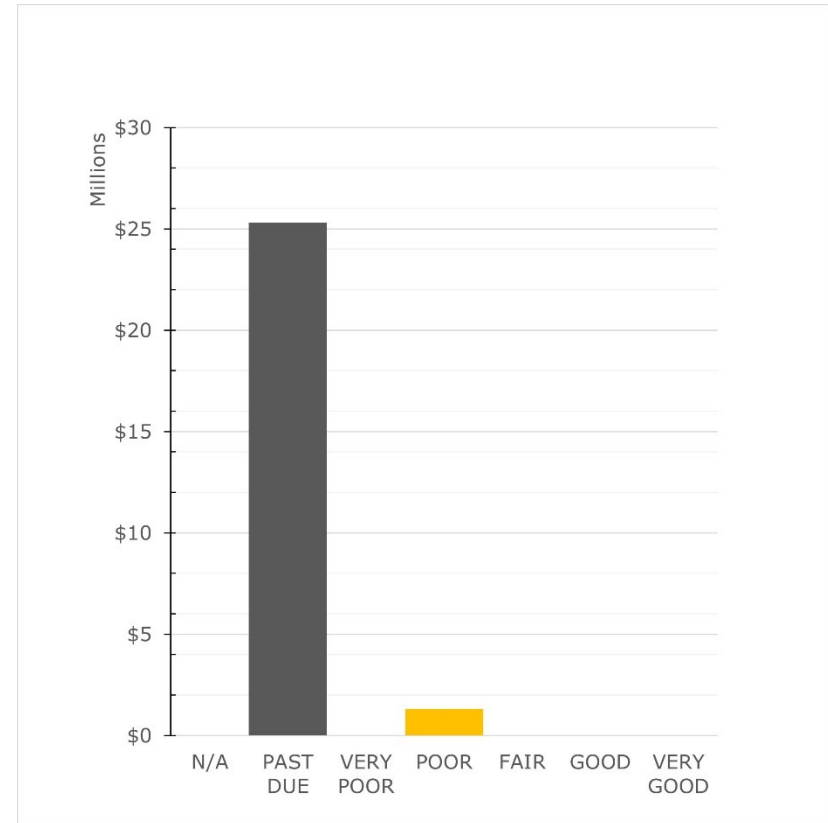
Likewise, an asset in “very good” condition may not be functioning 100% perfectly. Condition ratings assigned to assets are based on best practices and standards and are a tool that enables long term needs assessment at the whole portfolio level. Finally, assets in the N/A category were not assessed a condition at the time of this plan. An explanation for this decision will be provided further in the chapter.

**Facilities Asset Condition**

Guelph Public Library operates out of six (6) branches but four (4) of those are leased spaces and the West End Branch is represented under Recreation as a part of the West End Community Centre. Only the Main Branch is owned and operated by GPL and as such, only the condition of the Main Library is reflected in this plan. The condition of the facility has been determined based on information provided by 3<sup>rd</sup> party consultants engaged by the City. This includes a combination of facility condition assessments that review the physical and functional condition of the equipment comprising a facility and a long-term needs analysis with recommended major renewal and growth work.

The Main Library has a replacement value of \$26.6M with an overall condition of past due. Nearly all the facility components have reached the end of their expected useful lifecycles. As stated above, this does not mean that the building has failed, only that it should be considered a priority for replacement. In fact, GPL has already planned to replace this branch by 2026 as part of the Baker District redevelopment. In the intervening years, regular inspections and maintenance should be scheduled to monitor the aging Main Library and prevent interruption of service due to facility issues.

**Figure 93: State of the Guelph Public Library Facility Assets**



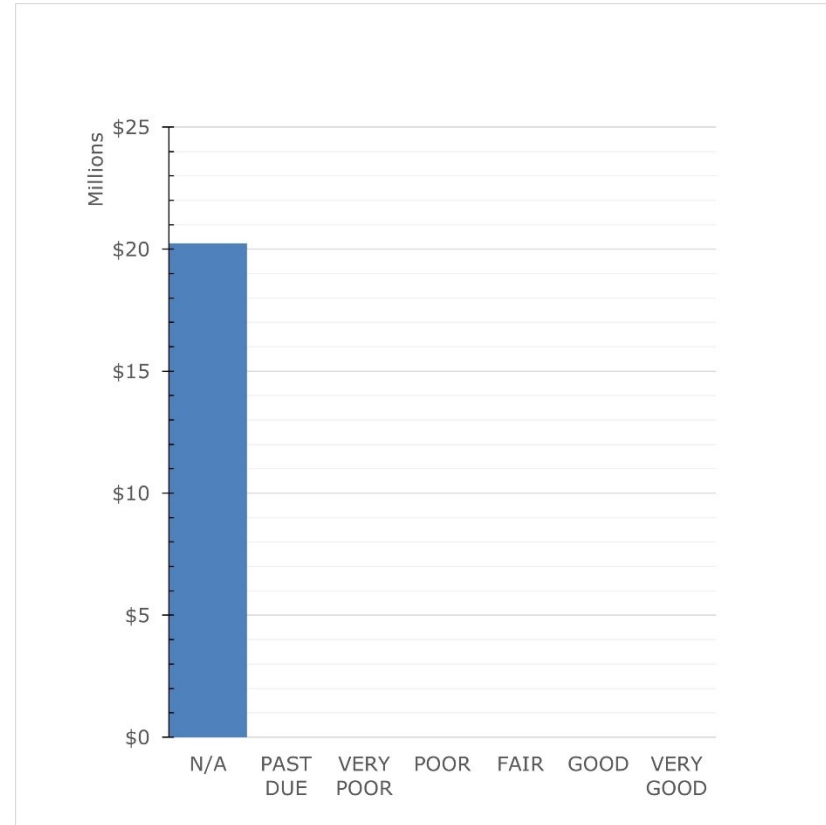
**Collection & Support Asset Condition**

The GPL collection consists of physical assets (i.e. books, magazines, films, etc.), digital assets (i.e. e-books, audio books, subscriptions, etc.) and support software to manage the collection.

The total value of the collection and support software is \$20.2M but the average condition of these assets is not reported in this plan. Digital collection items and software do not warrant condition ratings as they don't degrade the same way physical assets do. As per library staff, the condition of physical collection items is determined based on the number of circulations. Physical collection items are replaced after approximately 26 circulations so assigning them a condition isn't as relevant as for other physical assets like building components or vehicles.

Guelph Public Library monitors circulations of collection items and replaces or renews a portion of them annually as part of their operating budget. This practice is well-established and should continue even as the percentage of digital collection items grows.

**Figure 94: State of the Guelph Public Library Collection Assets**

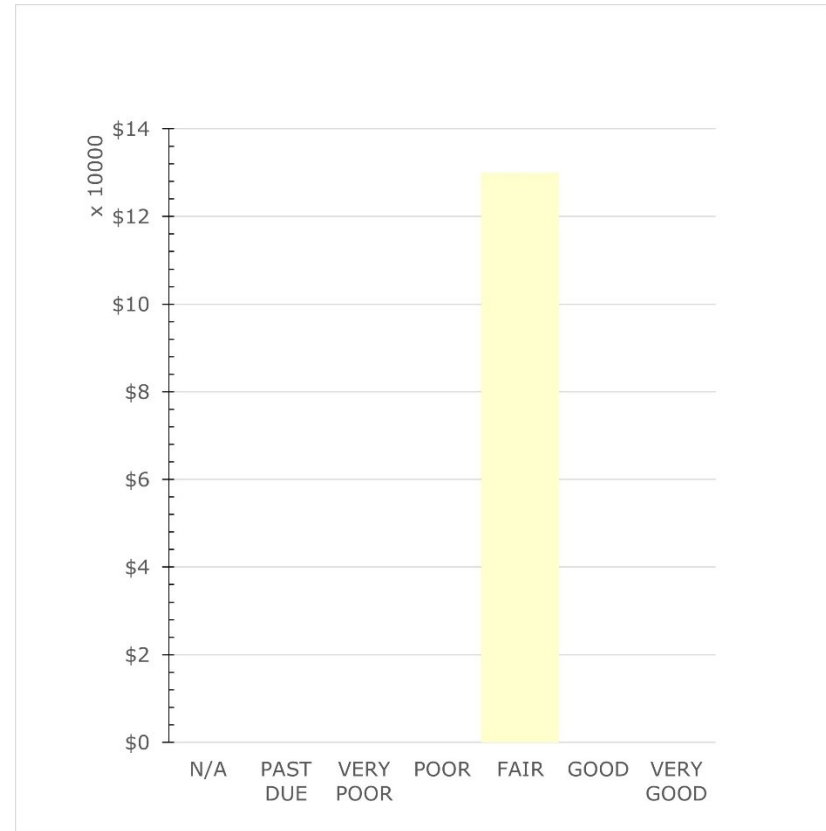


**Fleet Asset Condition**

The single vehicle operated by the Guelph Public Library is the bookmobile, which acts as a mobile branch. For the purposes of this plan, the condition of this asset was determined based on age and expected useful lifecycle, which is 12 years.

The bookmobile has a value of \$130K and is in fair condition, meaning that it is approximately halfway through it’s expected useful lifecycle. A replacement bookmobile has been budgeted for 2028 and electric or hybrid options should be considered in the interest of energy efficiency.

**Figure 95: State of the Guelph Public Library Fleet**



**Table 64: State of the Guelph Public Library Assets - Summary**

	<b>GPL FACILITIES</b>	<b>GPL COLLECTION</b>	<b>GPL FLEET</b>	<b>SUBTOTALS</b>	<b>OVERALL TOTAL</b>
<b>TOTAL CRV</b>	\$26,621,924	\$20,242,145	\$130,011		<b>\$46,994,080</b>
<b>N/A</b>	\$0	\$20,242,145	\$0	\$20,242,145	<b>43.07%</b>
<b>PAST DUE</b>	\$25,317,450	\$0	\$0	\$25,317,450	<b>53.87%</b>
<b>VERY POOR</b>	\$0	\$0	\$0	\$0	<b>0.00%</b>
<b>POOR</b>	\$1,304,474	\$0	\$0	\$1,304,474	<b>2.78%</b>
<b>FAIR</b>	\$0	\$0	\$130,011	\$130,011	<b>0.28%</b>
<b>GOOD</b>	\$0	\$0	\$0	\$0	<b>0.00%</b>
<b>VERY GOOD</b>	\$0	\$0	\$0	\$0	<b>0.00%</b>

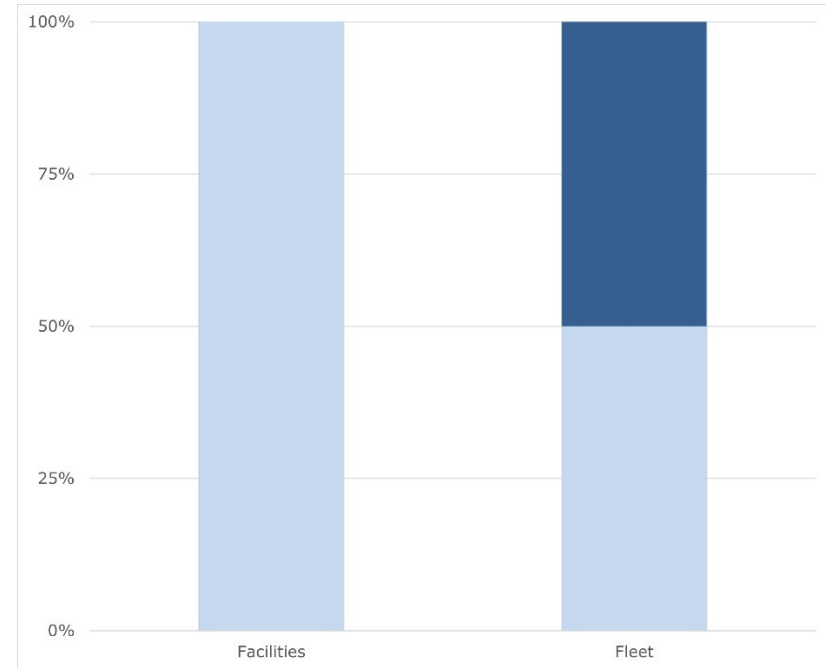
**Asset Age Profile**

Guelph Public Library assets have a variety of expected useful lifecycle values across various facility components and fleet. Expected useful lifecycle values have not been assigned to the collection assets as they are being managed annually or by number of circulations.

Comparing the current ages of assets to their expected normal lifecycle allows for a general understanding of what assets may require increased maintenance attention and possibly replacement in future years.

This age review for the GPL assets is shown in Figure 96 below. The average age of collection items is not reported here.

**Figure 96: Average Age of Guelph Public Library Assets as a Ratio of Normal Lifecycles.**



**Renewal Needs vs. Funding Analysis**

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for GPL assets were determined.

**Lifecycle Renewal Planning and Replacement Costs**

Assets in the GPL portfolio are valued based on Facility Condition Assessments (FCAs), development charge study costs and fleet replacement schedules. These



methodologies are used across all service areas to ensure consistency in the Asset Management Plan.

### **Funding Availability**

Capital renewal funding for Guelph Public Library comes from a single source, a tax supported fund. Estimated future contributions from property tax were provided by the City's Finance Department for the years 2024-2035 and used as the available funding value when determining the difference between planned contributions and forecast needs.

Prior to completing the financial analysis, the following steps were taken:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation.
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues.
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results are summarized in Table 65 and Figure 97 below.

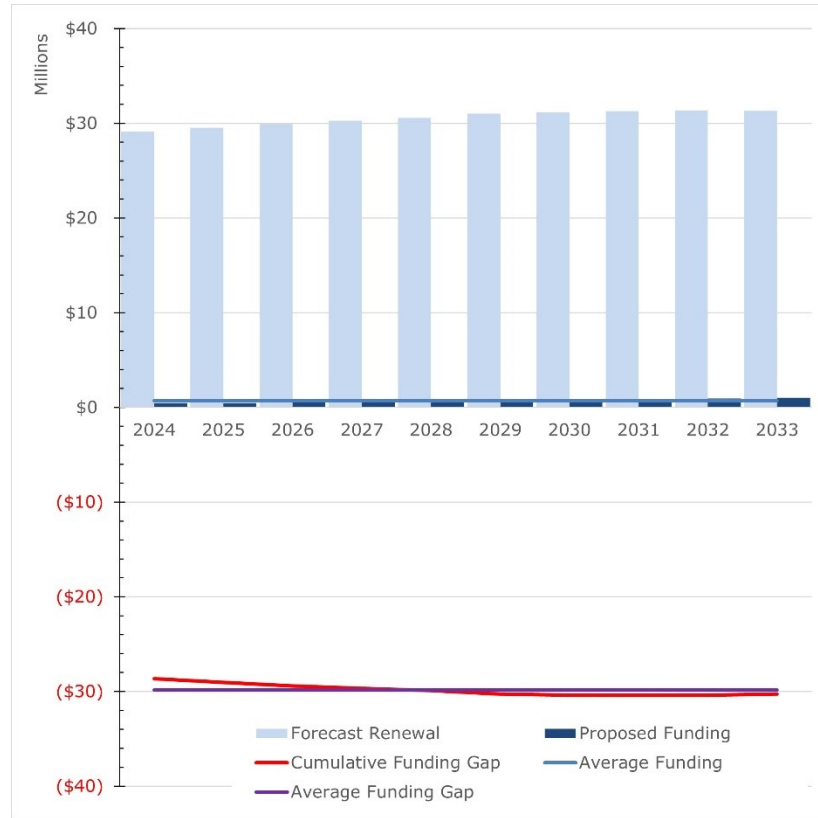
**Table 65: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions (in \$ millions)**

<b>Item</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
<b>Forecast Renewal Costs</b>	(\$29.1)	\$0.00	\$0.00	\$0.00	\$0.00	(\$0.17)	\$0.00	\$0.00	\$0.00	\$0.00
<b>Planned Reserve Fund Contributions</b>	\$0.45	\$0.46	\$0.53	\$0.59	\$0.66	\$0.73	\$0.80	\$0.87	\$0.95	\$1.02
<b>Cumulative Gap</b>	(\$28.7)	(\$29.1)	(\$29.4)	(\$29.7)	(\$29.9)	(\$30.3)	(\$30.4)	(\$30.4)	(\$30.4)	(\$30.3)

**Table 66: Guelph Public Library Renewal Forecast Summary (in \$ millions)**

<b>Average Annual Renewal Need</b>	(\$2.93)
<b>Average Annual Fund Contribution</b>	\$0.71
<b>Average Annual Gap (Cumulative)</b>	(\$29.84)
<b>10 Year Forecast Renewal Total</b>	(\$29.29)
<b>10-Year Forecast Reserve Fund Contributions</b>	\$7.06
<b>10-Year Funding Gap</b>	(\$22.22)

**Figure 97: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**



Review of the data clearly identifies that there is insufficient funding available to cover the needs of Guelph Public Library for the next 10 years. An average annual funding gap of \$29.2M is forecast for the next ten (10) years, with a total 10-year renewal need calculated at \$25.3M against forecast reserve fund contributions of \$7.1M. This predicts a \$22.2M funding gap by the end of 2033.

While this doesn't present a picture of sustainability for GPL, the forecast renewal costs are almost entirely due to the Library's Main Branch. As mentioned previously, this branch is due to be replaced in 2026 as part of the Baker St Redevelopment. Replacing the Main Branch doesn't change the needs of the existing facility but may reduce the urgency of these needs. When the new Central Library is ready, the Library Board will have options with the Main Branch, including sale, demolition and reconstruction or repurposing. Any of these actions would change the forecast infrastructure needs of the GPL assets and that forecast will be updated in future Asset Management Plans as more details become certain.

**Operations and Maintenance Activities**

Daily operation of Guelph Public Library services involves the use of multiple branches as well as the availability of the collection. The annual operating budget covers items such as:

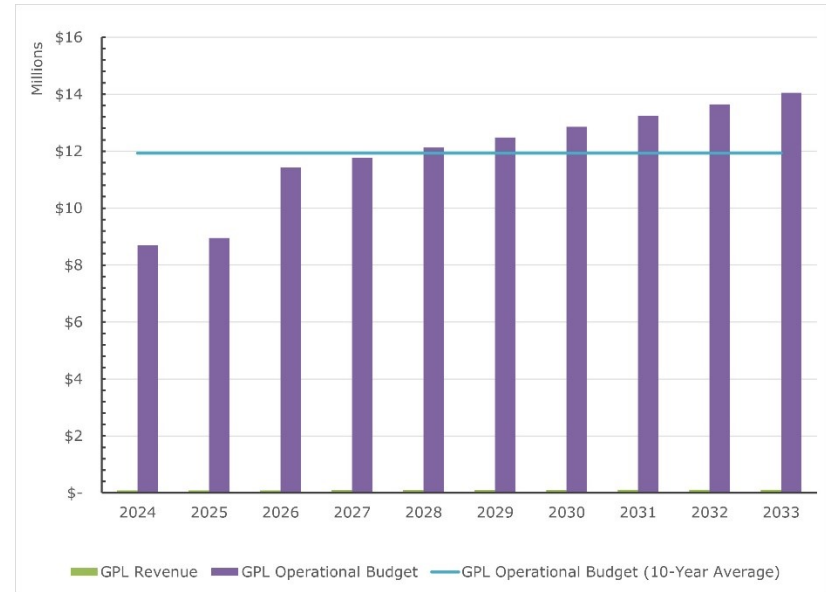
- Utility costs for GPL branches (hydro, natural gas, potable water, telephone service, internet, etc.)
- Collection purchases and program supplies
- Vehicle operating costs (fuel, hydro, etc.)
- Labour costs for staff involved in daily operations activities.
- General property maintenance (building maintenance, landscaping, winter control, etc.)

Also included in the annual operations and maintenance budgets are allowances for making unplanned repairs to GPL assets and equipment when repaired.

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 budget requested values which were also inflated by 3% per year. The review shows that in 2023, the amount spent on operational needs was about 106% of the budgeted value. Over the next ten (10) years, the average annual operations need is forecast at approximately \$9.9M. Library staff predict an approximate \$2.2M annual increase to operating expenses when the new Central Library is opened. This has been considered in 2026 and beyond.

Some of GPL’s operational needs are offset by revenue-generating activities like service fees, overdue charges, parking revenue and room rentals. In 2023, that revenue was approximately \$85K and was used to predict future revenue. Projected revenue has been inflated at the same rate as operating expenses. Note that the figures shown for GPL revenue are not meant to represent targets, but only to show the offset revenue can provide to operating budget needs.

**Figure 98: Forecast Operations Budget Needs 2024-2033**

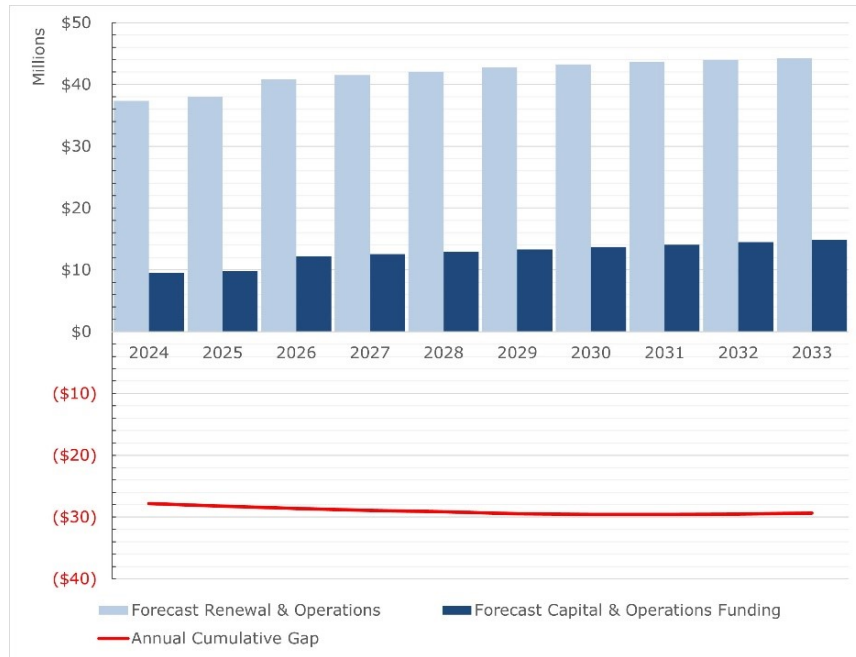


**Total Annual Forecast – Renewal and Operations**

The total forecast needs of assets operated by Guelph Public Library is determined by combining the renewal needs and forecast funding contributions. Refer to Figure 99 and Table 67 below for this summary.

As this analysis is a summation of previously discussed information the overall result is very similar. There is an annual funding gap averaging \$29 M over the next ten (10) years. This is almost entirely due to the existing renewal backlog in 2024 and the forecast funding not increasing to meet the additional needs from 2024-2033.

**Figure 99: Combined Renewal and Operations Forecast & Funding**



**Table 67: Combined Renewal and Operations Forecast vs. Funding (in \$ millions)**

<b>Item</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
<b>Renewal Forecast</b>	\$29.12	\$29.52	\$29.93	\$30.28	\$30.58	\$30.99	\$31.17	\$31.29	\$31.33	\$31.29
<b>Operations Forecast</b>	\$8.20	\$8.44	\$10.90	\$11.22	\$11.49	\$11.77	\$12.05	\$12.35	\$12.65	\$12.96
<b>Subtotal</b>	<b>\$37.3</b>	<b>\$37.9</b>	<b>\$40.8</b>	<b>\$41.5</b>	<b>\$42.1</b>	<b>\$42.8</b>	<b>\$43.2</b>	<b>\$43.6</b>	<b>\$43.9</b>	<b>\$44.2</b>
<b>Capital Reserve Fund Contribution</b>	\$0.71	\$0.71	\$0.71	\$0.71	\$0.71	\$0.71	\$0.71	\$0.71	\$0.71	\$0.71
<b>Operations Budget Contribution</b>	\$8.70	\$8.96	\$11.43	\$11.77	\$12.12	\$12.48	\$12.86	\$13.25	\$13.64	\$14.05
<b>Revenue</b>	\$0.08	\$0.09	\$0.09	\$0.09	\$0.10	\$0.10	\$0.10	\$0.10	\$0.11	\$0.11
<b>Subtotal</b>	<b>\$9.49</b>	<b>\$9.75</b>	<b>\$12.2</b>	<b>\$12.6</b>	<b>\$12.9</b>	<b>\$13.3</b>	<b>\$13.7</b>	<b>\$14.1</b>	<b>\$14.5</b>	<b>\$14.9</b>
<b>Annual Gap</b>	(\$27.8)	(\$28.2)	(\$28.6)	(\$28.9)	(\$29.1)	(\$29.5)	(\$29.5)	(\$29.6)	(\$29.5)	(\$29.4)

## Master and Major Capital Plans

### City Growth

Guelph Public Library follows a Strategic Plan to guide the future direction of GPL as part of a growing City of Guelph. In 2021, GPL refocused this plan on four strategic directions.

- 1) Work Together to Build a Resilient Community
- 2) Reflect our Changing Community
- 3) Strengthen Our Reach
- 4) Empower Board & Staff

Each of these directions has its own priorities and many of these relate to growth. Among these are identifying and reaching non-GPL users, identifying and removing accessibility barriers, evaluating and expanding programming and collecting and sharing more stories. Acting on these priorities will ensure GPL reflects the community and is meeting the needs of as many residents as possible.

A GPL Strategic Plan update is currently underway for 2025-2029 that will account for the new Central

Library and growth in the Clair-Maltby area. The refreshed plan should continue to prioritize library services that suit Guelph's growing population.

### Levels of Service

O. Reg. 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as "Customer" or "Technical" LOS in alignment with the O. Reg. 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

**Table 68: Guelph Public Library Levels of Service**

<b>Strategic Theme</b>	<b>LOS Type</b>	<b>Performance Measure</b>	<b>Current Performance</b>
City Building	Technical	% of facility assets in poor or less condition	100%
Environment	Technical	Energy Consumption (kWh)	769,517 kWh
Environment	Technical	Natural Gas Consumption (m <sup>3</sup> )	72,605 m <sup>3</sup>
Environment	Technical	Water Consumption (m <sup>3</sup> )	6,176 m <sup>3</sup>
Environment	Customer	Description of the environmental sustainability initiatives implemented in administration and operations facilities	Design standards for new facilities have been updated to be more energy efficient. As components of facilities come up for renewal, more energy efficient options are chosen.



## Risks to the GPL Assets

### Climate Change

Guelph Public Library's assets would require several different types of mitigation measures to address the potential risks resulting from climate change impacts. The trend of increasing average annual temperatures could require increased air conditioning capacity for library branches, especially if they are used as emergency cooling centres on hot days. More frequent severe storms present an increased risk of flooding and damage to library building components and collection items as well as a level of service reduction if a branch is temporarily closed. Regarding the bookmobile, reliance on fossil fuels should be considered when the asset has reached the end of its expected useful lifecycle. Replacing it with a hybrid or EV option could help to reduce the Library's carbon footprint.

In 2023, the City of Guelph published its first Climate Adaptation Plan. The plan identifies an additional three (3) action items which involve the GPL asset portfolio.

- 1) Design and build new Baker Street library with climate adaptation lens.
- 2) Periodically review, maintain, and update use of libraries as emergency shelter buildings. Review with an equity lens. This includes co-ordination with the County of Wellington and Emergency Services.
- 3) Itemize library building (functioning as a shelter, as needed) components susceptible to hazard impacts and plan with Asset Management for replacement.

Continued implementation of these actions would help prepare GPL assets for extreme weather events and emergency situations while also contributing to Guelph's greenhouse gas emissions reduction targets in the Race to Zero.

### Aging Assets

As the age of assets increase, so too does the potential for unexpected failures. While the existing Main Branch of the library has reached the end of its expected useful lifecycle, it remains in service until the new Central Library is complete. Two capital projects to ensure the current Main Branch remains operational and accessible have been budgeted for 2024-2028 to bridge that gap and address aging assets. Even though initial maintenance costs will be low, this approach should continue as the new Central Branch is brought online to ensure it remains operational, safe and accessible for as long as possible.

Library facilities should continue to be a part of a regular and repeated FCA process. Assessing these facilities will keep a close eye on the condition of critical assets whose failure could lead to expensive repairs and temporary facility closures. While the expected useful lifecycles of facility assets vary, the true lifecycle of a facility is only as long as the lifecycle of its critical assets.

### Insufficient Funding (Funding Gap)

Existing funding for Library assets is not meeting the projected needs of the portfolio, resulting in an increasing backlog and infrastructure gap. This trend is projected to worsen over the next ten (10) years with

a cumulative projected backlog of \$29.8M. With insufficient funding and normal continuing deterioration of physical assets the risk of increasing unexpected failures requiring emergency repair work will increase.

As mentioned previously, the opening of the new Central Library may reduce this funding gap in a variety of ways but it's also a good opportunity to properly plan for capital renewals from the start of the facility's useful lifecycle. Establishing a building inventory and planning for asset renewal from the start should reduce or eliminate future funding gaps for GPL facilities.

## **Summary**

The Guelph Public Library provides many opportunities for a thriving community to enrich their lives. While library assets are not formally defined as core assets in O. Reg. 588/17, their services are much beloved by Guelph residents.

Overall, the average condition of the GPL portfolio assets is past due, highlighting the well-known need to replace the Main Branch. This work is already underway as part of the Baker St. Redevelopment and is expected to be completed in 2026. The new Central Library will have a significant impact on the GPL asset portfolio and the capital investment will ensure that GPL is able to serve the needs of the community for years to come.

## Chapter 11: Solid Waste



**Quick Facts:****City of Guelph Solid Waste Assets**

Total value of facilities	\$96,810,968
Number of facilities	14 (13 at WRIC) & Eastview Landfill
Average condition of facilities	FAIR
Total building area	27,163 m <sup>2</sup> (292,367 f <sup>2</sup> )
Total value of vehicles & equipment	\$15,458,193
Number of vehicles & equipment	66
Average condition of vehicles & equipment	FAIR
Total value of Solid Waste assets	\$112,269,161

### Introduction

Waste management services for City of Guelph residents are provided by Solid Waste Services. Collection of garbage, recyclables, organics and yard waste are accomplished by City staff operating specialized vehicles and equipment. Collected materials are delivered to the City’s Waste Resource Innovation Centre (WRIC) for sorting and safe disposal. The WRIC also accommodates public waste drop-off on a fee-based structure depending on weight and material.

As of January 2025, the City of Guelph will transition to a new blue box collector to comply with O. Reg. 391/21 – Blue Box Regulation. City staff will no longer collect recyclable materials but will continue to manage curbside collection of garbage, organics and yard waste. The WRIC will continue to operate for the foreseeable future, but some Solid Waste assets may be repurposed due to this legislated change.

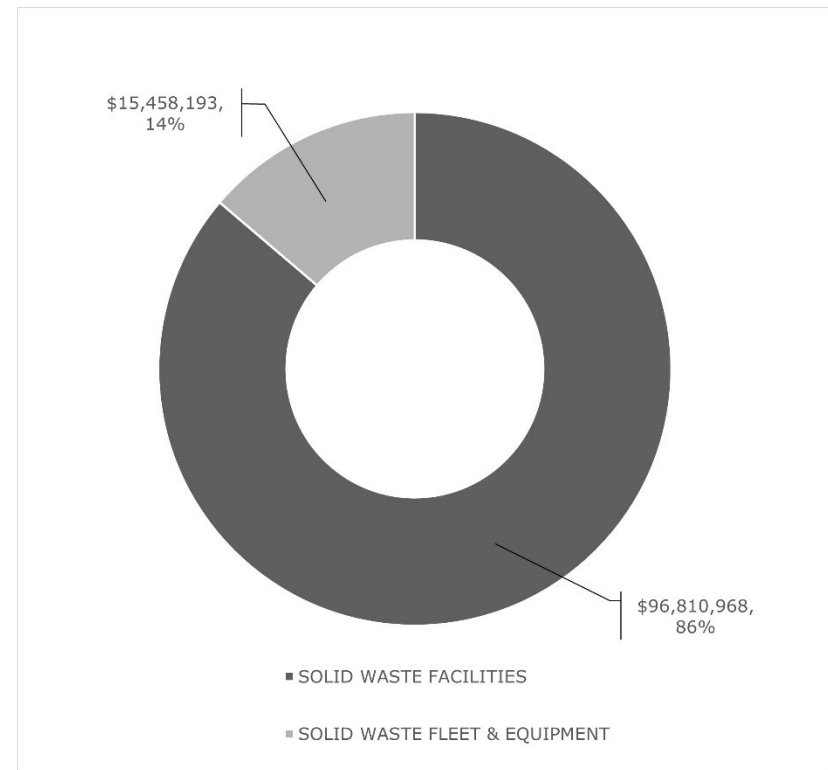
### Assets in the Solid Waste System

Solid Waste assets can be broadly classified into two categories:

- **Facilities:** The Waste Resource Innovation Centre site has multiple buildings for the administration and operation of Solid Waste Services. Also included in this category is the decommissioned Eastview Landfill.
- **Fleet and Equipment:** Vehicles and equipment operated by Solid Waste Services staff including packers, loaders and other motorized support equipment.

The current estimated total replacement value of these Solid Waste assets is \$112.3M with 86% of that value represented by the WRIC assets and the remaining 14% representing fleet and equipment.

**Figure 100: Replacement Value of Solid Waste Services Assets by Category**



### State of the Solid Waste Assets

Considering the entire Solid Waste portfolio, 63% of the assets (by current replacement value) are in fair or better condition while 36% are in poor condition or worse. These values are based on Facility Condition Assessments (FCAs) conducted for Solid Waste in 2019 and projected forward to 2024 to account for continued aging and deterioration. The remaining 1% are assets belonging to the decommissioned Eastview Landfill site that were not given an assessed or age-based condition when they were evaluated in 2019.

Solid waste assets also have a deferred renewal backlog of \$12.1M (by current replacement value), comprised of facility and fleet assets that are past due for replacement as of 2024.

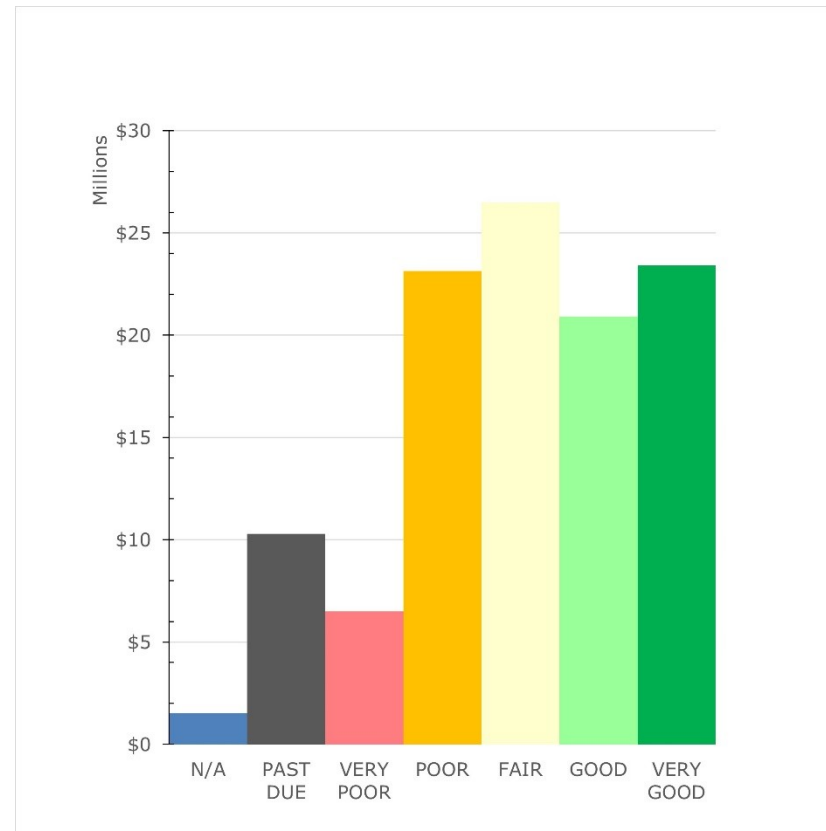
The value and condition of each asset was determined according to the methods described in the “Infrastructure Renewal and Lifecycle Management” section of this report.

An asset rated in past due or very poor condition does not mean that it is no longer delivering its intended service or has already failed. For example, some of the identified and assessed facility assets have reached or are close to the end of their expected useful lifecycles as of the time of this plan. Having these assets remain in service is not unexpected, but Solid Waste should make note of these assets and consider prioritizing their rehabilitation or replacement as they continue to age.

Likewise, an asset in “very good” condition may not be functioning 100% perfectly. Condition ratings assigned to assets are based on best practices and standards

and are a tool that enables long term needs assessment at the whole portfolio level.

**Figure 101: State of the Solid Waste Asset Portfolio**



**Facilities Asset Condition**

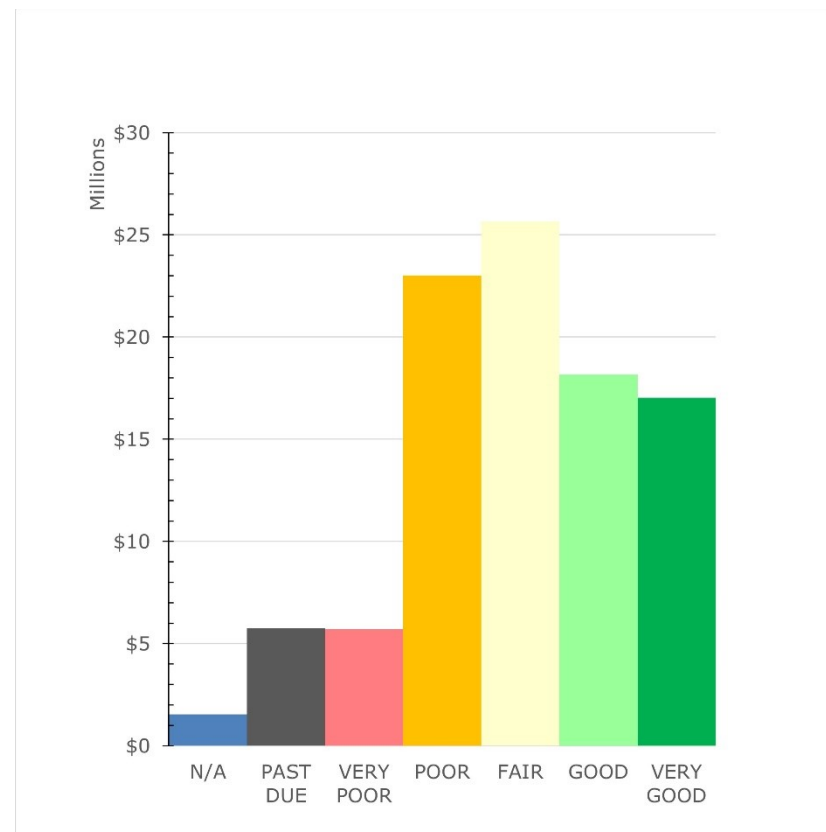
Facilities operated by Solid Waste Services include buildings such as Administration Buildings, a Materials Recovery Facility, an Organics Facility, a Transfer Station, Scales, Public Drop-Off Zones and the retired Eastview Landfill. The condition of these facilities has been determined based on information provided by 3<sup>rd</sup> party consultants engaged by the City. This includes a combination of facility condition assessments that review the physical and functional condition of the equipment comprising a facility and a long-term needs analysis with recommended major renewal or growth work.

There are two new facilities at the WRIC (the CFC Pumpdown Building and Residential Scalehouse) included with the Solid Waste asset portfolio that haven't been assessed as of the time of this plan. However, assigning them an age-based condition of very good is an acceptable best practice until a full condition assessment can be completed.

As per the 2019 Facility Condition Assessments (FCAs) and 2023 Asphalt Condition Assessment Report, all the facility assets at the WRIC have a combined replacement value of \$96.8M. 63% of these are in fair or better condition, while 36% are in poor or worse condition. These conditions also account for major asset replacements that have been tracked in a work management system in the past five (5) years. Overall, this indicates a moderate risk of unexpected failures and highlights the need for continued regular maintenance as well as long-term replacement planning.

Solid Waste staff also note that a 2021 FCA was conducted on the Organics Facility. This report did provide observations and recommendations to guide future asset replacement and maintenance and should be considered alongside the 2019 FCA when prioritizing facility work.

**Figure 102: State of the Solid Waste Facilities Assets**



**Fleet Asset Condition**

Fleet assets operated by Solid Waste Services as of 2024 have a replacement value of \$15.5M and include 22 packers, 4 loaders and 40 additional vehicles and equipment. For the purposes of this plan, the condition of these assets is determined based on age and expected useful lifecycle, which ranges from 5-20 years depending on asset type.

Analysis of these assets shows that 65% of the Solid Waste fleet and equipment with a replacement value of \$9.9M are in fair or better condition. Assets rated as poor and very poor make up 6% or \$0.9M of the portfolio, while the remaining 29% or \$4.5M are fleet and equipment that are rated past due. These assets have reached the end of their expected useful lifecycle prior to 2024. Solid Waste staff note that some of these assets have low utilization and are serviceable despite their age-based condition.

To address this backlog, Solid Waste has a standing project in the capital budget dedicated to fleet asset replacement. Vehicles and equipment are replaced based on their condition, usage, age, cost, safety, reliability and operational requirements. While budgeted amounts may not be enough to completely address an increasing backlog, it is worth noting that vehicles can remain in service beyond their expected useful lives with regularly scheduled maintenance and rehabilitation interventions. Solid Waste staff also notes that anticipated improvements to fleet data will help to inform decisions on the benefits of keeping and maintaining vehicle assets instead of replacing them when they reach the end of their expected useful lifecycles.

**Figure 103: State of the Solid Waste fleet assets.**

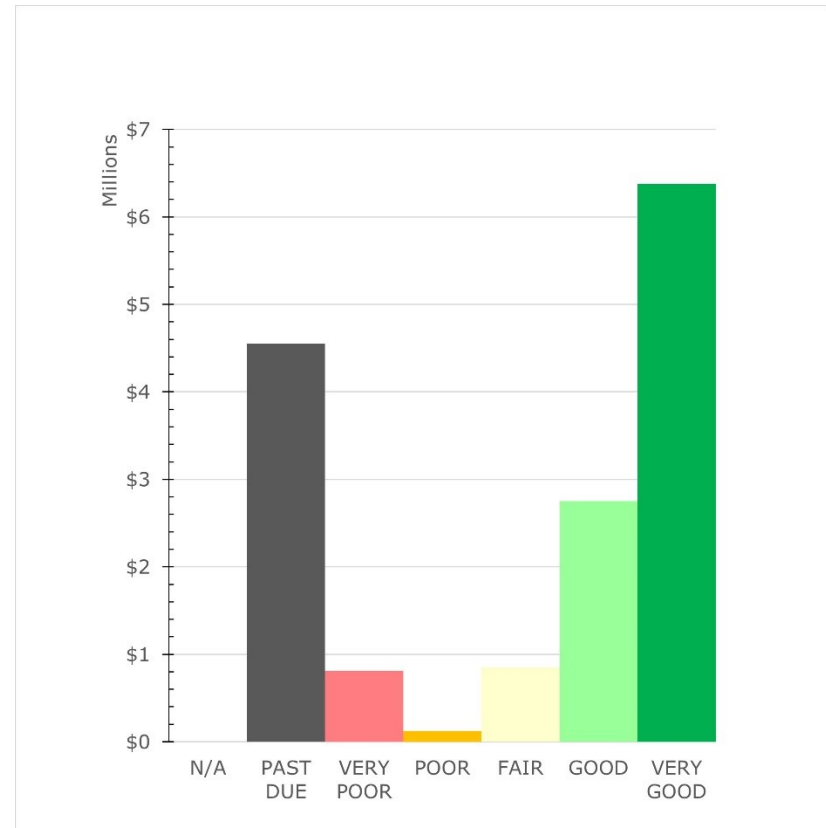


Table 69 below combines and summarizes all the Solid Waste assets by current replacement cost.



**Table 69: State of the Solid Waste Assets – Summary**

	<b>SOLID WASTE FACILITIES</b>	<b>SOLID WASTE FLEET &amp; EQUIPMENT</b>	<b>SUBTOTALS</b>	<b>OVERALL TOTAL</b>
<b>Condition</b>	\$96,810,968	\$15,458,193		\$112,269,161
<b>N/A</b>	\$1,528,913	\$0	\$1,528,913	1.36%
<b>PAST DUE</b>	\$5,745,167	\$4,549,871	\$10,295,038	9.17%
<b>VERY POOR</b>	\$5,694,925	\$810,088	\$6,505,013	5.79%
<b>POOR</b>	\$23,015,797	\$123,440	\$23,139,237	20.61%
<b>FAIR</b>	\$25,641,459	\$849,570	\$26,491,029	23.60%
<b>GOOD</b>	\$18,157,992	\$2,749,869	\$20,907,862	18.62%
<b>VERY GOOD</b>	\$17,026,715	\$6,375,354	\$23,402,070	20.84%

**Asset Age Profile**

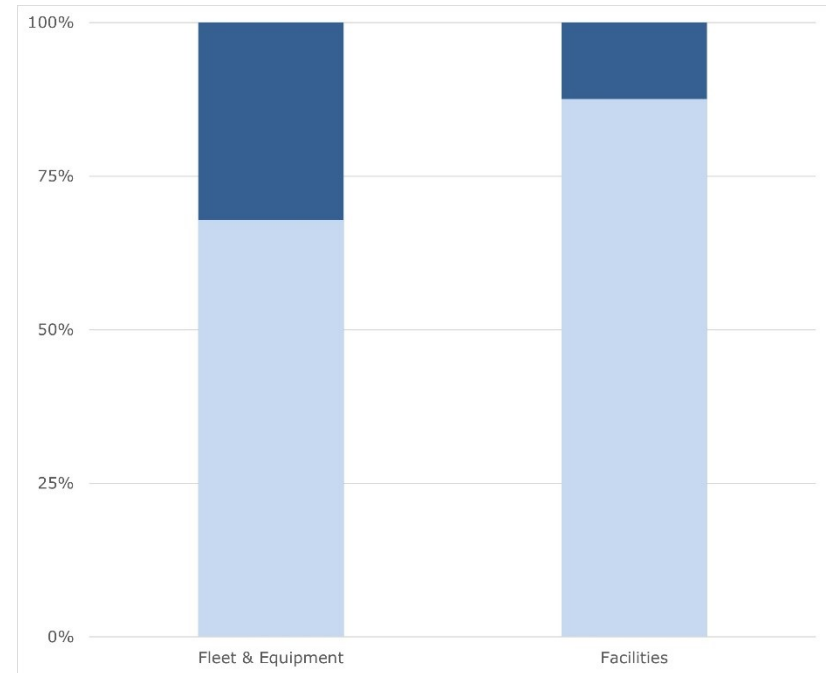
Solid Waste assets have a variety of expected useful lifecycle values. Assets identified as part of the 14 buildings that compose the WRIC are assigned individual lifecycle values ranging from 5-100 years. Fleet vehicle and equipment expected useful lifecycle values are in the 5–20 year range.

As shown in Table 69 above, 9% of Solid Waste assets have a condition rating of past due meaning that they have reached the end of their expected useful lifecycles. These assets are relatively evenly distributed between facility components and fleet with \$5.7M of need identified for facilities and \$4.5M identified for fleet.

Comparing the current ages of assets to their expected normal lifecycle allows for a general understanding of which assets may require increased maintenance attention and possibly replacement in future years. This age review for the Solid Waste assets is described below.

The age ratio chart shows that most Solid Waste assets are nearing the end of their average expected lifecycles. Considering the condition of these assets is reported to be mostly fair or better, it can be concluded that Solid Waste assets are outperforming age-based expectations.

**Figure 104: Average Age of Solid Waste Assets as a Ratio of Normal Lifecycles**



## Renewal Needs vs. Funding Analysis

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for Solid Waste assets were determined.

### Lifecycle Renewal Planning and Replacement Costs

Assets in the Solid Waste portfolio are valued based on Facility Condition Assessments (FCAs), historic and current construction costs and fleet replacement schedules. These methodologies are used across all service areas to ensure consistency in the Asset Management Plan.

### Funding Availability

Capital renewal funding for Solid Waste comes from a single source, property tax. Estimated future contributions from property tax were provided by the City’s Finance Department for the years 2024-2035 and used as the available funding value when determining the difference between planned contributions and forecast needs.

Prior to completing the financial analysis, the following steps were taken:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation.
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues.
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results are summarized in Table 70 below.

**Table 70: Solid Waste 10 Year Infrastructure Renewal Forecast Summary (in \$ millions)**

<b>Item</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
<b>Forecast Renewal Costs</b>	(\$10.60)	(\$4.61)	(\$6.87)	(\$4.03)	(\$2.52)	(\$4.88)	(\$0.13)	(\$2.92)	(\$12.27)	(\$14.66)
<b>Planned Reserve Fund Contributions</b>	\$1.07	\$1.26	\$1.49	\$1.75	\$1.95	\$2.17	\$2.41	\$2.66	\$2.93	\$3.21
<b>Cumulative Gap</b>	(\$9.53)	(\$13.16)	(\$18.93)	(\$21.77)	(\$23.00)	(\$26.39)	(\$24.90)	(\$25.91)	(\$36.03)	(\$48.56)

**Table 71: Solid Waste Renewal Forecast Summary (in \$ millions)**

<b>Average Annual Renewal Need</b>	(\$6.35)
<b>Average Annual Fund Contribution</b>	\$2.09
<b>Average Annual Gap (Cumulative)</b>	(\$24.82)
<b>10 Year Forecast Renewal Total</b>	(\$63.48)
<b>10-Year Forecast Reserve Fund Contributions</b>	\$20.91
<b>10-Year Funding Gap</b>	(\$42.57)

**Figure 105: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**



Review of Table 70 and Figure 105 above very clearly identifies that there is insufficient funding available to cover all the identified needs of Solid Waste assets between 2024 and 2033. An average annual funding gap of \$24.8M is forecast for the next ten (10) years, with a total 10-year renewal need calculated at \$63.5M against a forecast reserve fund contribution of \$20.91M. This predicts a \$42.6M backlog by the end of 2033, more than triple the current backlog of \$12.3M.

Most of the projected renewal needs for the next ten (10) years are related to Solid Waste facility components at the WRIC. Planned capital projects to address needs at the WRIC site and Organics Facility will reduce the backlog, although a funding gap

remains. Additionally, the planned new Solid Waste administrative facility could reduce the backlog by eliminating the need for some existing buildings. Finally, with the City no longer responsible for recycling as of January 2025, the projected 10-year needs of the Materials Recovery Facility could change significantly. Even if the building is repurposed, much of the equipment may no longer exist and thus would not need to be replaced.

The projected renewal need of the Solid Waste fleet is \$14.6M over the next 10 years. Due to the short expected useful lifecycle values of fleet and equipment assets, some assets are projected to be replaced multiple times over this 10-year period, but the bulk of the cost belongs to the packers and loaders. Again, the changes to recycling responsibility in 2025 may make the reduce the need to replace past due vehicles although the growth of the City and increased demand for waste collection must be considered as well.

**Operations and Maintenance Activities**

Daily operation of Solid Waste services involves the use of the facilities at the WRIC and the fleet of collection and support vehicles. The annual operating budget covers items such as:

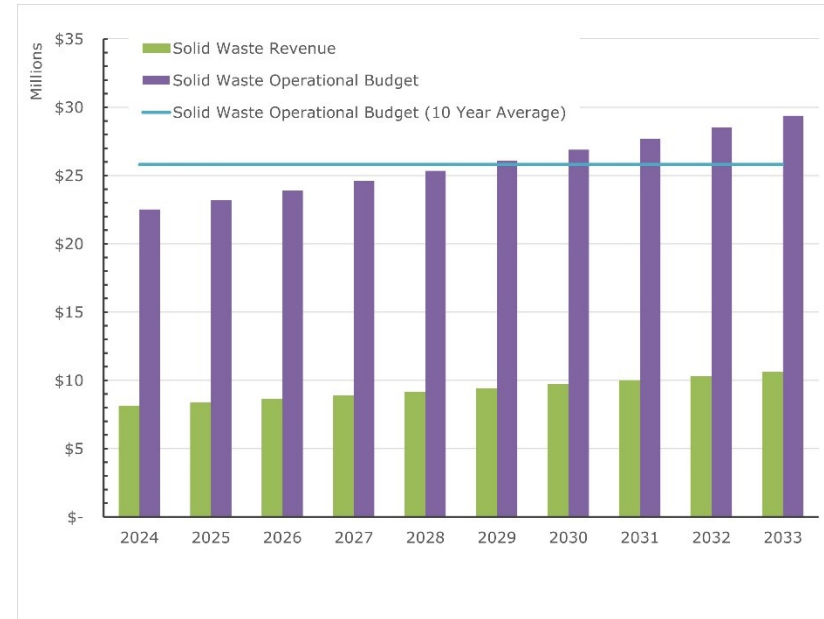
- Utility costs for the WRIC (hydro, natural gas, potable water, telephone service, internet, etc.).
- Vehicle operating costs (fuel, hydro, etc.).
- Labour costs for staff involved in daily operations activities.
- Supplies and materials to support program delivery.
- General property maintenance (building maintenance, landscaping, winter control, etc.).

- Haulage and tipping fees.

Also included in the annual operations and maintenance budgets are allowances for making unplanned repairs to Solid Waste assets when required.

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Requested budget values which were also inflated by 3% per year. The review shows that in 2023 the amount spent on operations needs was about 99% of the budgeted value. Over the next 10-years (until 2033) the average annual operational budget need is forecast at \$25.9M. Some of those needs are offset by revenue-generating activities like fees collected at the WRIC as well as sales of goods like recycling bins. In 2023, that revenue was approximately \$7.87M and was used to predict future revenue. Projected revenue has been inflated at the same rate as operating expenses and requested budget values. The values shown below are not meant to represent revenue targets for Solid Waste and are shown to visualize continued revenue against increasing operating expenses.

**Figure 106: Forecast Operations Budget Need 2024-2033**



**Total Annual Forecast – Renewal and Operations**

The total forecast needs of the Solid Waste infrastructure are determined by combining the renewal needs and forecast funding contributions. Refer to Figure 107 and Table 72 below for this summary.

As this analysis is a summation of previously discussed information the overall result is very similar: there is an annual funding gap averaging \$15.5M over the next ten (10) years. This is largely due to the existing renewal backlog in 2024 and insufficient funding to cover forecast renewal costs, especially in 2032 and 2033.

**Figure 107: Combined Renewal and Operations Forecast and Funding**



**Table 72: Combined Renewal and Operations Forecast vs. Funding (in \$ millions)**

	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
Renewal Forecast	\$10.60	\$14.42	\$20.42	\$23.52	\$24.95	\$28.56	\$27.31	\$28.57	\$38.96	\$51.77
Operations Forecast	\$22.51	\$23.19	\$23.88	\$24.60	\$25.34	\$26.10	\$26.88	\$27.69	\$28.52	\$29.37
Subtotal	<b>\$33.11</b>	<b>\$37.60</b>	<b>\$44.30</b>	<b>\$48.12</b>	<b>\$50.29</b>	<b>\$54.66</b>	<b>\$54.19</b>	<b>\$56.25</b>	<b>\$67.48</b>	<b>\$81.14</b>
Capital Reserve Fund Contribution	\$1.07	\$1.26	\$1.49	\$1.75	\$1.95	\$2.17	\$2.41	\$2.66	\$2.93	\$3.21
Operations Budget Contribution	\$22.51	\$23.19	\$23.88	\$24.60	\$25.34	\$26.10	\$26.88	\$27.69	\$28.52	\$29.37
Revenue	\$8.11	\$8.35	\$8.60	\$8.86	\$9.13	\$9.40	\$9.68	\$9.97	\$10.27	\$10.58
Subtotal	<b>\$31.69</b>	<b>\$32.80</b>	<b>\$33.98</b>	<b>\$35.21</b>	<b>\$36.42</b>	<b>\$37.67</b>	<b>\$38.97</b>	<b>\$40.32</b>	<b>\$41.72</b>	<b>\$43.17</b>
Annual Gap	(\$1.42)	(\$4.80)	(\$10.33)	(\$12.92)	(\$13.87)	(\$16.99)	(\$15.22)	(\$15.94)	(\$25.76)	(\$37.98)



## Master and Major Capital Plans

### City Growth

Expansion of Solid Waste services will occur with the continued expansion of the City, particularly as new residential areas are developed and existing areas see an increase in density.

In 2021, the City published an update to the Guelph Solid Waste Management Master Plan with an eye on the future of waste management. The plan noted that population growth will lead to a projected increase in the amount of waste generated to an estimated 58,000 tonnes per year by 2031. This growth will lead to an increase in both capital purchases and operating needs to keep pace with demand.

Other recommendations from the plan were mostly based on the reducing the amount of waste collected through various methods like public education, plastic bans, circular economy policies and collection standardization for industrial and commercial properties. Some of these are included in the 2024-2027 budget, reinforcing Solid Waste's commitment to servicing a growing Guelph. While these

recommendations may not directly lead to additional assets, the projected growth of solid waste services will place an additional burden on the existing assets and potentially increase the need for rehabilitation or renewal.

### Levels of Service

O. Reg. 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types.

The AMP identifies LOS as "Customer" or "Technical" LOS in alignment with the O. Reg. 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

**Table 73: Solid Waste Levels of Service**

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Customer	Description of the services provided by the asset network	The City of Guelph has a curbside collection program for residential, multi-residential, and downtown customers. All materials collected are delivered to the Waste Resource Innovation Centre (WRIC) where blue cart and green cart materials are processed at the Materials Recovery Facility and Organics Facility. The WRIC's transfer station receives all grey cart materials which are then sent to the landfill. The WRIC is also open to Guelph residents for public waste drop-off, including garbage, household hazardous waste, yard waste and recyclables.
City Building	Technical	% of WM asset CRV in Fair or better condition	50%
Environment	Technical	Annual Weight of Grey Cart Waste Collected at the Curb per Household	282.53kg/household (2023)
Environment	Customer	Description of the strategies used to mitigate GHG emissions and reduce water usage	<p>The City hosts a variety of efforts to divert waste to protect the environment including a Goods Exchange Weekend, an Electronics Recycling Program, a Waste Diversion Education Centre, a Paint-Plus Reuse Program, a Bike ReCycle Program and a Circular Economy Framework &amp; Policy.</p> <p>Additional strategies to reduce greenhouse gas emissions include a solar canopy at the WRIC, and LED lighting retrofit and exploring electrification of the Solid Waste fleet.</p>

## Risks to the Solid Waste Assets

### Climate Change

The 2023 Climate Adaptation Plan identifies seven (7) action items which involve the Solid Waste asset portfolio.

- 1) Liaise with the fire department on a mock transfer station fire scenario - (annual drills scheduled, ongoing).
- 2) Itemize Waste Resource Innovation Centre (Facility) components susceptible to hazard impacts and plan for replacement - (to be included as part of scope in next asset inventory and condition assessment).
- 3) Create a formal protocol for yard waste pick up during the summer - (already implemented).
- 4) Ensure fire suppression equipment is maintained - (ongoing).
- 5) Maintain cooling feature in waste collection fleet vehicles with adequate hydration available for staff. Provide vehicle redundancy - (ongoing).
- 6) Maintain and update as necessary lightning protocols for Waste Resource Innovation Centre (Facility) - (included in Emergency Response and Contingency Plan).
- 7) Add inclement weather shelters to the facility - (already in place).

Continued implementation of these actions would help prepare Solid Waste assets for emergency situations and extreme weather events while also focusing on the health and safety of staff.

As with all City services that operate facilities, the changing climate will require changes to some building equipment. Increased air-conditioning capacity to accommodate higher summer temperatures is likely. Replacing existing equipment with more energy efficient models or systems is also to be planned for. These are strategies that the City's Facilities & Energy Management team is already implementing. It is recommended that no special projects be implemented to make these kinds of changes, but to complete them when the current assets reach the end of their functional lives.

### Aging Assets

As the age of assets increase, so does the potential for unexpected failures. The facilities assets at the WRIC are used daily and will continue to deteriorate as they age. Sound operations and maintenance planning will help to ensure that availability, provided that the funding for these two essential activities is adequate.

The WRIC buildings should also be part of a regular and repeated FCA process, to keep a close eye on the condition of critical assets whose failure could lead to temporary closures. While the expected useful lifecycles of facility assets vary, the true lifecycle of a facility is only as long as the lifecycle of its critical assets.

### Insufficient Funding (Funding Gap)

Existing funding for Solid Waste assets is not meeting the projected needs of the portfolio, resulting in an increasing backlog and infrastructure gap. This trend is projected to worsen over the next ten (10) years with a cumulative projected backlog of \$48.6M. With

insufficient funding and normal continuing deterioration of physical assets the risk of increasing unexpected failures requiring emergency repair work will increase.

### **Asset Data Tracking**

There is currently no central system used to track asset data across the City of Guelph. The ongoing Enterprise Resource Planning (ERP) project will provide opportunity for Solid Waste to enhance the tracking of maintenance and rehabilitation processes of the assets they operate as well as forecast maintenance costs. This valuable data will help to shape capital investments, operational processes and future asset management plans by associating work with assets, providing a more accurate picture of the total cost of ownership over the expected useful lifecycle.

### **Summary**

Collection and management of garbage, organics, recycling and yard waste are essential services

provided by Solid Waste that are supplemented by the operation of assets.

In general, the condition of the Solid Waste portfolio is such that a backlog of infrastructure renewal needs has accumulated and is only projected to grow as the assets continue to age. The Solid Waste facilities are due for an updated FCA or needs assessment to guide future infrastructure renewal funding. Based on existing information, there are some major capital expenses within the 10-year forecast window and the funding is not currently enough to meet those needs. Most assets remain in a functional state (i.e. fair condition) and are meeting their level of service targets but continued underinvestment in Solid Waste asset renewal will only increase the risk of unexpected failures. Increasing funding to Solid Waste could be done at the expense of other asset portfolios but careful consideration of the benefits and consequences of that action is required before a decision is made.

## Chapter 12: Guelph Transit



**Quick Facts:****Guelph Transit Assets**

Total value of facilities	\$16,029,217
Number of facilities	1
Average condition of facilities	FAIR - GOOD
Total building area	2787 m <sup>2</sup> (30000 f <sup>2</sup> )
Total value of vehicles & equipment	\$117,627,873
Number of Transit buses	85
Number of mobility buses	14
Average condition of vehicles & equipment	FAIR
Total value of bus stops & shelters	\$4,701,255
Count of bus stops	641

## Introduction

Guelph Transit provides an essential service for residents and visitors alike, moving people around the city in an efficient and environmentally friendly manner. Their vision of creating a competitive, convenient and reliable transit network is accomplished by providing customers with 26 daily routes as well as late night service and on-demand service on holidays.

Guelph Transit operates and maintains a fleet of low-floor passenger buses as well as specialized vehicles for low-mobility users. In 2023, Guelph Transit’s first electric bus was put into daily service and additional electric units are expected to be deployed over the next four years. Administration and maintenance for this growing fleet occurs centrally at the Guelph Transit Administration Facility.

### Assets in the Guelph Transit System

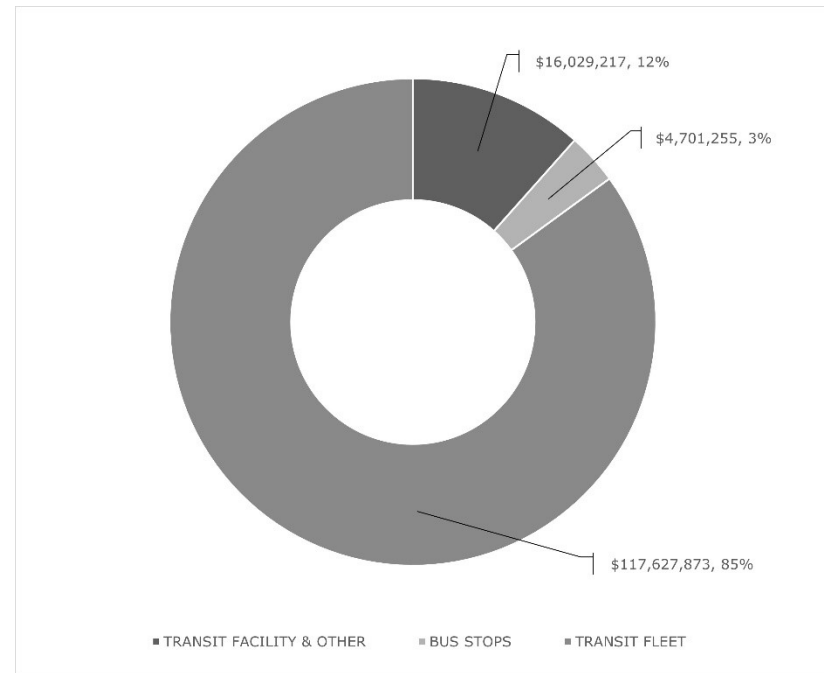
Guelph Transit assets can be broadly classified into three categories:

- **Fleet and Equipment:** Vehicles and equipment operated by Guelph Transit staff, including passenger buses, mobility buses, additional support vehicles and motorized equipment.
- **Facilities:** The Guelph Transit Administration Facility building and equipment.
- **Bus Stops:** 641 bus stops around the City of Guelph, some with shelters and some without.

The current estimated total replacement value of all Transit assets is \$138.4M with 85% of that value represented in the fleet and equipment and the

remaining 15% representing facilities, bus stops and other assets.

**Figure 108: Replacement Value of Guelph Transit Assets by Category**



Considering the entire Transit portfolio, 54% of the assets (by replacement value) are in fair condition or better while 36% are in poor condition or worse. With the bulk of the assets represented by expensive buses, these percentages can change significantly from year to year. Fleet assets have shorter expected useful lifecycle values and are replaced as part of ongoing annual capital projects.

The transit assets also have a deferred renewal backlog of \$39.4M, comprised of assets that are past due for replacement as of 2024.

A Guelph Transit route map has been included as Figure 110 below.

### State of the Guelph Transit Assets

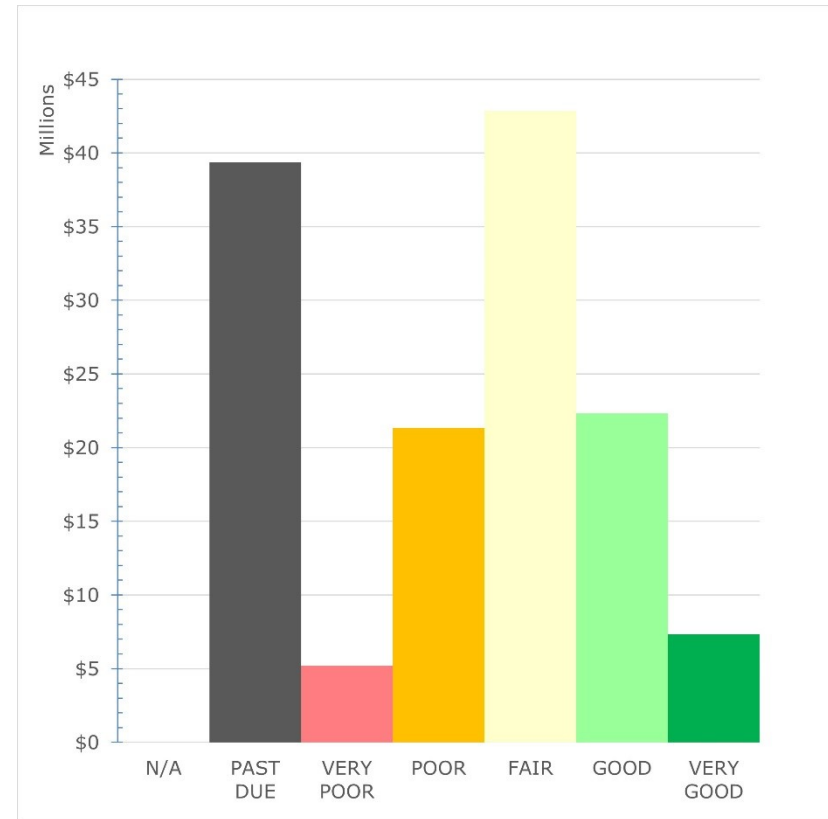
The value and condition of each asset was determined according to the methods described in the “Infrastructure Renewal and Lifecycle Management” section of this report.

An asset rated in past due or very poor condition does not mean that it is no longer delivering its intended service or has already failed. For example, passenger buses are assigned a 12-year expected useful lifecycle, a relatively short time frame compared to most other assets. While some of the buses have reached past due or very poor condition based on age, they remain in service due to regular maintenance.

Likewise, an asset in very good condition may not be functioning 100% perfectly. Condition ratings assigned to assets are based on best practices and standards

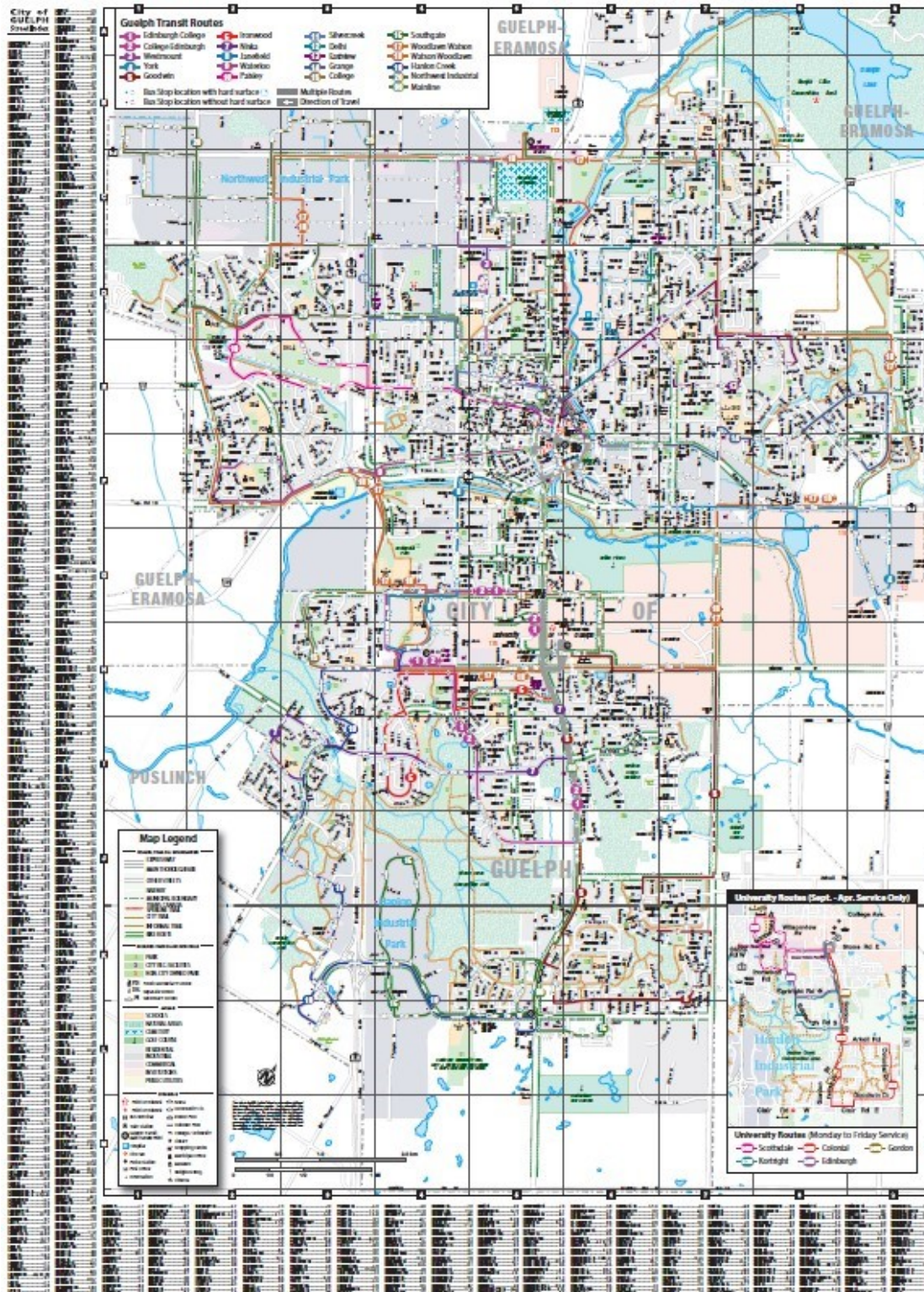
and are a tool that enables long term needs assessment at the whole portfolio level.

**Figure 109: State of the Guelph Transit Asset Portfolio**





**Figure 110: Guelph Transit Route Map**



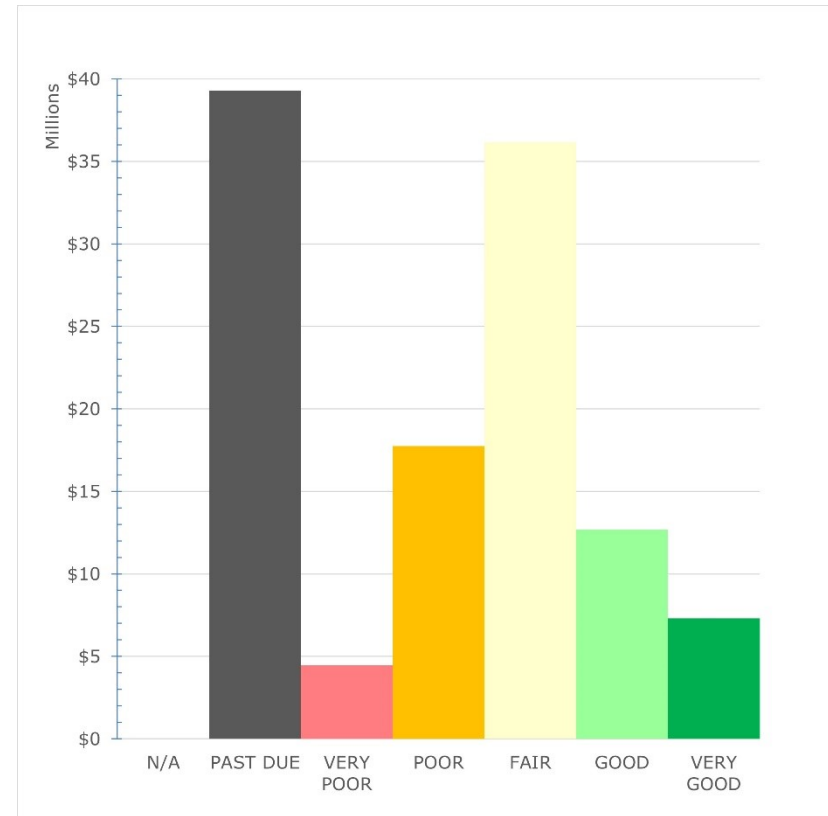
**Fleet Asset Condition**

Fleet assets operated by Guelph Transit as of 2024 have a replacement value of \$117.6M and include 85 passenger buses, 14 mobility buses and 9 additional support vehicles and motorized equipment. For the purposes of this plan, the condition of these assets is determined based on age and expected useful lifecycle, which ranges from 5-20 years depending on the asset type.

Analysis of these assets shows that 48% of the Guelph Transit fleet with a replacement value of \$56.1M are in fair condition or better. Assets rated as poor and very poor make up 19% of the portfolio, a value of \$22.2M. The remainder of the portfolio is \$39.3M of assets identified as past due, meaning that they reached the end of their expected useful lifecycle prior to 2024. This is the value of the deferred backlog, assets that should have been replaced based on age but may not have been partly due to inadequate funding in previous years.

Information provided by Fleet Planning and Guelph Transit staff confirms that many of the assets rated as past due condition in 2024 are already planned for replacement in the coming years. Fifteen new electric passenger buses are expected to be put into service between 2024 and 2025, nine (9) of which are replacements and six (6) of which account for growth. Concerns due to aging assets are already being addressed by established plans, although not enough to eliminate the backlog.

**Figure 111: State of the Guelph Transit Fleet Assets**



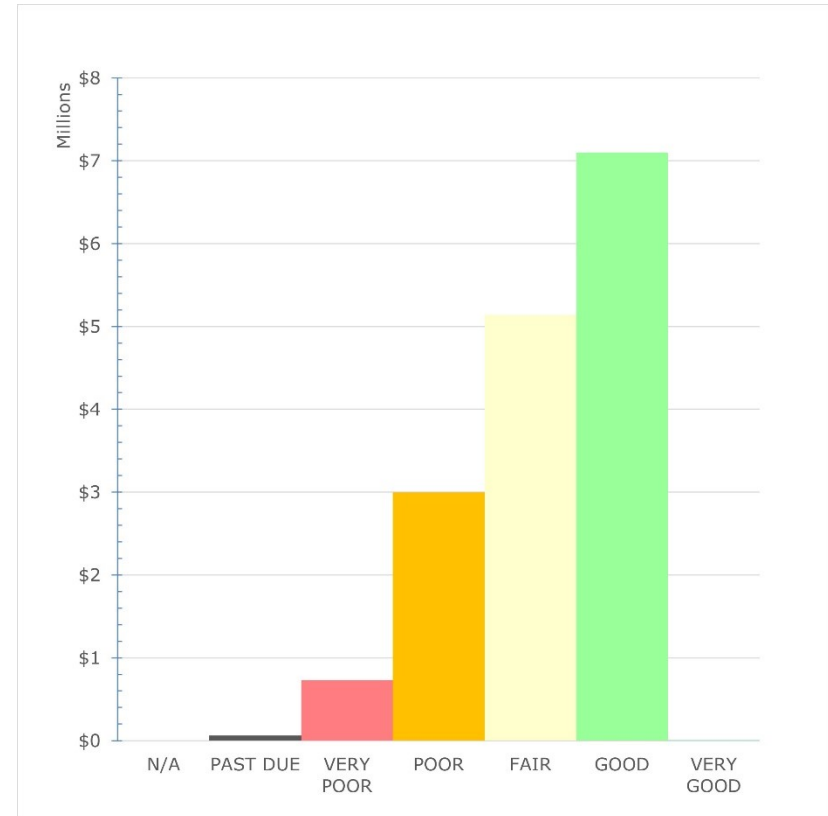
**Facility Asset Condition**

Guelph Transit operates out of a single facility, the Guelph Transit Administration Building located at 170 Watson Rd S. The condition of this facility has been determined based on information provided by 3<sup>rd</sup> party consultants engaged by the City. This includes a combination of facility condition assessments that review the physical and functional condition of the equipment comprising a facility and a long-term needs analysis with recommended major renewal or growth work.

Most of the facility assets are in fair or better condition, with 76% or \$12.2M in these categories. This indicates a low risk of unexpected failures at the Administration Building and highlights the benefits of the existing maintenance and renewal program.

The City has started a project to develop and build a new facility to support Guelph Transit and Fleet Services over the next 25+ years. This facility will store, charge and maintain the growing electric bus fleet as well as other fleet vehicles. The current schedule calls for a detailed facility design to be completed in Q4 of 2025 and no decisions have been made as to the continued operation of the current Guelph Transit Administration Building yet.

**Figure 112: State of the Guelph Transit Facility Assets**



**Bus Stop Asset Condition**

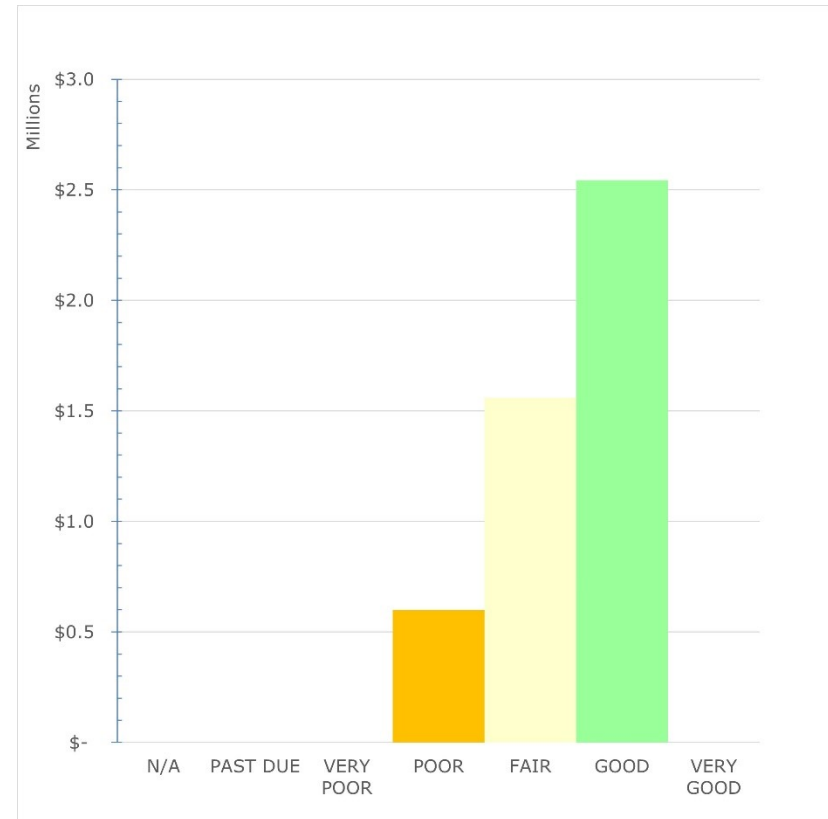
To service the 26 daily routes, Guelph Transit has 641 bus stops throughout the city, including 12 platforms at Guelph Central Station. 175 bus stops have a shelter while the remaining 466 do not. In total, the replacement value of the bus stops and shelters is \$4.7M, accounting for 3% of Guelph Transit’s assets by replacement value. While this is the smallest part of the Guelph Transit asset portfolio, it’s important to identify the condition of these highly visible assets.

The condition of bus stops and shelters are evaluated annually by Transit Servies staff as part of a scheduled inspection program. Age-based condition ratings were used in some cases where no inspected condition was provided, and a condition of fair was assigned if a stop had no specified age. As of 2024, approximately 87% or \$4.1M of bus stops are in fair or better condition, with no assets assessed as very poor or past due. As with the Guelph Transit Administration Building, this indicates a low risk of unexpected failures that would affect bus routes in the coming years.

Transit staff have identified the need for on-street charging as the EV bus fleet continues to grow. Charging infrastructure at bus stops will become more prevalent in the coming years and will be reflected in future Asset Management Plans.

Table 74 summarizes all the Transit assets by condition and current replacement cost.

**Figure 113: State of the Guelph Transit Bus Stop Assets**



**Table 74: State of the Guelph Transit Assets - Summary**

	<b>TRANSIT FACILITY &amp; OTHER</b>	<b>BUS STOPS</b>	<b>TRANSIT FLEET</b>	<b>SUBTOTALS</b>	<b>OVERALL TOTAL</b>
<b>Condition</b>	\$16,029,217	\$4,701,255	\$117,627,873		<b>\$138,358,345</b>
<b>N/A</b>	\$0	\$0	\$0	\$0	<b>0.00%</b>
<b>PAST DUE</b>	\$61,092	\$0	\$39,305,000	\$39,366,092	<b>28.45%</b>
<b>VERY POOR</b>	\$727,337	\$0	\$4,450,000	\$5,177,337	<b>3.74%</b>
<b>POOR</b>	\$2,996,199	\$599,372	\$17,740,000	\$21,335,571	<b>15.42%</b>
<b>FAIR</b>	\$5,138,468	\$1,558,367	\$36,145,000	\$42,841,835	<b>30.96%</b>
<b>GOOD</b>	\$7,099,435	\$2,543,516	\$12,675,000	\$22,317,952	<b>16.13%</b>
<b>VERY GOOD</b>	\$6,685	\$0	\$7,312,873	\$7,319,558	<b>5.29%</b>

**Asset Age Profile**

Guelph Transit assets have a variety of expected useful lifecycle values. Within the Guelph Transit Administration Building, assets and equipment are assigned individual lifecycle values ranging from 5-100 years. Fleet vehicle and equipment expected useful lives are in the 5-20 year range while bus stops are assigned a 10-year expected useful life.

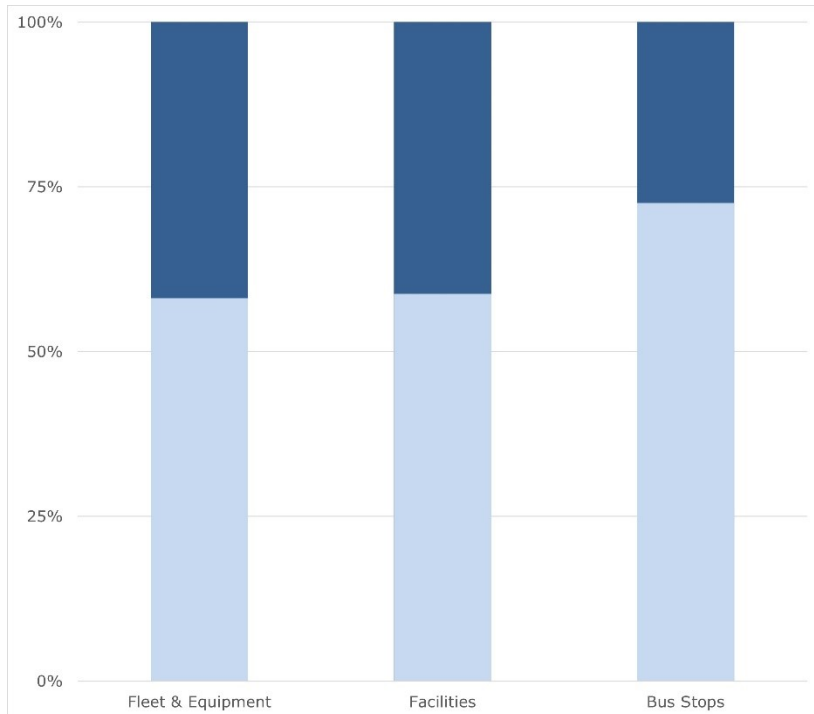
As shown in Table 74, 28.5% of assets have reached the end of their expected useful lifecycles and have a condition rating of past due. Nearly all of these are

fleet assets, including 28 passenger buses. As stated above, the existing replacement plan accounts for nine (9) electric replacement buses in 2024-2025, while more are expected between 2026-2027. These planned replacements show a commitment to renewing past due assets while also providing a significant reduction in greenhouse gas (GHG) emissions.

Comparing the current ages of assets to their expected normal lifecycle allows for a general understanding of which assets may require increased

maintenance attention and possibly replacement in future years. This age review for the Guelph Transit assets is described below.

**Figure 114: Average Age of Guelph Transit Assets as a Ratio of Normal Lifecycles**



The age ratio chart shows that most of the Guelph Transit facility and bus stop assets are past the mid-way point in their average expected lifecycles. Considering the condition of these assets is reported to be mostly fair and better, it can be concluded that these assets are slightly out-performing age-based expectations.

**Renewal Needs vs. Funding Analysis**

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for Guelph Transit assets were determined.

**Lifecycle Renewal Planning and Replacement Costs**

Assets in Guelph Transit portfolio are valued based on Facility Condition Assessments (FCAs), historic construction costs, estimates from staff and fleet replacement schedules. These methodologies are used across all service areas to ensure consistency in the Asset Management Plan.

**Funding Availability**

Capital renewal funding for Guelph Transit’s asset portfolio is funded from a combination of the City’s general Infrastructure Renewal fund, the Dedicated Gas Tax, the 100RE (Renewable Energy) fund and grant funding from the Provincial and Federal governments. Estimated future contributions from these sources were provided by the City’s Finance Department for the years 2024-2035 and used as the available funding value when determining the difference between planned contributions and forecast needs. For years without estimated funding values, an average of the values from previous years was assigned.

Prior to completing the financial analysis, the following steps were taken for renewal needs:

- Forecast renewal rates were calculated based on 2024 replacement cost estimates and were inflated by 3% per year in subsequent years to account for inflation.
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues.
- In years when the planned funding was not adequate to cover all forecast needs the difference in the two values was considered

deferred work and carried over to the next year. The carry over value was inflated at 3%. This carry-over does not represent any specific assets or projects, but instead the value of needed but deferred renewal work adding to the existing renewal backlog.

The results are summarized below in Table 75 and Figure 115.

**Table 75: Guelph Transit 10-Year Asset Renewal Forecast Summary (in \$ millions)**

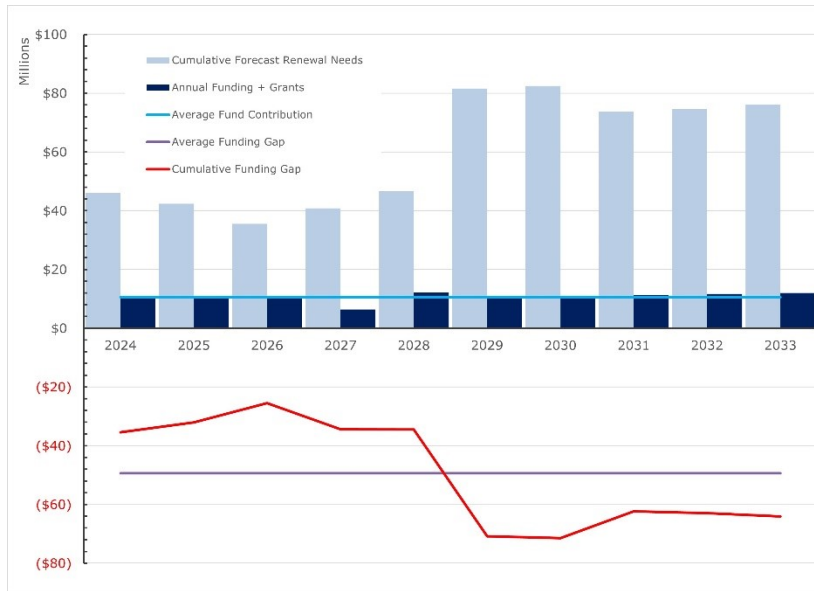
Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Forecast Renewal Costs</b>	(\$46.02)	(\$5.90)	(\$2.48)	(\$14.60)	(\$11.20)	(\$46.10)	(\$9.46)	(\$0.15)	(\$10.38)	(\$11.23)
<b>Planned Reserve Fund Contributions</b>	\$10.57	\$10.35	\$10.06	\$6.40	\$12.20	\$10.73	\$11.02	\$11.33	\$11.66	\$12.01
<b>Cumulative Gap</b>	(\$35.45)	(\$32.06)	(\$25.45)	(\$34.42)	(\$34.45)	(\$70.85)	(\$71.42)	(\$62.38)	(\$62.97)	(\$64.08)

**Table 76: Renewal Forecast Summary Information (in \$ millions)**

Average Annual Renewal Need	(\$15.75)
Average Annual Fund Contribution	\$10.63
Average Annual Gap (cumulative)	(\$49.35)
Forecast Renewals	(\$157.53)
Forecast Res. Funds	\$106.32
10-Year Funding Gap	(\$51.20)



**Figure 115: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**



Review of this data very clearly identifies that there is insufficient funding available to cover all the identified needs of Guelph Transit assets from 2024-2033. An average annual funding gap of \$49.35M is forecast for the next ten (10) years, with a total 10-year renewal need calculated at \$157.5 against a forecast funding of \$106.3M. This predicts a \$64.1M funding gap by the end of 2033, nearly double the current backlog value.

Most of the renewal cost for the next 10 years can be attributed to the Guelph Transit fleet. Ninety (90) passenger and mobility buses will reach the end of their expected useful lives in or before 2033. While some of these are already planned to be replaced, the

pace of renewal simply cannot keep up with the projected need.

Additionally, the forecast renewals contain more than \$5M worth of replacement or rehabilitation needs for the Guelph Transit Administration Facility. This building may not have Guelph Transit as a tenant within the next 10 years, but the capital needs to ensure the building is serviceable will remain if it is still in use.

**Operations and Maintenance Activities**

Daily operation of Guelph Transit service involves the use of fleet and facilities assets (including bus stops & shelters). The annual operating budget covers items such as:

- Utility costs for the Guelph Transit Administration Building (hydro, natural gas, potable water, telephone service, internet, etc.)
- Vehicle operating costs (fuel, hydro, etc.)
- Labour costs for staff involved in daily operations activities.
- General property maintenance (building maintenance, landscaping, winter control, etc.)

Also included in the annual operations and maintenance budgets are allowances for making unplanned repairs to the Guelph Transit assets when required.

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Budget requested values which were also inflated by 3% per year. Transit staff noted that the current budget is built around a fleet of

primarily diesel buses and that budgeting numbers may change as fleet electrification increases.

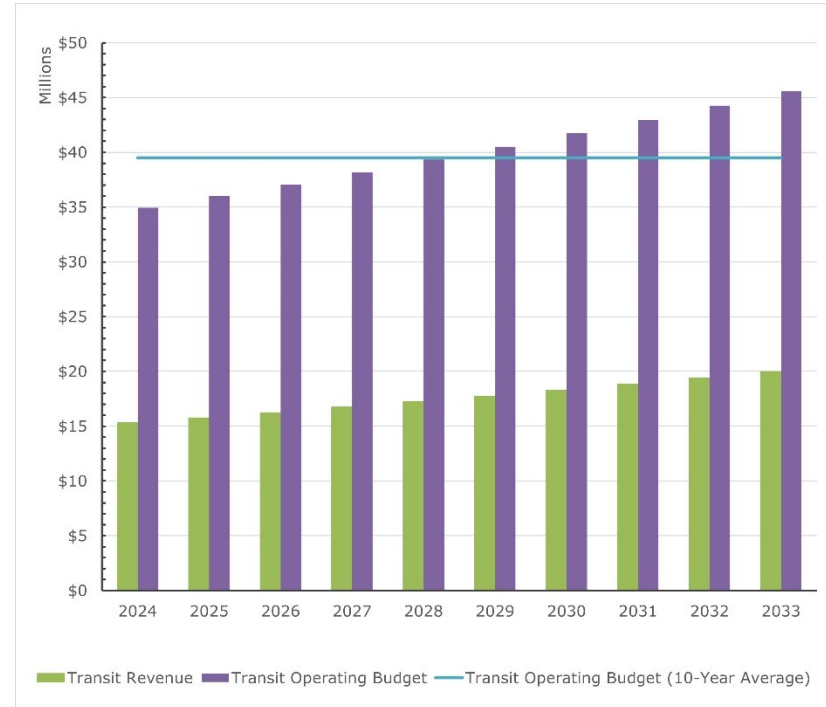
Review of the budget shows that in 2023, the amount spent on operations needs was about 97% of the budgeted value. Over the next ten (10) years (until 2033) the average annual operations need is forecast at approximately \$41.25M. Some of that need is offset by revenue generated from fares and advertising. In 2023, that revenue was approximately \$14.9M and this value was used to predict future revenue. Projected revenue has been inflated at the same rate as operating expenses. The values shown below are not meant to represent revenue targets for Guelph Transit and are shown to visualize continued revenue against increasing operating expenses.

**Total Annual Forecast – Renewal and Operations**

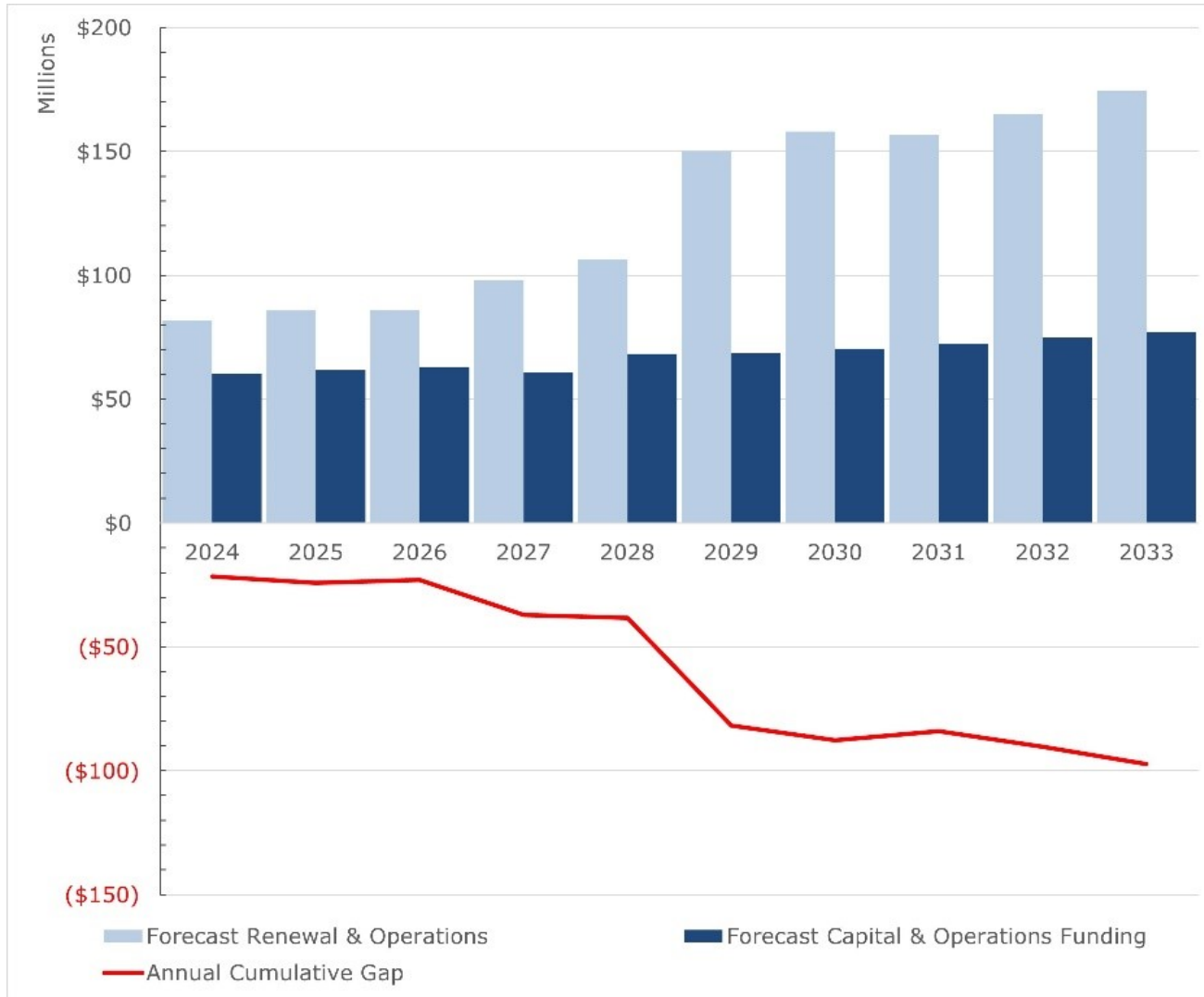
The total forecast needs of the Guelph Transit assets are determined by combining the renewal needs and forecast funding contributions. Refer to Figure 117 and Table 77 for this summary.

As this analysis is a summation of previously discussed information the overall result is very similar: there is an annual funding gap averaging \$58.5M over the next ten (10) years. This is largely due to the growing renewal backlog, the increased operating budget needs and insufficient funding to cover all forecast costs

**Figure 116: Forecast Operations Budget Needs 2024-2033**



**Figure 117: Combined Renewal and Operations Forecast Funding**



**Table 77: Combined Renewal and Operations Forecast vs. Funding (in \$ millions)**

	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
<b>Renewal Forecast</b>	\$46.02	\$48.67	\$47.74	\$58.62	\$66.09	\$108.43	\$115.12	\$112.41	\$119.52	\$127.37
<b>Operations Forecast</b>	\$35.99	\$37.07	\$38.18	\$39.32	\$40.50	\$41.72	\$42.97	\$44.26	\$45.59	\$46.95
<b>Subtotal</b>	<b>\$82.00</b>	<b>\$85.73</b>	<b>\$85.92</b>	<b>\$97.94</b>	<b>\$106.59</b>	<b>\$150.15</b>	<b>\$158.09</b>	<b>\$156.67</b>	<b>\$165.11</b>	<b>\$174.32</b>
<b>Capital Reserve Fund Contribution</b>	\$10.57	\$10.35	\$10.06	\$6.40	\$12.20	\$10.73	\$11.02	\$11.33	\$11.66	\$12.01
<b>Operations Budget Contribution</b>	\$34.95	\$35.99	\$37.07	\$38.19	\$39.33	\$40.51	\$41.73	\$42.98	\$44.27	\$45.60
<b>Revenue</b>	\$14.87	\$15.31	\$15.77	\$16.24	\$16.73	\$17.23	\$17.75	\$18.28	\$18.83	\$19.40
<b>Subtotal</b>	<b>\$60.38</b>	<b>\$61.65</b>	<b>\$62.90</b>	<b>\$60.83</b>	<b>\$68.26</b>	<b>\$68.48</b>	<b>\$70.50</b>	<b>\$72.59</b>	<b>\$74.76</b>	<b>\$77.00</b>
<b>Annual Funding Gap</b>	(\$21.62)	(\$24.08)	(\$23.02)	(\$37.11)	(\$38.33)	(\$81.67)	(\$87.59)	(\$84.08)	(\$90.35)	(\$97.33)

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## Master and Major Capital Plans

### City Growth

In 2021, the City published the Guelph Transit Future Ready Action Plan and conducted an extensive route review involving public consultation. While focused more on service than assets, the plan defined growth parameters for Guelph Transit from 2022-2031, including:

- 30% increase in service.
- Number of stops increased by 45% due to more bi-directional service.
- More Sunday service.
- Will service new growth areas such as the Guelph Innovation District, New Operations Campus and the Clair Maltby Secondary plan area.
- All intensification corridors will have more frequent service.
- All community nodes will have more frequent service.

Increased demand for Guelph Transit service will occur with the continued expansion of the City, particularly as new homes are constructed, and downtown Guelph is revitalized. Transit staff have noted a direct correlation between increased housing and transit demand. To prepare for this growth-driven demand, an ongoing route review project will adjust existing routes and create new ones, which will require assets like additional buses, stops and shelters to service.

Two additional large-scale Transit projects to support growth have also been announced. First, Guelph Central Station, a fully accessible building to serve public transit riders and the business needs of Guelph Transit, is in the design phase. Second, a new Transit and Fleet Services Facility to support the maintenance and changing of the City's growing electric fleet is in detailed design. These new facilities show a commitment to Guelph Transit serving the needs of a growing city.

### Levels of Service

O. Reg. 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as "Customer" or "Technical" LOS in alignment with the O. Reg. 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics. To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

**Table 78: Guelph Transit Levels of Service**

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Technical	Annual ridership volume	6.7 million riders
Foundations	Customer	Maps of routes and stops	See Figure 110 above.
Foundations	Customer	Description of asset replacement/rehabilitation planning and prioritization, defining end of life for assets.	Shelter condition is preliminarily determined by issue reports made by operators, supervisors, shelter cleaners, and the public. Repair/rehab/replacement is determined as according to the shelter type and resource availability. fleet to provided for buses based on replacement policy
People & Economy	Technical	Annual # of complaints due to uncleanliness or appearance of vehicles	1,127 complaints
Environment	Technical	Nat Gas Consumption (m <sup>3</sup> )	261,640 m <sup>3</sup>
Environment	Technical	Water Consumption (m <sup>3</sup> )	19,582 m <sup>3</sup>
Environment	Technical	Fuel Consumption (L)	2,811,216 L
Environment	Technical	Energy Consumption (kWh)	1,057,562

## Risks to the Transit Assets

### Climate Change

The 2023 Climate Adaptation Plan identifies four (4) action items which involve the Guelph Transit asset portfolio.

- 1) Continue to convert bus fleet to electric vehicles in collaboration with Fleet.
- 2) Investigate and provide adequate shelter for users at popular transit stops, consider equity lens.
- 3) Establish a business continuity plan in case building is compromised, itemize the transit building components, and provide alternate/redundant work environment in case the transit buildings cannot be safely occupied.
- 4) Ensure adequate air conditioning in the transit buildings and that staff are aware of alerts from Health & Safety.

Continued implementation of these actions would help prepare Guelph Transit assets for emergency situations and extreme weather events while also focusing on the health and safety of staff and passengers.

Ongoing and future renewal projects involving Guelph Transit assets can be directly correlated to mitigation of climate change and reduction of this risk. The continued electrification of the bus fleet over the next 10 years will reduce greenhouse gas emissions by

replacing diesel buses, positioning Guelph as a climate leader and example for the community. On the facilities side, the planned Transit & Fleet Services Facility will be designed to meet or exceed current building standards and will strive towards net zero carbon building design standards.

### Aging Asset Portfolio

As the age of assets increase, so too does the potential for unexpected failures. Guelph Transit vehicles see consistent use and will continue to deteriorate as they age. Considering the industry shift towards production of EV and hydrogen-powered vehicles, parts to maintain the aging diesel fleet may become harder to find in the coming years. While Transit continues to adapt to new industry standards, sound operations and maintenance planning are more important than ever to help to ensure vehicle availability and to maintain expected levels of service.

As it remains in service, the Guelph Transit Administration Facility should also be part of a regular and repeated FCA process, to keep a close eye on the condition of critical assets whose failure could lead to temporary closures. While the expected useful lifecycles of facility assets vary, the true lifecycle of a facility is only as long as the lifecycle of its critical assets.

### Insufficient Funding (Funding Gap)

Existing funding for Transit assets is not meeting the projected needs of the portfolio, resulting in an increasing backlog and infrastructure gap. This trend is projected to worsen over the next ten (10) years with

a cumulative projected backlog of \$97.3M. With insufficient funding and normal continuing deterioration of physical assets the risk of increasing unexpected failures requiring emergency repair work will increase.

### **Increased Operating Costs**

Transit staff have noted that increasing operating costs are also a risk to providing services. Operating budgets presented in this plan are assumed to increase with the rate of inflation but there are also larger potential increases like an upcoming collective agreement renewal or the operation and maintenance of growth facility and vehicle assets. Operating budgets should continue to be carefully planned and monitored by Transit staff to ensure consistent service is provided.

### **Asset Data Tracking**

There is currently no central system used to track asset data across the City of Guelph. The ongoing Enterprise Resource Planning (ERP) project will provide opportunity for Transit to enhance the tracking of maintenance and rehabilitation processes of the assets they operate as well as forecast maintenance costs. This valuable data will help to shape capital investments, operational processes and future asset

management plans by associating work with assets, providing a more accurate picture of the total cost of ownership over the expected useful lifecycle.

### **Summary & Recommendations**

Guelph Transit assets are a relatively small portfolio for the City of Guelph, but this does not negate their importance or value to the community. As Guelph continues to grow, the need for moving people around the city efficiently will only increase.

In general, the condition of the Guelph Transit portfolio is such that a large backlog of asset renewal needs has accumulated and is only projected to grow as the assets age. There are some major capital expenses within the 10-year forecast window and the funding is not currently enough to meet those needs. Most assets remain in fair condition and are meeting their level of service targets but continued underinvestment in Guelph Transit asset renewal will only increase the risk of unexpected failures. Increasing funding to Guelph Transit could be done at the expense of other asset portfolios but careful consideration of the benefits and consequences of that action is required before a decision is made.



## Chapter 13: Guelph-Wellington Paramedic Service



**Quick Facts:****Guelph-Wellington Paramedics Assets**

Total value of facilities	\$1,400,000
Number of facilities	1
Average condition of facilities	N/A
Total building area	186 m <sup>2</sup> (2002 f <sup>2</sup> )
Total value of vehicles & equipment	\$13,893,281
Number of vehicles & equipment	43
Average condition of vehicles & equipment	FAIR
Total value of Guelph-Wellington Paramedics assets	\$15,293,281

**Introduction**

The Guelph-Wellington Paramedic Service (GWPS) is managed as a department within the City of Guelph. The GWPS responds to calls for assistance throughout Wellington County. The total area the GWPS responds to is more than 2,600 KM<sup>2</sup>. This requires an array of strategically placed stations to maximize coverage and minimize response times.

**Assets in the GWPS System**

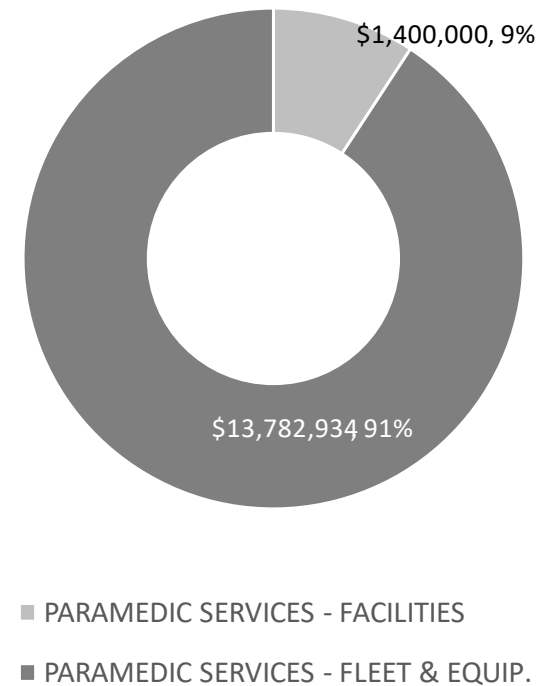
Assets in the GWPS System can be broadly classified into two categories:

- Facilities: Paramedic stations and posts
- Fleet and Equipment: Ambulances and equipment paramedics use in emergency response

The GWPS has space at the Clair Road Emergency Services Centre however for the purpose of this AMP, the centre is represented in the Fire Service’s asset portfolio for simplicity. Many of the GWPS’s paramedic stations and posts are leased facilities and are not part of the City’s facility assessment program. As such, the City lacks asset information on these facilities.

The current estimated total replacement value of the GWPS assets is \$15.1M. EMS Station #2 is the only City owned GWPS facility and has replacement value of \$1.4M which represents 9% of the GWPS asset portfolio. Fleet and equipment make up the remaining 91%.

**Figure 118: Replacement value of GWPS assets by category**

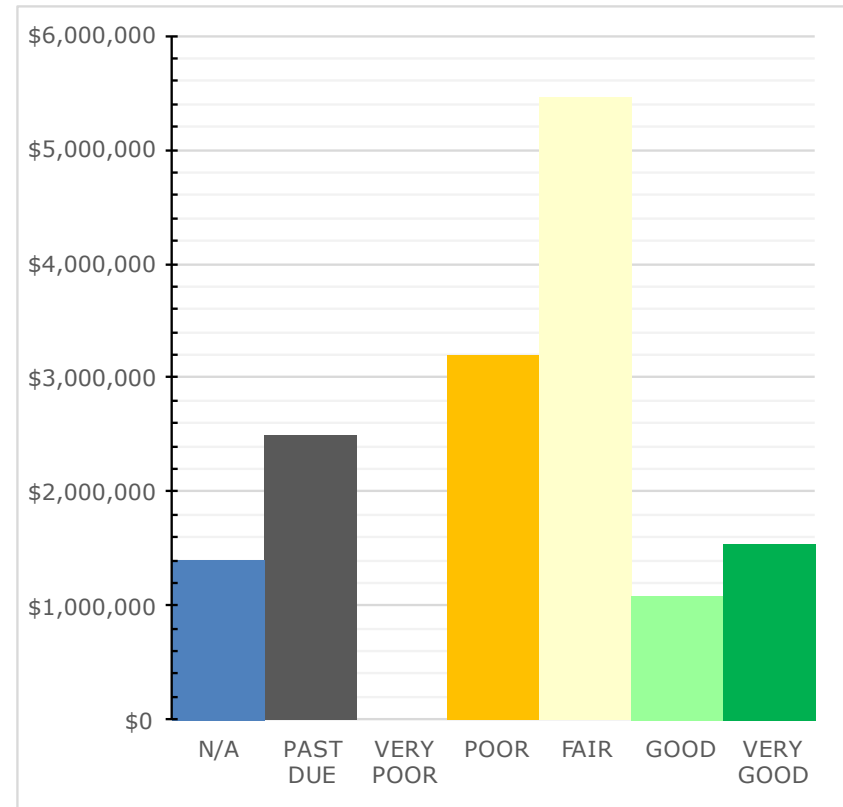


### State of the GWPS Assets

The value and condition of the assets were determined according to the methods described in the “Infrastructure Renewal and Lifecycle Management” section of this report.

Overall, the GWPS asset portfolio is in a fair state of repair. 35% of the portfolio is rated as being in a condition of “fair” and when combined with assets in “good” and “very good” condition, they collectively represent 53% of the replacement value. The GWPS has many assets with short estimated useful lives. Ambulances must be retired from active service after 5 years. Other auxiliary fleet are not strictly regulated however they are also only expected to have 5 years of service. This means that each year, all fleet assets decrease by one condition rating. Another way to interpret this is that the portfolio has less than half of its useful life remaining. Equipment regularly goes through preventative maintenance which allows many assets to continue until they fail inspection despite useful life predictions.

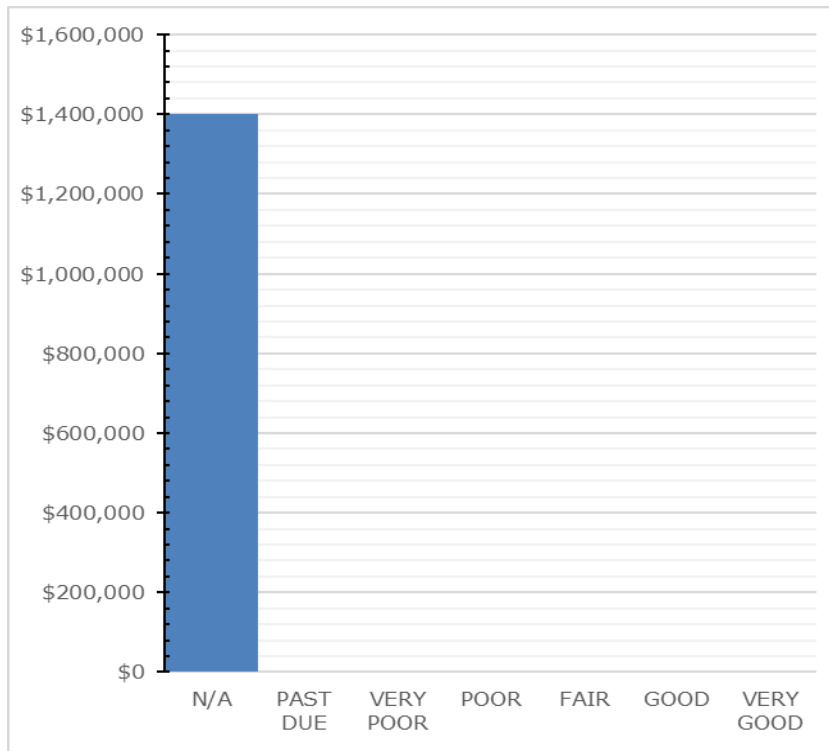
**Figure 119: State of the GWPS Asset Portfolio**



**Facilities Asset Condition**

There are two City owned facilities which the GWPS operates out of. EMS Station #2 as well as Clair Road Emergency Services Centre. The Emergency Centre has been represented in the Fire Service’s asset portfolio for simplicity. EMS Station #2 has not been included in the City’s facility condition assessment program to date so there is little quantified condition information about the paramedic station. A rating of “N/A” has been applied to EMS Station #2 as shown in Figure 120.

**Figure 120: State of the GWPS Facility Assets**

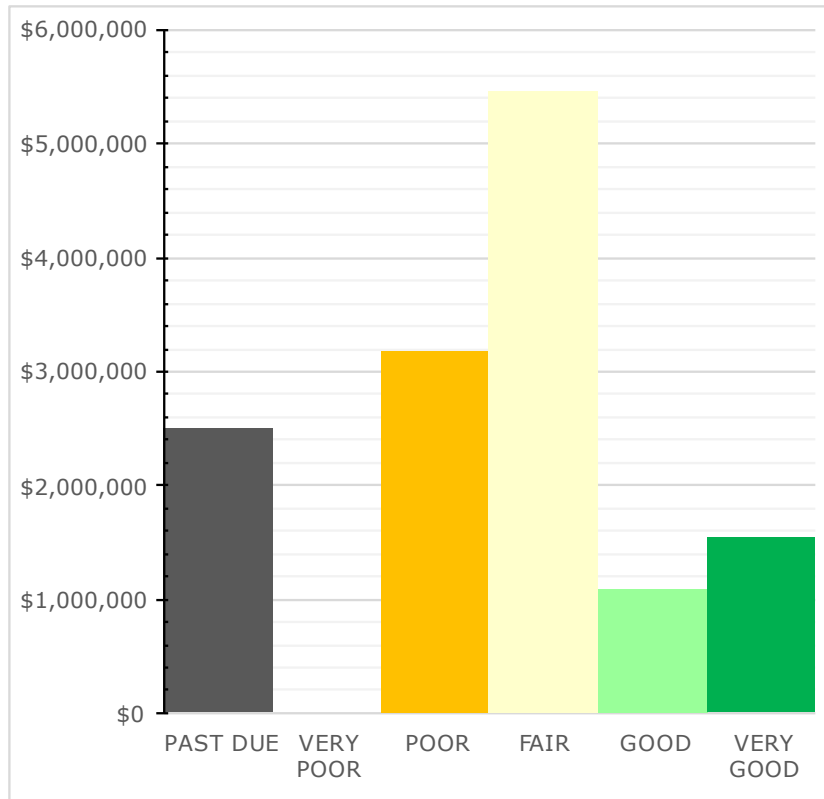


**Fleet and Equipment Asset Condition**

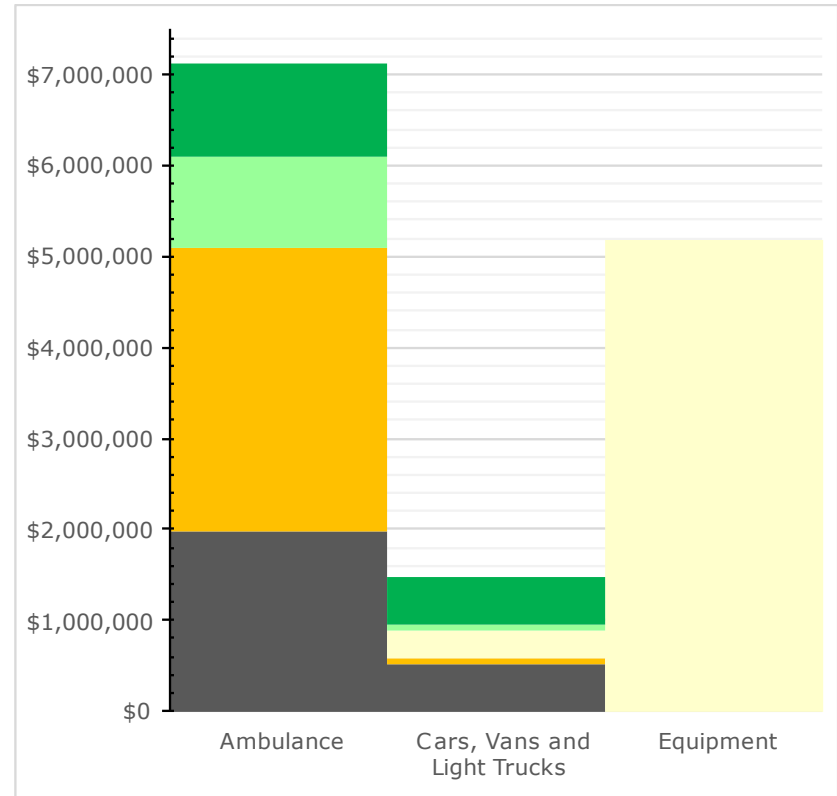
Fleet and equipment assets do not typically have formalized condition ratings. These assets are assessed for condition and potential failures by operating and maintenance staff. Preventative maintenance activities are capable of extending equipment useful lives far beyond estimations. Ambulance repairs are contracted out to certified repair services. Replacement of ambulances has been delayed due to supply chain issues resulting in late delivery of new ambulances to the GWPS.

The total current replacement value of the fleet and equipment assets is \$13.8M. 40% the assets are rated as “Poor” or less through age-based condition estimates. Ambulances have a 5 year useful life and represent the majority of the GWPS’s fleet and equipment as shown in Figure 121.

**Figure 121: State of the GWPS Fleet Assets**



**Figure 122: GWPS Fleet Asset Condition Breakdown**



**Asset Age Profile**

The expected useful life of the GWPS fleet assets is five years. The other equipment has various useful life lengths with an average of 7.24 years. The overall average useful life for all fleet and equipment assets is 3 years. The Age Ratio chart shows that the fleet and equipment assets are under half-way through their useful lives.

**Figure 123: Average age of GWPS Assets as a ratio of Normal Lifecycles**

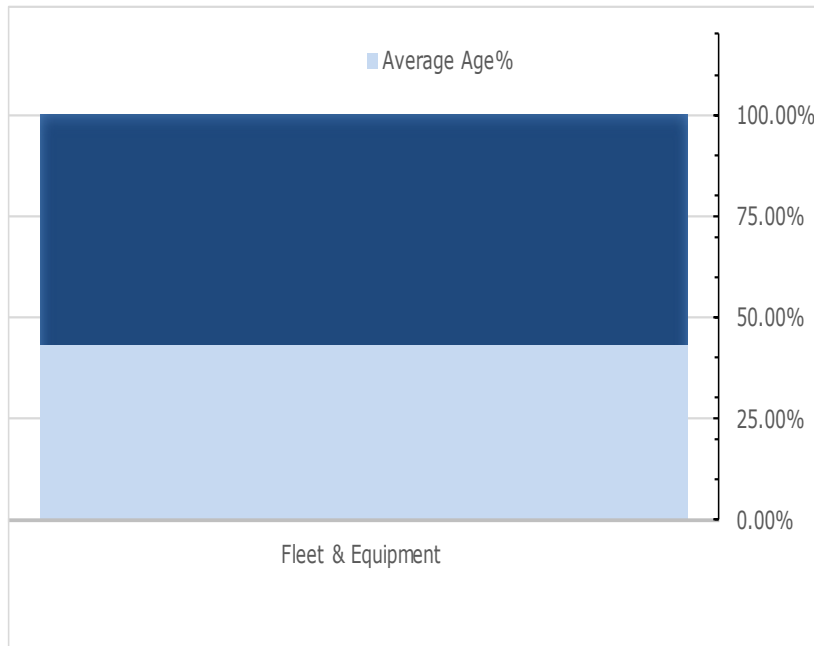


Table 79 shows the portion of the GWPS’s assets that the City will need to be able to fund the replacement for by condition.

**GWPS Split Funding**

The GWPS receives funding from the Ontario provincial Ministry of Health and Long-Term Care (MOHLTC) as well as from the Wellington County which is included in the service area of the GWPS. The MOHLTC contributes an amount equal to 50% of the previous year’s budget which means that all service enhancements must be absorbed by the City and County. For capital projects the costs are split between the County and the City based on call volumes. This split is estimated at 63% of calls within the City of Guelph.

**Table 79: State of the GWPS Assets – City of Guelph Portion of CRV**

	Facilities	Fleet & Equipment	TOTALS	
Condition	\$882,000	\$8,683,248	\$9,565,248	% of Portfolio
N/A	\$882,000	\$0	\$882,000	9.22%
PAST DUE	\$0	\$1,573,014	\$1,573,014	16.45%
VERY POOR	\$0	\$0	\$0	0.00%
POOR	\$0	\$2,006,731	\$2,006,731	20.98%
FAIR	\$0	\$3,442,649	\$3,442,649	35.99%
GOOD	\$0	\$684,709	\$684,709	7.16%
VERY GOOD	\$0	\$976,147	\$976,147	10.21%



## Renewal Needs vs. Funding Analysis

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for GWPS assets.

### Lifecycle Renewal Planning and Replacement Costs

The forecast of future renewal needs for the GWPS assets rely on age-based useful life deterioration. The replacement costs have been divided using the 63% proportion which the City of Guelph is responsible to fund from its infrastructure renewal fund.

### Funding Availability

Capital funding for the GWPS comes from property taxes levied by the City as well as transfers from Wellington County. Forecast available funding values for the infrastructure renewal fund were provided by staff from the City Finance Department for the years 2024-2035. These were compared to the forecast renewal needs calculated as part of the AMP analysis with the following criteria:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation
- Replacement values were reduced to 63% of the asset value to represent just the portion which will be funded through City property taxes.

- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results are summarized in the following table and charts.

**Table 80: Forecast infrastructure renewal needs compared to reserve fund contributions (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Forecast Renewal Costs	(\$1.95)	(\$2.73)	(\$0.18)	(\$1.16)	(\$1.35)	(\$2.09)	(\$0.02)	(\$0.18)	(\$1.16)	(\$1.58)
Predicted Available Funding	\$0.34	\$0.41	\$0.48	\$0.56	\$0.63	\$0.70	\$0.77	\$0.85	\$0.94	\$1.03
Cumulative Gap	(\$1.60)	(\$3.98)	(\$3.80)	(\$4.52)	(\$5.37)	(\$6.93)	(\$6.39)	(\$5.91)	(\$6.30)	(\$7.04)

**Table 81: Renewal Forecast Summary Information**

Average Annual Renewal Need	(\$1.24)
Average Annual Fund Contribution	\$0.67
Average Annual Gap (cumulative)	(\$5.18)
Forecast Renewals	(\$12.41)
Forecast Res. Funds	\$6.72
10-Year Funding Gap	(\$5.69)

**Figure 124: Forecast infrastructure renewal needs compared to reserve fund contributions**

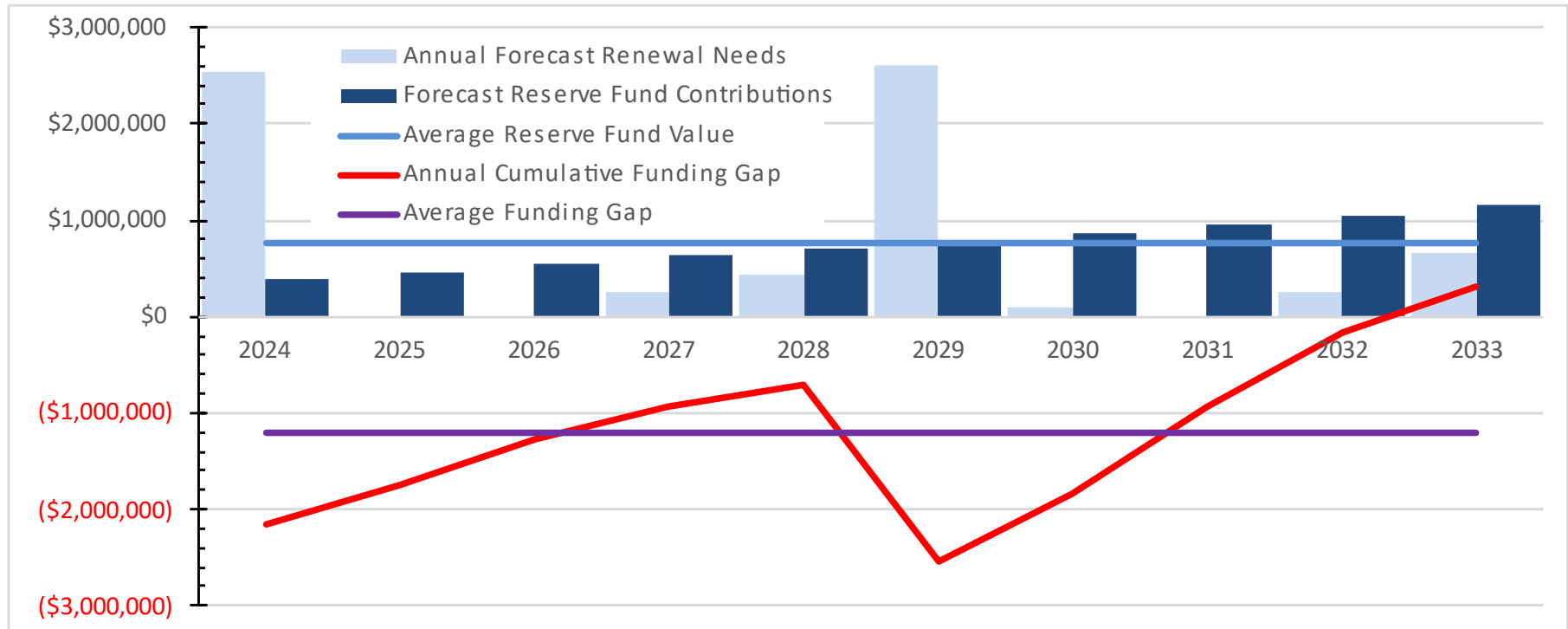


Table 80 and Figure 124 show that the available funding for the GWPS’s capital projects is insufficient to clear the initial backlog of assets which have aged past their expected useful life. The renewal gap over the 10-year horizon is \$0.87 which will result in the backlog growing by the same amount.

**Operations and Maintenance Activities**

The operating and maintenance activities for the GWPS include:

- Utilities for the ambulance stations and posts (Natural gas, water, electricity)
- Fuel for the fleet
- Facility repairs and maintenance supplies
- Vehicle repairs and maintenance
- Facility rentals for stations and posts

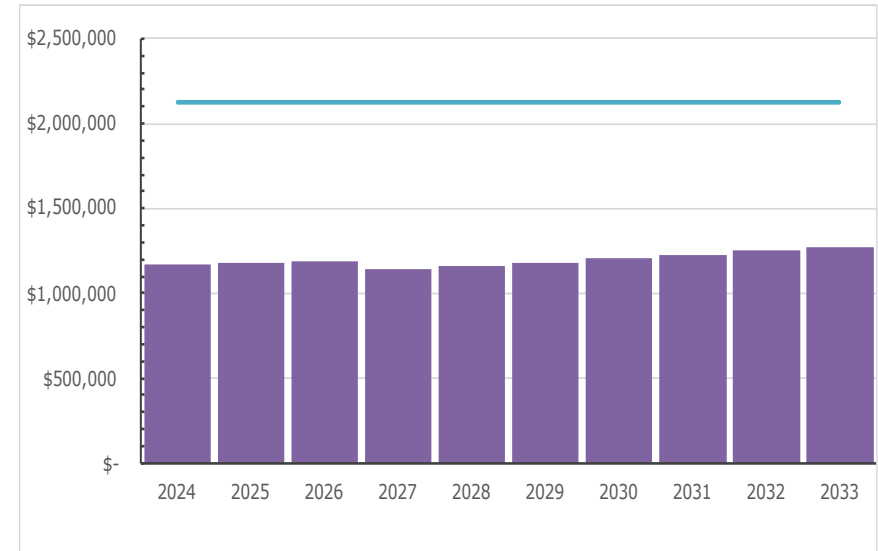
Also included in the annual operations and maintenance budgets are allowances for making unplanned repairs to the GWPS assets when required.

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Budget requested values which were also inflated by 3% per year. Review of the GWPS’s operational spending shows that spending out paced budgets. Three spending areas have historically been over budget.

- 1) Fuel expenses
- 2) Maintenance supplies
- 3) Building repairs

This suggests that there are many expensive repairs being funded through the operating budget rather than as capital spending. Over the next 10 years the average annual operations need is forecast at approximately \$2.1M.

**Figure 125: Forecast operations budget need 2024-2033**



**Total Annual Forecast – Renewal and Operations**

The total forecast needs of the GWPS infrastructure is determined by combining the renewal needs and forecast funding contributions. Refer to Table 82 and Figure 126 for a summary.

When the operations spending is included, the available funds roughly match the annual needs. This means that the initial backlog is not able to be cleared

and when a spending spike occurs in 2029, the backlog will continue to grow. A large part of the yearly spending is the \$483,000 of lease expenses for the various paramedic stations. The final backlog is forecast to be \$4.69 million.

**Figure 126: Combined Renewal and Operations Forecast vs. Funding**



**Table 82: Combined Renewal and Operations Forecast vs. Funding (in \$ millions)**

	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
<b>RENEWAL FORECAST</b>	\$2.53	\$0.00	\$0.00	\$0.26	\$0.44	\$2.60	\$0.10	\$0.00	\$0.26	\$0.67
<b>OPERATIONS FORECAST</b>	\$1.44	\$1.47	\$1.50	\$1.53	\$1.56	\$1.60	\$1.63	\$1.66	\$1.70	\$1.74
<b>SUB-TOTAL</b>	\$3.98	\$1.47	\$1.50	\$1.79	\$2.01	\$4.20	\$1.73	\$1.66	\$1.96	\$2.41
<b>CAPITAL RESERVE FUND CONTRIBUTION</b>	\$0.39	\$0.45	\$0.54	\$0.63	\$0.71	\$0.78	\$0.87	\$0.96	\$1.06	\$1.16
<b>OPS BUDGET CONTRIBUTION</b>	\$1.17	\$1.18	\$1.19	\$1.14	\$1.16	\$1.18	\$1.20	\$1.23	\$1.25	\$1.27
<b>SUB-TOTAL</b>	\$1.56	\$1.63	\$1.73	\$1.77	\$1.87	\$1.97	\$2.07	\$2.19	\$2.30	\$2.43
<b>ANNUAL CUMULATIVE GAP</b>	(\$2.42)	(\$2.26)	(\$2.03)	(\$2.05)	(\$2.19)	(\$4.42)	(\$4.08)	(\$3.55)	(\$3.21)	(\$3.18)

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## **Master and Major Capital Plans**

### **City Growth**

The GWPS Master Plan identifies that as the City and County continue to grow several increases and strategic changes will be required to meet future call volumes. In terms of infrastructure spending, there will be need for more ambulances as well as relocation of several ambulance stations. The GWPS will begin a model of facility ownership as these relocations occur as it is forecast to be more cost-effective in the long-term. Facility needs assessments have been completed for the 10 ambulance stations within the GWPS and identified many service improvements to ensure stations are able to accommodate staff and fleet.

## **Levels of Service**

O. Reg. 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as “Customer” or “Technical” LOS in alignment with the O. Reg. 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

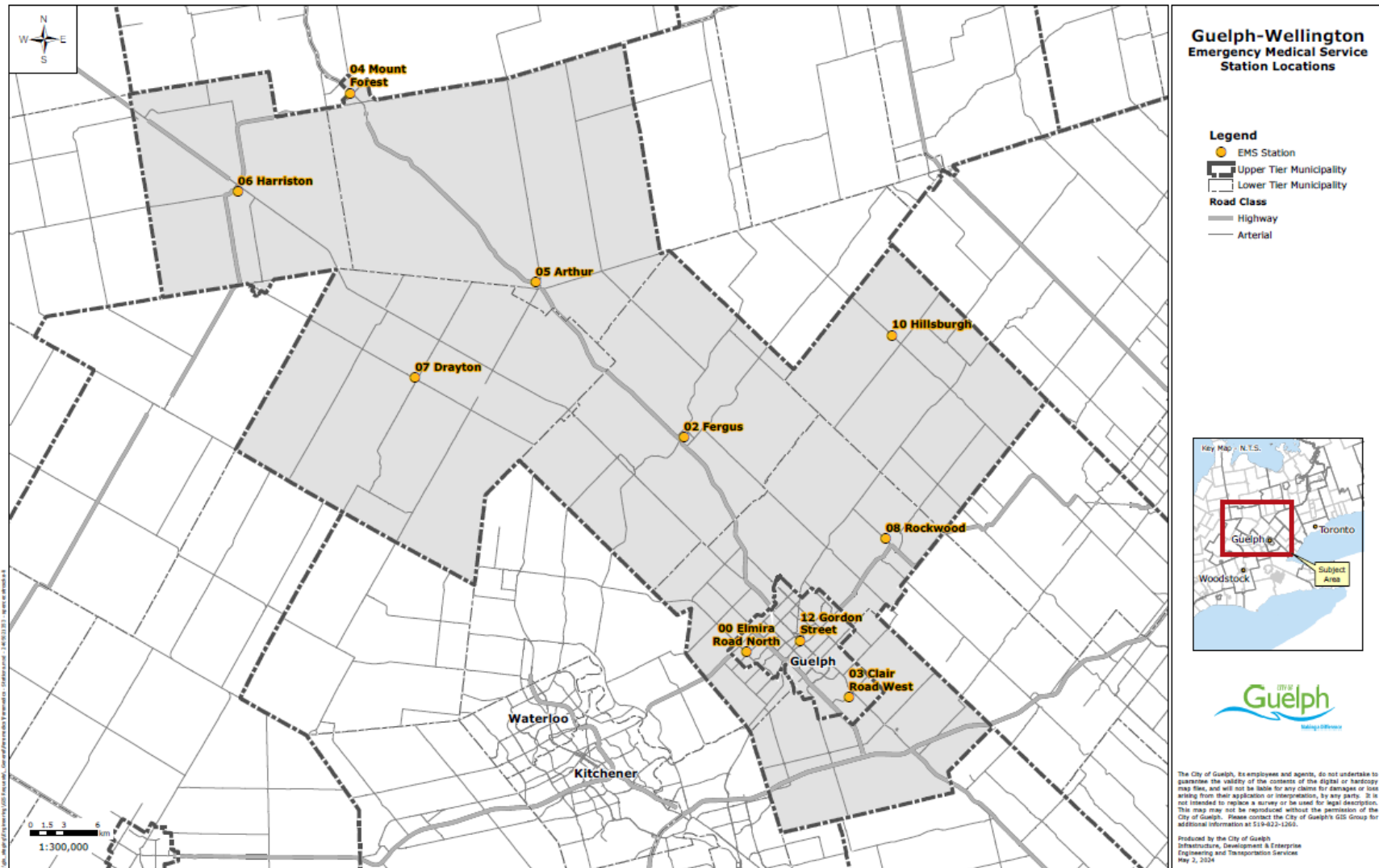
To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

**Table 83: Levels of Service Guelph-Wellington Paramedic Services**

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Technical	# of Ambulances	20
Foundations	Technical	# of Auxiliary Vehicles	18
Foundations	Customer	Emergency Response call volumes	29,765
Foundations	Customer	Description of the size/quantity of the services provided by the assets/asset network	See the map on the following page
City Building	Technical	Vehicles: Condition Ratings of Assets > Poor	10/46 = 21.7%
City Building	Technical	Equipment: Condition Ratings of Assets > Poor	11/246 = 4.5%
Environment	Technical	Energy Consumption (kWh)	218,060 kWh
Environment	Technical	Natural Gas Consumption (m <sup>3</sup> )	50,700 m <sup>3</sup>
Environment	Technical	Water Consumption (m <sup>3</sup> )	1,430 m <sup>3</sup>



**Figure 127: Location of GWPS Stations and Areas Served**



## Risks to the GWPS Assets

### Climate Change Risk Mitigation

The 2023 Climate Adaptation Plan<sup>29</sup> identifies a variety of action items for the GWPS to participate in to be more ready for extreme weather events. These thirteen items can be summarized in the following themes:

- Continue to establish continuity plans for emergency scenarios
- Identify and maintain options for emergency shelters in response to various extreme weather events
- Identify facility components susceptible to climate hazards and plan for regular maintenance and replacement

The GWPS is also recommended to participate in regular emergency exercises with Wellington County given the GWPS's close working relationship. These items will help prepare the GWPS for extreme heat, acute weather events, and flooding so that they can continue to operate and support the many communities they serve.

### Summary and Recommendations

In general, the GWPS asset portfolio is in poor condition, resulting from short lived assets with high replacement costs. Year to year forecast funding and expenses are fairly evenly matched, however this prevents the GWPS from clearing the backlog of non-critical assets which need replacement. As the GWPS continues to relocate and acquire ownership of their facilities, it is recommended that they are included in the City's facility condition assessment program. This will allow City staff to better forecast and prioritize capital work and enable better interdepartmental collaboration.

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<sup>29</sup> <https://guelph.ca/plans-and-strategies/climate-adaptation-plan/>

## Chapter 14: Guelph Police Service



**Quick Facts:****Guelph Police Service Assets**

Total value of facilities	\$146,578,312
Number of facilities	1
Average condition of facilities	GOOD
Total building area	13,640 m <sup>2</sup> (147,820 f <sup>2</sup> )
Total value of vehicles & equipment	\$19,389,949
Number of vehicles & equipment	3,966
Average condition of vehicles & equipment	FAIR
Total value of Guelph Police Service assets	\$165,968,261

**Introduction**

The Guelph Police Service (GPS) is managed by the Guelph Police Services Board that operates separate from the City of Guelph in the provision of police services to the Guelph community. The GPS plays a multifaceted role in safeguarding the community by promoting public safety through proactive measures, education, enforcement, and emergency response.

The GPS assets are included with the City’s Corporate AMP because Council provides funding for these services although the Board is responsible for developing the operating and capital estimates for the police service, which are then approved by City Council<sup>30</sup>.

**Assets in the Guelph Police Service System**

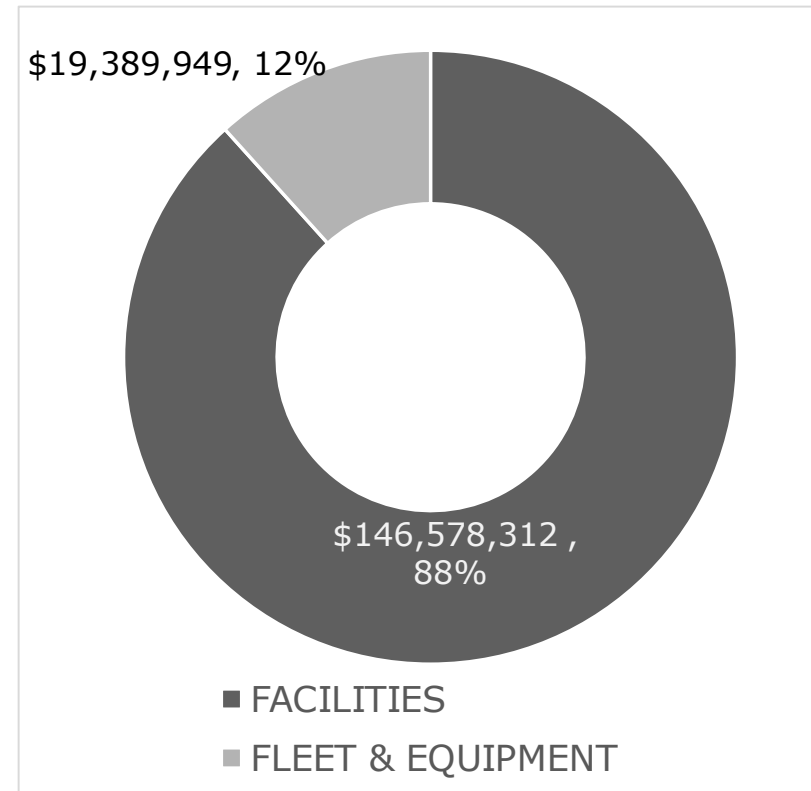
The Guelph Police Service has two categories of assets:

- Facilities: The Police Headquarters
- Fleet and Equipment: Police cruisers and equipment officers use for law enforcement including uniforms, radios, investigation equipment and force options

The GPS also occupies space at the Clair Road Emergency Services Centre, however, for the purposes of the AMP that facility is included with the analysis for the Guelph Fire Department and not represented in the Police Services portfolio.

The current estimated total replacement value of the Guelph Police Service’s assets is \$165.9M with the Police Headquarters representing 88% of the portfolio. The fleet and equipment is the remaining 12%.

**Figure 128: Replacement Value of Guelph Police Service Assets by Category**

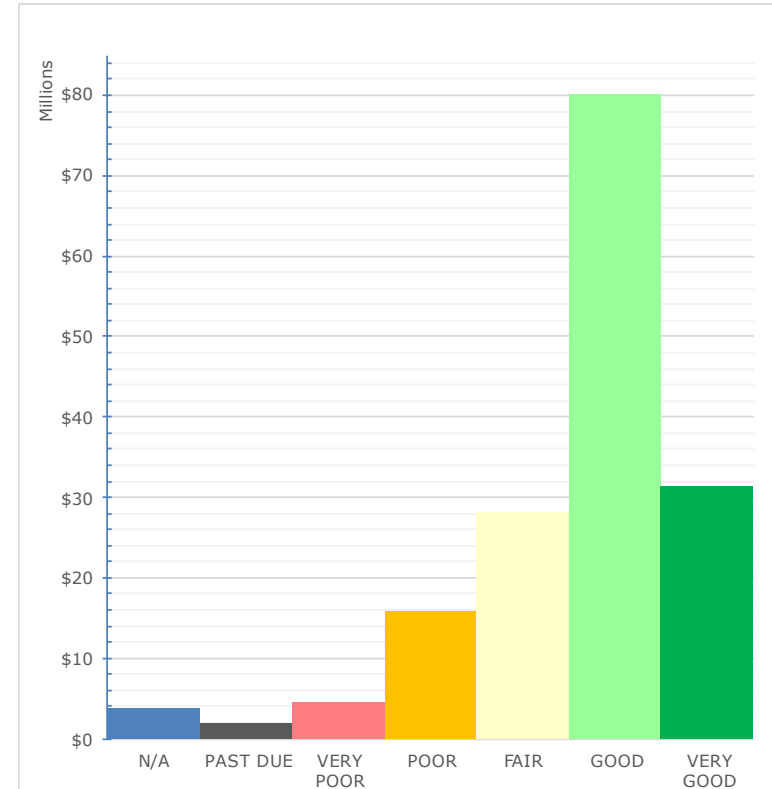


<sup>30</sup> <https://www.guelphpolice.ca/en/about-gps/police-services-board.aspx>

### State of the Guelph Police Service Assets

Overall, the GPS asset portfolio has a rating condition of Good. 67% of the portfolio is rated as being in a condition of "Good" or better. The portfolio's composition of facility and fleet assets means that there is a mixture of individual assets with long useful lives and large replacement values as well as many components which may be shorter lived and have lower replacement values. As discussed in the age summary, the average remaining service life is around 52% meaning that most of the portfolio is midway through the expected useful life.

**Figure 129: State of the Guelph Police Service Asset Portfolio**



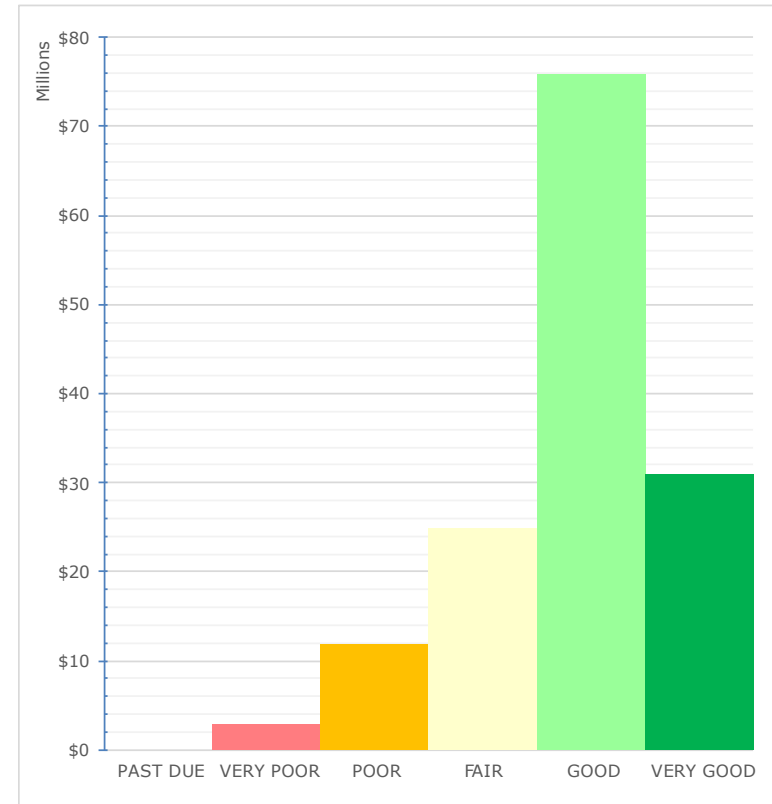
**Table 84: State of the Guelph Police Service Assets – Summary**

	Guelph Police Headquarters	Fleet & Equipment	TOTALS	
Condition	\$146,578,312	\$19,389,949	\$165,968,261	% of Portfolio
N/A	\$0	\$3,862,352	\$3,862,352	2.33%
PAST DUE	\$0	\$1,957,773	\$1,957,773	1.18%
VERY POOR	\$2,922,719	\$1,691,707	\$4,614,426	2.78%
POOR	\$11,866,960	\$4,007,050	\$15,874,010	9.56%
FAIR	\$24,895,854	\$3,343,650	\$28,239,504	17.02%
GOOD	\$75,963,805	\$4,091,596	\$80,055,401	48.24%
VERY GOOD	\$30,928,974	\$435,820	\$31,364,794	18.90%

### Facility Asset Condition

The GPS has only one facility within its asset portfolio, the Police Headquarters. The facility was extensively renovated and expanded in size with the project ending in 2022 and it now has an area of 13,730m<sup>2</sup> (147,820ft<sup>2</sup>). The current replacement value of the Police Headquarters is \$146.5 million. A 2023 condition assessment has established the updated state of repair after renovations to the headquarters was completed. The Police Headquarters is in a very good state of repair with only 2% of the facilities elements being assessed to be in very poor condition.

**Figure 130: State of the Guelph Police Service Headquarters**

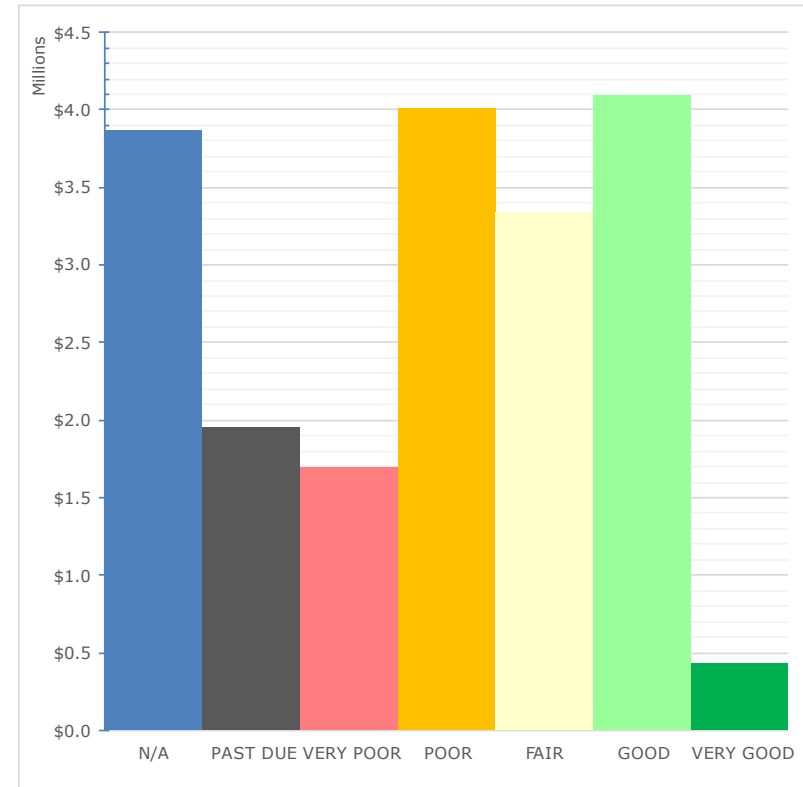




### Fleet & Equipment Asset Condition

The GPS has 89 vehicles, with 33 of those vehicles being identified as part of the reserve fleet. Additionally, the GPS has 3,876 pieces of equipment which need to be maintained. Fleet and equipment assets do not have formal condition rating system like that used for facilities but instead assets are inspected regularly by operating staff who identify needs for repair, rehabilitation, or replacement.

**Figure 131: State of the Guelph Police Service Fleet & Equipment assets**



**Asset Age Profile**

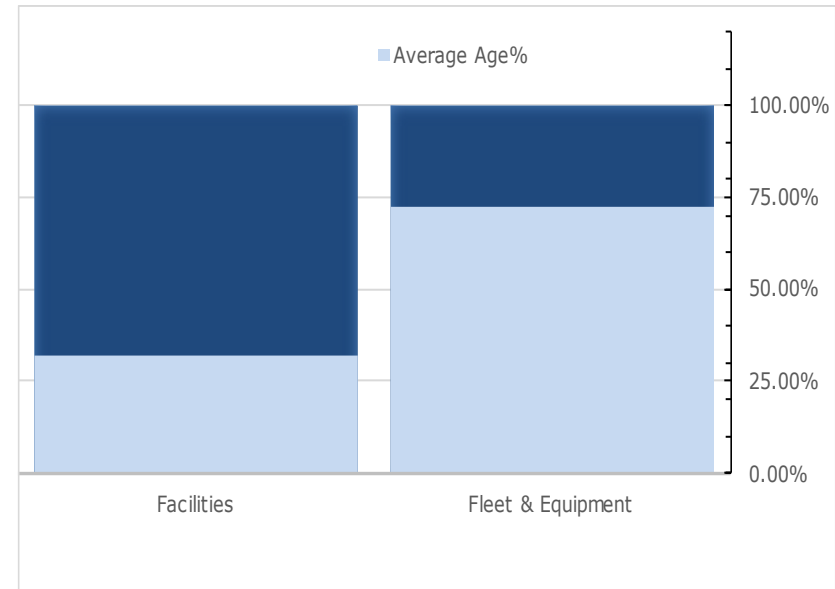
Building structures and other critical elements are estimated to last 75 years. Over the lifespan of the Police Headquarters, two major expansions of the facility’s footprint have occurred. This results in the various facility elements having asynchronous useful lives. Some components of the Police Headquarters are as old as 35 years while many components were just refreshed or added. The average age of components within the Police Headquarters is 10.5 years.

Police vehicles in front line service face extreme conditions where they are expected to be in use all day, every day. Over the course of three years, vehicles can be expected to accumulate over 150,000 KM of travel distance. After three years, vehicles are transitioned into various support units which are lighter on vehicle use. On average, the useful life of a police vehicle is just under 4 years. Many vehicles, with proper maintenance, can be retained beyond their expected useful life. Additionally, the police fleet has recently upgraded to electric hybrids which allow the run times for engines to be greatly reduced and have the potential to extend the useful life of the fleet.

Equipment assets for the GPS have a wide range of useful lives, ranging from 2 years to over twenty years depending on factors such as manufacturer recommendations, regulatory requirements, and department policy for the specific equipment types.

The average asset age is shown as a percentage of the expected useful life in Figure 132. The Police Headquarters is 32% through its useful life while the Fleet and Equipment are 73% through their useful life.

**Figure 132: Average age of Guelph Police Service assets as a ratio of normal lifecycles**



### **Renewal Needs vs. Funding Analysis**

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for GPS assets.

#### **Lifecycle Renewal Planning and Replacement Costs**

To forecast renewal needs for the GPS assets, fleet and equipment rely on simple age-based lifecycles while facility components use condition assessments to forecast the next renewal year. Replacement costs for fleet and equipment have been estimated using the recent historical costs for fleet and equipment.

#### **Funding Availability**

Capital funding for the GPS comes from property taxes levied by the City. Forecast available funding values for the infrastructure renewal fund were provided by staff from the City Finance Department for the years 2024-2035. These were compared to the forecast renewal needs calculated as part of the AMP analysis with the following criteria:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results are summarized in the following table and charts.

**Table 85: Forecast infrastructure renewal needs compared to reserve fund contributions (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Forecast Renewal Costs	(\$8.41)	(\$2.78)	(\$3.68)	(\$7.43)	(\$12.91)	(\$7.78)	(\$4.55)	(\$2.84)	(\$5.02)	(\$25.55)
Predicted Available Funding	\$4.25	\$4.42	\$5.18	\$5.36	\$5.51	\$5.66	\$5.82	\$5.98	\$6.15	\$6.32
Cumulative Gap	(\$4.17)	(\$2.65)	(\$1.22)	(\$3.33)	(\$10.83)	(\$13.27)	(\$12.41)	(\$9.64)	(\$8.80)	(\$28.28)

**Table 86: Renewal Forecast Summary Information (in \$ millions)**

Average Annual Renewal Need	(\$8.09)
Average Annual Fund Contribution	\$5.47
Average Annual Gap (cumulative)	(\$9.46)
Forecast Renewals	(\$80.95)
Forecast Res. Funds	\$54.66
10-Year Funding Gap	(\$26.29)

**Figure 133: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**

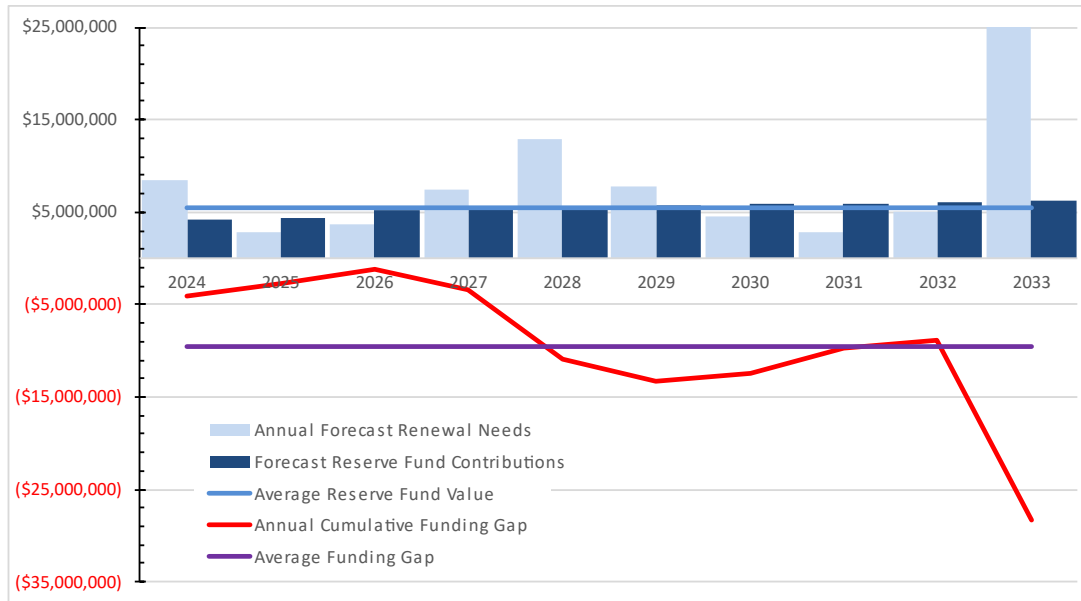


Table 85 and Figure 133 show that the available funding for the Guelph Police Service is not sufficient to clear the asset backlog given the major capital expenditures which may need additional attention. Specifically in 2028 and 2029 when facility components come due for rehabilitation or replacement as well as in 2033. Spending on capital projects may not always exactly align with predictions and depending on available maintenance practices, asset conditions may outperform projections. As the Police Headquarters continues to age, attention to facility needs will be beneficial in refining the timeline of capital expenses. The average funding gap is

\$26.2M over the 10-year horizon which is indicative of higher needs than available funding.

**Operations and Maintenance Activities**

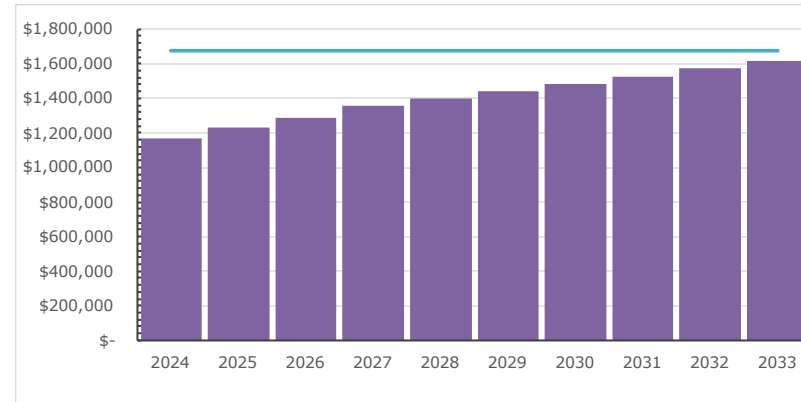
The operating and maintenance activities for the GPS include:

- Utilities
- Vehicle Repair & Maintenance
- Facility Repair & Maintenance

Also included in the annual operations and maintenance budgets are allowances for making unplanned repairs to the GPS assets when required.

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Budget requested values which were also inflated by 3% per year. Over the next 10-years (until 2033) the average annual operations need is forecast at approximately \$1.67M. Refer to Figure 134.

**Figure 134: Forecast operations budget need 2024-2033**



**Total Annual Forecast – Renewal and Operations**

The total forecast needs of the GPS infrastructure are determined by combining the renewal needs and forecast funding contributions. Refer to Figure 135 and

Table 87 for this summary. There is a limited effect on the annual forecast needs for GPS from the operating budget. Since the operating budget for GPS is fully funding, the funding cap calculation does not vary significantly from the capital funding calculation.

**Figure 135: Combined Renewal and Operations Forecast vs. Funding**



**Table 87: Combined Renewal and Operations Forecast vs. Funding (in \$ millions)**

	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
RENEWAL FORECAST	\$8.41	\$2.78	\$3.68	\$7.43	\$12.91	\$7.78	\$4.55	\$2.84	\$5.02	\$25.55
OPERATIONS FORECAST	\$1.87	\$2.19	\$2.35	\$2.48	\$2.55	\$2.63	\$2.71	\$2.79	\$2.87	\$2.96
SUB-TOTAL	\$10.28	\$4.97	\$6.03	\$9.91	\$15.46	\$10.40	\$7.26	\$5.63	\$7.89	\$28.51
CAPITAL RESERVE FUND CONTRIBUTION	\$4.25	\$4.42	\$5.18	\$5.36	\$5.51	\$5.66	\$5.82	\$5.98	\$6.15	\$6.32
OPS BUDGET CONTRIBUTION	\$1.87	\$2.19	\$2.35	\$2.48	\$2.55	\$2.63	\$2.71	\$2.79	\$2.87	\$2.96
SUB-TOTAL	\$6.11	\$6.61	\$7.53	\$7.83	\$8.06	\$8.29	\$8.53	\$8.77	\$9.02	\$9.28
ANNUAL CUMULATIVE GAP	(\$4.17)	(\$2.53)	(\$1.02)	(\$3.09)	(\$10.49)	(\$12.61)	(\$11.34)	(\$8.20)	(\$7.07)	(\$26.29 )



## Master and Major Capital Plans

### City Growth

In 2026 the GPS Headquarters will undergo a facilities needs assessment study. The service will continue to grow proportionately to the population of the city. That will include both staffing and assets increases to maintain adequate and effective police service delivery.

### Levels of Service

O. Reg. 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as “Customer” or

“Technical” LOS in alignment with the O. Reg. 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval

**Table 88: Guelph Police Services Levels of Service**

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Customer	Description of the size/quantity of the services provided by the assets/asset network	The Guelph Police Service maintains assets related to the Service’s vehicles and associated vehicle based equipment, IT equipment and infrastructure and equipment required for the various units including investigative services, tactical and traffic, body armour and facilities.
City Building	Technical	# of police vehicles	89 vehicles

Strategic Theme	LOS Type	Performance Measure	Current Performance
City Building	Customer	Description of asset maintenance policies and practices	Regular preventative maintenance is performed on all assets as required. When an asset is due for replacement, an evaluation of whether the useful life can be extended, if the asset could be repaired or needs to be replaced is completed. Needs of the service and unit are evaluated when the asset is due for replacement to ensure that the best possible purchase is being made vs. just replacing with the same.
People & Economy	Technical	% of community satisfied with police services (2023)	90% satisfaction with communications personnel 92% satisfaction with Officers involved with calls 86% satisfaction with response times
People & Economy	Customer	Description of the strategies used to keep assets and asset services safe and accessible to the public	Ensure that assets are in compliance with applicable legislation (e.g. AODA, OBC, Police Services Act, OHSA). Safeguarding of assets through security measures implemented as Police HQ (e.g. security cameras). Maintain inventory of serial numbers where applicable to ensure that assets can be easily identified and ownership identified.
Environment	Technical	Energy Consumption (kWh)	101484 kWh
Environment	Technical	Natural Gas Consumption (m <sup>3</sup> )	1806306 m <sup>3</sup>
Environment	Technical	Water Consumption (m <sup>3</sup> )	7996 m <sup>3</sup>
Environment	Technical	Fuel Consumption (L)	162,953 L

Strategic Theme	LOS Type	Performance Measure	Current Performance
Environment	Customer	Description of the environmental sustainability initiatives implemented in administration and operations facilities	April 2023 Guelph Police Service completed the transition to a full front line hybrid fleet. Every marked front-line vehicle is now fueled by hybrid technology (Uniform, K9, Traffic). Vehicle service / maintenance reduced by 30% and fuel reduced by 60 000 litres (30%). Anti – theft modules removed from all vehicles eliminating idling. In 2024 GPS began cycling current hybrid vehicles out of the front-line fleet to replace the remaining gas fueled engine vehicles.

**Climate Change Risk Mitigation**

The 2023 Climate Adaptation Plan<sup>31</sup> identifies a variety of action items for the GPS to participate in to be more ready for extreme weather events. These thirteen items can be summarized in the following themes:

- Continue to establish continuity plans for emergency scenarios
- Identify and maintain options for emergency shelters in response to various extreme weather events
- Identify facility components susceptible to climate hazards and plan for regular maintenance and replacement

The GPS is also recommended to participate in regular emergency exercises with Wellington County given the GPS’s close working relationship. These items will help

prepare the GPS for extreme heat, acute weather events, and flooding so that they can continue to operate and support the community.

**Summary and Recommendations**

In general, the GPS portfolio is in good condition. Year to year forecast funding and expenses are closely matched with the exception of a few large expenses. The backlog of vehicles and equipment may take time to clear entirely, however assets which are past due are likely being deliberately retained because they are in an adequate state of repair at the end of the useful life estimation. The major expenses relating to the aging elements of the police headquarters will require attention from maintenance staff to adequately assess and plan for replacement.

<sup>31</sup> <https://guelph.ca/plans-and-strategies/climate-adaptation-plan/>

## Chapter 15: Guelph Fire Department



**Quick Facts: City of Guelph Fire Department Assets**

Total value of facilities	\$60,629,800
Number of facilities	6
Average condition of facilities	FAIR
Total building area	7,593 m <sup>2</sup> (81,720 f <sup>2</sup> )
Total value of vehicles & equipment	\$30,852,710
Number of vehicles & equipment	42
Average condition of vehicles & equipment	POOR
Total value of Fire Department assets	\$91,482,510

### Introduction

The Guelph Fire Department (GFD) provides public fire and life safety education, fire safety inspections and code enforcement, and emergency response including fire suppression services to the city. The service operates out of multiple fire stations located strategically across the city to provide quick response times to emergencies. The GFD relies on specialized vehicles and equipment to be safe and reliable.

### Assets in the GFD System

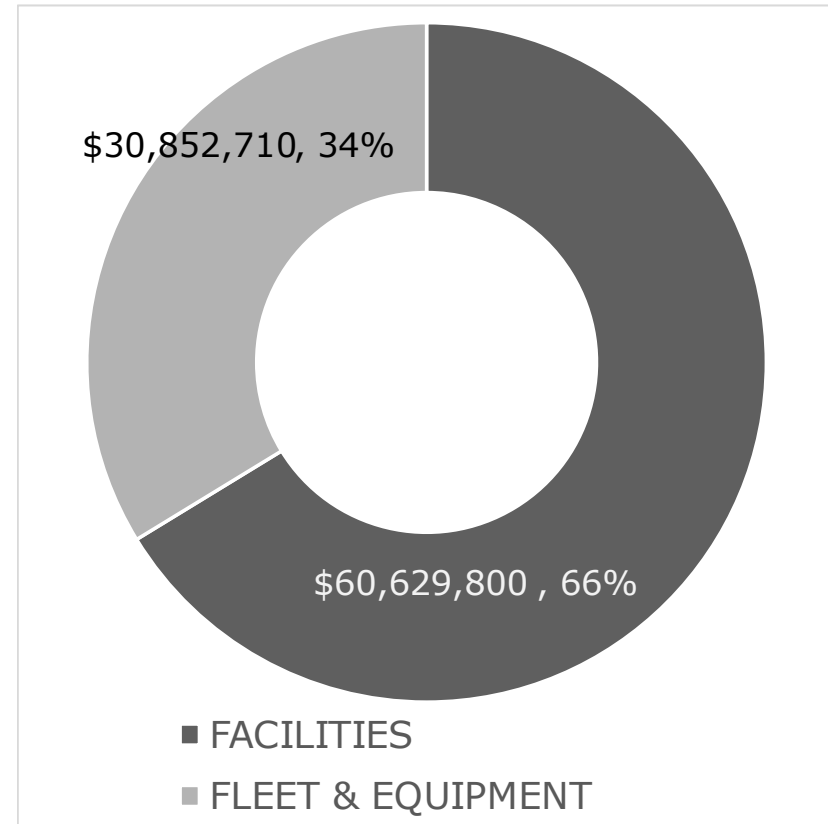
The GFD Service has two categories of assets:

- Facilities: The Fire Services Headquarters, stations, and Claire Road Emergency Services Centre
- Fleet and Equipment: Pumpers, aerial trucks, auxiliary vehicles, and equipment used in service delivery

The Clair Road Emergency Services Centre is shared with the Guelph-Wellington Paramedic Service and Guelph Police Service. For simplicity of analysis, the centre is presented under the GFD’s asset portfolio.

The current estimated total replacement value of the GFD’s assets is \$91.5M with the facilities representing 66% of the portfolio. The fleet and equipment account for the remaining 34%.

**Figure 136: Replacement value of Fire Service Assets by Category**

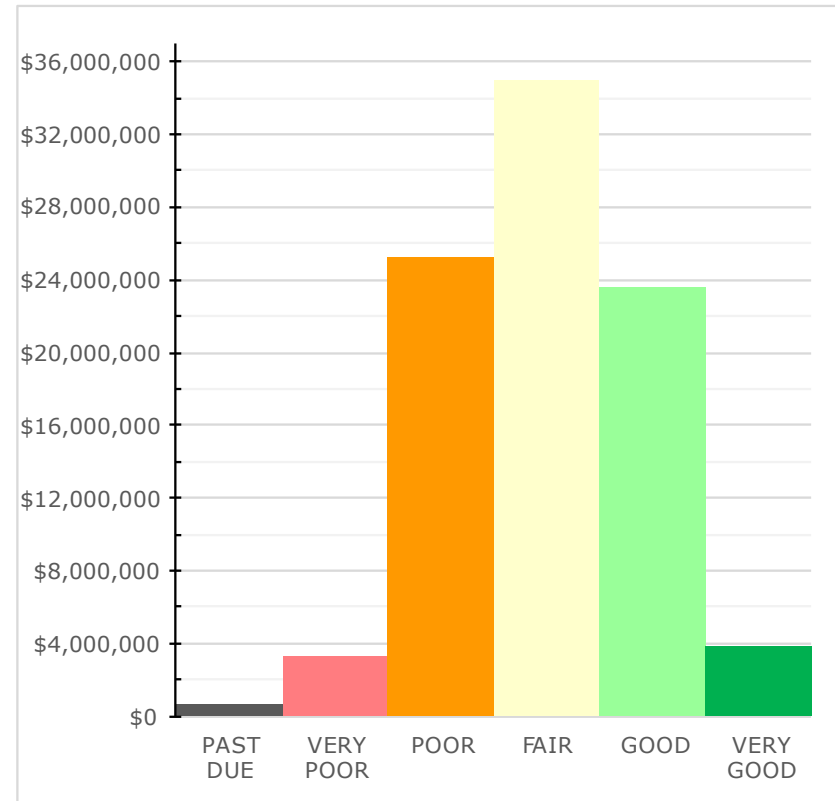


### State of the GFD Assets

The value and condition of the assets were determined according to the methods described in the “Infrastructure Renewal and Lifecycle Management” section of this report.

Overall, the GFD asset portfolio has a rating condition of Fair. 61.5% of the portfolio is rated as being in a condition of “fair” or better. The portfolio’s composition of facility and fleet assets means that there is a mixture of individual assets with long useful lives and large replacement values as well as many components which may be shorter lived and have lower replacement values. As discussed in the age summary, the average remaining service life is around 22% meaning that most of the portfolio is approaching the end of the expected useful life.

**Figure 137: State of the GFD Asset Portfolio**



**Table 89: State of the GFD Assets - Summary**

	Facilities	Fleet & Equipment	TOTALS	
Condition	\$60,629,800	\$30,852,710	\$91,482,510	% of Portfolio
N/A	\$0	\$0	\$0	0.00%
PAST DUE	\$520,103	\$119,133	\$639,236	0.70%
VERY POOR	\$3,243,655	\$5,000	\$3,248,655	3.55%
POOR	\$7,958,268	\$17,238,086	\$25,196,354	27.54%
FAIR	\$29,298,458	\$5,745,567	\$35,044,025	38.31%
GOOD	\$19,609,317	\$3,984,727	\$23,594,044	25.79%
VERY GOOD	\$0	\$3,760,196	\$3,760,196	4.11%

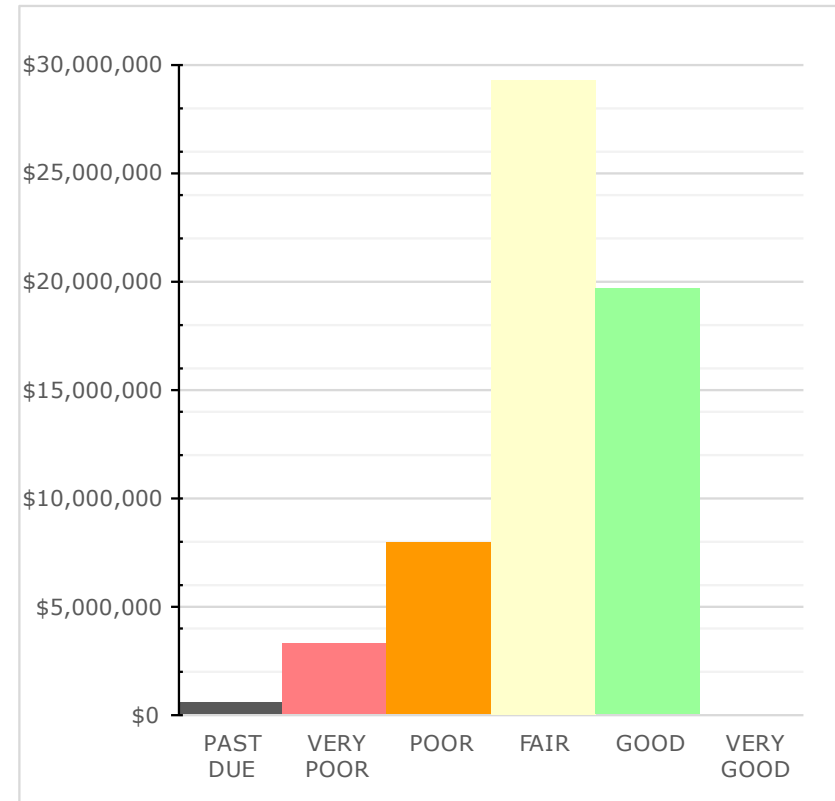


**Facility Asset Condition**

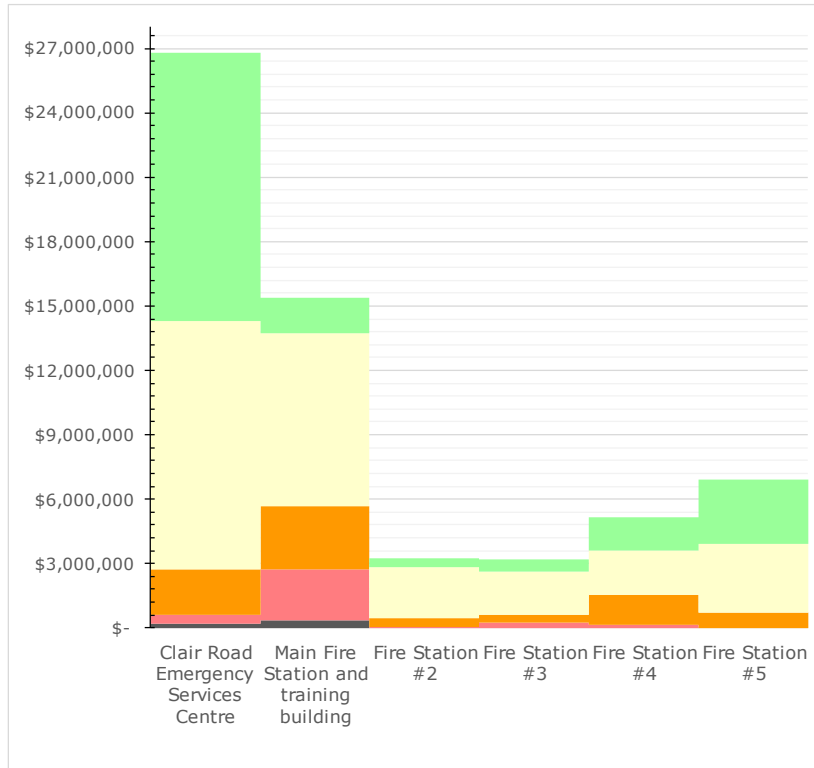
The GFD operates out of 6 facilities distributed across the City of Guelph. The condition of these facilities is assessed as part of the City’s recurring facility condition assessments through 3<sup>rd</sup> party consultants.

The total current replacement value of the fire stations is \$60M. Overall, the fire stations are in a good state of repair with 81% being rated as being in “fair” or better condition. This assessment places the condition of the fire stations above the expected condition forecast by an age-based linear deterioration. The condition of these assets may begin to more rapidly deteriorate once they have surpassed the expected useful life threshold. It is expected that many of the smaller components of these facilities will need attention in the next ten years as the buildings continue to age. Continued reassessment of the facility conditions will be critical to accurately predicting the appropriate timing of asset renewals. Figure 3.2 captures the cumulative conditions of each of the 6 GFD facilities.

**Figure 138: State of GFD Facility Assets**



**Figure 139: State of the GFD Facilities Condition by Facility**



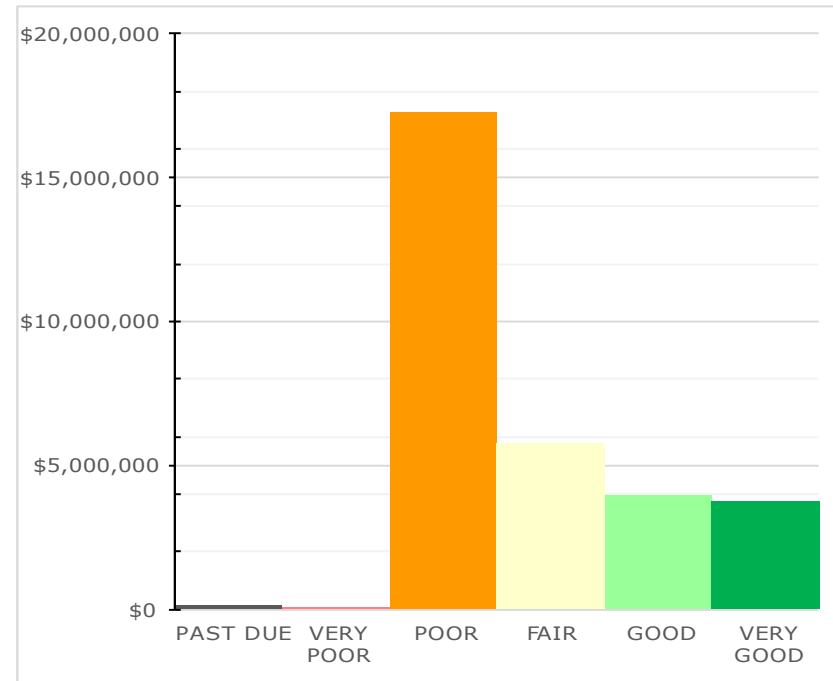
**Fleet and Equipment Asset Condition**

The GFD has 46 vehicles as well as over a thousand pieces of equipment which need to be maintained. Fleet and equipment assets do not have a formalized condition rating systems similar to facilities. Instead, assets are inspected regularly by operating staff who identify needs for repair, rehabilitation, or replacement. Fire equipment lifecycles are defined by

OEM recommendations as well as age and staff condition assessments.

Fleet for the Fire Services require specialized technicians who are certified to maintain the vehicles to NFPA standards. All fire trucks must be replaced after 20 years however pumper trucks are placed into reserves after 12-15 years and aerial trucks are placed into reserves after 15-18 years. By being placed into reserves, the useful life of the fire trucks is extended however there is need for replacements in the active-duty fleet to maintain the level of service standards.

**Figure 140: State of the GFD Fleet and Equipment Assets**



**Asset Age Profile**

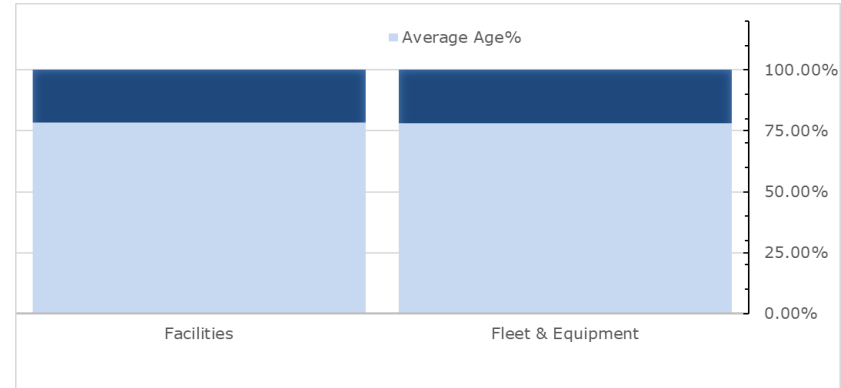
The structure of a building is estimated to last 75 years from construction. The average useful life of a fire station is estimated to be 27 years, meaning that the other components within the fire station have much shorter lifespans and will need to be repaired or replaced before the major critical components. The oldest of the fire stations is 70 years old.

Fire trucks have a 20-year lifecycle, however they are used in front line service for approximately 15-18 years before they are retired to reserves to extend their lifespans. This means that a replacement vehicle needs to be acquired at approximately the 15-year point. Other auxiliary vehicles have less strict replacement requirements and are expected to last between 5 to 10 years depending on effective preventative maintenance.

The useful life of Fire equipment varies greatly based on manufacturer recommendations and other best practices. This may be as little as 4 years or as great as 20 years before replacement may be expected.

The asset age is shown as a percentage of the expected useful life in Figure 141.

**Figure 141: Average age of GFD assets as ratio of normal lifecycles**



**Renewal Needs vs. Funding Analysis**

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for GFD assets.

**Lifecycle Renewal Planning and Replacement Costs**

To forecast renewal needs for the GFD assets, fleet and equipment rely on simple age-based lifecycles while facility components use condition assessments to forecast the next renewal year. Replacement costs for fleet are estimated using an annually inflated historical price with an additional 45% contingency added. This estimate has been found to be too low in comparison to the rapid inflation that has been seen for vehicles in the past five years. When possible, recent quotes for similar vehicles have also been included.

**Funding Availability**

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Capital funding for the GFD comes from property taxes levied by the City. Forecast available funding values for the infrastructure renewal fund were provided by staff from the City Finance Department for the years 2024-2035. These were compared to the forecast renewal needs calculated as part of the AMP analysis with the following criteria:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results are summarized in the following table and charts.

**Table 90: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Forecast Renewal Costs	(\$5.38)	(\$0.96)	(\$2.92)	(\$4.35)	(\$4.10)	(\$22.71)	(\$0.21)	(\$5.05)	(\$6.34)	(\$18.36)
Predicted Available Funding	\$1.74	\$2.05	\$2.42	\$2.84	\$3.17	\$3.53	\$3.91	\$4.32	\$4.75	\$5.21
Cumulative Gap	(\$3.65)	(\$2.67)	(\$3.25)	(\$4.86)	(\$5.94)	(\$25.30)	(\$22.36)	(\$23.77)	(\$26.07)	(\$39.99)

**Table 91: Forecast Renewal Summary (in \$ millions)**

Average Annual Renewal Need	(\$7.04)
Average Annual Fund Contribution	\$3.39
Average Annual Gap (cumulative)	(\$15.79)
Forecast Renewals	(\$70.39)
Forecast Res. Funds	\$33.94
10-Year Funding Gap	(\$36.46)

**Figure 142: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**

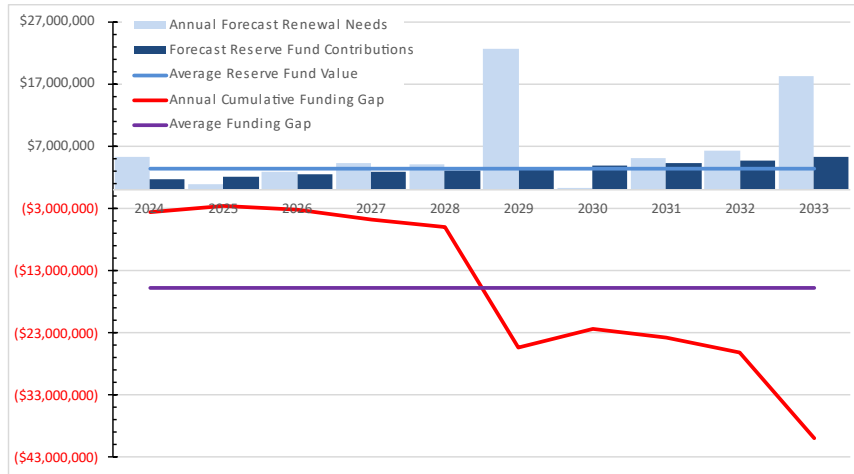


Table 90 and Figure 142 show that the available funding for the GFD is insufficient to cover the years of major capital expenditures. Specifically in 2028 and 2029, many fleet vehicles are forecasted to need to be renewed. In the case of the auxiliary vehicles, this may be able to be delayed with good maintenance but this cannot be done for the fire trucks. Over the next 10 years, the funding gap is expected to grow to \$36.4M.

**Operations and Maintenance Activities**

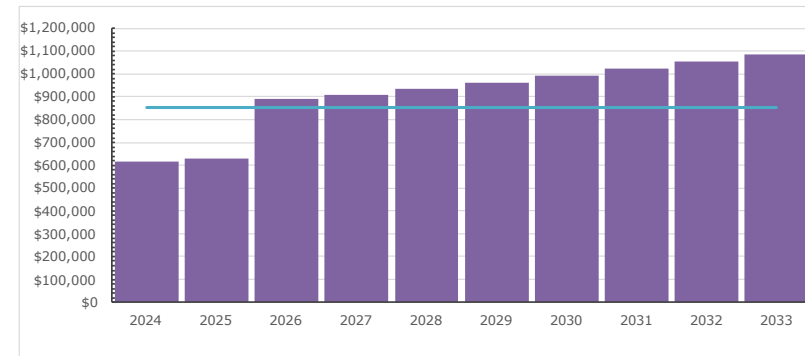
The operating and maintenance activities for the GFD include:

- Utilities
- Vehicle Repair & Maintenance
- Facility Repair & Maintenance

Also included in the annual operations and maintenance budgets are allowances for making unplanned repairs to the GFD assets when required. In 2023, there were several large unplanned vehicle repairs which resulted in spending \$300,000 in excess of the available budget. Even within the first quarter of 2024 there have been additional major unplanned repairs to vehicles with many years remaining. This trend is concerning for the predictable operating need for a fire truck to attain a fifteen-year lifecycle.

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Budget requested values which were also inflated by 3% per year. The review shows that in 2023 the amount spent on operations needs was about 91% of the budgeted value after 2025. Over the next 10-years (until 2033) the average annual operations need is forecast at approximately \$0.85M. Refer to Figure 143.

**Figure 143: Forecast operations budget needs 2024-2033**



**Total Annual Forecast – Renewal and Operations**

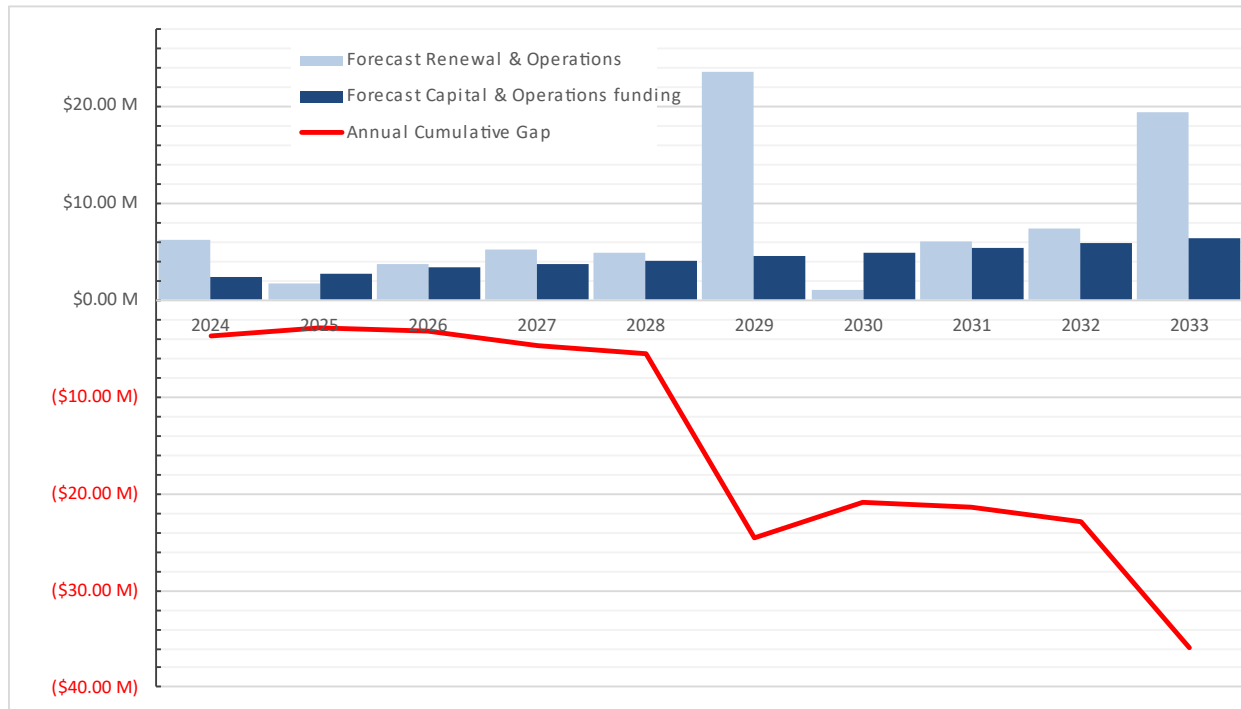
**The total forecast needs of the GFD infrastructure is determined by combining the renewal needs and forecast funding contributions. Refer to**

Figure 144 and Table 92 for this summary.

There is a limited effect on the annual forecast needs for the GFD from the operating budget. Since the

operating budget for the GFD is almost fully funded, the funding gap calculation does not vary significantly from the capital funding calculation.

**Figure 144: Combined Renewal and Operations Forecast vs. Funding**



**Table 92: Combined Renewal and Operations Forecast vs Funding (in \$ millions)**

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
RENEWAL FORECAST	\$5.38	\$0.96	\$2.92	\$4.35	\$4.10	\$22.71	\$0.21	\$5.05	\$6.34	\$18.36
OPERATIONS FORECAST	\$0.75	\$0.78	\$0.80	\$0.82	\$0.85	\$0.87	\$0.90	\$0.93	\$0.95	\$0.98
SUB-TOTAL	\$6.14	\$1.74	\$3.72	\$5.17	\$4.95	\$23.58	\$1.11	\$5.98	\$7.30	\$19.34
CAPITAL RESERVE FUND CONTRIBUTION	\$1.74	\$2.05	\$2.42	\$2.84	\$3.17	\$3.53	\$3.91	\$4.32	\$4.75	\$5.21
OPS BUDGET CONTRIBUTION	\$0.62	\$0.63	\$0.89	\$0.91	\$0.94	\$0.96	\$0.99	\$1.02	\$1.05	\$1.08
SUB-TOTAL	\$2.35	\$2.67	\$3.31	\$3.75	\$4.11	\$4.49	\$4.90	\$5.34	\$5.80	\$6.30
ANNUAL CUMULATIVE GAP	(\$3.78)	(\$2.85)	(\$3.25)	(\$4.68)	(\$5.52)	(\$24.61)	(\$20.82)	(\$21.47)	(\$22.96)	(\$36.00)



## Master and Major Capital Plans

### City Growth

As the City continues to grow, additional vehicles, equipment, facilities, and personnel will be needed to support the wider service area. These expansions will partly be funded through development charges but will become solely reliant on funding through the infrastructure renewal fund afterward. Additionally, design standards been updated and facility needs assessments have identified many service improvements to ensure fire stations are able to accommodate staff and fleet. New Fire apparatuses have been found to be heavier, causing greater wear to the driving surfaces in and around the stations. Accommodating these needs will also be essential to the longevity and adequacy of fire stations however they are not captured in like for like replacement schedules.

### Levels of Service

O.Reg 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as "Customer" or "Technical" LOS in alignment with the O.Reg 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

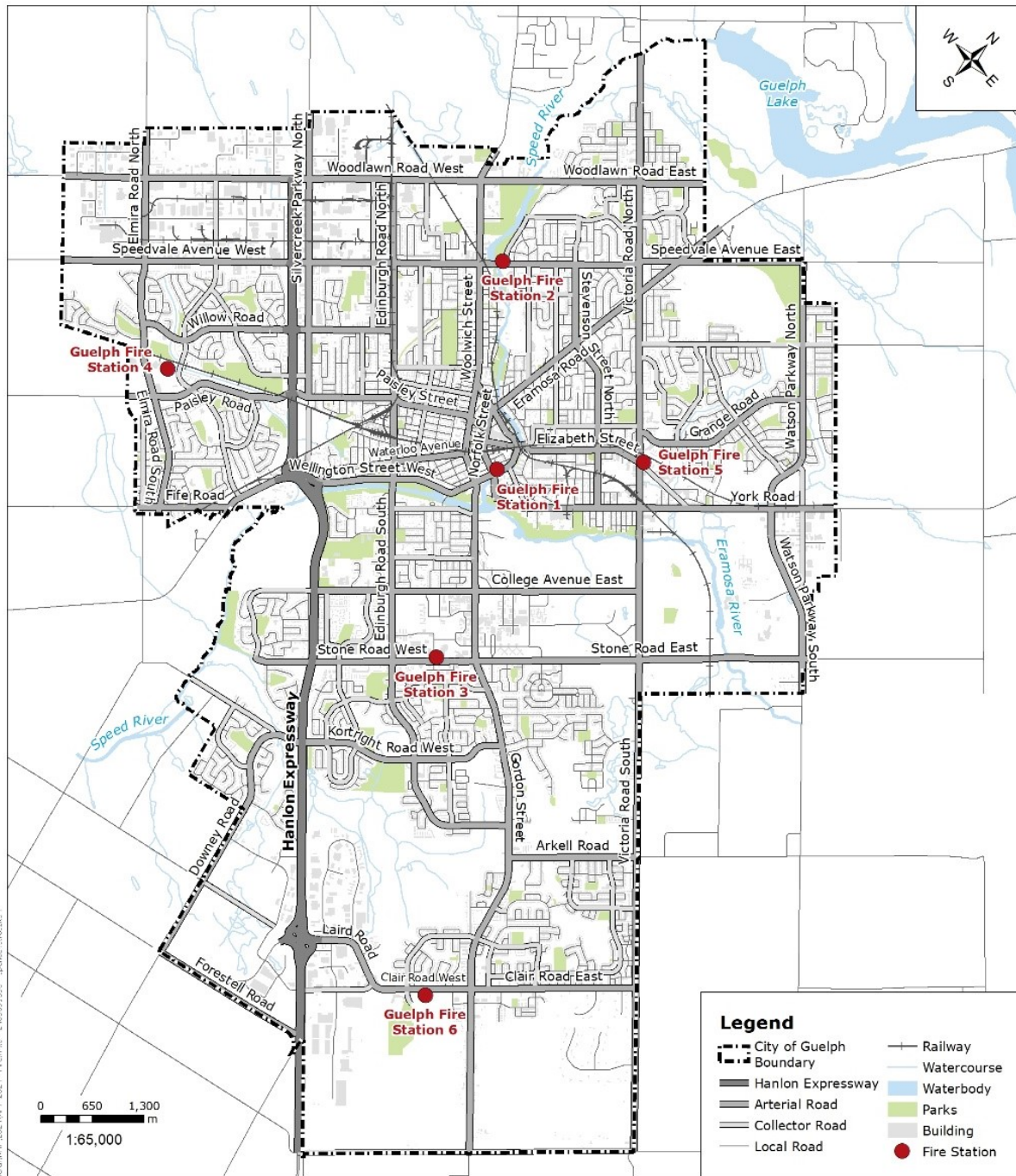
**Table 93: Fire Department Services Level of Service Metrics**

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Technical	% of fire assets that meet or exceed minimum target design requirements	100%
City Building	Technical	% of vehicles and equipment past their optimum service life	0.38%
City Building	Customer	Description of asset replacement/rehabilitation planning and prioritization, defining end of life for assets.	<p>Current asset replacement planning and prioritization utilizes two (2) separate Excel documents:</p> <p>1) For the fleet replacement program: "Fleet Budget Capital (BA Chart 27 Nov 2023)". This covers fire trucks and light duty vehicles from 2024-2045 and is over and above the corporation's 10-year capital forecast. End of life for fire trucks is 20 years. Replacement pumper trucks are in frontline status for 12-15 years and then placed into reserve status where they are retired from service prior to end of life. Replacement aerial trucks are in frontline status for 15-18 years and then placed into reserve status.</p> <p>2) For the equipment replacement program: "2024-2048 Fire Equipment Asset Life Cycling". This covers general fire equipment, rope rescue equipment, auto extrication equipment, hazmat equipment, and hoses/nozzles. Replacement timing is based on OEM recommendations, age, and condition assessments. Note that equipment cannot be "run to fail".</p>
People & Economy	Technical	% of service calls responded to with 4 minutes	64.3%

<p>People &amp; Economy</p>	<p>Customer</p>	<p>Description of the strategies used to keep assets and asset services safe and accessible to the public</p>	<p>Under the Highway Traffic Act:</p> <ul style="list-style-type: none"> <li>- safety standards certificate, annual, and semi-annual inspections are completed by GFD’s licensed motor vehicle inspection technicians.</li> <li>- the GFD facility is an authorized inspection station licensed by the Ministry of Transportation</li> <li>- preventative maintenance inspections are part of GFD’s maintenance plan and schedule and are done by GFD’s qualified technicians at prescribed intervals.</li> <li>- daily inspections completed by GFD drivers on behalf of the department.</li> </ul> <p>The National Fire Protection Association publishes industry standards which GFD follows:</p> <ul style="list-style-type: none"> <li>- NFPA 1901, Standard for Automotive Fire Apparatus defines the requirements for new automotive fire apparatus.</li> <li>- NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus.</li> </ul> <p>Under the Occupational Health and Safety Act:</p> <ul style="list-style-type: none"> <li>- clause 25(1)(b) for maintaining equipment in good condition.</li> <li>- clause 25(2)(a) for providing information and instruction to workers.</li> <li>- clause 28(1)(c) for reporting equipment defects</li> <li>- O. Reg. 714/94 – Firefighters – Protective Equipment, Section 6 outlines inspection, testing and service record requirements for chassis mounted aerial devices.</li> </ul> <p>The Ontario Fire Service Health and Safety Advisory Committee, formed under section 21 of the Act,</p>
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Strategic Theme	LOS Type	Performance Measure	Current Performance
			published Guidance Notes which includes Section 1: Apparatus and equipment.
Environment	Technical	Fuel Consumption (L)	Gasoline: 74,905 L Diesel: 17,182 L
Environment	Technical	Water Consumption (m <sup>3</sup> )	7,411 m <sup>3</sup>
Environment	Technical	Nat Gas Consumption (m <sup>3</sup> )	137,972 m <sup>3</sup>
Environment	Technical	Energy Consumption (kWh)	1,063,916 kWh
Environment	Customer	Description of environmental sustainability initiatives (e.g., GHG emission mitigation, water usage reduction).	<p>GFD balances its capital funding constraints for replacement fire trucks with the City’s goal of energy conservation and greenhouse gas (GHG) emissions reductions in its Race to Zero protocol.</p> <p>GFD requires new fire trucks to meet the minimum EPA Emission Standards for Heavy-Duty Highway Engines and Vehicles, however, additional green technology solutions and associated costs are requested of vendors.</p> <p>Examples of green technologies included:</p> <ul style="list-style-type: none"> <li>- Fully electric fire trucks using high-voltage systems.</li> <li>- Hybrid fire trucks using a combination of EV and diesel power.</li> </ul> <p>Idle Reduction Technologies (IRTs) which utilize lithium-ion batteries to provide services such as heat, air conditioning, and/or electricity to the vehicle.</p>

**Figure 145: Map of GFD Facilities**



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Produced by the City of Guelph  
Infrastructure, Development & Enterprise  
Engineering and Transportation Services  
May 9, 2024

**City of Guelph  
Fire Stations**



## Climate Change Risk Mitigation

The 2023 Climate Adaptation Plan<sup>32</sup> identifies a variety of action items for the GFD to participate in to be more ready for extreme weather events. These thirteen items can be summarized in the following themes:

- Continue to establish continuity plans for emergency scenarios
- Identify and maintain options for emergency shelters in response to various extreme weather events
- Identify facility components susceptible to climate hazards and plan for regular maintenance and replacement

By taking a proactive approach to climate change readiness, the GFD assets will be more resilient and operational in extreme weather.

## Summary and Recommendations

In general, the GFD is in fair or better condition however there are major capital expenses within the 10-year horizon. The replacement of fire trucks is critical to the City's fire protective services and will need attention when these replacement needs arise. The GFD headquarters is also aging rapidly which may result in a complete renewal once the structure is no longer adequate. Continued building condition assessment will be critical to proper asset maintenance and renewal timing.

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<sup>32</sup> <https://guelph.ca/plans-and-strategies/climate-adaptation-plan/>

## Chapter 16: Parking Service



**Quick Facts: City of Guelph – Parking Service Assets**

Number of Parkade Structures	3
Average Parkade Condition	Good
Number of Parkade parking spots	1,450
Number of Surface Lots	5
Average Surface Lot Condition	Fair
Number of Off-Street Spaces	1,725
Total Portfolio Value	\$59,719,111



### Introduction

Parking within the City of Guelph’s downtown is planned through the City’s Engineering and Transportation Services and operationalized by Public Works. Enforcement of parking policies is provided by the City’s By-Law staff through out the city. It is expected that as the City of Guelph continues to grow, availability of parking within the downtown area will increase in demand. Additionally, the City will need to balance the demand for EV parking equipped with charging stations and other alternate parking spaces such as for secure bicycle parking, accessible parking, and loading areas.

### Assets in the Parking Service System

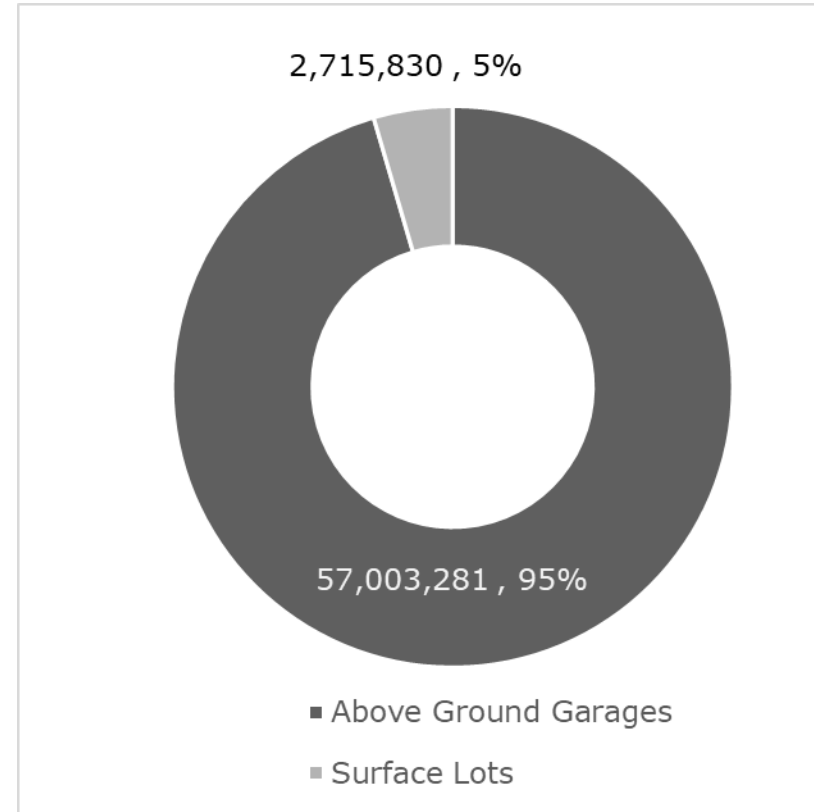
Parking Service assets can be broadly classified into 2 categories:

- Parking Garages: Multilevel structures capable of housing hundreds of vehicles.
- Surface Lots: Paved or gravel parking lots.

The City also provides many on-street parking spots throughout the downtown. For simplicity and the purpose of this plan, on-street parking is part of the road assets.

The current estimated total replacement value of the Parking Service’s assets is \$59.7M with 95% representing the 3 garages and the remaining 5% for the 5 surface lots.

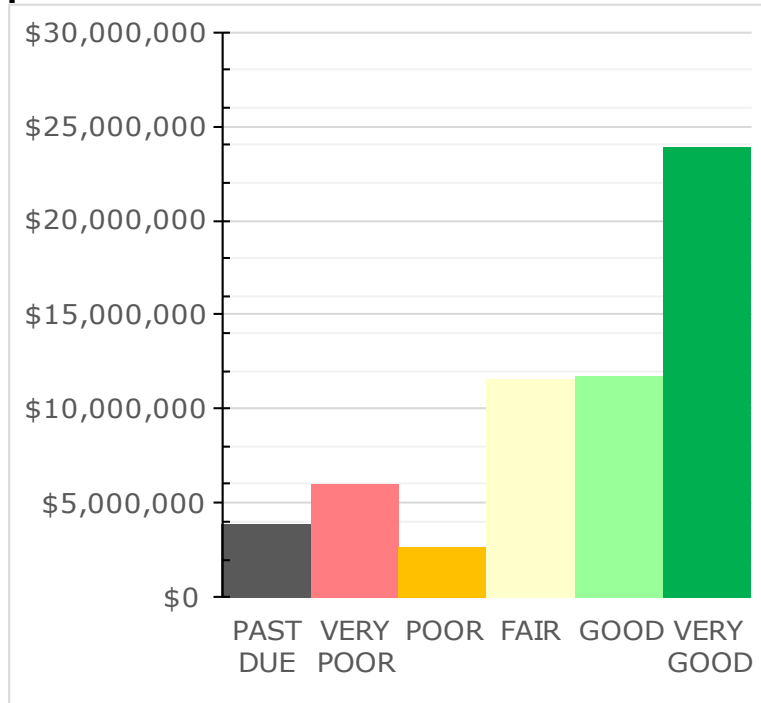
**Figure 146: Replacement value of Parking Service assets by category**



### State of the Parking Service Assets

Overall, the Parking Service asset portfolio is in a good state of repair. 79% of the portfolio is rated as being in a condition of “Fair” or better. The portfolio consists of relatively few assets however many are large structures which are expensive to replace. The portfolio has roughly half of its expected service life remaining, making future replacements within the next decade foreseeable.

**Figure 147: State of the Parking Service asset portfolio**



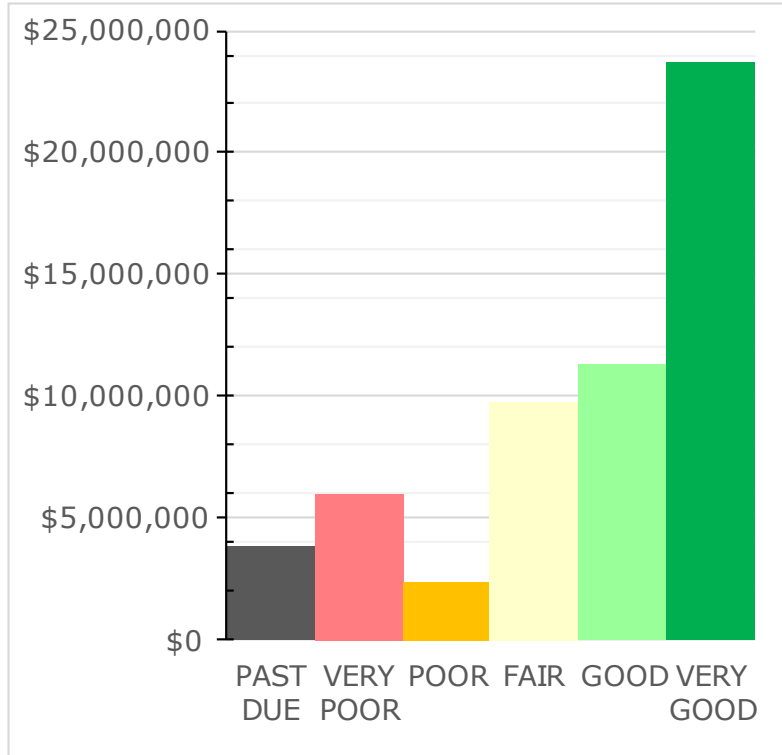
The value and condition of the assets were determined according to the methods described in the “Infrastructure Renewal and Lifecycle Management” section of this report.

### Parking Garage Asset Condition

There are three parking garages operated by the City of Guelph. West Parkade, East Parkade, and Market Parkade. The condition of these facilities is assessed as part of the City’s recurring facility condition assessments through the engagement of 3<sup>rd</sup> party consultants.

The total current replacement value of the parking garages is \$57M. The average estimated useful life of a parking garage is 30 years. Both West Parkade and East Parkade have less than 20% of their estimated useful life remaining however, their condition has been assessed to better than expected. Should critical components of the parkades need to be replaced, it is likely the entire structure will be rebuilt.

**Figure 148: State of the Parking Service Parking Garage assets**



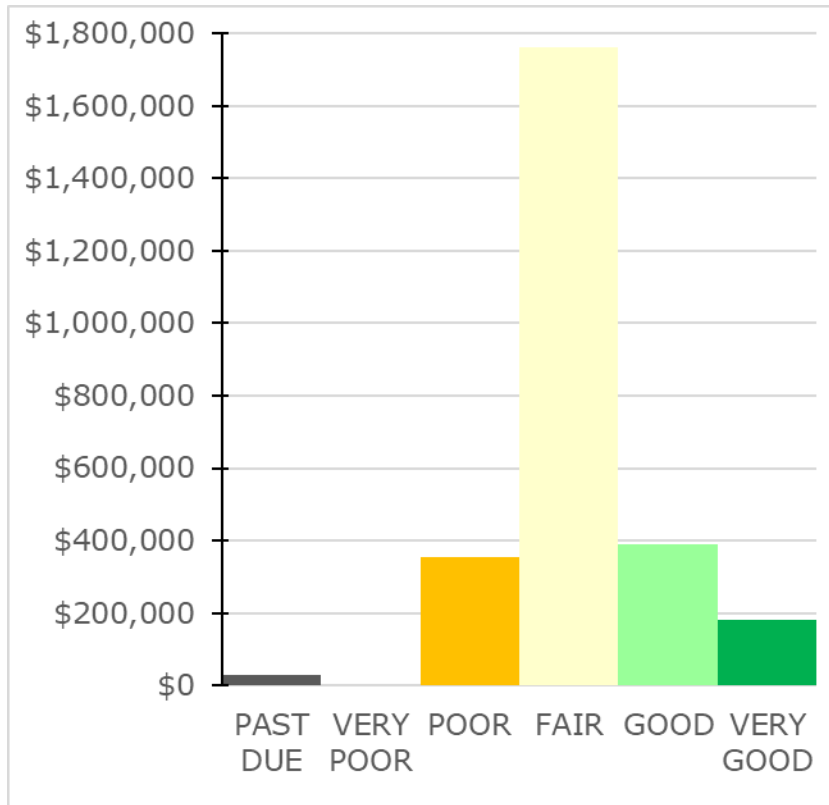
**Figure 149: Parking Garage asset condition breakdown**



**Surface Lot Asset Condition**

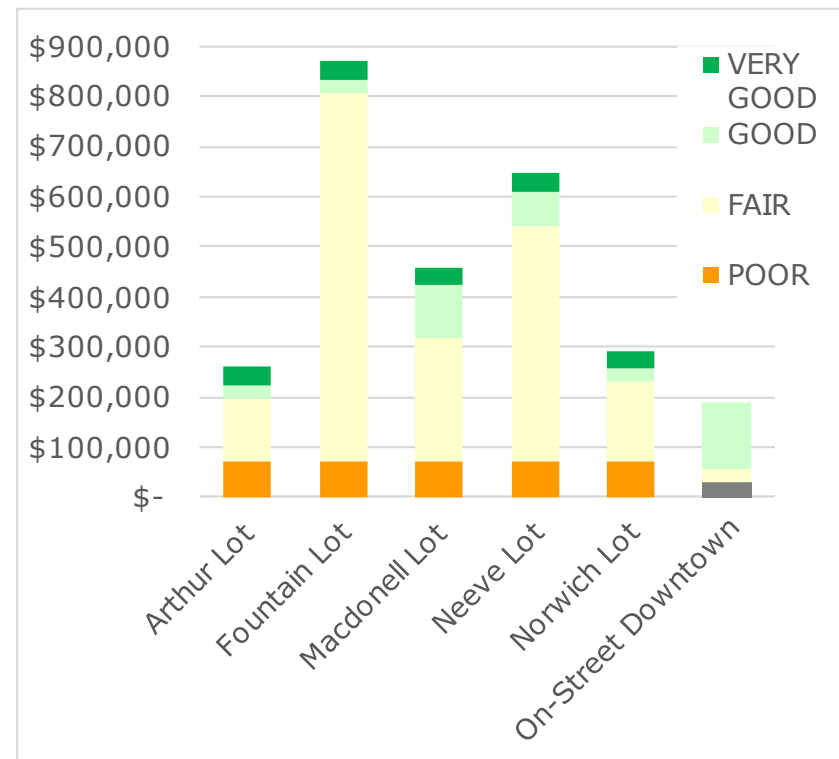
The City operates five parking lots within the downtown as well as equipment to support the on-street parking services. Due to the reduced asset value and limited criticality, these assets do not have a formalized assessment program. As Public Works staff notices issues, inventory is repaired or replaced.

**Figure 150: State of the Parking Service Surface Lot Assets**



The total current replacement value of the surface lots is \$2.7M. The estimated useful life of the asphalt surfaces, which represents the majority of the replacement value, is 45 years. The gates and other pay equipment have an estimated useful life of 7 years. The surface lot assets have a large percentage of their value rated as “Fair” which is in alignment with their age being half-way through their useful life.

**Figure 151: Surface Lot Asset Condition Breakdown**



**Table 94: State of the Parking Service Assets – Summary**

	<b>Above Ground Garages</b>	<b>Surface Lots</b>	<b>TOTALS</b>	
<b>Condition</b>	<b>\$57,003,281</b>	<b>\$2,715,830</b>	<b>\$59,719,111</b>	<b>% of Portfolio</b>
<b>N/A</b>	\$0	\$0	<b>\$0</b>	<b>0%</b>
<b>PAST DUE</b>	\$3,847,722	\$30,030	<b>\$3,877,752</b>	<b>6%</b>
<b>VERY POOR</b>	\$6,009,659	\$0	<b>\$6,009,659</b>	<b>10%</b>
<b>POOR</b>	\$2,334,819	\$354,850	<b>\$2,689,669</b>	<b>5%</b>
<b>FAIR</b>	\$9,776,200	\$1,762,204	<b>\$11,538,404</b>	<b>19%</b>
<b>GOOD</b>	\$11,319,505	\$388,498	<b>\$11,708,003</b>	<b>20%</b>
<b>VERY GOOD</b>	\$23,715,378	\$180,250	<b>\$23,895,627</b>	<b>40%</b>

**Asset Age Profile**

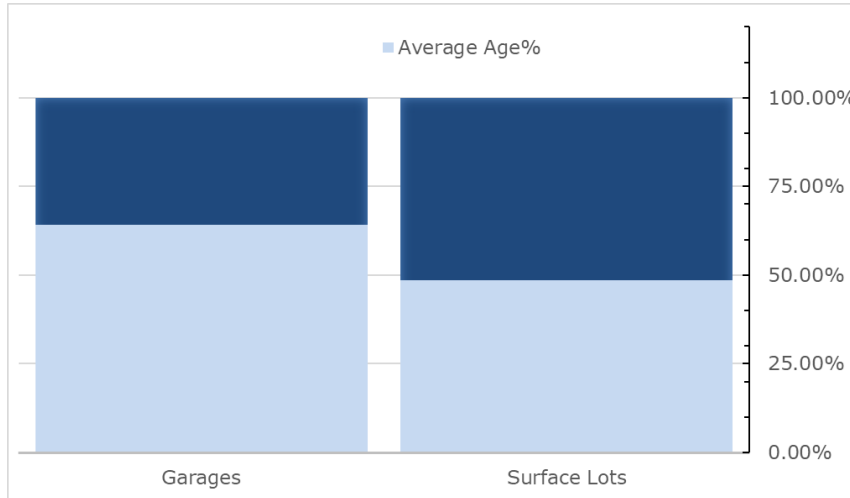
The structure of a parking garage is expected to last 75 years from construction. Many important components within the garages will need to be replaced once or several times within the lifecycle of the structure such as water and sewer infrastructure as well as various pieces of facility equipment. The longevity of an asset is primarily determined by the condition of the critical components. A parking garage

is expected to last 75 years before needing to be reconstructed.

The asphalt pavement of the surface lot is estimated to last up to 45 years while the equipment to operate the lots is expected to last 7 years.

The asset age is shown below as a percentage of the expected lifecycle of the asset.

**Figure 152: Average age of Parking Service Assets as a Ratio of Normal Lifecycles**



The Age Ratio chart shows that the surface lots are about mid-way through the average expected lifecycle. Parking garages are on average further along their lifecycle. The Market Parkade is considerably newer than the other two parkades which is lowering the average age. Large facilities such as parking garages contain many components which can have extended lives due to regular maintenance and rehabilitation.

**Renewal Needs vs. Funding Analysis**

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for parking service assets.

**Lifecycle Renewal Planning and Replacement Costs**

To forecast future renewal needs, City staff rely primarily on the assessment information provided through facility condition assessments. In addition to the condition of the parking facility, future needs are also taken into account such as demand for parking in the downtown and population growth. These considerations are put into the Downtown Parking Master Plan and pulled forward into the AMP. Estimated costs for planned work to renew parking facilities were provided by City staff as well as unit costs where applicable.

**Funding Availability**

Capital funding for Parking Services come from three sources: user-fees, Community Benefits Charges, and property tax. Revenues from downtown parking permits were 60% of the estimated \$4.2 million in 2022. This has resulted in less available capital reserve funding from user-fees. The estimated future contributions from these sources were used as the available funding value when determining the difference between forecast needs.

Prior to completing this review the following steps were taken:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues
- In years when the planned funding is not adequate to cover all forecast needs the

difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

**Table 95: Forecast infrastructure renewal needs compared to reserve fund contributions (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Forecast Renewal Costs</b>	(\$4.52)	(\$0.10)	(\$0.76)	(\$0.27)	(\$6.74)	(\$0.60)	(\$0.49)	\$0.00	(\$4.03)	(\$4.36)
<b>Predicted Available Funding</b>	\$2.43	\$3.01	\$2.92	\$3.01	\$3.13	\$3.25	\$3.38	\$3.52	\$3.66	\$3.81
<b>Cumulative Gap</b>	(\$2.09)	\$0.76	\$2.17	\$2.74	(\$3.61)	(\$1.07)	\$1.79	\$3.52	(\$0.37)	(\$0.94)

**Table 96: Renewal Forecast Summary Information (in \$ millions)**

Average Annual Renewal Need	(\$2.19)
Average Annual Fund Contribution	\$3.21
Average Annual Gap (cumulative)	\$0.29
Forecast Renewals	(\$21.86)
Forecast Res. Funds	\$32.12
10-Year Funding Gap	\$10.25

**Figure 153: Forecast infrastructure renewal needs compared to reserve fund contributions**

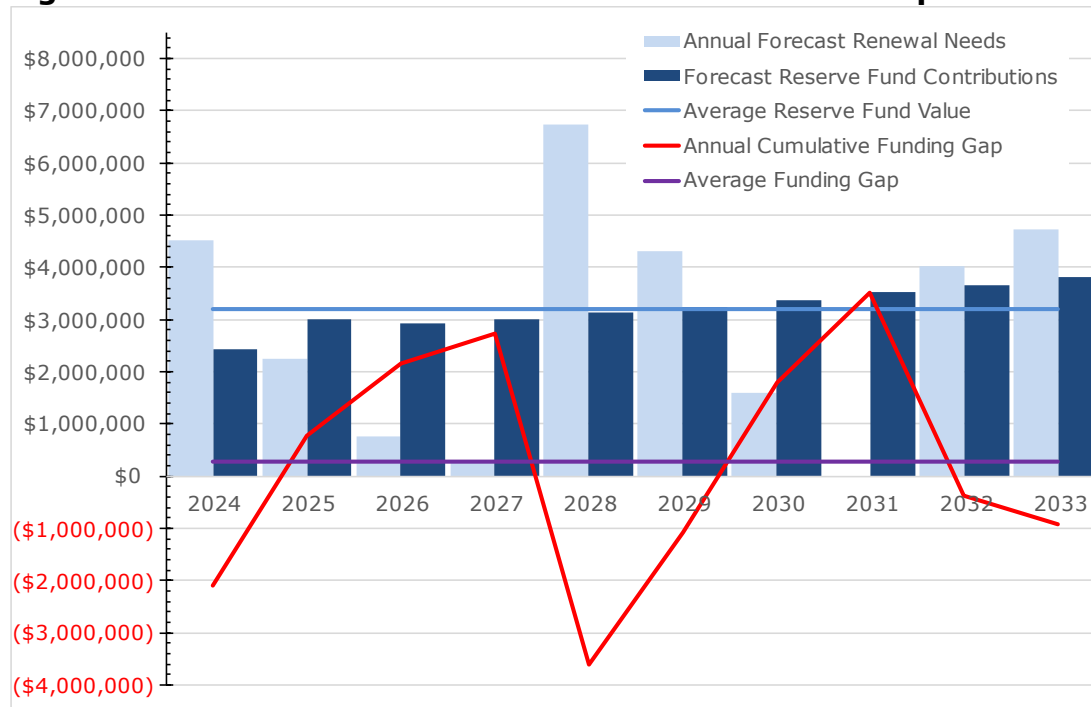




Table 95 and Figure 153 show that the available funding for the Parking service meets the needs of the forecast needs over the next 10 years. There is an exception for large capital investments in 2028 and 2029 as well as in 2032 and 2033 for items such as electrical, railings, and sub-components of the structure. These investments can be covered by reserves and issuing debt.

**Operations and Maintenance Activities**

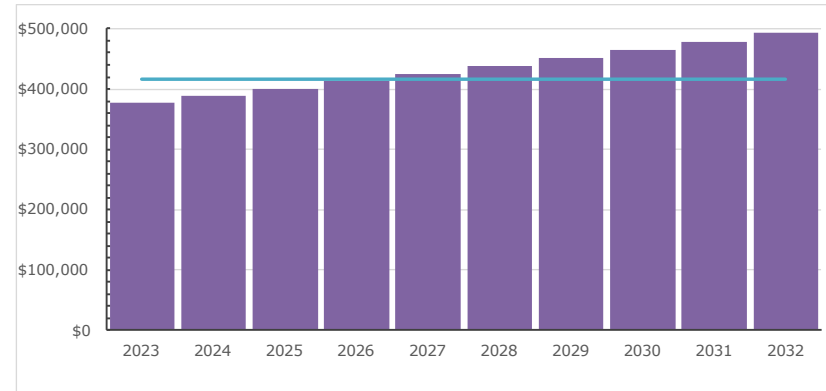
The parking service operations includes:

- Utility costs for the parking facilities (electricity and water)
- Building maintenance and repairs (supplies and labour)

Also included in the annual operations and maintenance budgets are allowances for making unplanned repairs to the parking service assets when required.

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Budget requested values which were also inflated by 3% per year. The review shows that in 2023 the amount spent on operations needs was about 97% of the budgeted value. Over the next 10-years (until 2033) the average annual operations need is forecast at approximately \$0.4M. Refer to Figure 154.

**Figure 154: Forecast operations budget need 2024-2033**

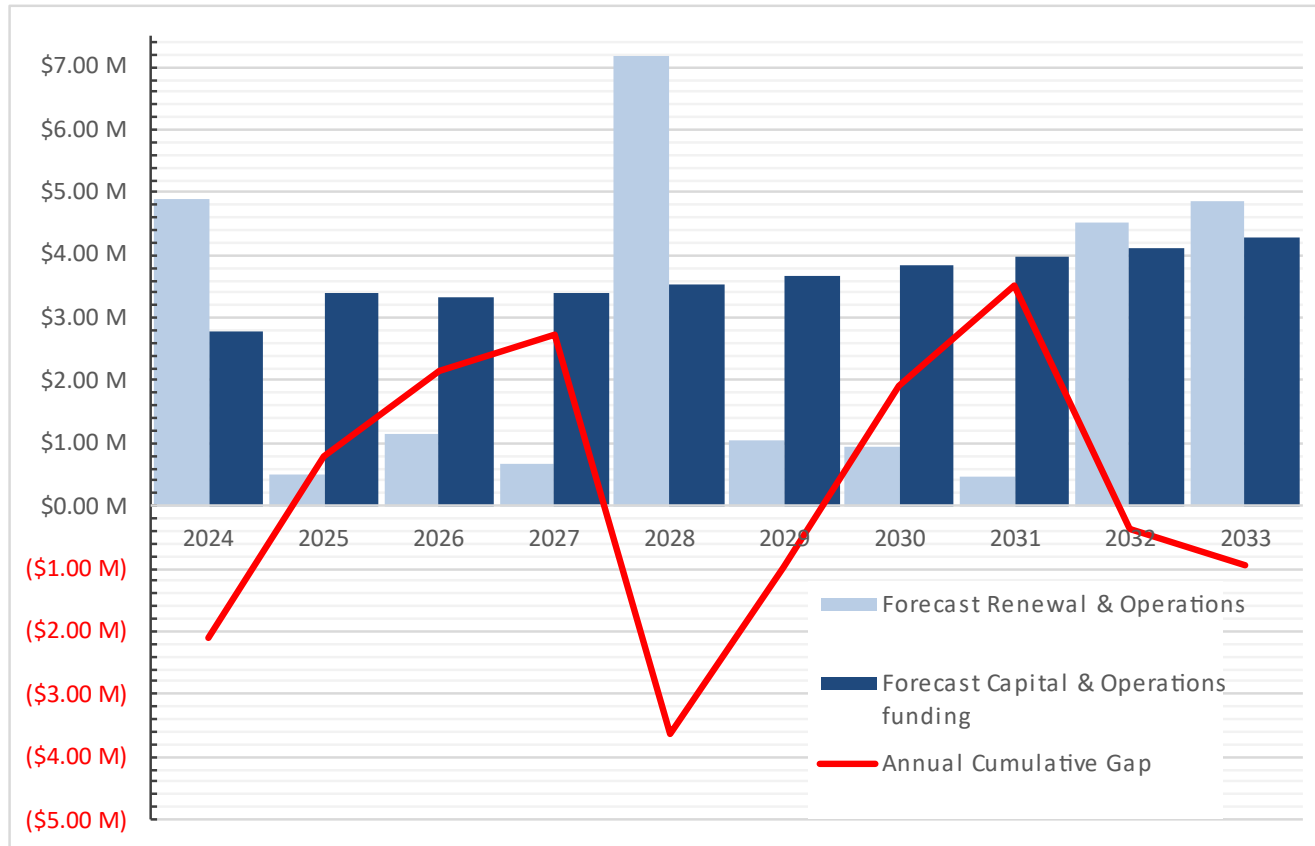


**Total Annual Forecast – Renewal and Operations**

The total forecast needs of the parking services infrastructure is determined by combining the renewal needs and forecast funding contributions. Refer to Figure 155 and Table 97 for this summary.

There is a limited effect on the annual forecast needs for parking services from the operating budget. Since the operating budget for parking services is almost fully funding, the funding gap calculation does not vary significantly from the capital funding calculation.

**Figure 155: Combined Renewal and Operations Forecast vs. Funding**



**Table 97: Combined renewal and operations forecast vs. funding (in \$ millions)**

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
RENEWAL FORECAST	\$4.52	\$0.10	\$0.76	\$0.27	\$6.74	\$0.60	\$0.49	\$0.00	\$4.03	\$4.36
OPERATIONS FORECAST	\$0.38	\$0.39	\$0.40	\$0.41	\$0.43	\$0.44	\$0.45	\$0.46	\$0.48	\$0.49
SUB-TOTAL	\$4.90	\$0.49	\$1.16	\$0.68	\$7.17	\$1.04	\$0.94	\$0.46	\$4.51	\$4.85
CAPITAL RESERVE FUND CONTRIBUTION	\$2.43	\$3.01	\$2.92	\$3.01	\$3.13	\$3.25	\$3.38	\$3.52	\$3.66	\$3.81
OPS BUDGET CONTRIBUTION	\$0.37	\$0.38	\$0.39	\$0.40	\$0.42	\$0.43	\$0.44	\$0.45	\$0.47	\$0.48
SUB-TOTAL	\$2.80	\$3.39	\$3.31	\$3.41	\$3.54	\$3.68	\$3.82	\$3.97	\$4.13	\$4.29
ANNUAL CUMULATIVE GAP	(\$2.10)	\$0.81	\$2.16	\$2.73	(\$3.62)	(\$0.98)	\$1.90	\$3.51	(\$0.38)	(\$0.95)

**Master and Major Capital Plans**

**City Growth**

The Downtown Parking Master Plan<sup>33</sup> identifies several major capital projects within the next twenty years. The Baker street parking facility is expected to be built within a 5-year horizon. Additionally, the aging East and West Parkades may need complete renewals by 2040. City staff have estimated they will need \$25M for East Parkade and \$40M for West Parkade. As the City continues to grow there is potential that new

parking facilities will be needed in the north and south ends of the downtown.

<sup>33</sup> <https://guelph.ca/plans-and-strategies/parking-master-plan/>

**Levels of Service**

O.Reg 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as “Customer” or “Technical” LOS in alignment with the O.Reg 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with

similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

The [Downtown Parking Master Plan \(DPMP\)](#) from Sept. 2023 will be referenced to further help identify the levels of service currently being delivered, and future targets. The maps in Figure 156 and Figure 157 present a baseline for measuring how the current available parking assets are used.

**Table 98: Parking Services Levels of Service**

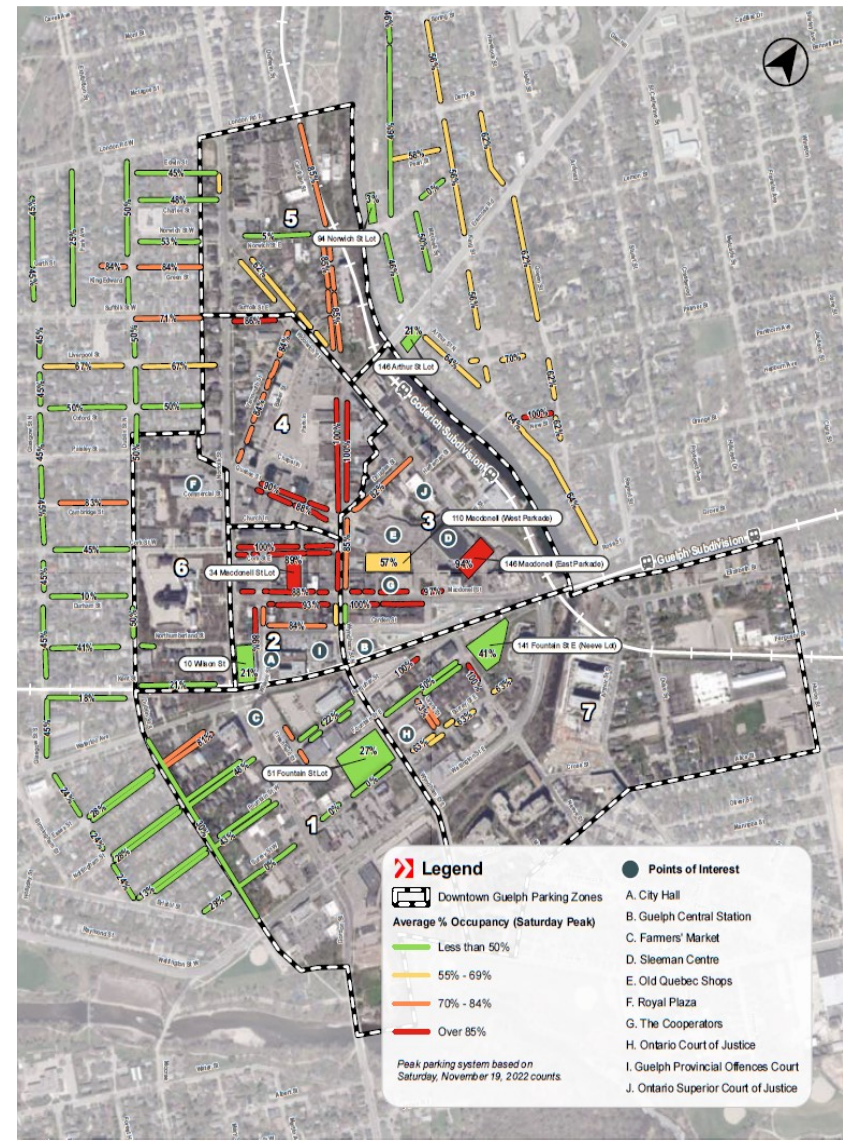
Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Technical	# of Off-Street Parking Spaces within the downtown	1725 Spaces
Foundations	Customer	Peak Utilization Maps (Weekday & Saturday)	See Figure 156 and Figure 157 below <sup>34</sup>
Environment	Technical	Energy Consumption (kWh)	413,700 kWh
Environment	Technical	Water Consumption (m <sup>3</sup> )	224 m <sup>3</sup>

<sup>34</sup> <https://guelph.ca/plans-and-strategies/parking-master-plan/>

**Figure 156: Weekday Peak Parking Utilization (2022)**



**Figure 157: Saturday Peak Parking Utilization (2022)**



## Risks to the Parking Service assets

### Climate Change Risk & Mitigation

The 2023 Climate Adaptation Plan<sup>35</sup> identifies three action items which involve the parking service asset portfolio.

- 1) Include parking assets in the pavement condition assessment program.
- 2) Pursue a venture to create a City-wide urban heat island effect map.
- 3) Investigate areas where permeable pavements and low impact development can be applied.

These actions would help prepare parking assets for elevated freeze/thaw cycles as well as extreme heat events which can deteriorate asset condition more rapidly than expected. Surface lots in particular are more exposed to extreme weather and may have a reduced estimated useful life going forward.

### Summary and Recommendations

In general, the Parking Service asset portfolio is in fair or better condition. There are some major capital expenses within the 10-year forecast however funding appears to be adequate to address these needs. Once the Baker Street parking facility is completed, operating budget needs will increase however it should be many years before major repairs need to be completed. Within that time the East and West Parkades will continue to age, potentially resulting in more rapid deterioration of their condition. Continuation of the facility condition assessment program will be critical for the aging facilities.

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<sup>35</sup> <https://guelph.ca/plans-and-strategies/climate-adaptation-plan/>

## Chapter 17: Operations Service Fleet



**Quick Facts:****City of Guelph Operations Fleet Assets**

Total value of vehicles	\$21,759,851
Number of vehicles	145
Average condition of vehicles	FAIR
Total value of equipment	\$6,715,753
Number of pieces of equipment	195
Average condition of equipment	FAIR
Total value of Fleet assets	\$27,475,604



### Introduction

The Operations Service Fleet consists of 4 service areas which are not otherwise represented within the asset management plan: By-law, Corporate Fleet, Public Works, and Traffic management. Assets within this category have been identified by the Corporate Fleet within these categories however, it is important to remember that many fleet vehicles are managed as a corporate resource. This means that vehicles and equipment used by one service area may be used by another service area the next day based on needs. Many factors including asset utilization are used to determine vehicle provision to service areas.

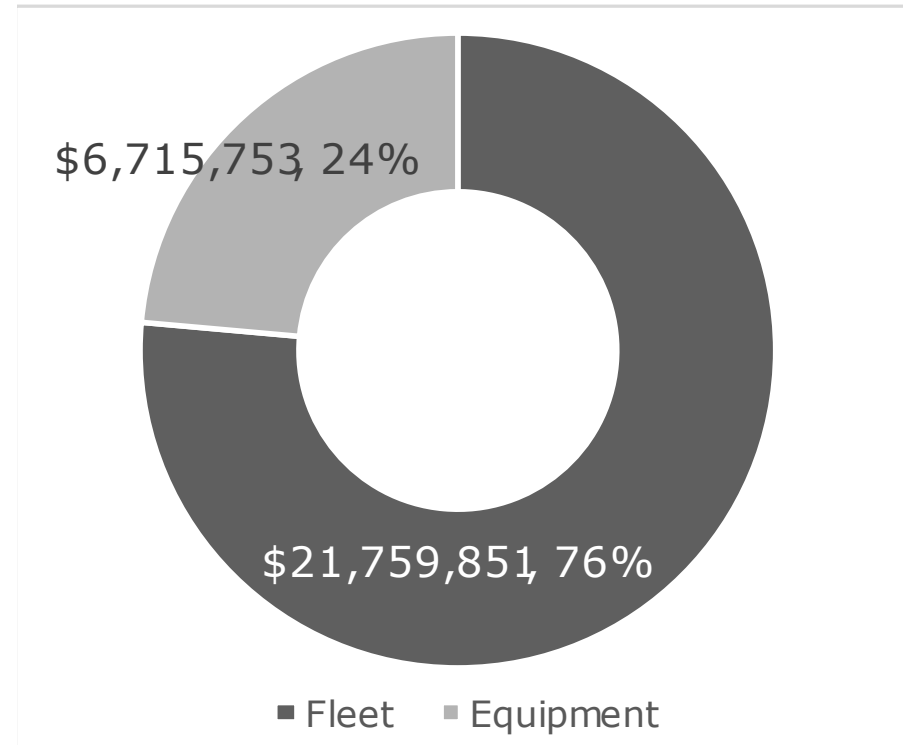
### Assets in the Operations Service Fleet System

Assets in the Operations Service Fleet can be broadly classified into two categories:

- Vehicles: Light and Heavy-Duty vehicles (Pickup trucks, snowplows, vans, etc.)
- Equipment: Large and small pieces of equipment used by service areas (Asphalt spreaders, sand and salt spreaders, snow blowers, etc.)

The current estimated total replacement value of the Operations Service Fleet asset portfolio is \$28.5M which is primarily represented by the vehicles which make up 76% of the portfolio. Equipment is estimated to be 24% of the portfolio’s replacement value.

**Figure 158: Replacement value of the Operations Service Fleet Assets by Category**

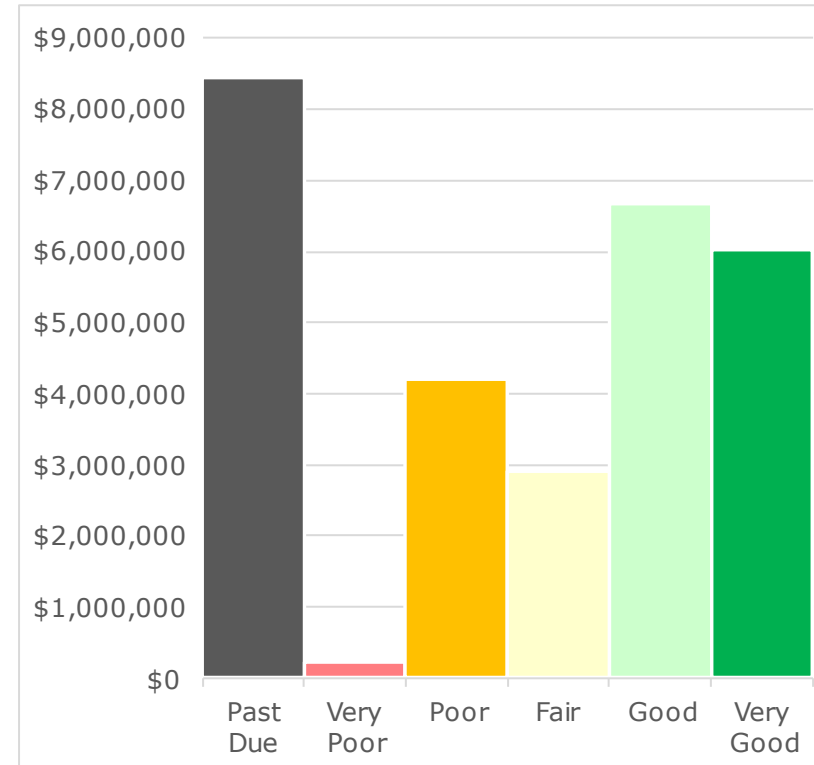


### State of the Operations Service Fleet Assets

Fleet and equipment assets do not have formalized condition ratings like other asset categories. Vehicles are distributed to service areas based on many factors including the expected wear and tear with that service area. For example, By-law vehicles get higher mileage on a daily basis where other service areas may not use their vehicles as frequently. This means that older vehicles can be provided to and shared by light use service areas to extend the service life of the vehicles. Preventative maintenance activities are also capable of extending the service life of vehicles and equipment beyond the expectations. Due to the limited condition information presently available to the City, the age-based condition is not fully representative of the precise condition of fleet and vehicle assets.

The value and condition of the assets were determined according to the methods described in the “Infrastructure Renewal and Lifecycle Management” section of this report. The summary of this information can be seen in **Error! Not a valid bookmark self-reference.** and Table 99. Thirty percent of the assets are listed as “Past Due” while 55% are in “Fair” or better condition.

**Figure 159: State of the Operations Service Fleet Asset Portfolio**



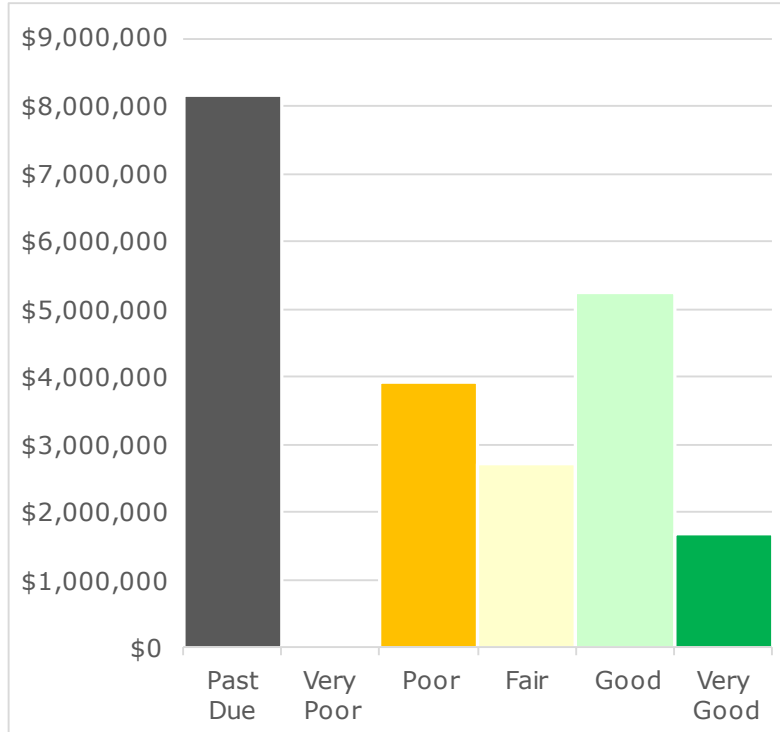
**Table 99: State of the Operations Service Fleet Assets**

	Vehicles	Equipment	TOTALS	% of Portfolio
Condition	\$21,759,851	\$6,715,753	\$28,475,604	
N/A	\$0	\$9,792	\$9,792	0.03%
PAST DUE	\$8,162,940	\$277,616	\$8,440,556	30%
VERY POOR	\$14,142	\$210,131	\$224,273	1%
POOR	\$3,916,502	\$285,700	\$4,202,202	15%
FAIR	\$2,725,059	\$186,996	\$2,912,055	10%
GOOD	\$5,259,456	\$1,400,471	\$6,659,927	23%
VERY GOOD	\$1,681,752	\$4,345,048	\$6,026,800	21%

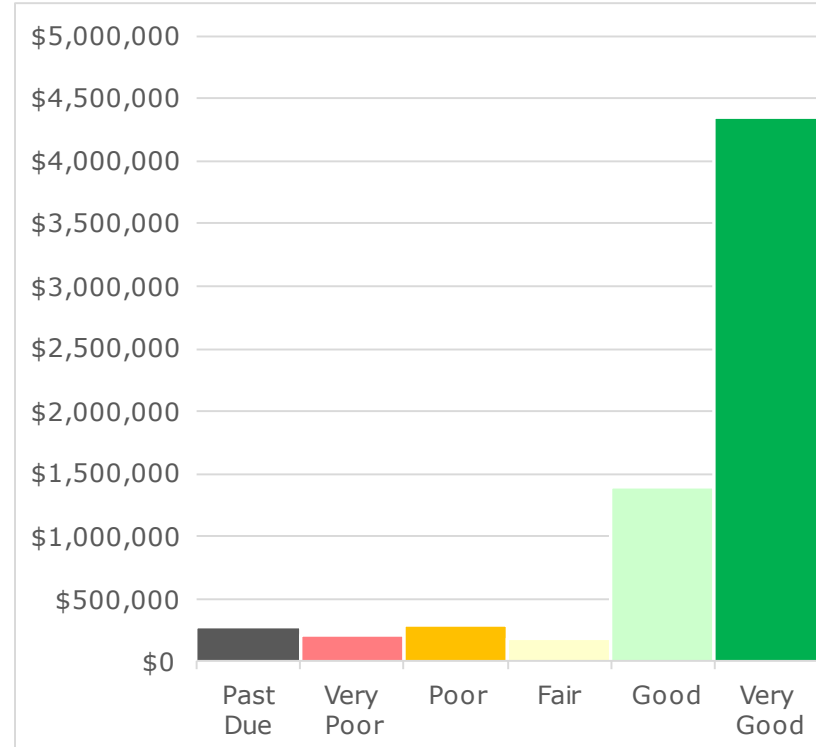
There are 148 vehicles identified under the Operations Service Fleet inventory with 44% of assets being in "Fair" or better condition. The total current replacement value of the Fleet assets is \$21.7M. The average estimated useful life of fleet assets is 7 years which is relatively short. The total current replacement value of the 195 equipment assets is \$6.7M. 85% the assets are rated as "Good" or "Very Good" through age-based condition estimates. Replacement schedules prepared by City staff for fleet and equipment have been included in the financial analysis

but do not inform the age-based condition estimates for these assets.

**Figure 160: State of the Operations Services Fleet - Vehicle Assets**



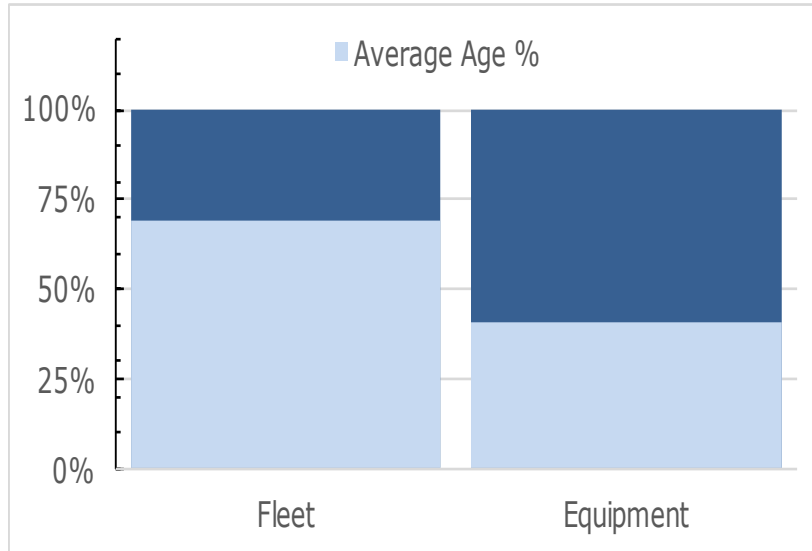
**Figure 161: State of the Operations Service Fleet - Equipment Assets**



**Asset Age Profile**

The expected useful life of vehicle assets may be as much as 15 years or as little as 5 years depending on the type of vehicle. The average expected useful life of the vehicles is 7 years. The equipment assets have an average useful life of 17 years however some may be as long as 20 years. The Age Ratio chart shows that the vehicles are two thirds through their useful lives while equipment assets are only one third through.

**Figure 162: Average age of Operations Service Fleet Assets as a Ratio of Normal Lifecycles**



**Renewal Needs vs. Funding Analysis**

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for Corporate Fleet assets.

**Lifecycle Renewal Planning and Replacement Costs**

The forecast of future renewal needs for the Operations Services Fleet assets rely on age-based useful life deterioration as well as replacement schedules prepared by City staff. When assets were not listed in replacement schedules, historical costs were inflated at 3% annually and an additional 45% contingency was added. This estimate is generally accepted in absence of a quote for a specific asset replacement. As the electrification initiative continues, replacement cost for electric equivalents will be established but are not currently represented in this analysis.

**Funding Availability**

Capital funding for the Operations Services Fleet comes from property taxes levied by the City. Forecast available funding values for the infrastructure renewal fund were provided by staff from the City Finance Department for the years 2024-2035. These were compared to the forecast renewal needs calculated as part of the AMP analysis with the following criteria:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation

- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results are summarized in the following table and charts.

**Table 100: Forecast infrastructure renewal needs compared to reserve fund contributions (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Forecast Renewal Costs</b>	(\$7.92)	(\$0.35)	(\$4.29)	(\$4.11)	(\$3.51)	(\$5.79)	\$0.00	(\$3.32)	(\$1.53)	(\$1.96)
<b>Predicted Available Funding</b>	\$0.58	\$0.68	\$0.81	\$0.95	\$1.06	\$1.18	\$1.31	\$1.44	\$1.59	\$1.74
<b>Cumulative Gap</b>	(\$7.34)	(\$7.23)	(\$10.92)	(\$14.42)	(\$17.30)	(\$22.43)	(\$21.80)	(\$24.33)	(\$25.00)	(\$25.97)

**Table 101: Renewal Forecast Summary Information (in \$ millions)**

Average Annual Renewal Need	(\$3.28)
Average Annual Fund Contribution	\$1.13
Average Annual Gap (cumulative)	(\$17.67)
Forecast Renewals	(\$32.78)
Forecast Res. Funds	\$11.34
10-Year Funding Gap	(\$21.44)

**Figure 163: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**

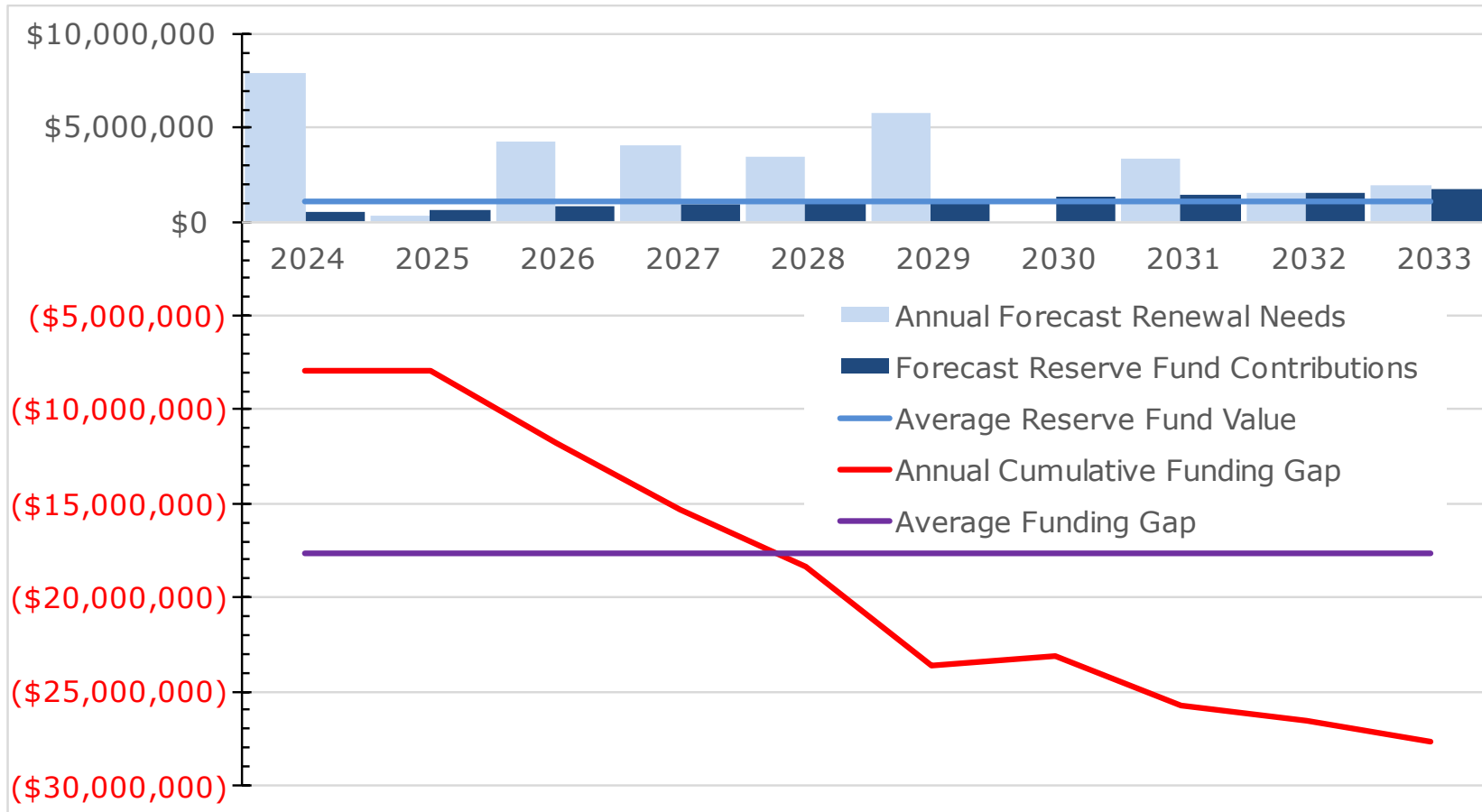




Table 100 and Figure 163 show that the available funding for the Operations Services Fleet gap over the 10-year horizon. The estimated gap in 2033 is \$21.44M which will result in a substantial growth in assets in "Past Due" condition. The annual investment required to clear the operations fleet's backlog and renew all vehicles forecast for the next ten years is \$3.28M. In comparison, the current annual funding contribution is \$1.13M or one third of the annual renewal need.

**Operations and Maintenance Activities**

The operating and maintenance activities for the Operations Services Fleet include:

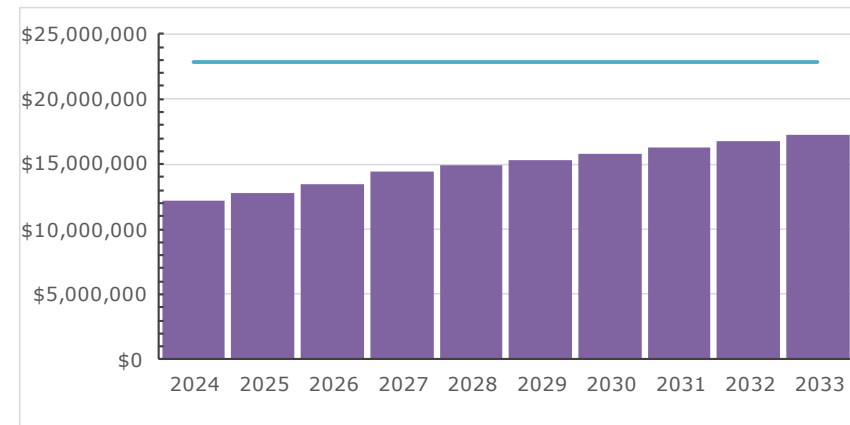
- Fleet materials: Tires and other Automotive Parts
- Fuel: Gasoline & Diesel (Coloured & Uncoloured)
- Vehicle Repairs

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Budget requested values which were also inflated by 3% per year. Review of the Operations Services Fleet operational spending shows that spending out paced budgets. Three spending areas have historically been over budget.

- 4) Fuel
- 5) Automotive Parts
- 6) Vehicle Repairs & Maintenance

Over the next 10 years the average annual operations need is forecast at approximately \$22.8M. These operational needs do not take the switch to electric vehicles into account as the precise effect and timing of this change is unknown.

**Figure 164: Forecast Operations Budget Need 2024-2033**

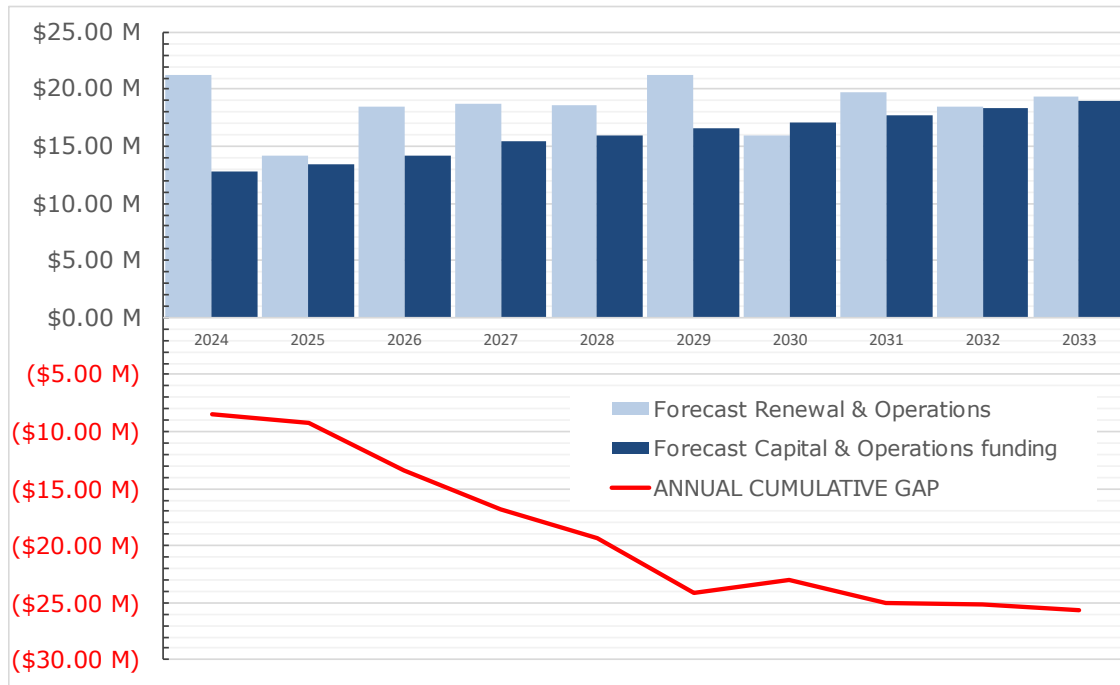


**Total Annual Forecast – Renewal and Operations**

The total forecast needs of the Operational Services Fleet are determined by combining the renewal needs and forecast funding contributions. Refer to Figure 165 and Table 102 for this summary.

When the operations spending is included, the available funds are less than the annual needs. This means the backlog will continue to grow as total funding is outpaced by replacement needs. The final backlog is forecast to be \$25.61 million.

**Figure 165: Combined Renewal and Operations Forecast vs. Funding**



**Table 102: Combined Renewal and Operations Forecast vs Funding (in \$ millions)**

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
RENEWAL FORECAST	\$7.92	\$0.35	\$4.29	\$4.11	\$3.51	\$5.79	\$0.00	\$3.32	\$1.53	\$1.96
OPERATIONS FORECAST	\$13.38	\$13.78	\$14.20	\$14.62	\$15.06	\$15.51	\$15.98	\$16.46	\$16.95	\$17.46
SUB-TOTAL	\$21.30	\$14.14	\$18.49	\$18.74	\$18.57	\$21.30	\$15.98	\$19.78	\$18.48	\$19.42
CAPITAL RESERVE FUND CONTRIBUTION	\$0.58	\$0.68	\$0.81	\$0.95	\$1.06	\$1.18	\$1.31	\$1.44	\$1.59	\$1.74
OPS BUDGET CONTRIBUTION	\$12.21	\$12.76	\$13.42	\$14.47	\$14.90	\$15.35	\$15.81	\$16.28	\$16.77	\$17.28
SUB-TOTAL	\$12.79	\$13.45	\$14.23	\$15.42	\$15.96	\$16.53	\$17.12	\$17.73	\$18.36	\$19.02
ANNUAL CUMULATIVE GAP	(\$8.51)	(\$9.20)	(\$13.46)	(\$16.78)	(\$19.39)	(\$24.16)	(\$23.03)	(\$25.09)	(\$25.21)	(\$25.61)

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## Master and Major Capital Plans

### City Growth

As the City continues to grow, additional fleet vehicles will be needed to support the wider service area. For example, an additional snowplough to plow new roads within a timely manner. As Guelph continues to prioritize its race to zero, electrification will be crucial for the City's vehicles. Light vehicles such as pickup trucks and SUVs have had electric options for longer and their platforms have matured to be more affordable and efficient. Opportunities to begin electrifying the light fleet have been identified within the City's budget within the next ten years.

## Levels of Service

O. Reg. 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as "Customer" or "Technical" LOS in alignment with the O. Reg. 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

**Table 103: Parking Services Levels of Service**

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Customer	Description, which may include maps and/or images, of assets and/or asset services, including details such as location, size, type, risk, and other searchable attributes.	The Corporate Fleet service oversees and services vehicles and equipment for the entire City. Assets within the Corporate Fleet service area include light vehicles, like pickup trucks, as well heavy-duty vehicles such as dump trucks.
City Building	Technical	% of Assets > Poor Condition Rating	60%
City Building	Customer	Description of asset replacement/rehabilitation planning and prioritization, defining end of life for assets.	Vehicles are regularly inspected by City staff and determined whether repair, rehabilitation, or replacement is needed. Service area needs are also taken into consideration.
Environment	Technical	Fuel Consumption	Gasoline: 391,140 L Diesel: 411,727 L
Environment	Customer	Description of environmental sustainability initiatives (e.g., GHG emission mitigation, water usage reduction).	Greening of the fleet to reduce reliance on non-renewable energy sources. This includes developing the infrastructure to support a green fleet.

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## **Risks to the Operations Services Fleet Assets**

### **Climate Change Risk Mitigation**

The 2023 Climate Adaptation Plan<sup>36</sup> identifies a variety of action items for the Corporation to participate in to be more ready for extreme weather events. These seven items can be summarized in the following themes:

- Work to establish redundancy in vehicle and replacement part availability
- Ensure adequate cooling and hydration is available within vehicles

The public works department is encouraged to establish a plan for if additional assistance is needed to clear a route to the Arkell Spring Grounds. This plan will likely include involvement from Operations Services Fleet staff.

## **Summary and Recommendations**

In general, the Operations Services Fleet asset portfolio is in “Poor” or better condition. There is not enough funding being allocated to infrastructure renewal to replace assets as quickly as they are aging. As the fleet continues to electrify, there will be a shift in what operating and maintenance needs are required. This will likely result in a reduced operational expense however infrastructure such as charging stations will be required wherever vehicles are stored.

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<sup>36</sup> <https://guelph.ca/plans-and-strategies/climate-adaptation-plan/>

## Chapter 18: Information Technology



**Quick Facts:****City of Guelph Information Technology Assets**

Total number of IT assets	10,303
Total value of IT assets	\$20,265,331
Average condition of IT assets	FAIR



## Introduction

Information Technology (IT) assets play a critical support role for nearly all services provided by the City of Guelph. Despite accounting for a small percentage of the asset portfolio, the daily operation of these assets allows the City to collaborate and function efficiently. Asset types in the IT portfolio include various computer hardware and software licenses.

### Assets in the IT System

IT assets are unique in the overall asset portfolio due to their very short lifecycles and consistent new product releases. This can make like-for-like asset replacement a challenge, as well as affect future needs planning as it is very difficult to predict what a supplier or service provider will do with their product.

Another distinctive characteristic of IT products, particularly software, is the need for the City to pay annual service and license fees to continue to use products that have already been purchased. These annual costs are typically considered operational expenses and are accounted for as such in this plan.

IT assets are classified by an internal inventory system and include types such as:

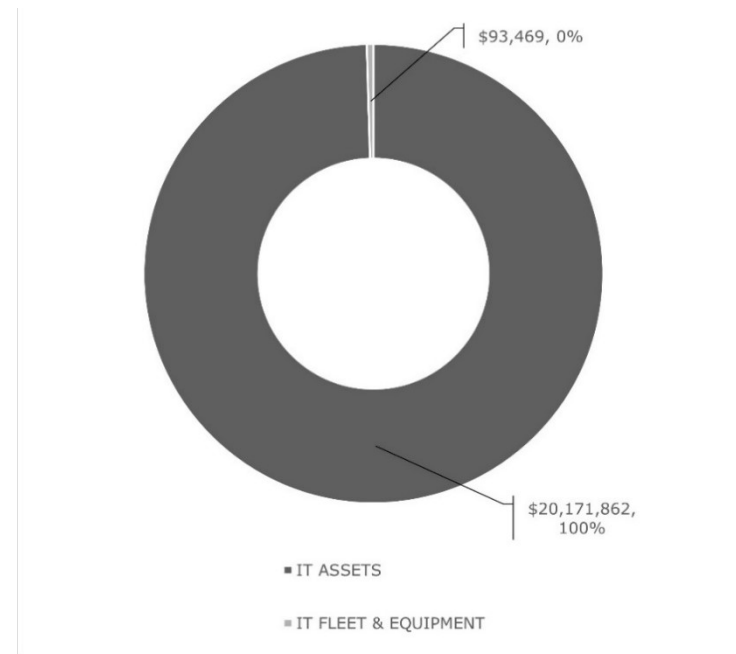
- Computers
- Computer Accessories
- Displays
- Meeting Room Technology
- Mobile Devices
- Network Devices
- Power Devices
- Printers
- Server Chassis

- Software Licenses
- Storage Devices
- Telephony Equipment

There are also a very small number of fleet assets operated by IT staff to support IT infrastructure at facilities around the City.

The current estimated total replacement value of the IT asset portfolio is \$20.3M with nearly all that value represented by IT assets (hardware and software). The remaining \$93.5K belongs to fleet assets operated by IT staff.

**Figure 166: Replacement Value of IT Assets**

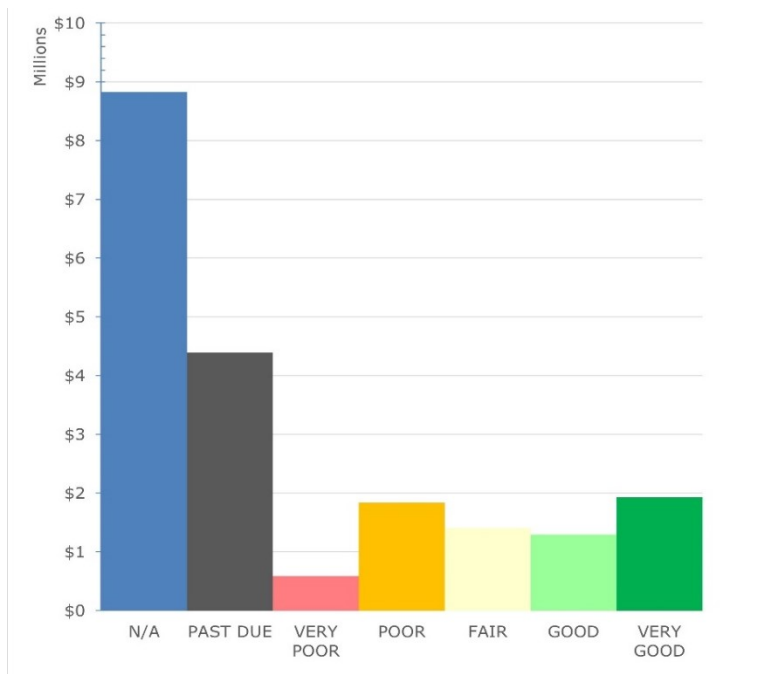


### State of the IT Assets

The value and condition of each asset was determined according to the methods described in the “Infrastructure Renewal and Lifecycle Management” section of this report.

An asset rated in past due or very poor condition does not mean that it is no longer delivering its intended service or has already failed. For example, a computer or cellular phone may continue to function normally as it nears or exceeds its expected useful lifecycle and may only be retired when it loses compatibility with a critical system.

**Figure 167: State of the IT Asset Portfolio**



Likewise, an asset in “very good” condition may not be functioning 100% perfectly and may not remain that way for long due to the low durability of technology devices. Condition ratings assigned to assets are based on best practices and standards and are a tool that enables long term needs assessment at the whole portfolio level.

### IT Technology Asset Condition

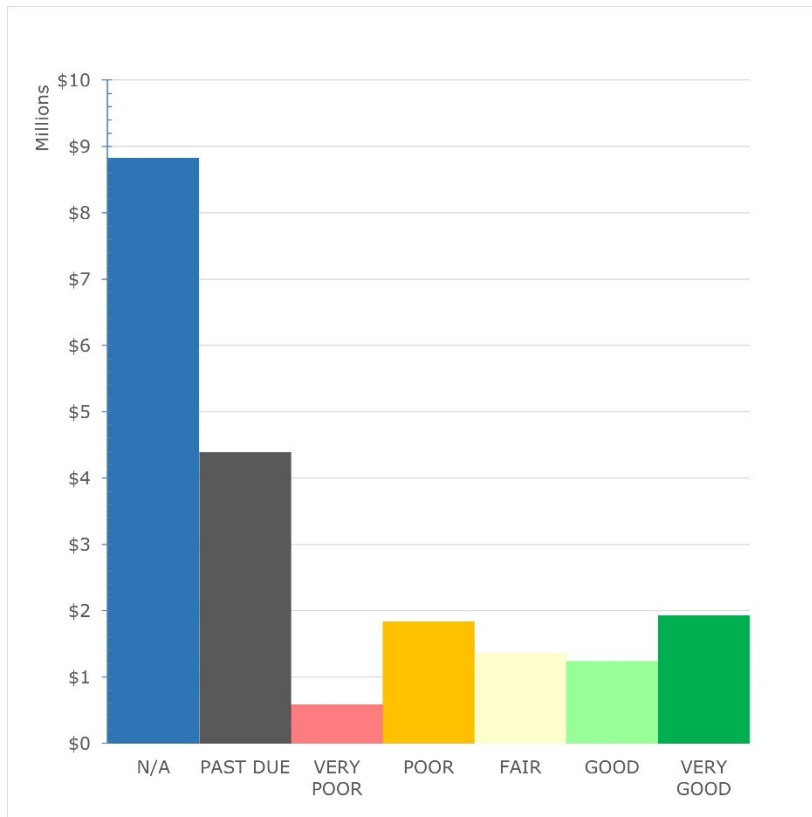
Technology assets make up almost 100% of the IT asset portfolio. Assessed conditions of these assets were not provided for this plan because an age-based approach to determining condition is the typical best practice for evaluating the condition of technology assets.

This technology asset portfolio has a combined replacement value of \$20.2M. 66% of these assets (by replacement value) are in fair or better condition, while 12% are in poor condition or worse. This distribution is common given the short expected useful lifecycle of IT assets mentioned above. Available budget and inventory may delay the replacement of assets beyond their expected useful lifecycles, but those assets may continue to function with regular maintenance. That said, aging technology assets do present a higher risk of failure and often need to be replaced immediately to ensure business continuity.

The remaining 22% of the assets are software packages that have no condition rating. Software lifecycle can be based on functionality, compatibility with other technologies or the City’s business needs. These factors make it difficult to assign them an age-

based rating, but the upfront and annual costs of software are still worth including in this plan.

**Figure 168: State of the IT Technology Asset Portfolio**



**IT Fleet Asset Condition**

Fleet assets operated by IT include two light vehicles used to support technology around the City of Guelph. As with the technology assets, the condition of these vehicles is determined based on age and expected useful lifecycle, which is typically 5 years.

Analysis of these assets shows that 58% of the portfolio (by replacement value) is in good condition while the remaining 42% are in fair condition. It is worth noting that these vehicles may see less usage than other fleet assets and could remain in service beyond their expected useful lives with regularly scheduled maintenance and rehabilitation interventions. When the vehicles are due for replacement, IT should consider EV options to reduce GHG emissions and contribute to Guelph’s Race to Zero.

**Figure 169: State of the IT Fleet Asset Portfolio**

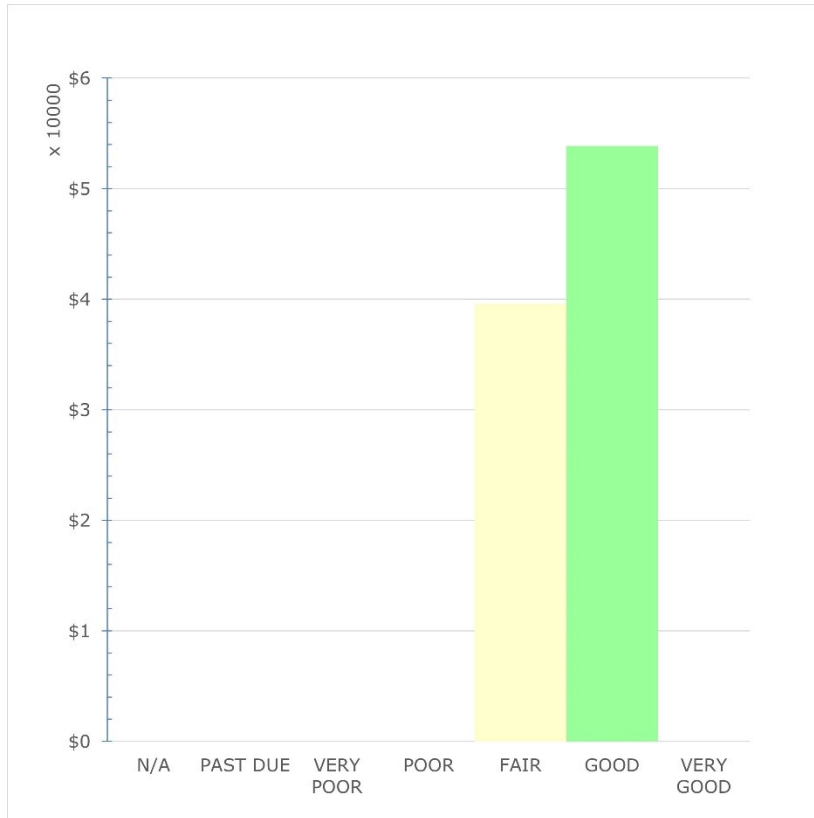


Table 104 below summarizes all the IT assets by condition and replacement cost.

**Table 104: State of the IT Assets - Summary**

	<b>IT ASSETS</b>	<b>IT FLEET &amp; EQUIPMENT</b>	<b>SUBTOTALS</b>	<b>OVERALL TOTAL</b>
<b>TOTAL CRV</b>	\$20,171,862	\$93,469		<b>\$20,265,331</b>
<b>N/A</b>	\$8,829,955	\$0	\$8,829,955	<b>43.57%</b>
<b>PAST DUE</b>	\$4,392,181	\$0	\$4,392,181	<b>21.67%</b>
<b>VERY POOR</b>	\$586,397	\$0	\$586,397	<b>2.89%</b>
<b>POOR</b>	\$1,836,360	\$0	\$1,836,360	<b>9.06%</b>
<b>FAIR</b>	\$1,363,108	\$39,611	\$1,402,719	<b>6.92%</b>
<b>GOOD</b>	\$1,238,680	\$53,858	\$1,292,538	<b>6.38%</b>
<b>VERY GOOD</b>	\$1,925,180	\$0	\$1,925,180	<b>9.50%</b>

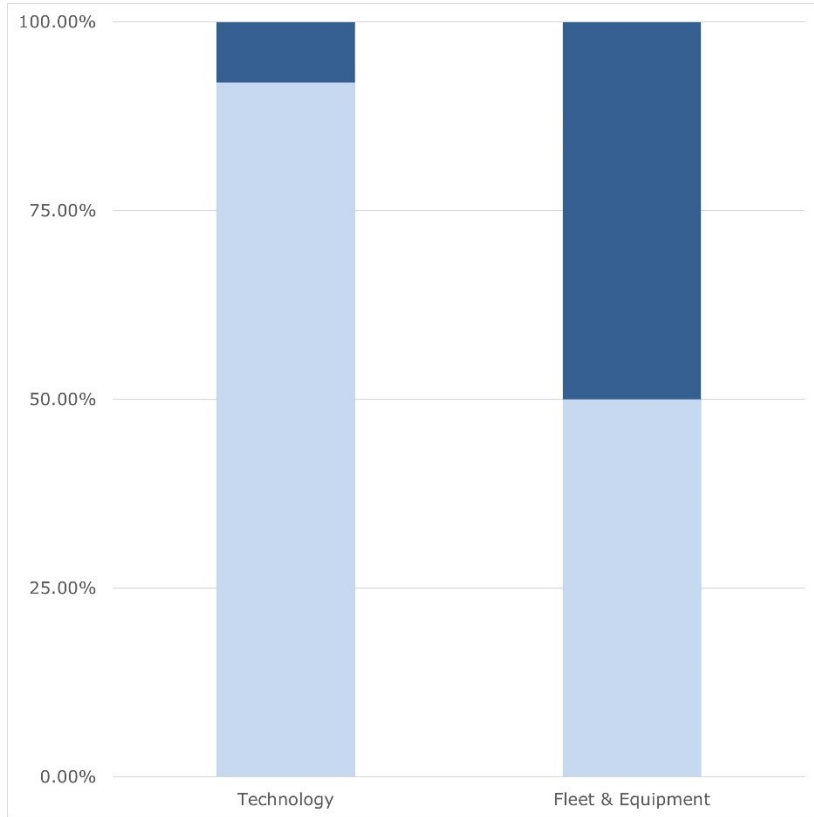
**Asset Age Profile**

All the IT asset included in this plan have short expected useful lifecycles of 15 years or less, with the average just above 5 years.

Comparing the current ages of assets to their expected normal lifecycle allows for a general understanding of what assets may require increased maintenance attention and possibly replacement in future years.

This age review for the IT assets is described below.

**Figure 170: Average Age of IT Assets as a Ratio of Normal Lifecycles**



The age ratio chart above shows that most IT technology assets have reached the end of their average expected useful lifecycles. This is in line with the age-based conditions reported in which the highest percentage of IT technology assets are past due.

Table 105 summarizes the average age of IT assets using the categories assigned by the service area. This view of the data shows that computers, meeting room

technology and mobile devices are generally newer while some telephony equipment, server chassis and power devices have remained in service beyond their average expected useful lifecycle.

**Table 105: Average Age and Expected Useful Lifecycle of IT Assets by Type**

IT Asset Type	Average Age of Assets	Average Expected Useful Lifecycle
Computer	2.96	5.02
Computer Accessory	2.70	4.00
Display	3.26	7.07
Meeting Room	3.00	6.00
Mobile Device	3.19	3.46
Network Device	4.54	6.24
Power Device	4.85	4.94
Printer	5.34	5.00
Server Chassis	8.35	5.00
Software License	5.81	5.32
Storage Device	7.15	5.00
Telephony Equipment	8.65	7.95

## Renewal Needs vs. Funding Analysis

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for IT assets were determined.

### Lifecycle Renewal Planning and Replacement Costs

Assets in the IT portfolio are valued based on historic purchase prices with replacement values inflated in subsequent years to account for inflation. These methodologies are used across all service areas to ensure consistency in the Asset Management Plan.

### Funding Availability

Capital renewal funding for IT comes from a single source, a percentage of property tax based on asset portfolio valuation. Forecast available funding values for this source was provided by staff from the City Finance Department for the years 2024-2035. These were compared to the forecast renewal needs

calculated as part of the AMP analysis with the following criteria:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are inflated by 3% per year in subsequent years to account for inflation.
- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues.
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

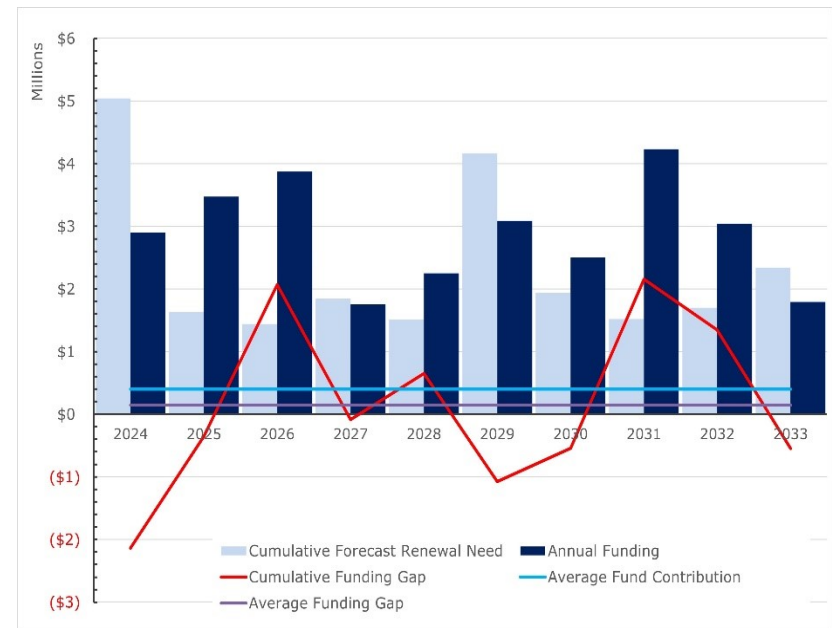
**Table 106: IT 10-Year Infrastructure Renewal Forecast Summary (in \$ millions)**

	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Forecast Renewal Costs</b>	(\$5.04)	(\$1.63)	(\$1.44)	(\$1.84)	(\$1.51)	(\$4.16)	(\$1.94)	(\$1.52)	(\$1.70)	(\$2.34)
<b>Planned Reserve Fund Contributions</b>	\$2.90	\$3.48	\$3.87	\$1.75	\$2.25	\$3.09	\$2.50	\$4.23	\$3.04	\$1.79
<b>Cumulative Gap</b>	(\$2.14)	(\$0.36)	\$2.06	(\$0.09)	\$0.65	(\$1.07)	(\$0.54)	\$2.16	\$1.35	(\$0.55)

**Table 107: Renewal Forecast Summary Information (in \$ millions)**

Average Annual Renewal Need	(\$2.31)
Average Annual Fund Contribution	\$2.89
Average Annual Gap (cumulative)	0.15
Forecast Renewals	(\$23.11)
Forecast Res. Funds	\$28.91
10-Year Funding Gap	(\$5.80)

**Figure 171: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**



Review of Table 106 and



Figure 171 above show that the proposed infrastructure renewal funding for IT will exceed the needs of the asset portfolio multiple times over the next ten (10) years. Despite this, a funding gap of approximately \$0.5M will remain after the 10-year period. This is caused by the initial renewal backlog of \$2.1M and a few years of asset needs that exceed proposed funding.

### **Operations and Maintenance Activities**

Daily operation of IT assets and services involves the use of many technologies. The annual operating budget covers items such as:

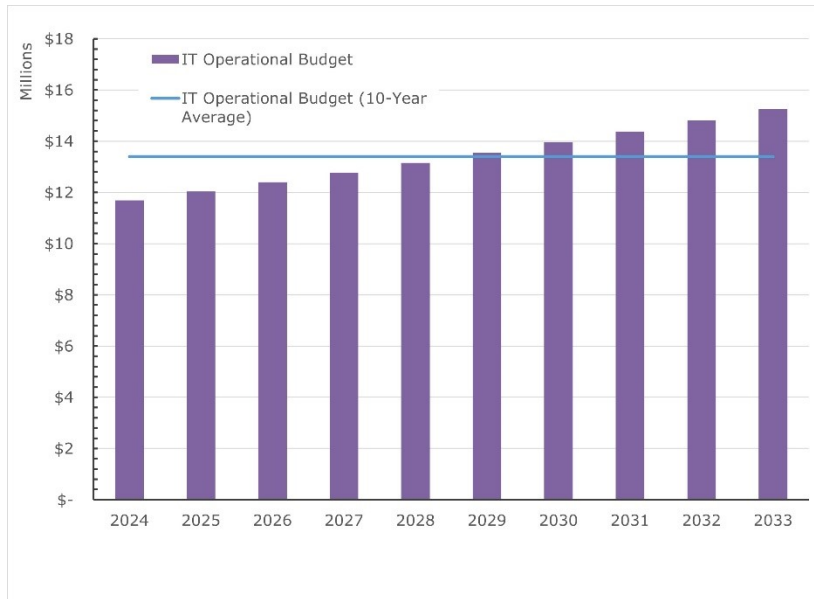
- Annual renewal costs for software packages
- Labour costs for staff involved in daily operations activities.
- Vehicle operating costs (fuel, hydro, etc.)
- Supplies and materials to support program delivery.

Also included in the annual operations and maintenance budgets are allowances for unplanned repairs or replacements to IT assets when required.

Actual operating expenses from 2023 were reviewed and inflated by 3% per year to estimate future annual operations expenses. These forecast values were compared to the 2023 Budget requested values which were also inflated by 3% per year.

Review of the operating budget projects an average annual operating need of approximately \$13.4M over the next ten (10) years.

**Figure 172: Forecast Operations Budget Need 2024-2033**

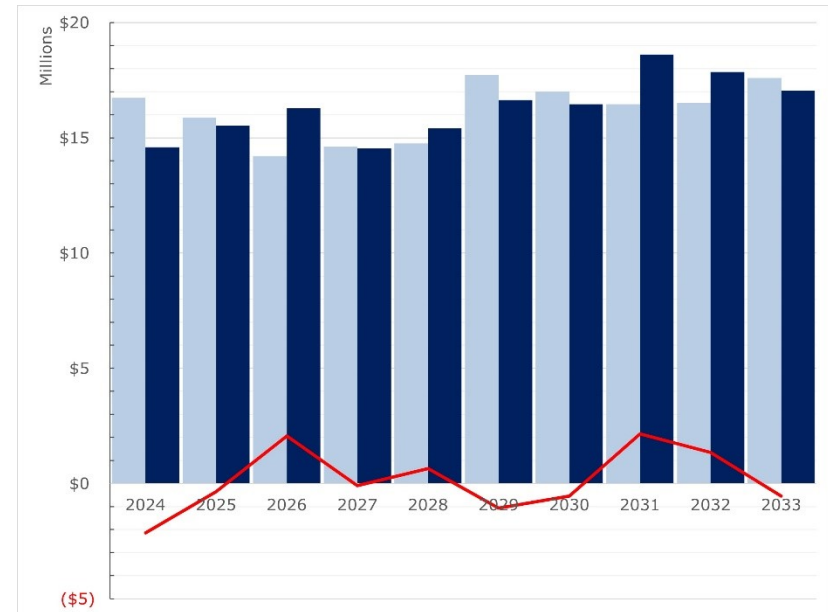


**Total Annual Forecast – Renewal and Operations**

The total forecast needs of the IT asset portfolio are determined by combining the renewal needs and forecast funding contributions. Refer to Figure 173 and Table 108 for this summary.

As this analysis is a summation of previously discussed information, the overall result is very similar. Increasing funding over the next ten (10) years is almost enough to close the funding gap for IT assets.

**Figure 173: Combined Renewal and Operations Forecast and Funding**



As mentioned above, annual software license renewals are part of the IT operating budget. These renewals currently account for more than a third of that budget, a percentage that is likely to increase as new software packages are purchased and implemented. This growth is not accounted for in the budget figures shown but may change this picture significantly in future iterations of the Asset Management Plan.

**Table 108: Combined Renewal and Operations Forecast vs. Funding (in \$ millions)**

	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>2030</b>	<b>2031</b>	<b>2032</b>	<b>2033</b>
<b>Renewal Forecast</b>	\$5.04	\$3.83	\$1.81	\$1.84	\$1.60	\$4.16	\$3.04	\$2.08	\$1.70	\$2.34
<b>Operations Forecast</b>	\$11.69	\$12.04	\$12.40	\$12.77	\$13.16	\$13.55	\$13.96	\$14.38	\$14.81	\$15.25
	<b>\$16.73</b>	<b>\$15.87</b>	<b>\$14.21</b>	<b>\$14.62</b>	<b>\$14.76</b>	<b>\$17.71</b>	<b>\$17.00</b>	<b>\$16.45</b>	<b>\$16.51</b>	<b>\$17.59</b>
<b>Capital Reserve Fund Contribution</b>	\$2.90	\$3.48	\$3.87	\$1.75	\$2.25	\$3.09	\$2.50	\$4.23	\$3.04	\$1.79
<b>Operations Budget Contribution</b>	\$11.69	\$12.04	\$12.40	\$12.77	\$13.16	\$13.55	\$13.96	\$14.38	\$14.81	\$15.25
	<b>\$14.59</b>	<b>\$15.52</b>	<b>\$16.27</b>	<b>\$14.53</b>	<b>\$15.41</b>	<b>\$16.64</b>	<b>\$16.46</b>	<b>\$18.61</b>	<b>\$17.85</b>	<b>\$17.05</b>
<b>Annual Funding Gap</b>	(\$2.14)	(\$0.36)	\$2.06	(\$0.09)	\$0.65	(\$1.07)	(\$0.54)	\$2.16	\$1.35	(\$0.55)

## **Master and Major Capital Plans**

### **City Growth**

The multi-year budget identifies several major technology initiatives in the upcoming years including upgrades and enhancements to existing systems. There's also an update included to the Digital and Technology Master Plan to present a vision and platform to detail technology initiatives to support the organization and the Future Guelph Strategic Plan 2024-2027. As the City continues to grow, the reliance on existing and emerging technologies to provide excellent service will expand as well.

## **Levels of Service**

O. Reg. 588/17 requires that as part of the 2024 AMP the City establishes levels of service (LOS) for all asset types. The AMP identifies LOS as "Customer" or "Technical" LOS in alignment with the O. Reg. 588/17. In addition to these two categories, the AMP also identifies a strategic theme from the 2024-2027 Strategic Plan for the various LOS metrics.

To develop the 2024 current LOS, the City contracted the support of a third party. An environmental scan was completed against other municipalities with similar operations asset composition. Lists of recommendations for the City were summarized from the environmental scan and then were reviewed by service areas for approval.

**Table 109: IT Levels of Service**

Strategic Theme	LOS Type	Performance Measure	Current Performance
Foundations	Customer	Number of Service Desk Tasks received (2023)	30,951 Tasks
City Building	Technical	% of IT assets past their estimated service life	21.7%
City Building	Customer	Description of asset replacement/rehabilitation planning and prioritization, defining end of life for assets.	IT uses industry best practices, acquired knowledge, and manufacturers supported product terms to set standard lifecycles for IT assets. Each year IT reviews the listing of assets that are scheduled for replacement and evaluates that list against the current budget, workplan and overall operation of the asset. IT strongly prefers to replace assets in their assigned replacement cycles, due to some of the listed circumstances they are sometimes extended.

## Risks to the IT Assets

### Climate Change Risk & Mitigation

The 2023 Climate Adaptation Plan identifies six (6) action items which involve the IT asset portfolio.

- 1) Create relocation plan for assets and stage the rollout to avoid service disruption. Create an interim plan to protect equipment from flooding at data centers.
- 2) Develop and maintain internal Information Technology asset management program.
- 3) Maintain service and maintenance contracts for critical equipment to store or obtain spares within 4 hours.
- 4) Formalize emergency plans, understand length (time) of backup power, and have redundant staff available at all hours.
- 5) Conduct trial emergency exercise planned for 2023.
- 6) Continue to liaise with surrounding municipalities for information sharing and networking.

These actions would help prepare IT assets for extreme weather events that lead to power outages or extended periods of downtime.

### Insufficient Funding (Funding Gap)

Existing capital funding for IT assets will not meet the projected needs of the portfolio over the next ten (10) years. While there are years where proposed funding exceeds the needs the portfolio, a cumulative funding gap of \$0.55M is the result. This is a significant decrease to the existing funding gap, highlighting the prioritization of IT assets and their importance to nearly ever service provided by the City. Continued emphasis should be placed on IT asset renewal funding to achieve sustainability for the portfolio.

### Summary and Recommendations

The IT asset portfolio may only represent a small portion of assets for the City of Guelph, but this does not negate its importance.

Overall, the assets are in fair condition. Although there is a backlog of \$4.4M, this is an indication of asset age and expected useful lifecycle as opposed to performance. Some of this backlog may also be addressed as assets are not replaced to suit ongoing hoteling transitions. IT has a Digital and Technology Master Plan to ensure that assets are replaced when needed and infrastructure supporting the City's operations continues to function effectively. Long-term planning for replacement of IT assets should be updated on an annual basis to ensure coordination with advancing technologies to meet the City of Guelph's needs.

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## **APPENDICES**

## Appendix A: Asset Management Terminology

**Table A 1: Asset Management Terminology and Definitions**

Term	Definition
Asset	An item, thing or entity that has potential or actual value to an organization.
Asset Management	Coordinated activity of an organization to realize value from assets.
Asset Management Plan	Documented information that specifies the activities, resources, and timescales required for an individual asset, or a grouping of assets, to achieve the organization’s asset management objectives.
Asset Management System	The people, processes, tools and other resources involved in the delivery of asset management. Management system for asset management whose function is to establish the asset management policy and asset management objectives. The asset management system is a subset of asset management.
Asset Portfolio	Assets that are within the scope of the asset management system.

Term	Definition
Asset System	Set of assets that interact or are interrelated.
Asset Type	Grouping of assets having common characteristics that distinguish those assets as a group or class.
Capability	Measure of capacity and the ability of an entity (system, person or organization) to achieve its objectives. Asset management capabilities include processes, resources, competences and technologies to enable the effective and efficient development and delivery of asset management plans and asset life activities, and their continual improvement.
Competence	Ability to apply knowledge and skills to achieve intended results.
Condition	A description of the state of an asset with regards to its appearance, quality and/or working performance. Refer to Table A 2 for a description of the condition definitions used within this AMP

Term	Definition
Continual Improvement	Recurring activity to enhance performance.
Core Asset	According to O. Reg. 588/17 the infrastructure assets that support the following five service areas are to be considered Core assets for the purpose of asset planning <ul style="list-style-type: none"> <li>• Roads</li> <li>• Bridges</li> <li>• Water Treatment</li> <li>• Wastewater Treatment</li> <li>• Stormwater Management</li> </ul>
Corporate Asset Management	The application of asset management principles at a corporate level to maximize consistency among diverse asset groups. Corporate asset management creates efficiency by harmonizing service levels and business processes wherever possible.
Corrective Action	Action to eliminate the cause of a nonconformity and to prevent recurrence.
Critical Asset	Asset having potential to significantly impact on the achievement of the organization’s objectives.

Term	Definition
Current Replacement Value (CRV)	The cost to replace the asset with a new version of that asset that provides the same function, meets the same target service levels (or in the case of a building is the same size and function) and is built according to modern standards. Usually expressed in current year dollar value.
Effectiveness	extent to which planned activities are realized and planned results achieved
Expected Useful Lifecycle (EUL)	The length of time in years that an asset is expected to be able to provide effective service or meet expected performance targets
Intangible Assets	Non-physical assets, such as leases, brands, digital assets, use rights, licenses, intellectual property rights, reputation or agreements.
Level Of Service (LOS)	Parameters, or a combination of parameters, which reflect social, political, environmental and economic outcomes that the organization or asset delivers.

Term	Definition
Lifecycle / lifecycle planning	<p>The different stages involved in the management of an asset. These include:</p> <ul style="list-style-type: none"> <li>• Needs identification</li> <li>• Planning / design</li> <li>• Acquisition / construction</li> <li>• Operating and maintaining while in use</li> <li>• Modification or upgrade (i.e. rehabilitation)</li> <li>• Disposal / demolition</li> </ul> <p>The lifecycle stages are normally expressed in the form of a continuous cycle emphasizing the need for sound planning</p>
Management System	<p>Set of interrelated or interacting elements of an organization to establish policies and objectives and processes to achieve those objectives.</p>
Net Book Value	<p>The original cost of an asset, less any accumulated depreciation, accumulated depletion, or accumulated amortization, and less any accumulated impairment. The value at which a company carries an asset on its balance sheet.</p>

Term	Definition
Objective	<p>Result to be achieved. An objective can be strategic, tactical or operational and can relate to different disciplines (such as financial, health and safety, and environmental goals) and can apply at different levels (such as strategic, organization-wide, project, product and process. In the context of asset management systems, asset management objectives are set by the organization, consistent with the organizational objectives and asset management policy, to achieve specific measurable results.</p>
Organization	<p>Person or group of people that has its own functions with responsibilities, authorities and relationships to achieve its objectives</p>
Organizational Objective	<p>Overarching objective that sets the context and direction for an organization’s activities. Organizational objectives are established through the strategic level planning activities of the organization.</p>

Term	Definition
Organizational Plan	Documented information that specifies the programmes to achieve the organizational objectives
Performance	Measurable result. Performance can relate either to quantitative or qualitative findings. Performance can relate to the management of activities, processes, products (including Services), systems or organizations. For the purposes of asset management, performance can relate to assets in their ability to fulfil requirements or objectives.
Policy	Intentions and direction of an organization as formally expressed by its top management
Predictive Action	Action to monitor the condition of an asset and predict the need for preventive action or corrective action
Preventive Action	Action to eliminate the cause of a potential nonconformity or other undesirable potential situation.
Process	Set of interrelated or interacting activities which transform inputs into outputs.

Term	Definition
Remaining Service Lifecycle (RSL)	The length of time in years that an asset is expected to be able to continue to meet expected service levels or meet expected performance targets
Requirement	Need or expectation that is stated, generally implied or obligatory.
Risk	Effect of uncertainty on objectives. Risk is often expressed in terms of a combination of the consequences of an event (including changes in circumstances) and the associated "likelihood" of occurrence.
Service Area Master Plan	A planning document specific to one service area or group of assets that highlights the current state of those assets and future capital needs or projects.
Stakeholder	Person or organization that can affect, be affected by, or perceive themselves to be affected by a decision or activity. A "stakeholder" can also be referred to as an "interested party".

Term	Definition
Strategic Asset Management Plan	Documented information that specifies how organizational objectives are to be converted into asset management objectives, the approach for developing asset management plans, and the role of the asset management system in supporting achievement of the asset management objectives.
Top Management	Person or group of people who directs and controls an organization at the highest level

Term	Definition
Whole Life Costing	<p>The practice of using forecast costs through all stages of an asset’s expected useful lifecycle when completing financial analysis (from planning / design, acquisition/construction, operating &amp; maintenance, mid-life rehabilitation, disposal/demolition.</p> <p>Whole life costing is intended to provide an understanding of all of the costs associated with an asset, before, during and after the active service life of the asset.</p>

**Appendix B: Condition Rating Definitions**

The following table details the definitions for asset condition ratings used by the City of Guelph.

While some assets are assessed by third party consultants using different criteria all results are converted to a rating from the below table. This enables equal comparison of all assets regardless of type.

**Table A 2: City of Guelph Condition Rating Definitions**

Rating	Score	Criteria
Very Good	5	The system, component or element is nearly new and fit for future use without any need for immediate attention.  Typically, this means the asset has greater than 80% of its expected useful lifecycle (EUL) remaining but it may be older
Good	4	There are no deficiencies with the system, component, or element that require immediate repairs, but the asset has been in use for some period of time and is no longer nearly new. It may require some maintenance or minor repairs in the short-term future.  Typically, an asset in GOOD condition has between 60-80% of expected useful lifecycle (EUL) remaining but it may be older or newer
Fair	3	The system, component or element remains in working condition, but may no longer be providing the intended level of service. The condition of the asset may mean increased resources for maintenance are required to ensure the item can continue to remain at the current condition level.  Typically, an asset in FAIR condition has between 40-60% of expected useful lifecycle (EUL) remaining but it may be older, or newer.
Poor	2	The system, component, or element is in working condition but requires regular repairs and maintenance to remain in working condition. Most probably it can no longer deliver the intended level of service or functional performance expected.  Typically, an asset in POOR condition means the asset has between 20-40% of its expected useful lifecycle (EUL) remaining, but it may be older or newer.

Rating	Score	Criteria
Very Poor	1	<p>The system, component or element remains functional but likely is not providing the levels of service it is designed for, or that are required and therefore major repairs, a thorough rehabilitation or even a complete replacement of the asset should be completed for the asset to be able to continue functioning or to return the asset to its intended level of service delivery.</p> <p>Typically an asset in VERY POOR condition has less than 20% of its expected useful lifecycle (EUL) remaining but it may be older or newer.</p> <p>Additionally: an asset should be identified in VERY POOR condition if there is an identified health and safety risk as a result of the condition of the asset or with the function the asset is supposed to provide. The identified risk is of a magnitude that mitigation measures should be completed immediately or sooner than a six (6) month time period.</p>
Past Due	0	<p>The system, component or element has surpassed its useful lifecycle and is no longer able to provide its intended level of service. Functional performance is greatly reduced. Replacement of the item is required to return the level of service the asset is intended to deliver.</p>
Unknown	99	<p>The system, component or element cannot be accurately assessed.</p> <p>In these situations, the Proponent must clearly indicate why the assessment was not possible and provide recommendations for the system, component or element based on professional judgement.</p> <p>Examples: electrical wiring hidden behind walls; pipes hidden behind walls etc.</p>



**Appendix C: Asset Maturity Levels**

The International Infrastructure Maintenance Manual (IIMM) is considered a baseline document for Asset Management Professionals. One of the key inclusions in the manual is definitions that help organizations define their level of asset maturity. See the table below.

**table A 3: IIMM Asset Management Maturity Levels**

Section	Aware	Basic	Core	Intermediate	Advanced
2.1 AM Policy Development	Corporate awareness of the benefits of AM.	Corporate expectation expressed in relation to development of AM Plans and AM objectives.	AM Policy and AM Objectives developed, aligned to corporate goals and strategic context.	AM System scope Is defined and documented. Strategic context (internal, external, customer environment) analysed and implications for the AM System documented in the Strategic AM Plan.	AM Policy and Strategic AM Plan fully integrated into the organisation's business processes and subject to defined audit, review and updating procedures.
2.2 Levels of Service and Performance Management	Level of service requirements generally understood but not documented or quantified.	Asset contribution to organisation's objectives and have been defined. Customer Groups defined and requirements informally understood.	Levels of service and performance measures In place covering a range some basic levels of service of service attributes. Annual reporting against performance targets. Customer Group needs analysed. Level of service and cost relationship understood.	Customers are consulted on significant service levels and options.	Customer communications plan In place. Levels of service are integral to decision making and business planning.

Section	Aware	Basic	Core	Intermediate	Advanced
2.3 Demand Forecasting	Future demand requirements generally understood but not documented or quantified. Demand forecasts based on mathematical analysis of past trends and primary demand factors.	Demand forecasts based on experienced staff predictions, with consideration of known past demand trends and likely future growth patterns	Demand Forecasts based on robust projection of a primary demand factor (e.g.: population growth) and extrapolation of historic trends. Risk associated with demand change broadly understood and documented. Demand management considered as an alternative to major project development	A range of demand scenarios Is developed (e.g.: high/ medium/ low). Demand management Is considered In all strategy and project decisions.	Risk assessment of different demand scenarios with mitigation actions identified
2.4 Asset Register Data	Asset information in combination of sources and formats. Awareness of need for asset register.	Basic physical Information recorded in a spreadsheet or similar (e.g. location, size, replacement cost and asset age/ type), but may be based on broad assumptions or not complete	Sufficient information to complete asset valuation (basic attributes, replacement cost and asset age / life) and support prioritizations of programs (criticality). Asset hierarchy, identification and attribute systems documented. Metadata held as appropriate	A reliable register of physical, financial and risk attributes recorded in an information system with data analysis and reporting functionality. Systematic and documented data collection process in place.	Information ion on work history type and cost, condition, performance, etc. recorded at asset component level. Systematic and fully optimised data collection programme with supporting metadata.
2. 5 Asset Condition	Condition and performance understood but not quantified or documented.	Adequate data and information to confirm current performance against AM Objectives	Condition and performance information is suitable to be used to plan maintenance and renewals to meet over the short term.	Future condition and performance Information is modelled to assess whether AM objectives can be met in the long term. Contextual information. such as demand, is used to estimate likely performance.	The type, quality and amount of data are optimised to the decisions being made. The underlying data collection programme is adapted to reflect the assets' lifecycle stage.

Section	Aware	Basic	Core	Intermediate	Advanced
3.1 Decision Making	AM decisions based largely on staff Judgement.	Corporate priorities incorporated nto decision making.	Formal decision-making techniques (MCA/ BCA) are applied to major projects and programmes where criteria are based on the organisations' AM objectives.	Formal decision making and prioritisation techniques are applied to all operational and capital asset programmes within each main budget category. Critical assumptions and estimates are tested for sensitivity to results.	AM objectives/targets are set based on formal decision-making techniques, supported by the estimated costs and benefits of achieving targets. The framework enables projects and programmes to be optimised across all activity areas. Formal risk-based sensitivity analysis is carried out.
3.2 Risk Management	Risk management is identified as a future improvement. Risk framework developed d.	Critical services and assets understood and considered by staff involved in maintenance/ renewal decisions.	Critical assets and high risks identified. Documented risk management strategies for critical assets and high risks.	Resilience level assessed and improvements identified. Systematic risk analysis to assist key decision making. Risk register regularly monitored and reported. Risk managed and prioritised across the organization.	Resilience strategy and programme In place including defined levels of service for resilience. Formal risk management policy in place. Risk Is quantified and risk mitigate ion options evaluated. Risk is Integrated into all aspects of decision making.
3.3 Operational Planning	Operational processes based on historical practices.	Operating procedures are available for critical operational processes. Operations organisational structure in place and roles assigned	Operating procedures are available for all operational processes. Operational support requirements are in place	Risk and opportunity planning completed. Operational objectives and intervention levels defined and implemented. Alignment with organizational objectives can be demonstrated.	Continual improvement can be demonstrated for all operational processes. Comparison with ISO 55001 requirements complete.

Section	Aware	Basic	Core	Intermediate	Advanced
3.4 Capital Works Planning	Capital investment projects are identified during annual budget process	There Is a schedule of proposed capital projects and associated costs for the next 3-5 years, based on staff judgement of future requirements.	Projects have been collated from a wide range of sources and collated into a project register. Capital projects for the next three years are fully scoped and estimated. A prioritisation framework in in place to rank the importance of capital projects.	Formal options analysis and business case development has been completed for major projects In the 3-5 year period. Major capital al projects for the next 10 - 20 years are conceptually identified and broad cost estimates are available.	Long-term capital investment programmes are developed using advanced decision-making techniques such as predictive renewal modelling.
3.5 Financial and Funding Strategies	Financial planning is largely an annual budget process, but there is intention to develop longer term forecasts.	Assets re-valued in compliance with financial reporting and accounting standards. 10-year financial forecasts are based on extrapolation of past trends and broad assumptions about the future. Expenditure categories compliant with FRS.	Asset revaluations have a 'B' grade data confidence 10-year+ financial forecasts based on current comprehensive AMPs with detailed supporting assumptions/ reliability factors.	Asset revaluations have a "B" grade data confidence 10 year+ financial forecasts based on current comprehensive AMPs with detailed supporting assumptions/ reliability factors.	Asset revaluations have an "A" grade data confidence. 10-year + financial forecasts based on comprehensive, advanced AM plans with detailed underlying assumptions and high confidence in accuracy. Advanced financial modelling provides sensitivity analysis demonstrable whole life costing and cost analysis for level of service options.
4.1 AM Teams	Leadership is supportive of AM	AM functions are carried out by small groups. Roles reflect AM requirements	Position descriptions incorporate AM roles AM coordination processes established Ownership and support of AM by leadership Awareness of AM across most of the organisation	Organisational structures support AM Roles reflect AM resourcing requirements and reflected in position descriptions for key roles. Consistent approach to AM across the organisation Internal communication plan established.	Roles reflect AM requirements and defined In all relevant position descriptions Formal documented assessment of AM capability and capacity requirements to achieve AM objectives Demonstrable alignment between AM objectives, AM systems and individual responsibilities

Section	Aware	Basic	Core	Intermediate	Advanced
4.2 AM Plans	Stated intention to develop AM Plans	AM Plans contain basic information on assets, service levels, planned works and financial forecasts (5-10 years) and future improvements.	AM objectives are defined with consideration of strategic context. Approach to risk and critical assets described, top-down condition and performance assessment, future demand forecasts, description of supporting AM processes, 10-year financial forecasts, 3-year AM improvement plan.	Analysis of asset condition and performance trends (past/future), customer engagement in setting LOS, ODM/ risk techniques applied to major programmes. Strategic context analysed with risks, issues and responses described.	Evidence of programmes driven by comprehensive ODM techniques, risk management programmes and level of service/cost trade-off analysis. Improvement programmes largely complete with focus on ongoing maintenance of current practice.
4.2 Management Systems	Awareness of need to formalise systems and processes.	Simple process documentation in place for service-critical AM activities.	Basic Quality Management system in place that covers all organisational activities. Critical AM processes are documented, monitored and subject to review. AM System meets the requirements of ISO 55001.	Process documentation implemented in accordance with the AM System to appropriate level of detail. Internal management systems are aligned.	ISO certification to multiple standards for large asset intensive organisations, including ISO 55001. Strong integration of all management systems within the organisation.
4.3 Information Systems	Intention to develop an electronic asset register / AMIS.	Asset register can record core asset attributes - size, material, etc. Asset information reports can be manually generated for AM Plan input.	Asset register enables hierarchical reporting (at component to facility level). Customer request tracking and planned maintenance functionality enabled. System enables manual reports to be generated for valuation and renewal forecasting.	Spatial relationship capability. More automated analysis reporting on a wider range of information.	Financial, asset and customer service systems are integrated and all advanced AM functions are enabled. Asset optimization analysis can be completed

Section	Aware	Basic	Core	Intermediate	Advanced
4.4 Service Delivery Mechanisms	AM roles generally understood.	Service delivery roles clearly allocated (internal and external) generally following historic approaches.	Core functions defined Procurement strategy / policy in place. Internal service level agreements in place with the primary internal service providers and contract for the primary external service providers.	Risks, benefits, and costs of various outsourcing options considered and determined. Competitive tendering practices applied with integrity and accountability.	All potential service delivery mechanisms reviewed, and formal analysis carried out to identify best delivery mechanism.
4.6 Improvement Planning	Recognition of AM improvements	Improvement actions identified and allocated to appropriate staff.	Current and future AM performance assessed, and gaps used to drive the improvement actions. Improvement plans identify objectives, timeframes, deliverables, resource requirements and responsibilities	Formal monitoring and reporting on the improvement programme to Executive Team. Project briefs developed for all key Improvement actions.	Improvement plans specify key performance indicators (KPIs) for monitoring AM improvement, and these are routinely reported.

**Appendix D: Overview of Fleet Assets**



Quick Facts:

### **City of Guelph Fleet Overview**

Total value of vehicles	\$222,609,510
Number of vehicles	557
Average condition of vehicles	FAIR
Total value of equipment	\$17,767,961
Number of pieces of equipment	581
Average condition of equipment	FAIR
Total value of Fleet assets	\$27,475,604



**Introduction**

Fleet and Equipment assets are managed by Corporate Fleet Services within the Operations department. Fleet and Equipment for the emergency services are maintained by their own specialized staff. With this top-down view of corporate fleet, asset maintenance and renewal can be more effectively planned. Corporate Fleet staff use a wide range of factors to determine fleet and equipment provision for the various service areas within the city. The corporate fleet provides driver training for the various vehicles owned by the City.

NOTE: For the purposes of this asset management plan and to understand the complete costs and needs of each service, the vehicles and equipment are included in the analysis for the service area that matches the vehicle type: e.g. fire trucks are included with the Fire Services chapter, ambulances are included with the Guelph-Wellington Paramedics services chapter. This appendix serves as a summary of all assets managed by the Corporate Fleet Service to conceptualize the needs for this asset category as a whole.

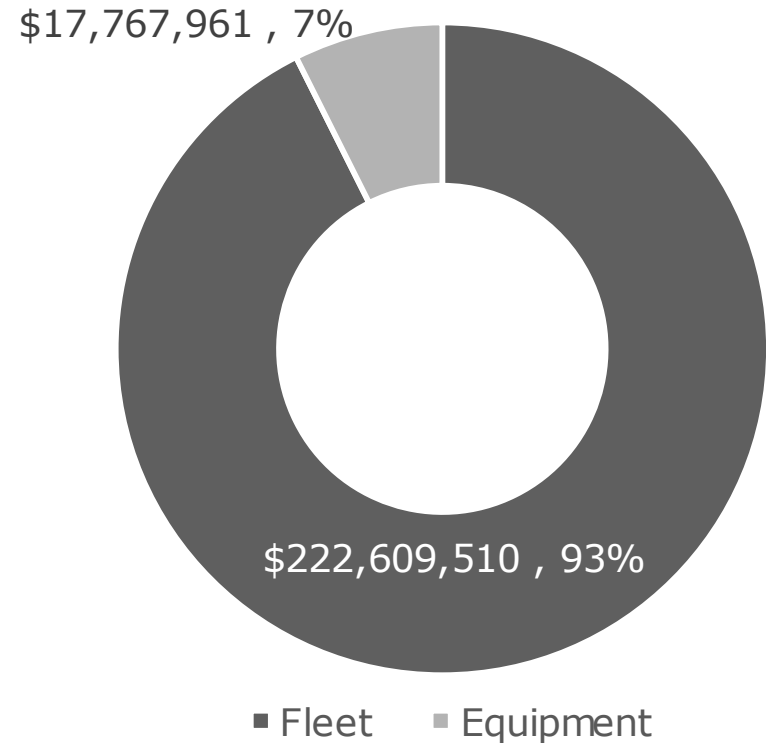
**Assets in the Corporate Fleet System**

Assets in Corporate Fleet can be broadly classified into two categories:

- Vehicles: Light and Heavy-Duty vehicles (SUVs, backhoes, busses, ambulances, etc.)
- Equipment: Large and small pieces of equipment used by service areas (Asphalt spreaders, sand and salt spreaders, snow blowers, etc.)

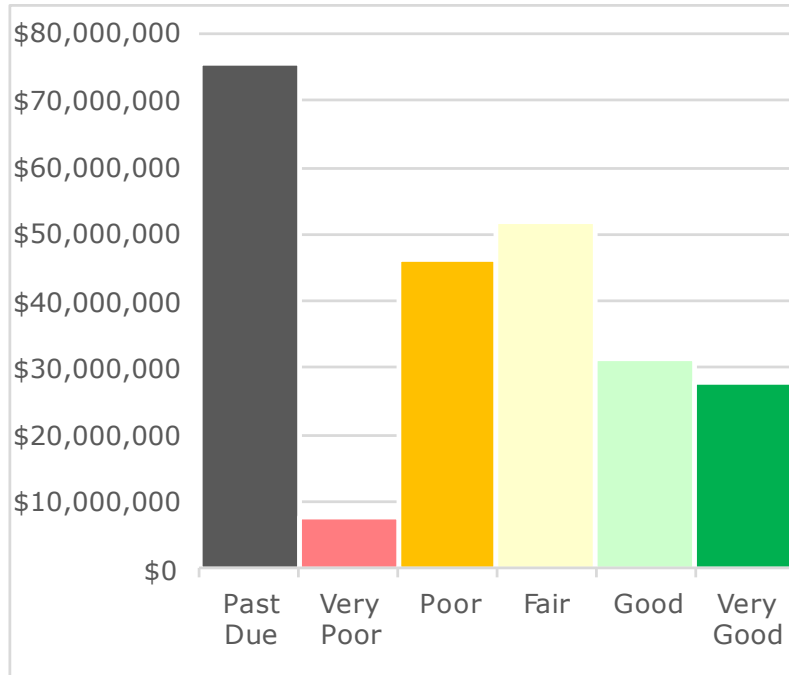
The current estimated total replacement value of the Corporate Fleet asset portfolio is \$240 million which is primarily represented by the vehicles which make up 93% of the portfolio. Equipment is estimated to be 7% of the portfolio’s replacement value.

**Figure 174: Replacement Value of the Corporate Fleet Assets by Category**



**State of the Corporate Fleet Assets**

**Figure 175: State of the Corporate Fleet Asset Portfolio**



The value and condition of the assets were determined according to the methods described in the "Infrastructure Renewal and Lifecycle Management" section of this report.

Fleet and equipment assets do not have formalized condition ratings like other asset categories. Vehicles are distributed to service areas based on many factors including the expected wear and tear with that service area. For example, By-law vehicles get higher mileage on a daily basis where other service areas may not use their vehicles as frequently. This means that older vehicles can be provided to and shared by light use service areas to extend the service life of the vehicles. Preventative maintenance activities are also capable of extending the service life of vehicles and equipment beyond the expectations. Due to the limited condition information presently available to the City, the age-based condition is not fully representative of the precise condition of fleet and vehicle assets.

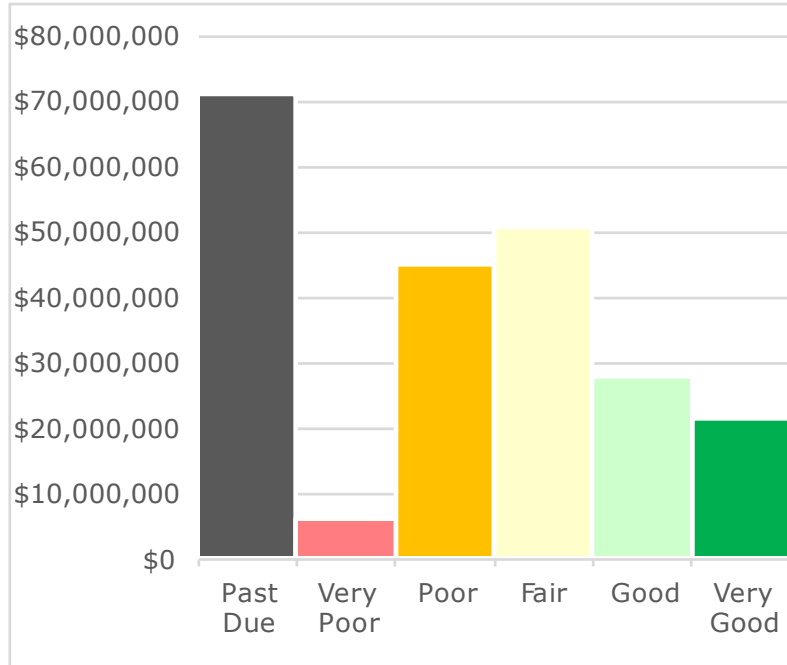
The value and condition of Corporate Fleet can be seen in Figure 175 and Table 110. Thirty-one percent of the assets are listed as "Past Due" while 46% is in "Fair" or better condition.

**Table 110: State of the Corporate Fleet and Equipment Assets**

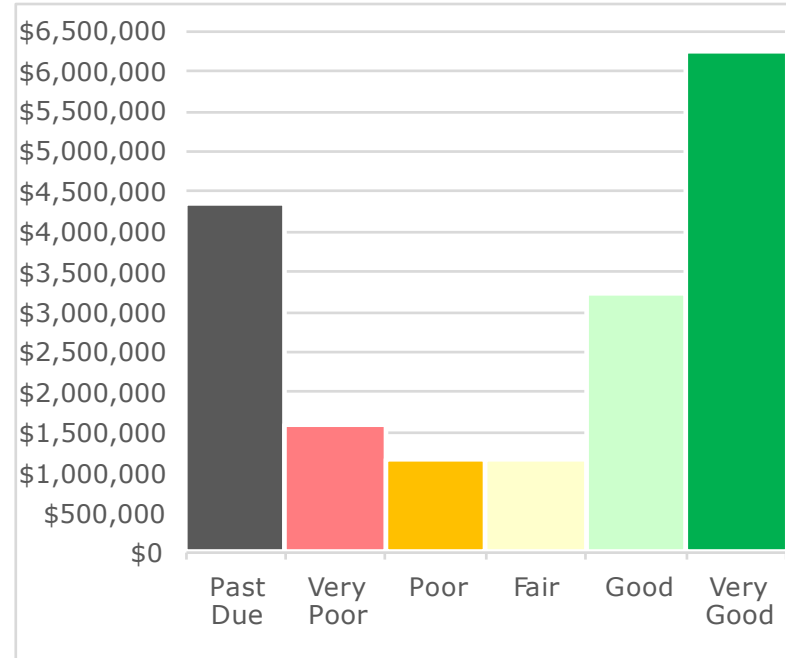
	Vehicles	Equipment	TOTALS	% of Portfolio
Condition	\$222,609,510	\$17,767,961	\$240,377,471	
N/A	\$0	\$9,792	\$9,792	0.00%
PAST DUE	\$71,288,653	\$4,356,272	\$75,644,925	31%
VERY POOR	\$6,105,964	\$1,578,572	\$7,684,536	3%
POOR	\$44,902,178	\$1,155,251	\$46,057,429	19%
FAIR	\$50,800,467	\$1,166,457	\$51,966,925	22%
GOOD	\$28,017,665	\$3,239,447	\$31,257,113	13%
VERY GOOD	\$21,494,582	\$6,262,170	\$27,756,752	12%

There are 557 vehicles identified under the Corporate Fleet inventory with 46% of assets being in “Fair” or better condition. The total current replacement value of the Fleet assets is \$222.6M. The average estimated useful life of fleet assets is 7 years which is relatively short. The total current replacement value of the 581 equipment assets is \$17.7M. 60% the assets are rated as “Fair” or better through age-based condition estimates. Replacement schedules prepared by City staff for fleet and equipment have been included in the financial analysis but do not inform the age-based condition estimates for these assets.

**Figure 176: State of the Corporate Fleet - Vehicle Assets**



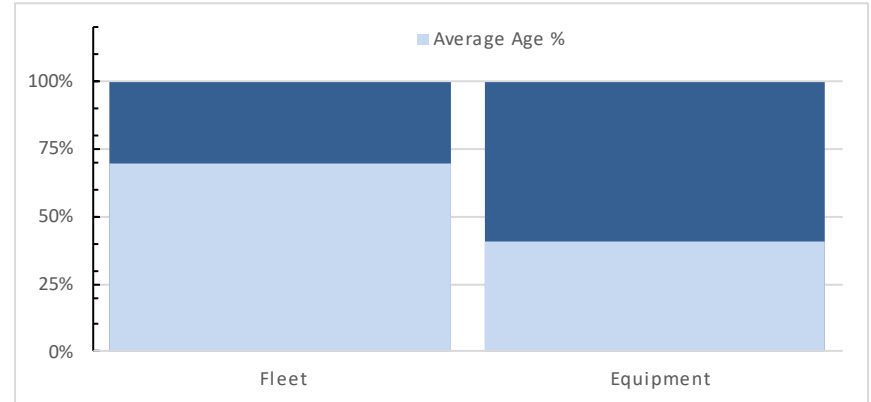
**Figure 177: State of the Corporate Fleet - Equipment**



**Asset Age Profile**

The expected useful life of vehicle assets may be as much as 15 years or as little as 5 years depending on the type of vehicle. The average expected useful life of the vehicles is 7 years. The equipment assets have an average useful life of 13 years however some may be as long as 20 years. The Age Ratio chart shows that the vehicles are 69% through their useful lives while equipment assets are only 41% through.

**Figure 178: Average Age of Corporate Fleet Assets as a Ratio of Normal Lifecycles**



### **Renewal Needs vs. Funding Analysis**

In addition to following the details in the “Forecast Needs vs. Available Funding” section of this report, the following points provide information regarding how the replacement values and forecast replacement years for Corporate Fleet assets.

#### **Lifecycle Renewal Planning and Replacement Costs**

The forecast of future renewal needs for Corporate Services Fleet assets rely on age-based useful life deterioration as well as replacement schedules prepared by City staff. When assets were not listed in replacement schedules, historical costs were inflated at 3% annually and an additional 45% contingency was added. This estimate is generally accepted in absence of a quote for a specific asset replacement. As the electrification initiative continues, replacement cost for electric equivalents will be established but are not currently represented in this analysis.

#### **Funding Availability**

Capital funding for Corporate Fleet comes from property taxes levied by the City. ICIP funding for electrification of the transit fleet is also included and forecast out to 10 years. Forecast available funding values for the infrastructure renewal fund were provided by staff from the City Finance Department for the years 2024-2035. These were compared to the forecast renewal needs calculated as part of the AMP analysis with the following criteria:

- Forecast renewal rates are calculated based on 2024 replacement cost estimates and are

inflated by 3% per year in subsequent years to account for inflation

- A 15% contingency was added to the 2024 replacement values to account for infrastructure renewal soft costs like design fees, construction mobilization and unforeseen construction issues
- In years when the planned funding is not adequate to cover all forecast needs the difference in the two values is considered deferred work and carried over to the next year. The carry over value is inflated at 3%. This carry-over is not representing any specific assets or projects, but instead representing a value of needed but deferred renewal work adding to the existing renewal backlog.

The results are summarized in the following table and charts.

**Table 111: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions (in \$ millions)**

Item	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
<b>Forecast Renewal Costs</b>	(\$72.59)	(\$12.94)	(\$7.01)	(\$21.16)	(\$20.82)	(\$78.95)	(\$4.97)	(\$9.41)	(\$17.75)	(\$22.28)
<b>Predicted Available Funding</b>	\$15.97	\$11.00	\$11.40	\$2.44	\$10.70	\$10.89	\$11.10	\$11.32	\$11.55	\$11.81
<b>Cumulative Gap</b>	(\$56.61)	(\$60.26)	(\$57.67)	(\$78.12)	(\$90.59)	(\$161.37)	(\$160.09)	(\$162.98)	(\$174.07)	(\$189.77)

**Table 112: Renewal Forecast Summary Information (in \$ millions)**

Average Annual Renewal Need	(\$26.79)
Average Annual Fund Contribution	\$10.82
Average Annual Gap (cumulative)	(\$119.15)
Forecast Renewals	(\$267.89)
Forecast Res. Funds	\$108.18
10-Year Funding Gap	(\$159.72)

**Figure 179: Forecast Infrastructure Renewal Needs Compared to Reserve Fund Contributions**

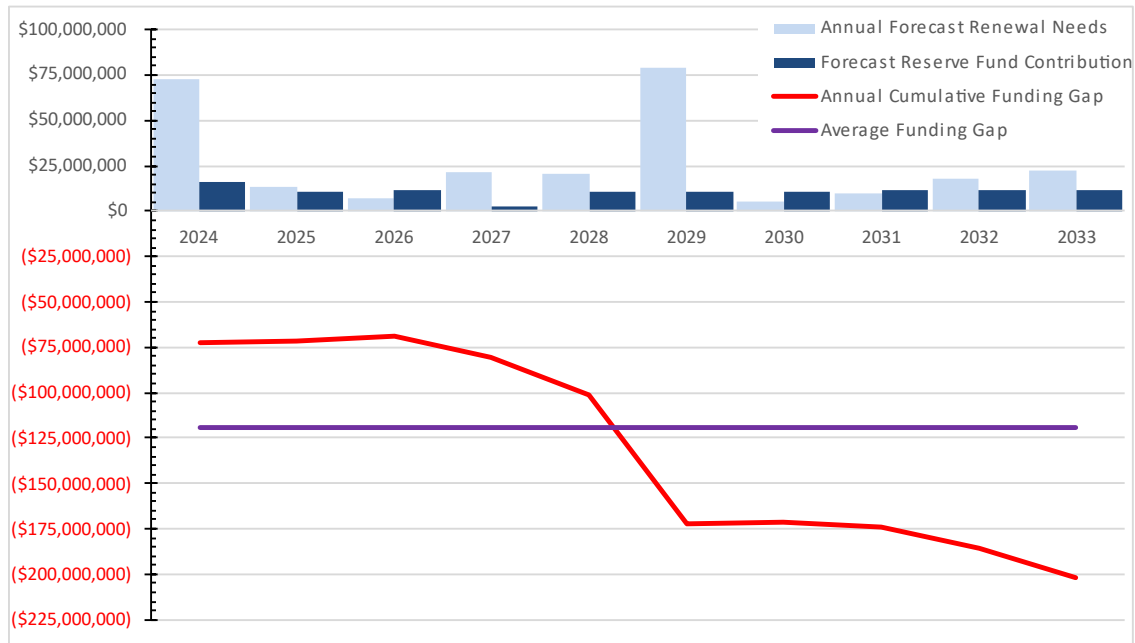


Table 111 and Figure 179 show that the available funding for Corporate Fleet assets is insufficient to close the renewal gap over the 10-year horizon. The estimated gap in 2033 is \$159.7M which will result in a substantial growth in assets in “Past Due” condition. Vehicles for Transit and the Guelph Fire Department are forecast to come due in 2029 which are also some of the most expensive vehicles in the fleet. This results in a major spike in renewals requirements for the corporate fleet. To properly address these renewal needs, an average annual spending of \$26.79M would be required.

**Master and Major Capital Plans  
City Growth**

As the City continues to grow, additional fleet vehicles will be needed to support the wider service area. For example, an additional snowplough to plow new roads within a timely manner. Electrification of the fleet is a priority for the City as it advances towards its race to zero carbon emissions. There are many factors which go into this initiative including infrastructure capacity, replacement cycles, funding availability, and technological advancements. Presently, the corporate fleet has the capacity to support light vehicle electrification. With the help of ICIP grants, Transit Busses are also beginning to be electrified. Not all



vehicle types have had time to develop into viable electric alternatives or maybe double the cost of replacing like for like. Replacement standards will

continue to change as electric alternatives become available and are resource effective to adopt.

## **Risks to the Corporate Services Fleet Assets**

### **Climate Change Risk Mitigation**

The 2023 Climate Adaptation Plan<sup>37</sup> identifies a variety of action items for the Corporate to participate in to be more ready for extreme weather events. These seven items can be summarized in the following themes:

- Work to establish redundancy in vehicle and replacement part availability
- Ensure adequate cooling and hydration is available within vehicles

The public works department is encouraged to establish a plan for if additional assistance is needed to clear a route to the Arkell Spring Grounds. This plan will likely include involvement from Corporate Fleet staff.

### **Summary and Recommendations**

In general, the Operations Services Fleet asset portfolio is in “Poor” or better condition. There is not enough funding being allocated to infrastructure renewal to replace assets as quickly as they are aging. As the fleet continues to electrify, there will be a shift in what operating and maintenance needs are required. This will likely result in a reduced operational expense however infrastructure such as charging stations will be required wherever vehicles are stored.

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<sup>37</sup> <https://guelph.ca/plans-and-strategies/climate-adaptation-plan/>

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## Appendix E: Reference Documents

1. City of Guelph "Future Guelph Strategic Plan 2024-2027"  
<https://guelph.ca/wp-content/uploads/2018-Strategic-Asset-Management-Policy.pdf>
2. City of Guelph Strategic Asset Management Policy  
<https://guelph.ca/wp-content/uploads/2018-Strategic-Asset-Management-Policy.pdf>
3. City of Guelph 2021 Core Assets Management Plan  
<https://guelph.ca/wp-content/uploads/Core-Assets-AMP-2021.pdf>
4. City of Guelph 2020 Corporate Asset Management Plan  
<https://guelph.ca/wp-content/uploads/2020-corporate-asset-management-plan.pdf>
5. City of Guelph Natural Assets, Inventory, Condition, Risk and Service Attribution  
<https://guelph.ca/wp-content/uploads/Guelph-Natural-Asset-Inventory-Consolidated-Report-Final.pdf>
6. Guelph's Growth Management Strategy  
<https://guelph.ca/plans-and-strategies/guelphs-growth-management-strategy/>
7. City of Guelph Official Plan  
<https://guelph.ca/plans-and-strategies/official-plan/>
8. Cultural Plan 2030  
<https://guelph.ca/plans-and-strategies/culture-plan/>
9. Downtown Parking Master Plan  
<https://guelph.ca/plans-and-strategies/parking-master-plan/>
10. Municipal Finance Officers' Association of Ontario Asset Management Framework  
[https://mfoa-amp.ca/AMF/AMF\\_04.html](https://mfoa-amp.ca/AMF/AMF_04.html)
11. Analysis of Bill 109 (More Homes for Everyone Act, 2022) and Bill 23 (More Homes Built Faster, 2022) - 2022-349  
<https://pub-guelph.escribemeetings.com/filestream.ashx?DocumentId=32465>
12. Water & Wastewater Servicing Master Plan  
<https://guelph.ca/plans-and-strategies/water-and-wastewater-servicing-master-plan/>
13. Water Supply Plan  
<https://guelph.ca/plans-and-strategies/water-supply-master-plan/>
14. Guelph Transit Future Ready Action Plan  
<https://guelph.ca/living/getting-around/bus/guelph-transit-future-ready-action-plan/>
15. Climate Adaptation Plan  
<https://guelph.ca/plans-and-strategies/climate-adaptation-plan/>

16. Guelph-Wellington Paramedic Service Master Plan (2018-2022)  
<https://guelph.ca/plans-and-strategies/paramedic-service-master-plan-2018-2022/>
  17. Guelph Parks and Recreation Master Plan  
<https://guelph.ca/plans-and-strategies/parks-and-recreation-master-plan/>
  18. Moving Guelph Forward – Transportation Master Plan  
<https://guelph.ca/plans-and-strategies/transportation-master-plan/>
  19. Guelph Solid Waste Management Master Plan: Give Waste a New Life  
<https://guelph.ca/plans-and-strategies/solid-waste-management-master-plan/>
  20. Guelph Stormwater Management Master Plan  
<https://guelph.ca/plans-and-strategies/stormwater-management/>
  21. ISO 55000:2014 – Asset Management – Overview, principles and terminology
  22. International Infrastructure Management Manual (IIMM)
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