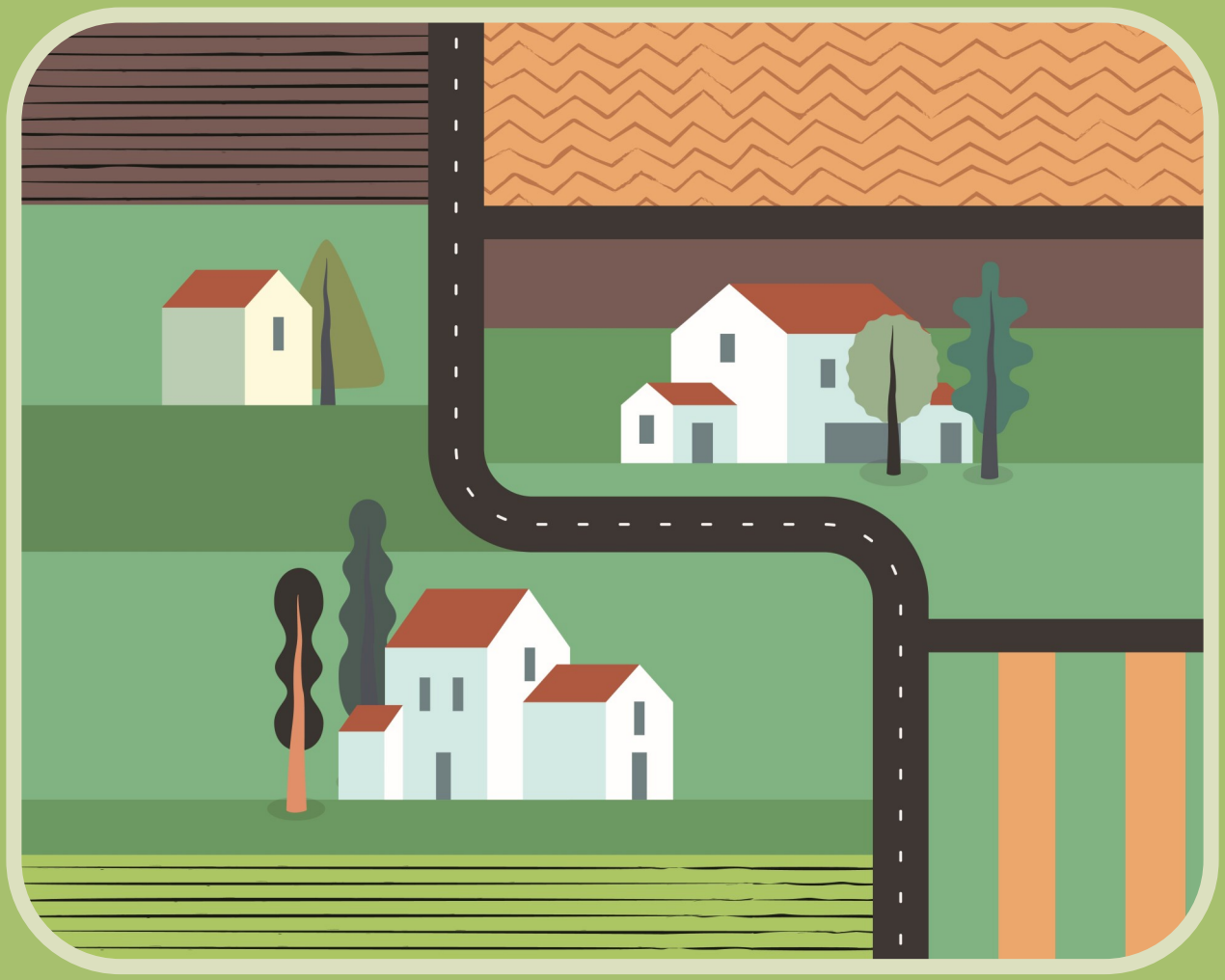
COUNTY OF WELLINGTON

Annual State of Infrastructure

2023

(Based on actuals to December 31, 2022)



2022 County Assets Summary

The data contained in this Annual State of Infrastructure Report represents the status of County assets as of December 31, 2022. The purpose of annual reporting is to ensure the asset management practices outlined in the Asset Management Plan (AMP) are being monitored and updated to ensure that the County delivers the best possible services to the community.

The asset groups contained within this annual report include the County's core infrastructure assets as reported on in the AMP, as well as select other asset groups. Any asset classes that are new inclusions in County asset reporting are noted with an asterisk (*) throughout this report. Additional details about core assets can be found within the AMP. Key details about the new asset groups are included within this report, with full details being included in the next version of the AMP (upcoming in 2024).

In compliance with O. Reg. 588/17, the County will prepare updated AMPs as required in 2024 and 2025. Subsequent to completing those requirements, the AMP will be updated every 5 years. During years where a new AMP is not published, an updated version of the Annual State of Infrastructure report will be produced to reflect changes to the County's assets in order to update financial analysis and the County's yearly Budget and Ten Year Plan.

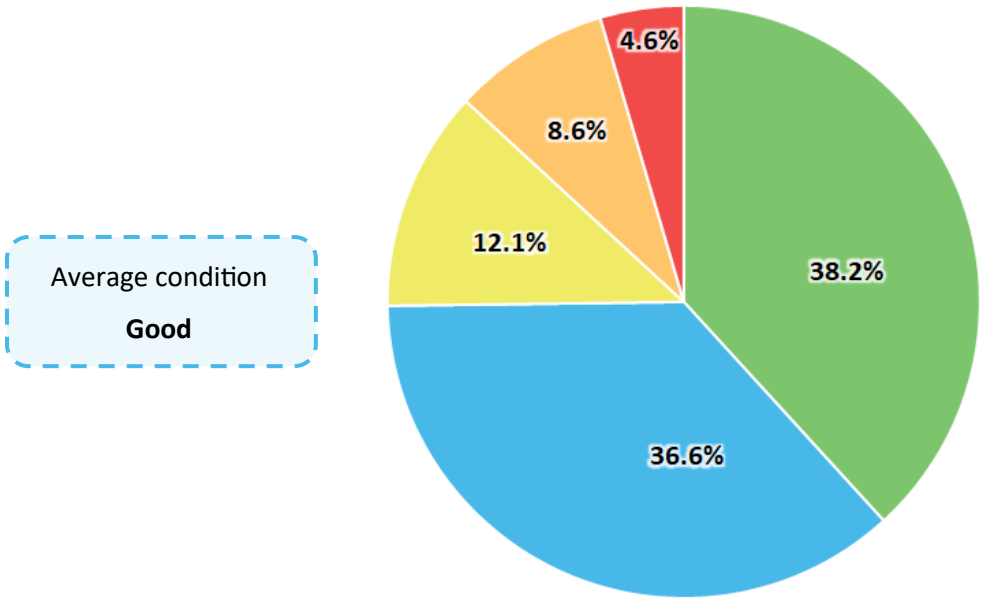
Asset Class	Inventory	Total Replacement Cost
Roads	**709** centreline-km **1,434** lane-km	$ 332,166,306
Bridges	**103**	$ 288,245,548
Culverts	**97**	$ 76,687,089
Storm Network (pipes)	**36,622** m	$ 36,622,230
Storm Network (structures)	**1,492**	$ 7,721,100
Roadside Elements	**43** Traffic Signal Sets	$ 7,403,349
Vehicles & Equipment	**184** Vehicles **143** Pieces of Equipment	$ 29,019,635
Buildings*	**37** Facilities/Structures **1,320** Social/Affordable Housing Units	$ 520,534,420
TOTAL		**$ 1,298,399,677**

2022 County Assets Summary (cont'd)

Condition

The County assesses the condition of its assets on a regular basis in order to evaluate regulatory and service level requirements, to inform short- and long-term funding decisions, and provide an overview on the current state of infrastructure. The chart and table below provide a summary of condition across all County assets (shown as percent of each asset group), and also includes the total replacement cost of assets that fall within each condition rating.

The overall condition of County assets changes from year to year due to many factors. For example, buildings are a new asset group that has been included in this report which were not previously reported on in the AMP or past Annual Infrastructure reports. Therefore the overall condition of County assets has been updated to reflect this addition. Additionally, the County's assets are regularly updated with condition assessments and with the use of predictive modelling from the County's asset management software.



	Very Good	Good	Fair	Poor	Very Poor
Roads	32.0%	17.2%	27.1%	20.3%	3.4%
Bridges & Culverts	19.0%	43.1%	23.4%	10.9%	3.5%
Stormwater Network	58.3%	18.3%	5.2%	7.7%	10.6%
Roadside Elements	41.9%	51.2%	7.0%	0.0%	0.0%
Vehicles & Equipment	61.3%	11.5%	9.3%	12.7%	5.3%
Buildings*	16.9%	78.3%	0.4%	0.0%	4.5%
ALL ASSETS	**38.2%**	**36.6%**	**12.1%**	**8.6%**	**4.6%**
REPLACEMENT COST	**$ 407,929,722**	**$ 578,045,931**	**$ 180,851,284**	**$ 101,794,096**	**$ 29,778,644**

2022 County Assets Summary (cont'd)

Risk

Risk assessments allow the County to evaluate how likely an asset is to fail and what the impact of that failure would be. The factors used to assess probability and consequence of failure vary for each asset group, as reported on in the AMP. The table below provides a summary of risk ratings across all County assets (shown as percent of each asset group), and also includes the total replacement cost of assets that fall within each risk rating.

	Very Low	Low	Moderate	High	Very High
Roads	31.8%	35.0%	18.5%	14.7%	0.0%
Bridges & Culverts	19.0%	29.0%	16.4%	29.5%	6.0%
Stormwater Network	79.3%	11.6%	4.7%	3.0%	1.4%
Roadside Elements	62.8%	30.2%	7.0%	0.0%	0.0%
Vehicles & Equipment	82.3%	14.0%	1.4%	2.0%	0.3%
Buildings*	12.7%	68.9%	12.4%	3.0%	3.0%
ALL ASSETS	**48.0%**	**31.5%**	**10.1%**	**8.7%**	**1.8%**
REPLACEMENT COST	**$ 332,594,371**	**$ 376,319,422**	**$ 362,125,057**	**$ 202,139,120**	**$ 25,221,707**

Funding Needs

These measures outline the County's funding needs and provide a guideline for departments to prioritize needs over wants. They are also used to identify any funding gaps between the capital needs and the 10-year capital budget forecast. As more data is collected, these measures will eventually inform the budget forecasts.

Total Replacement Cost for County Assets

$ 1,298,399,677

Ten-Year Average Annual Capital Needs

$ 74,144,179

= Scheduled and backlog replacement cost
+ Scheduled capital lifecycle activities cost

Note: Includes a 2% allocation (of budget costs) annually for the lifecycle events associated with the future Roads facilities. This is in addition to the ten-year average annual capital Needs identified within the Infrastructure Summary pages.

Ten-Year Average Annual Operating Needs

$ 352,948

= Scheduled operating lifecycle activities cost

Note: Currently includes traffic signals only.

2022 County Assets Summary (cont'd)

Financial Indicators

The following ratios are used to assess the ongoing financial health of the County's capital assets. The capital reserves as percentage of amortization ratio compares the existing capital reserves available in relation to the accumulated amortization which reflects the amount of depreciation on the assets. Ideally, the ratio should be 100% or greater, meaning that the amount available in reserves, at any time, is equal to the amount of depreciation on the assets. This ratio is well below 100% and can indicate a significant infrastructure gap and be a useful gauge for the potential reserve requirements. The actual reserve requirements however, should be based on sound asset management practices. The majority of the capital reserves balance is dedicated to the replacement and renewal of capital assets but may include funds being saved for new assets. The asset consumption ratio provides an estimate of the useful life remaining in the County's capital assets. It shows the value of the tangible capital assets that have been consumed and seeks to highlight the aged condition of the assets and the potential asset replacement needs. The Ministry of Municipal Affairs and Housing (MMAH) considers a ratio of 25% or less to be relatively new, 26% to 50% to be moderately new, 51% to 75% to be moderately old, and greater than 75% to be old.

Capital Reserves as a Percentage of Amortization

$$= \frac{\text{Capital reserves}}{\text{Accumulated amortization}}$$

Five-Year Average = 16.8%

	2022	2021	2020	2019	2018
Capital reserves balance	$ 72,907,882	$ 67,743,970	$ 56,652,635	$ 49,053,009	$ 49,850,878
Accumulated amortization expense	$ 391,525,521	$ 369,635,496	$ 350,173,355	$ 327,968,776	$ 309,788,245
Capital Reserves as % of Amortization	**18.6%**	**18.3%**	**16.2%**	**15.0%**	**16.1%**

Asset Consumption Ratio

$$= \frac{\text{Total accumulated amortization}}{\text{Total gross costs of assets}}$$

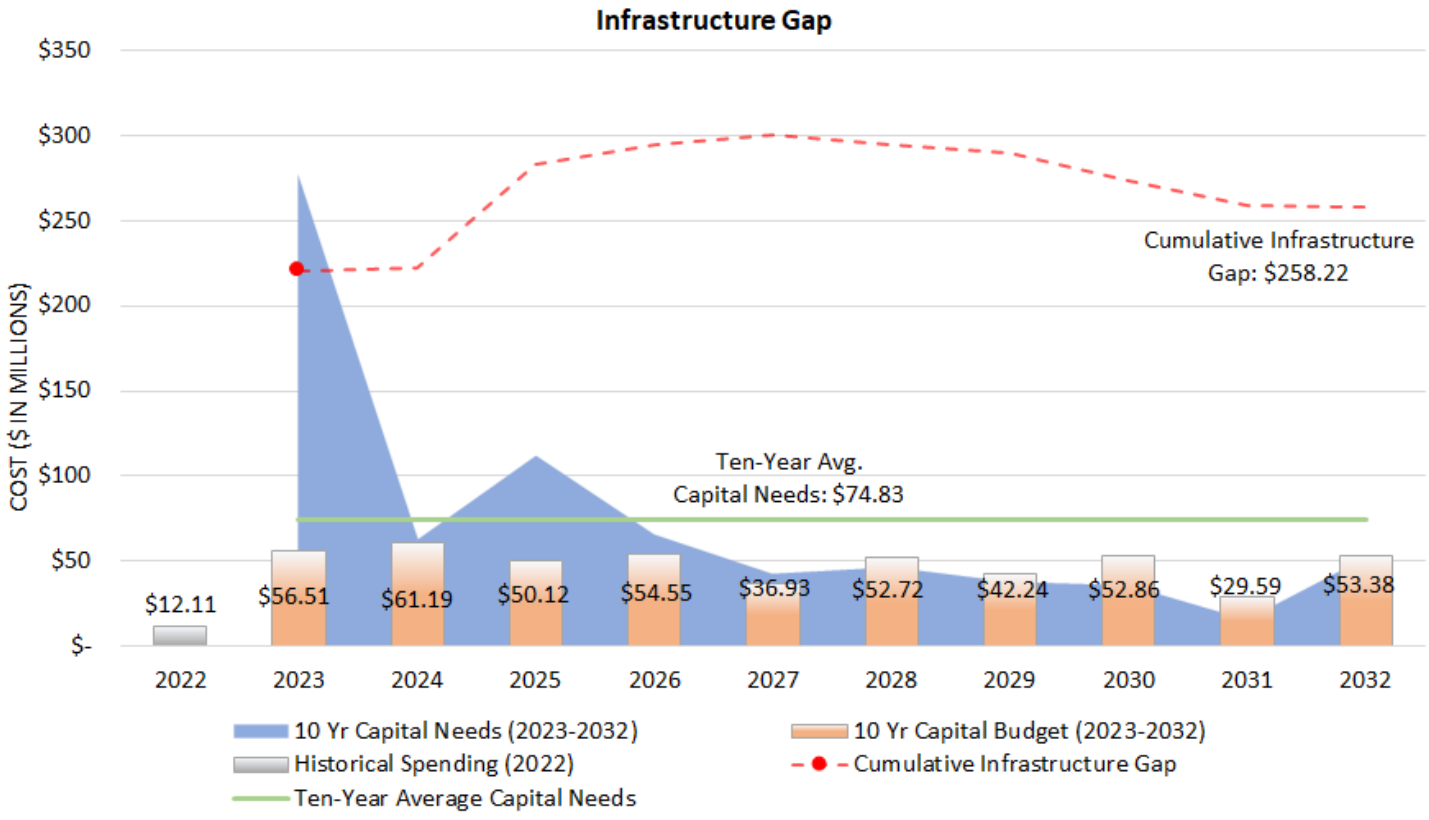
	2022	2021	2020	2019	2018
Asset Consumption Ratio	47.5%	46.5%	45.1%	44.0%	42.9%

Infrastructure Gap

The graph below measures the difference between what the County plans to invest (ten-year capital budget for 2023-2032) and what needs to be invested (ten-year capital needs for 2023-2032) in order to sustain the current levels of service and overall condition. The infrastructure gap will reach a cumulative gap of $258.22M by 2032. If the County were to invest an additional $7.5M per year, the gap would close within the same timeframe for the asset groups contained in this report.

The infrastructure gap has increased from an estimated $44.40M, as reported in the 2022 annual report, to an estimated $258.22M in 2023. This increase of approximately $214M is attributed to the following inclusions and adjustments:

- The addition of social housing and property services building structure needs
- Updated replacement value methodology and inflation adjustments
- Analysis of future facility needs and budget adjustments (roads garages, new affordable housing, County led ambulance stations, Erin library, Delhi transitional housing, and school board properties)
- A 2% provision of budget estimate for ongoing operations at newly constructed facilities
- Inclusion of roads growth projects that consist of roundabouts and intersection improvements



Continuous Improvement

While the AMP documents how a group of assets are to be managed over a period of time, the purpose of the Annual State of Infrastructure Report is to ensure those practices and procedures are being monitored and updated to ensure the County continues to deliver the best possible services to the community.

Each section in the Annual State of Infrastructure Report contains a Highlights and Comments section as well as a Data Quality indicator as follows:

2022 Highlights and Comments

This section summarizes the key changes, assumptions and improvements to data modeling and analysis from the previous year.

Data Quality Indicator

Six parameters are evaluated when rating the data quality of County assets. These parameters are consistent with the AMP and include: inventory, condition, risk, lifecycle strategy, financial sustainability strategy, and levels of service. The result provides an overall level of confidence in the available asset data.

In order to guide the continuous improvement of the Corporate Asset Management Programme, the following short and long term goals have been identified along with their status in 2022:

Short Term Improvement Goals	Status in 2022
Ensure compliance with Provincial Asset Management Regulation (O. Reg. 588/17)	✓
Define replicable methodology for calculating replacement costs for core and other assets	✓
Develop preliminary risk matrices for all asset groups	✓
Build data collection templates for all County assets to better align with CityWide AM software	✓
Define standard operating procedures for the AM software	✓
Upload and review other asset (non-core) data to ensure accuracy and completeness	✓
Incorporate operating budget costs (i.e. lifecycle costs) into the funding models for core assets	✎
Long Term Improvement Goals	**Status in 2022**
Integrate growth projections and master plans (e.g. Roadmap), the Development Charge Study and the Climate Change Mitigation Plan into the AM Plan	✓
Define levels of service for all municipal assets	✓
Improve integration of the ten-year budget forecast with the AM Plan. This may include re-aligning the budget to better reflect asset categories	✎
Continue to collaborate with Member Municipalities	✎

Legend: In progress ✎ Complete ✓

ROADS

CORE ASSETS

2022 Highlights and Comments

- To ensure accuracy, road lengths were updated based on GIS measurements.
- Replacement costs have been inflated from their 2020 unit costs of $150,000 per lane-km in to their 2022 cost of $160,683.75 per lane-km, using an inflation rate of 3.5% for each year and revised segment lengths. In addition to the inflation correction, the road's replacement value now includes road excavation expenses related to replacing stormwater infrastructure. These costs have been re-allocated from the stormwater network to the road network, resulting in a significant increase in road's replacement value and a corresponding decrease in stormwater pipes replacement value. The re-allocation has resulted in an additional $71,028.39 per lane-km, bringing the new 2022 replacement value total to $231,712.14 per lane-km. Refer to the stormwater section for more information.
- The methodology for calculating operating and maintenance costs, including winter control costs, has been revised to include amortization expenses broken out across the FIR categories in the Transportation Services Function. Last year's values have been restated in the 2022 Annual Report published on the County's website (page 8).

Inventory and Key Levels of Service

Total length of Road Network	709 centerline-km 1,434 lane-km

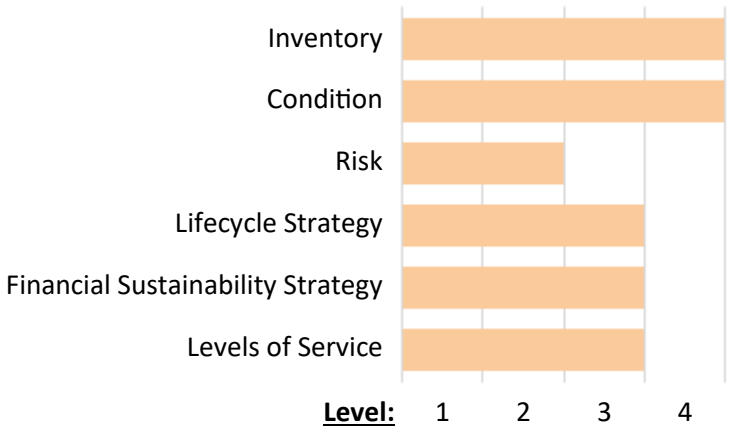
Length of Roads:

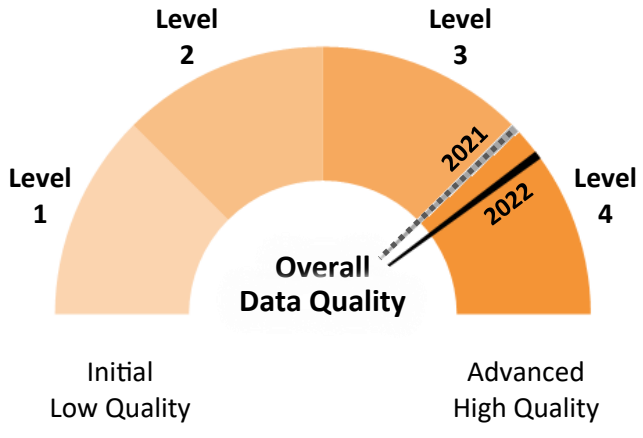
MMS Class 1 and 2	461 lane-km
MMS Class 3 and 4	957 lane-km
MMS Class 5 and 6	16 lane-km

Number of controlled intersections (roundabout or traffic signal)	48
Number of road closures and average duration	14 planned, 75 days 0 unplanned, 0 days
Estimated network replacement value	$ 332,166,306
Operating and maintenance costs per lane-km	$ 7,523
Winter control costs per lane-km	$ 1,001

Data Quality Indicator

Data Quality Parameters:





ROADS (CONT'D)

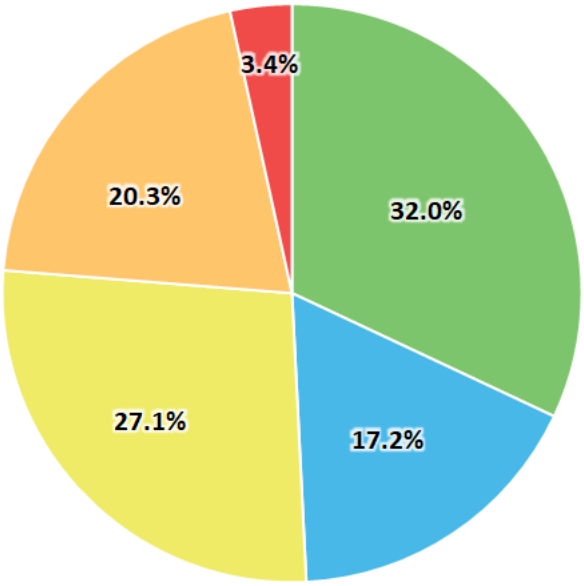
CORE ASSETS

Condition

Very Good	Good	Fair	Poor	Very Poor
227 km of Roads	122 km of Roads	192 km of Roads	144 km of Roads	24 km of Roads
$ 108,238,997	$ 57,136,507	$ 88,841,216	$ 66,638,790	$ 11,310,796

Average condition

Good



Risk

Very Low	Low	Moderate	High	Very High
136 Assets	111 Assets	53 Assets	35 Assets	0 Assets
225 km of Roads	248 km of Roads	131 km of Roads	104 km of Roads	-
$ 103,962,982	$ 118,342,342	$ 61,524,439	$ 48,336,543	-

Funding Needs

Ten-Year Average Annual Capital Needs

$ 23,246,059

Bridges & Culverts

Core Assets

2022 Highlights and Comments

- Two additional structures have been included in the inventory.
- To account for inflation, replacement cost values for 2021 were increased by 3.5%.
- In a previously published version of the 2022 Annual Report, the estimated replacement value of culverts was incorrectly stated as approx. $78.9 M when the actual value was approximately $72.9 M. This has been corrected in the currently published version on the County's website (page 10).
- The methodology for calculating operating and maintenance costs has been revised to include amortization expenses broken out across the FIR categories in the Transportation Services Function. Last year's values have been restated in the 2022 Annual Report published on the County's website (page 10).

Inventory and Key Levels of Service

Total number of bridges	**103**
Concrete bridges	88
Steel truss bridges	15

Total number of culverts	**97**
Concrete culverts	73
CSP arch culverts	24

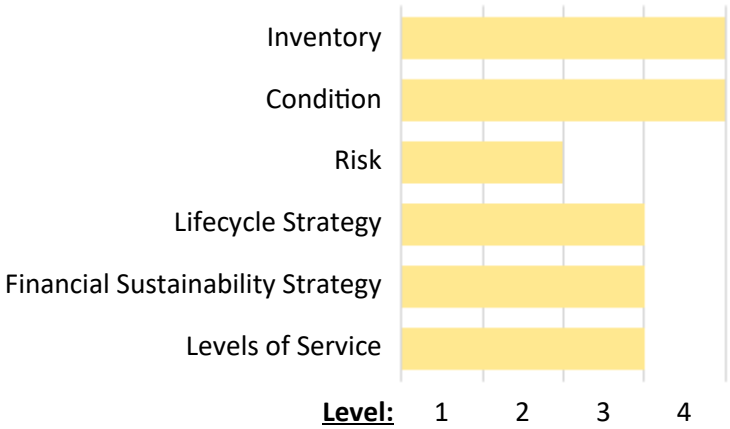
Percentage of bridges with loading or dimensional restrictions	6.8%
Condition assessment cycle	2 years
Operating and maintenance costs for bridges and culverts per m^2	$102.92

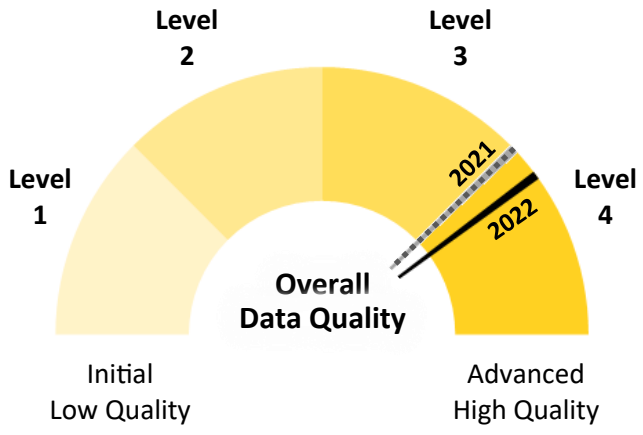
Estimated replacement value:

Bridges	$ 288,245,548
Culverts	$ 76,687,089
Network total	**$ 364,932,637**

Data Quality Indicator

Data Quality Parameters:



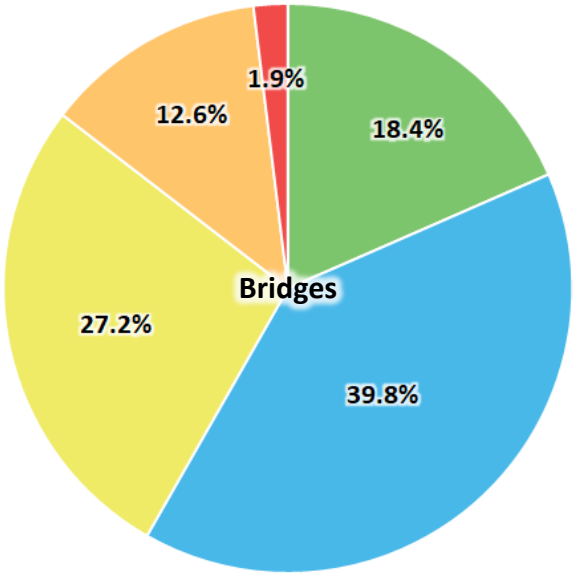


Bridges & Culverts (cont'd)

Core Assets

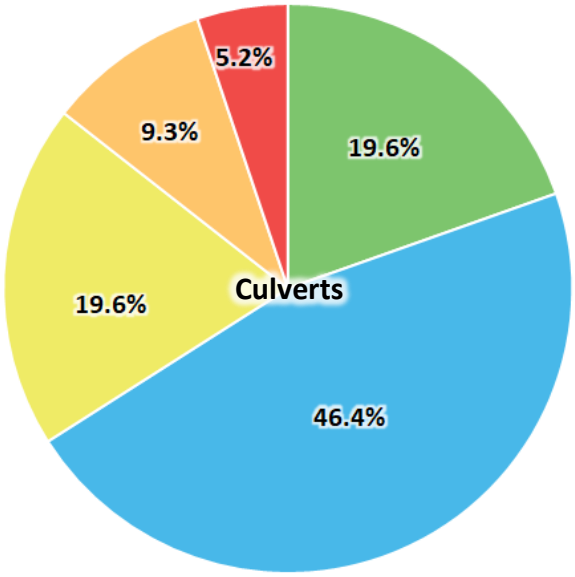
Condition

Very Good	Good	Fair	Poor	Very Poor
19 Bridges	41 Bridges	28 Bridges	13 Bridges	2 Bridges
$ 50,423,248	$ 143,357,850	$ 69,645,150	$ 22,645,800	$ 2,173,500
19 Culverts	45 Culverts	19 Culverts	9 Culverts	5 Culverts
$ 12,760,314	$ 36,794,250	$ 17,201,700	$ 6,277,275	$ 3,653,550
$ 63,183,562 Total	$ 180,152,100 Total	$ 86,846,850 Total	$ 28,923,075 Total	$ 5,827,050 Total



Average condition

Good



Risk

Very Low	Low	Moderate	High	Very High
38 Assets	58 Assets	33 Assets	59 Assets	12 Assets
18 Bridges	29 Bridges	20 Bridges	30 Bridges	6 Bridges
$ 48,467,098	$ 70,297,200	$ 64,066,500	$ 90,800,550	$ 14,614,200
20 Culverts	29 Culverts	13 Culverts	29 Culverts	6 Culverts
$ 12,812,064	$20,213,550	$ 12,637,350	$ 25,631,775	$ 5,392,350
$ 61,279,162	$ 90,510,750	$ 76,703,850	$ 116,432,325	$ 20,006,550

Funding Needs

Ten-Year Average Annual Capital Needs

$ 8,162,179

Stormwater Network

Core Assets

2022 Highlights and Comments

- General improvements were made to the stormwater network inventory. Locations were updated (added, removed, or adjusted) and condition adjusted across the network due to additional field data collection completed across the County.
- To account for inflation, stormwater structures replacement cost values for 2021 were increased by 3.5% in 2022.
- The replacement cost method for pipes has been refined in 2022. The replacement cost is now calculated using a unit cost of $1,000 per meter of pipe. The associated road excavation expenses previously associated with the storm pipes, have been re-allocated to the road network, resulting in a significant decrease in stormwater pipes replacement value and a corresponding increase in road's replacement value. These changes provide a more accurate representation of replacement costing.

Inventory and Key Levels of Service

Length of Stormwater Pipes	36,622 m
Number of Stormwater Structures	1,492
Condition assessment cycle	4 years

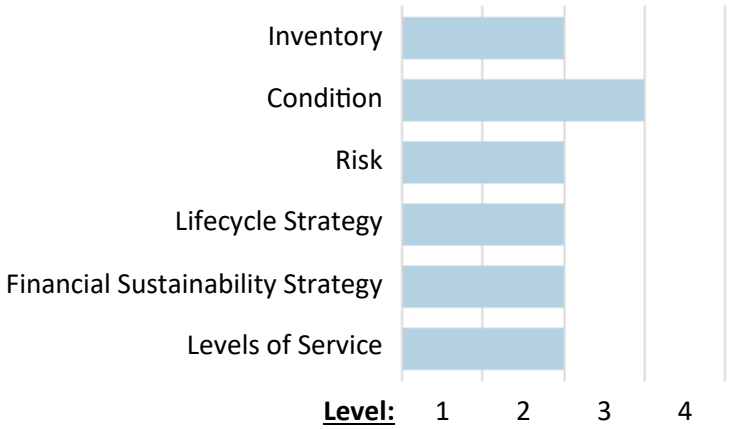
Percentage of the stormwater network that is resilient to a 100-year storm	92.0%
Percentage of the road network that is resilient to a 100-year storm	93.9%

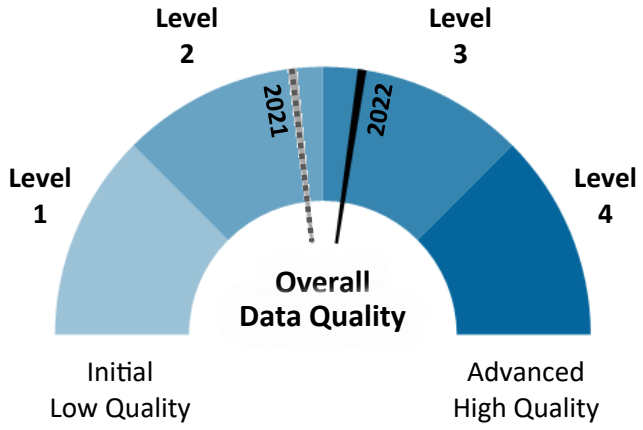
Estimated replacement value:

Stormwater pipes	$ 36,622,230
Stormwater structures	$ 7,721,100
Network total	**$ 44,343,330**

Data Quality Indicator

Data Quality Parameters:



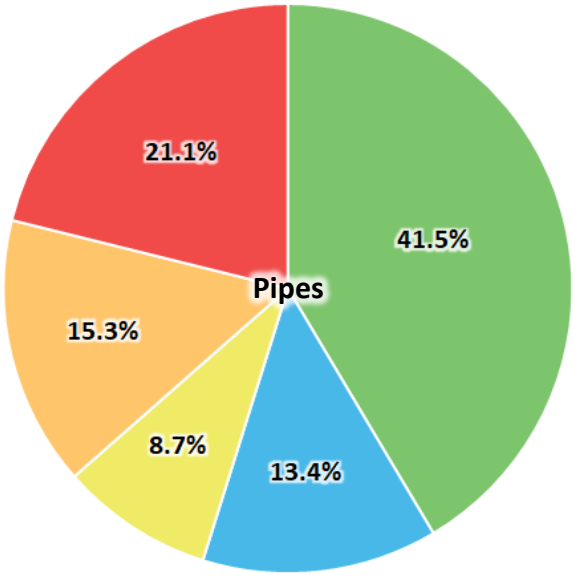


Stormwater Network (cont'd)

Core Assets

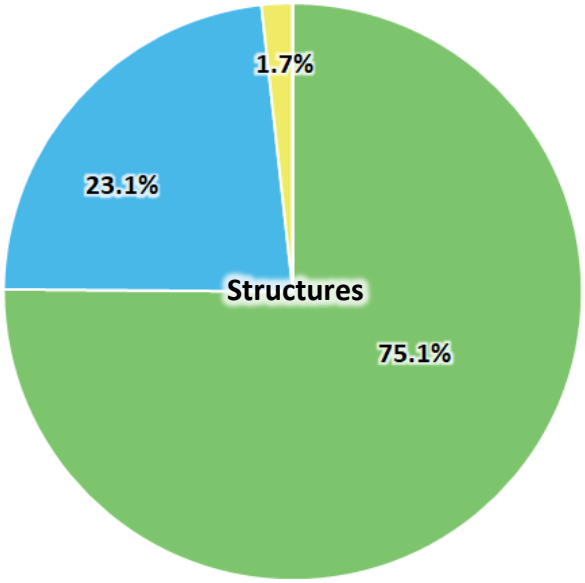
Condition

Very Good	Good	Fair	Poor	Very Poor
15,181 m of Pipes	4,900 m of Pipes	3,184 m of Pipes	5,618 m of Pipes	7,740 m of Pipes
$ 15,181,050	$ 4,900,170	$ 3,183,580	$ 5,617,830	$ 7,739,600
1,121 Structures	345 Structures	26 Structures	0 Structures	0 Structures
$ 5,801,175	$ 1,785,375	$ 134,550	-	-
$ 20,982,225 Total	$ 6,685,545 Total	$ 3,318,130 Total	$ 5,617,830 Total	$ 7,739,600 Total



Average condition

Good



Risk

Very Low	Low	Moderate	High	Very High
2,468 Assets	281 Assets	82 Assets	65 Assets	26 Assets
22,108 m of Pipes	7,867 m of Pipes	3,429 m of Pipes	2,217 m of Pipes	1,002 m of Pipes
$ 22,108,220	$ 7,866,770	$ 3,428,560	$ 2,216,710	$ 1,001,970
1,466 Structures	26 Structures	-	-	-
$ 7,586,550	$ 134,550	-	-	-
$ 29,694,770	$ 8,001,320	$ 3,428,560	$ 2,216,710	$ 1,001,970

Funding Needs

Ten-Year Average Annual Capital Needs

$ 297,147

Roadside Elements

Other Assets

2022 Highlights and Comments

- Terminology has been updated throughout this report section to clarify that each traffic signal asset represents a set of signals (2 or more) at each location.
- Inventory numbers have been updated to indicate that one previously reported asset has been transferred to the Region of Waterloo and is no longer under County ownership.
- Replacement cost methodology was refined to more accurately capture the components and costs at each individual intersection. 2022 costs were determined by inflating the historical cost of the asset using the NRBCPI (Non-Residential Building Construction Price Index).
- AADT has been included for each intersection with a traffic signal and is used as a parameter in the risk analysis.
- A formal condition scale hasn't been developed for this asset class yet. Currently the condition solely reflects the age of the asset on a 20 year lifecycle.
- Traffic signals are maintained to a high standard due to a very high consequence of failure and the need to remain compliant with regulations. At a minimum, they are maintained to keep their condition good or very good.
- Annual inspections are completed on all traffic signals and the cost to maintain each signal's components fall within the operating budget.
- In a previously published version of the 2022 Annual Report, the lifecycle of traffic signals was incorrectly stated as 20 years, when the actual lifecycle used was 35 years. This has been corrected in the currently published version on the County's website (page 14).

Inventory and Key Levels of Service

Total number of Traffic Signal Sets	**43**
Traffic signal sets at road intersections	35
Midblock (crosswalk) traffic signals	5
Temporary traffic signal sets	3

Average annual daily traffic expected to travel through traffic signals	11,982
Average percentage of daily truck traffic	5.2%

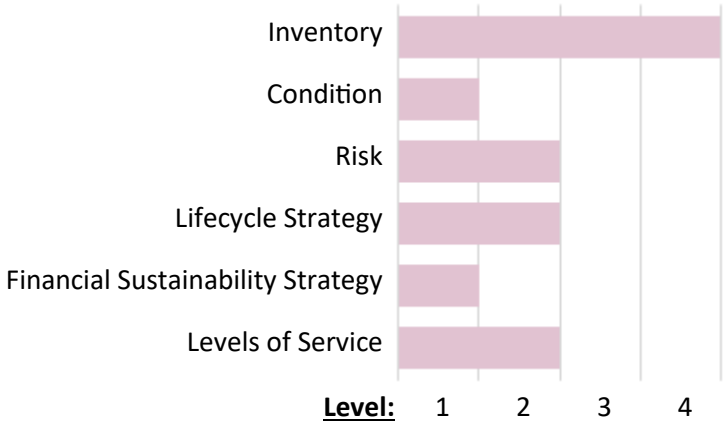
Estimated replacement value	$ 7,403,349

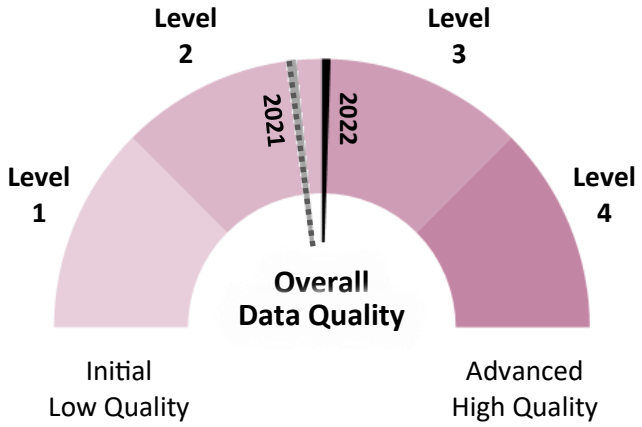
ROADSIDE ELEMENTS (CONT'D)

OTHER ASSETS

Data Quality Indicator

Data Quality Parameters:

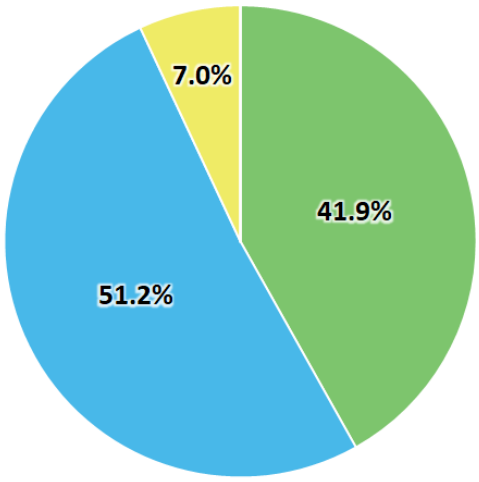




Condition

Very Good	Good	Fair	Poor	Very Poor
18 Traffic Signal Sets	22 Traffic Signal Sets	3 Traffic Signal Sets	0 Traffic Signal Sets	0 Traffic Signal Sets
$ 3,300,332	$ 3,547,339	$ 555,678	-	-

Average condition: **Very Good**



Risk

Very Low	Low	Moderate	High	Very High
27 Assets	13 Assets	3 Assets	0 Assets	0 Assets
27 Traffic Signal Sets	13 Traffic Signal Sets	3 Traffic Signal Sets	-	-
$ 4,804,932	$ 2,042,739	$ 555,678	-	-

Funding Needs

Ten-Year Average Annual Operating Needs $ 352,948

Vehicles and Equipment

Other Assets

2022 Highlights and Comments

- The method for calculating inventory was updated to better reflect inventory numbers as of December 31st each reporting year. The former method did not consider vehicles and equipment that came into service during the year, were disposed of during the year, and/or transferred to different departments throughout the year.
- Equipment pools, singular assets which represent multiple pieces of equipment, are currently included within this report. They are currently included as single assets in all inventory numbers and counts. However, these pools will be reported within their own section in the next version of the AMP to ensure a clearer description of equipment pools owned by the County.

Inventory and Key Levels of Service

Total number of Vehicles	**184**
Licensed vehicles	115
Unlicensed vehicles	69

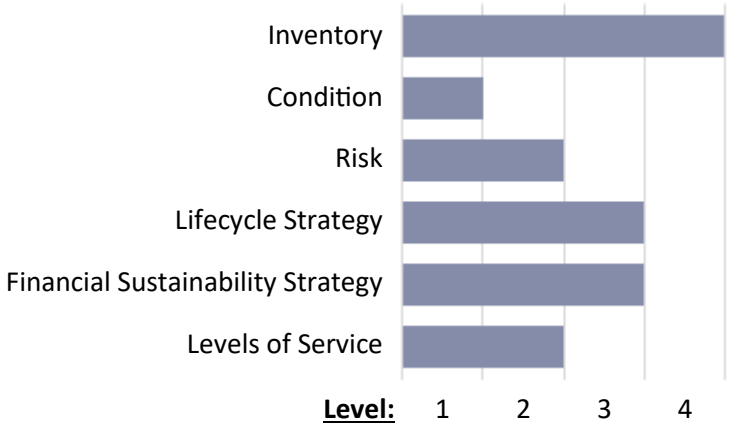
Average number of fleet maintenance WOs completed per month	119
Average number of vehicles seen by fleet mechanics per month	49

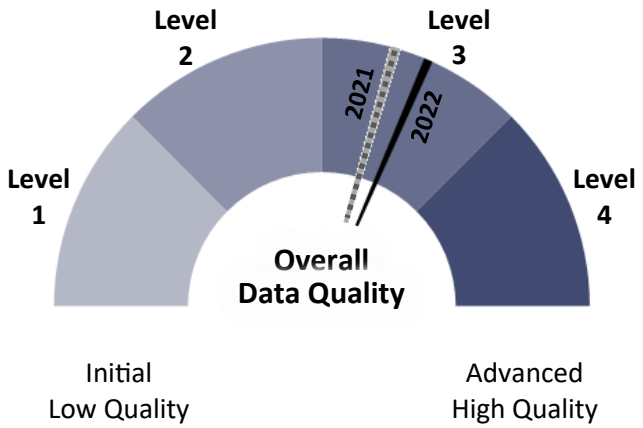
Total number of Equipment	**143**
Electronic vehicle chargers	3
Solar panels	15
Generators	9

Operating and maintenance costs per vehicle	$ 19,848
<u>Estimated replacement value:</u>	
Vehicles	$ 23,267,339
Equipment	$ 5,752,297
Network total	**$ 29,019,635**

Data Quality Indicator

<u>Data Quality Parameters:</u>

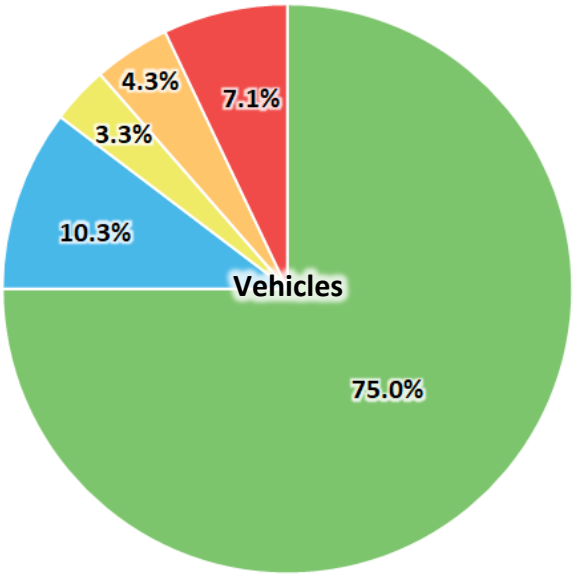




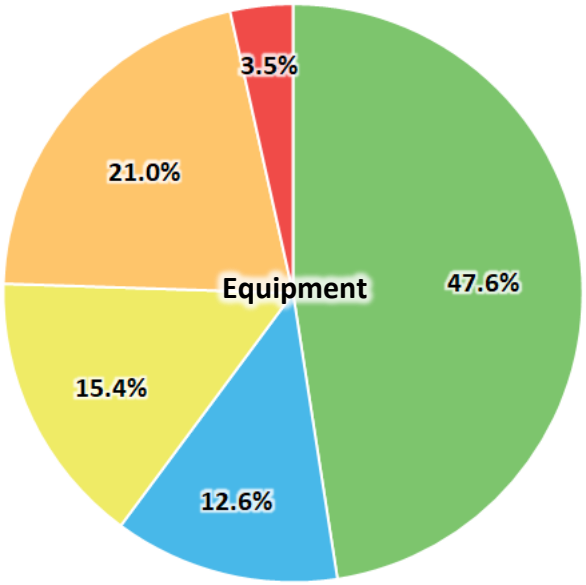
Vehicles and Equipment (cont'd)

Condition

Very Good	Good	Fair	Poor	Very Poor
138 Vehicles	19 Vehicles	6 Vehicles	8 Vehicles	13 Vehicles
$ 19,482,550	$ 2,855,752	$ 207,393	$ 344,024	$ 377,620
68 Equipment	18 Equipment	22 Equipment	30 Equipment	5 Equipment
$ 4,869,725	$ 171,600	$ 323,617	$ 270,377	$ 116,978
$ 24,352,275 Total	$ 3,027,352 Total	$ 531,010 Total	$ 614,401 Total	$ 494,598 Total



Average condition **Good**



Risk

Very Low	Low	Moderate	High	Very High
264 Assets	50 Assets	5 Assets	7 Assets	1 Asset
128 Vehicles	45 Vehicles	4 Vehicles	6 Vehicles	1 Vehicle
$ 8,184,118	$ 12,836,433	$ 567,214	$ 1,575,986	$ 103,587
136 Equipment	5 Equipment	1 Equipment	1 Equipment	-
$ 5,231,330	$ 362,211	$ 101,338	$ 57,418	-
$ 13,415,449	$ 13,198,644	$ 668,552	$ 1,633,404	$ 103,587

Funding Needs

Ten-Year Average Annual Capital Needs

$ 3,299,817

BUILDINGS*

OTHER ASSETS

2022 Highlights and Comments

- Buildings is a new asset group and was not previously included in the Asset Management Plan (AMP). This group includes the total number of County owned facilities/structures, as well as the total number of social and affordable housing units. Reporting in this section is high level, and should be considered preliminary.
- County facilities/structures refers to large buildings such as offices and garages, and smaller structures like sheds. Social and affordable housing units are the total number of dwellings within the County's social housing portfolio, such as apartment buildings, townhouse complexes, semi-detached, and detached homes.
- A formal condition scale hasn't been developed yet for this asset group. Currently the condition is using the age of the asset, or a Building Condition Assessment (BCA), when available. Certain assets have fallen into the "very poor" condition rating due to their age, this is not reflective of their actual condition. Full details on this profile group will be reported in the next version of the AMP.
- The replacement values for the County facilities/structures were based on their 2022 building insurance valuations. The replacement values for social and affordable housing units were calculated using the 2022 Construction Guide Average.
- The current building assets in CityWide are being refined to better align with industry standards and best practices. Over time and in future versions of this report and the AMP, building assets will be reviewed and updated accordingly, in order to better reflect the County's inventory.

Inventory and Key Levels of Service

Number of County Facilities/Structures	37
Number of Social and Affordable Housing Units	1,320

Number of customer request forms handled by Property Services	1,100
Percentage of projects managed by Property Services completed on/under budget	100%

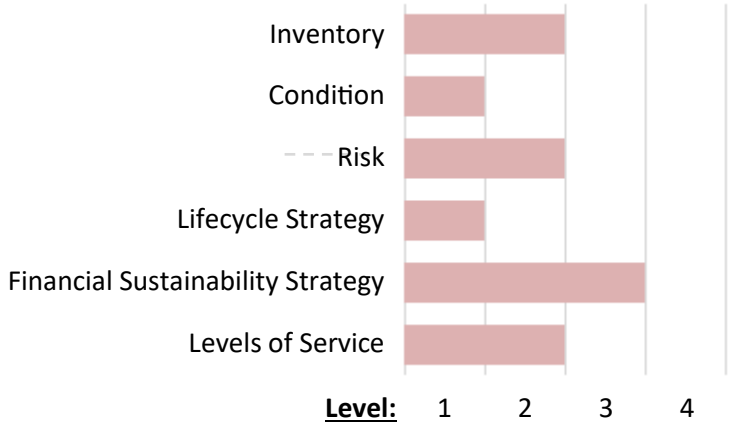
Number of Social Housing work orders per year	6,209
Percentage of Social Housing buildings inspected annually	100%

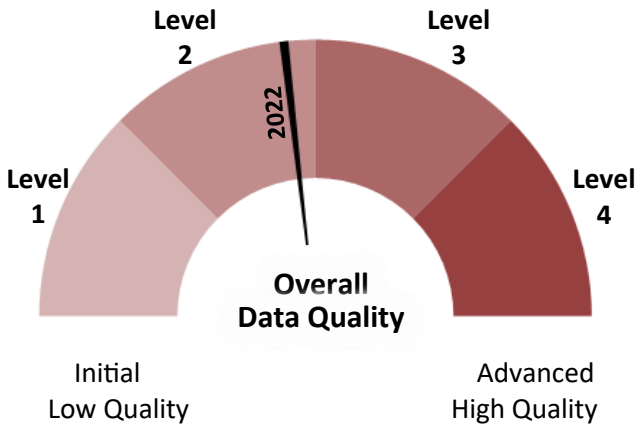
Estimated replacement value (Non-Social Housing)	$ 232,314,490
Estimated replacement value (Social Housing)	$ 288,219,930

BUILDINGS* (CONT'D)

Data Quality Indicator

Data Quality Parameters:

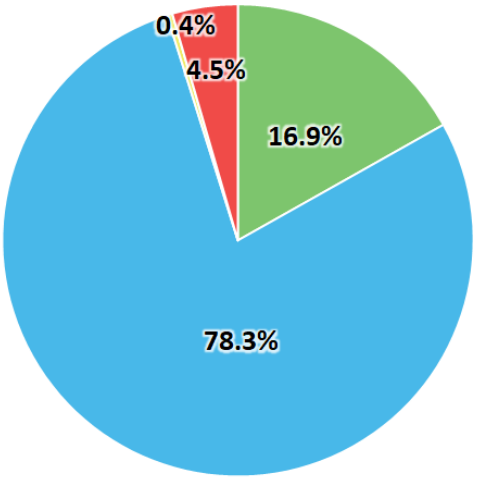




Condition

Very Good	Good	Fair	Poor	Very Poor
45 Assets	209 Assets	1 Asset	0 Assets	12 Assets
$ 187,872,331	$ 327,497,088	$ 758,400	-	$ 4,406,600

Average condition **Good**



Risk

Very Low	Low	Moderate	High	Very High
34 Assets	184 Assets	33 Assets	8 Assets	8 Assets
$ 119,437,076	$ 144,223,627	$ 219,243,978	$ 33,520,138	$ 4,109,600

Funding Needs

Ten-Year Average Annual Capital Needs $ 26,535,162