



STATE OF INFRASTRUCTURE REPORT 2025

CITY OF WHITEHORSE

TABLE OF CONTENTS

Executive Summary	1
Background	3
Use of Inventory Data.....	5
Methodology.....	7
Data Confidence Level.....	10
Transportation.....	11
Roads.....	11
Sidewalks.....	14
Paved Trails	15
Bridges	16
Fleet.....	19
Water Systems	21
Water Mains.....	21
Water Hydrants.....	24
Water – Vertical Assets	25
Sanitary Sewer Systems	27
Sanitary Sewer Mains.....	27
Sanitary Sewer Manholes	30
Sanitary – Vertical Assets	31
Stormwater Systems	33
Stormwater Mains & Non-Bridge Culverts	33
Stormwater Manholes	37
Large Diameter Culverts.....	38
Catch Basins.....	40
Stormwater – Vertical Assets	41
Facilities.....	43
B&TS	47
Parks & Park Amenities	51
Closing Remarks	57

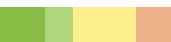
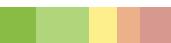
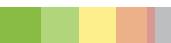
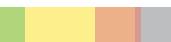


EXECUTIVE SUMMARY

The City's State of Infrastructure Report (SOIR) provides a snapshot of the condition and age of the City's infrastructure assets, **valued at \$465 million in 2023 based on the City's Annual TCA Report**, and documents a data-driven approach to delivering municipal services. These infrastructure assets are critical to effective service delivery.

As the City's Asset Management initiative matures, future SOIR editions will become more comprehensive, evaluating more City assets. An efficient Asset Management System (AMS) supports Council Strategic Priorities, with a central focus on data accuracy and inventory completeness. **The following graphic provides a summary of the overall condition of each asset type assessed in the SOIR.**

→Table 1: Summary of the overall condition of each asset type assessed in the SOIR

SERVICE AREA	ASSET TYPE	DATA CONFIDENCE	ASSESSMENT CRITERIA	OVERALL CONDITION (TOTAL NUMBER OF ASSETS)
Transportation	Roads	High	External	
	Sidewalks	High	External	
	Paved Trails	High	External	
	Bridges	High	External	
	Fleet	Medium	Age/Useful Life	
Water	Mains	Medium	Age/Useful Life	
	Hydrants	Medium	Age/Useful Life	
	Vertical Assets	Medium	External	
Sanitary Sewer	Mains	Medium	Age/Useful Life	
	Manholes	Medium	Age/Useful Life	
	Vertical Assets	Medium	External	
Stormwater	Mains	Medium	Age/Useful Life	
	Manholes	Medium	Age/Useful Life	
	Large Culverts	High	External	
	Catch Basins	High	External	
	Vertical Assets	High	External	
Facilities	Facilities	Medium	Age/Useful Life	
BTS	IT Equipment	Medium-High	Internal	
Parks	Parks	Low	No condition details for this report	-
	Playgrounds	Low-Medium	Age/Useful Life	
	Urban Trees	Low	Internal	

Data Confidence Levels**High** → Systematic condition assessment reported through defined performance metrics**Medium** → No condition assessment data is available but age useful life information is**Low** → No condition assessment data is available and age and useful life information is limited, or condition assessment data is available but is inconsistent



BACKGROUND

Collection of data to inform asset inventory has been ongoing annually in the City since 2022. This process aims to continually improve the knowledge of the asset inventory, and to eventually capture all assets owned and managed by the City. Before 2022, there had been no formalized documentation about asset condition.

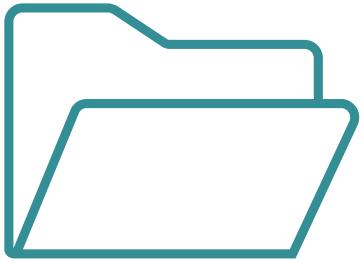
Asset inventory information provides the foundation for effective Asset Management and is the base input into decision models to substantiate infrastructure investment requirements, identifying the infrastructure areas with the greatest needs. By historically tracking the changes in the City's infrastructure inventory, the City can assess the effectiveness of capital investments and provide a rationale for business decisions. Additional attributes included in the asset inventory are the average or defined age, expected asset life, and assessment classification of all assets.

The **2025 SOIR** has built on the inaugural 2022 report and focuses on:

- **Data Confidence:** Ensuring accuracy and reliability in asset information to support decision-makers.
- **Inventory:** Effective inventory management - to know our assets, minimize costs, and ensure efficient operations.
- **Asset Classification:** To categorize assets based on their type, purpose, or characteristics, helping the City to organize, manage, and assess its assets effectively for better decision-making and planning.

The State of Infrastructure Report (SOIR) serves as a communication tool about the condition of municipal infrastructure assets. It's important to note that the SOIR represents just one element of the broader Asset Management System (AMS). This report offers detailed information on asset conditions where data is present, while also flagging assets needing further examination for up-to-date assessments and to build asset data confidence.

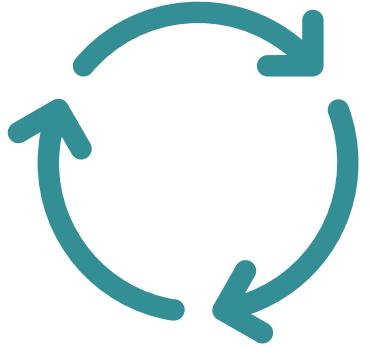




USE OF INVENTORY DATA

The City has made progress in inventorying various assets, leading to some improvement in data confidence. One of the Asset Management initiatives mentioned in the Strategy is to centralize information and to work with departments to understand how information flows within their department to other departments. As this process matures, roles and responsibilities are more well defined and as data is centralized, asset inventories will become more robust and staff's confidence in this information will increase. Another initiative out of the Strategy is to define and standardize condition assessments, for assets that are assessed, to create information that is comparable from year-to-year.





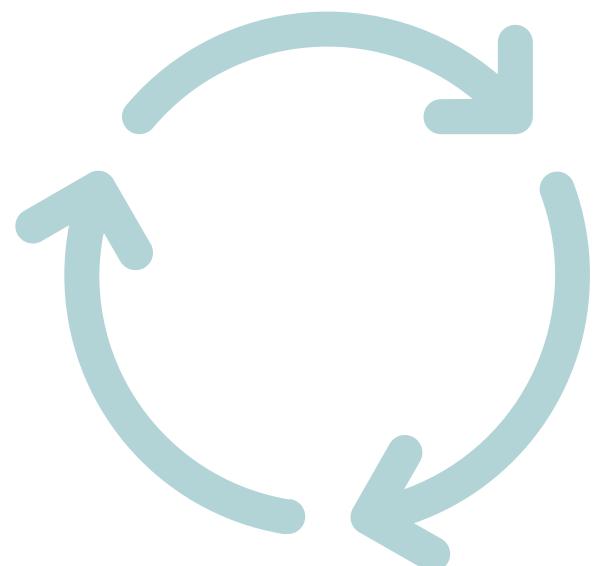
METHODOLOGY

Asset Management best practices aim to provide condition for assets where possible. This is due to condition often providing a more accurate reflection of how an asset is functioning despite its age. Condition assessments are performed on a variety of assets within the organization and condition was reported on where it was available. Alternatively, the assets age over its useful life was used as an asset's "condition state" where condition assessment information was not available. As the City matures on its Asset Management journey, condition assessments will become more formalized and more readily available. The following table describes the methodology used for each service area contained within this document.

→ Table 2: Methodology used for each service area

SERVICE AREA	ASSET TYPE	INTERNAL OR EXTERNAL ASSESSMENT	ASSESSMENT METHOD	YEAR ASSESSED	FREQUENCY OF ASSESSMENT
Transportation	Roads	External	PCI Rating from Pavement Management Report by Tetra Tech	2023	Every 3 Years
	Sidewalks	External	PCI Rating from Pavement Management Report by TetraTech	2023	Every 3 Years
	Paved Trails	External	PCI Rating from Pavement Management Report by TetraTech	2023	Every 3 Years
	Bridges	External	BCI Rating from Bridge and Large Culvert Inspections Report by Stantec	2023	Every 3 Years
	Fleet	Internal	Age/Useful Life	2024	-
Water	Mains	Internal	Age/Useful Life	2024	-
	Hydrants	Internal	Age/Useful Life	2024	-
	Vertical Assets	External	Vision Condition (1 (Excellent) - 5 (Critical) Scale) from Utility Station Audit Report by Stantec	2022	-
	Mains	Internal	Age/Useful Life	2024	-
Sanitary Sewer	Manholes	Internal	Age/Useful Life	2024	-
	Vertical Assets	External	Vision Condition (1 (Excellent) - 5 (Critical) Scale) from Utility Station Audit Report by Stantec	2022	-
	Mains	Internal	Age/Useful Life	2024	-
Stormwater	Manholes	Internal	Age/Useful Life	2024	-
	Large Culverts	External	BCI Rating from Bridge and Large Culvert Inspections Report by Stantec	2024	-
	Catch Basins	External	Vision Condition (1 (Very Good) - 5 (Very Poor) Scale) from Pavement Management Report by Tetra Tech	2024	-
	Vertical Assets	External	Vision Condition (1 (Excellent) - 5 (Critical) Scale) from Utility Station Audit Report by Stantec	2022	-
Facilities	Facilities	Internal	Age/Useful Life	2024	-

SERVICE AREA	ASSET TYPE	INTERNAL OR EXTERNAL ASSESSMENT	ASSESSMENT METHOD	YEAR ASSESSED	FREQUENCY OF ASSESSMENT
BTS	IT Equipment	Internal	Condition Score of (1(Excellent) – 5 (Poor)) made internally by staff based on Age/Useful life info/sometimes physical condition based on Hardware replacement policy.	2024	Annually
Parks	Parks	-	Will eventually show the sum of condition of all the amenities within. But no condition details for this report.	-	-
	Playgrounds	Internal	Age/Useful Life	2024	-
	Urban Trees	Internal	Vision Condition (1 & 2 (Very Good) – 9 & 10 (Very Poor) Scale)	2024	-



DATA CONFIDENCE LEVEL

The City of Whitehorse is currently working to improve the confidence level in the data for its asset types. The condition and functionality of some asset types are well documented, regularly updated, and readily accessible. However, some of the City's asset types have not been inventoried or undergone recent inspections or condition assessments. Anticipated future reports will maintain a commitment to enhancing data quality while shifting the focus toward evaluating asset inventory and performance concerning their capacity to meet demand and functional requirements. Below is a table that describes the data confidence levels that will be used throughout the report and their definitions.

→ *Table 3: Data confidence levels*

HIGH	MEDIUM	LOW
<p>Systematic condition assessment reported through defined performance metrics.</p>	<p>No condition assessment data is available but age and useful life information is.</p>	<p>No condition assessment data is available and age and useful life information is limited, or condition assessment data is available but is inconsistent.</p>





TRANSPORTATION

ROADS

The City owns and maintains approximately 272 km of roads based on information available within our GIS. Roads are broken into Local, Collector and Arterial road classes within the TetraTech report done in 2023 and these were used to determine the breakdown below. Where the TetraTech report didn't have information, road class was taken from our GIS layer.

→ *Table 4: Road class by length (km)*

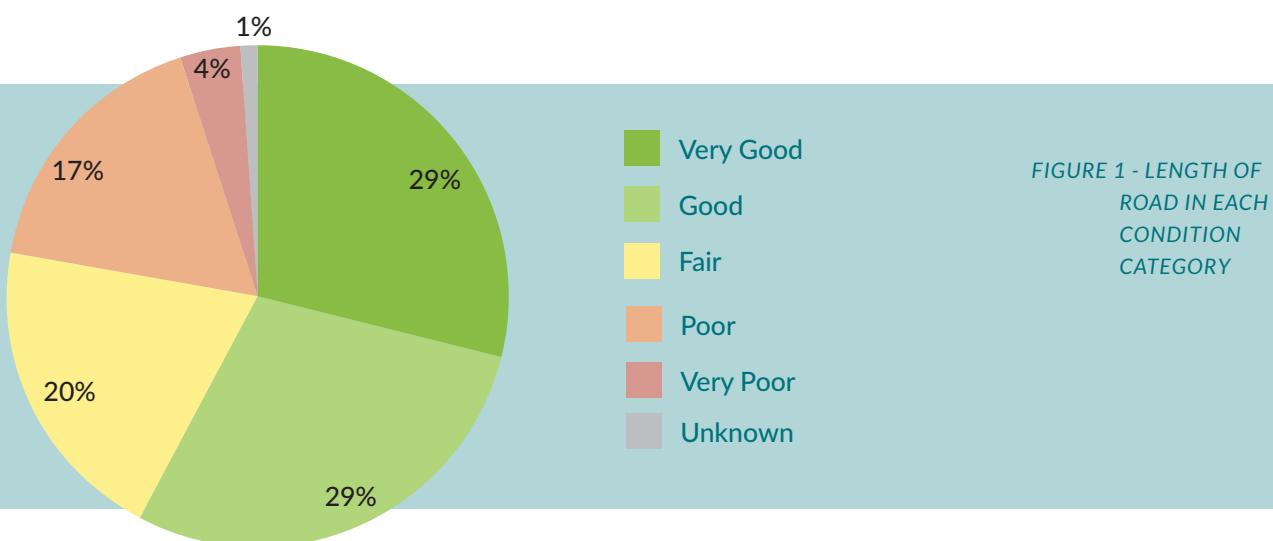
ROAD CLASS	LENGTH (KM)
Arterial	47.4
Collector	69.9
Local	154.2

The City has implemented a Road Maintenance Policy which speaks to the frequency in which the City's roads need to be inspected. Currently, it dictates that City owned roads will be assessed every 3 years. The last inspection followed industry best practices and provided a Pavement Condition Index (PCI) value, which is a number from 0-100. This was done in 2023 by TetraTech and the report included PCI values, and a 10-year maintenance and rehabilitation program for the City to follow. Below is a table in the report that describes how PCI values were divided into condition categories:

→ Table 5: PCI Value for condition category

PCI VALUE	CONDITION CATEGORY
85-100	Very Good
70-85	Good
55-70	Fair
40-55	Poor
0-40	Very Poor
no PCI	Unknown

Below is a figure that shows the length of road in each condition category based on the TetraTech results. Over half of the City's roads are currently in Good to Very Good condition, 20% are in Fair condition, 17% are in Poor condition, and 4% are currently in Very Poor condition. One percent of roads were not evaluated. This is likely due to the addition of inventory after the consultant was provided the information.



It should be noted that the assessment done in the previous State of Infrastructure Report (SOIR) which showed PCI information from 2018, was done using a different methodology, so information will not be directly compared. However, going forward future assessments will be done using the same methodology as the TetraTech report and should provide the City with a clear line of sight on how asset condition is trending based on investment and treatments applied.

The ten-year paving program outlined in Tetra Tech's report considers annual road rehabilitation budgets of \$2 million, \$4.5 million, and \$6.3 million. The results highlight that a minimum funding level of \$6.3 million per year on average is necessary to maintain the existing backlog cost over the next 20 years. With an annual budget of \$4.5 million, the City can maintain the backlog cost over the next five years. However, the current City budget of \$2 million per year would lead to a long-term increase in the backlog cost as the pavement network is forecasted to deteriorate. The City's 2025 Capital Plan allocates \$2 million for road rehabilitation for 2025, increasing to \$5.0 million in 2026 through 2028.

Furthermore, the City has launched a significant project focused on low-volume roads (46.6km). In collaboration with WSP, the City is actively engaged in gathering comprehensive inventory data on these roads and examining their current condition. Subsequently, we have received the consultant's report, providing valuable insights into the project's outcomes. These assets are currently not included in the condition information above.

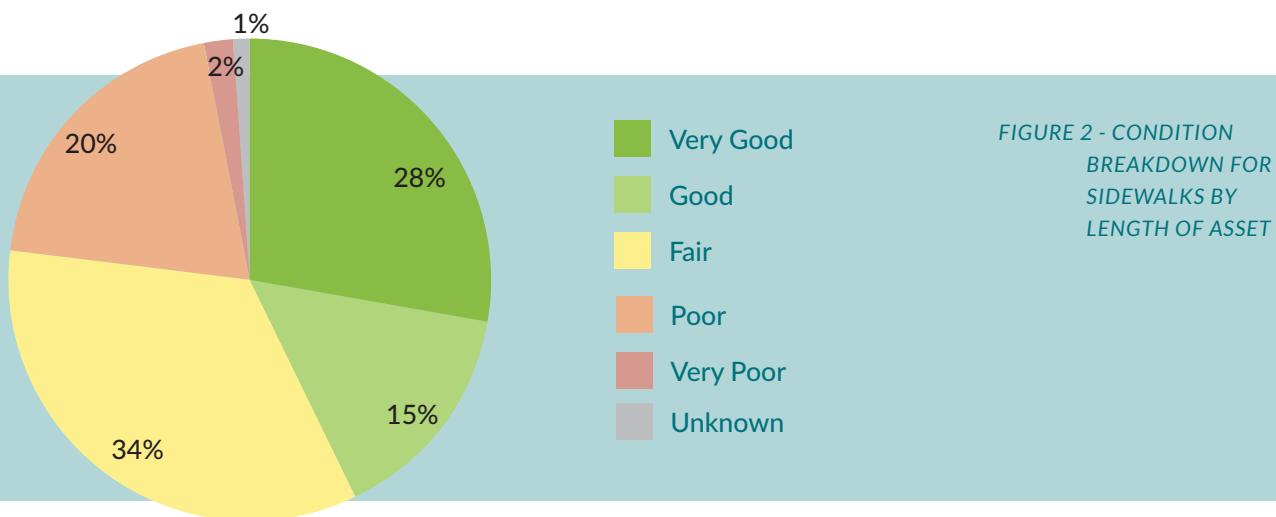
The insights and recommendations derived from these assessments will play an important role in guiding the City's next steps. With a more accurate understanding of road conditions and lifecycle requirements, the City will be better equipped to plan and execute strategies that ensure the continued safety, reliability, and functionality of its road infrastructure. These efforts reflect the City's commitment to continuous improvement in its asset management practices, contributing to the overall well-being and quality of life of its residents.

→ **Table 6: Roads data confidence**

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Roads	High	Good	Road condition assessment	Road condition assessment	Start developing elements of an Asset Management Plan

SIDEWALKS

Based on information available within the City's GIS there is approximately 128 km of Sidewalk owned and maintained by the City. The sidewalks had their condition provided through the same report as the roads in 2023 and they also use the same industry standard of PCI as their condition value. The assessment reviewed factors like smoothness, cracks, structural integrity, and surface wear and provided a score based on what was detected. Approximately 1% of sidewalk assets were not evaluated during this assessment, which could have been due to addition of inventory after the consultant had already received data. Below is a diagram that shows the condition breakdown for sidewalks by length of asset.

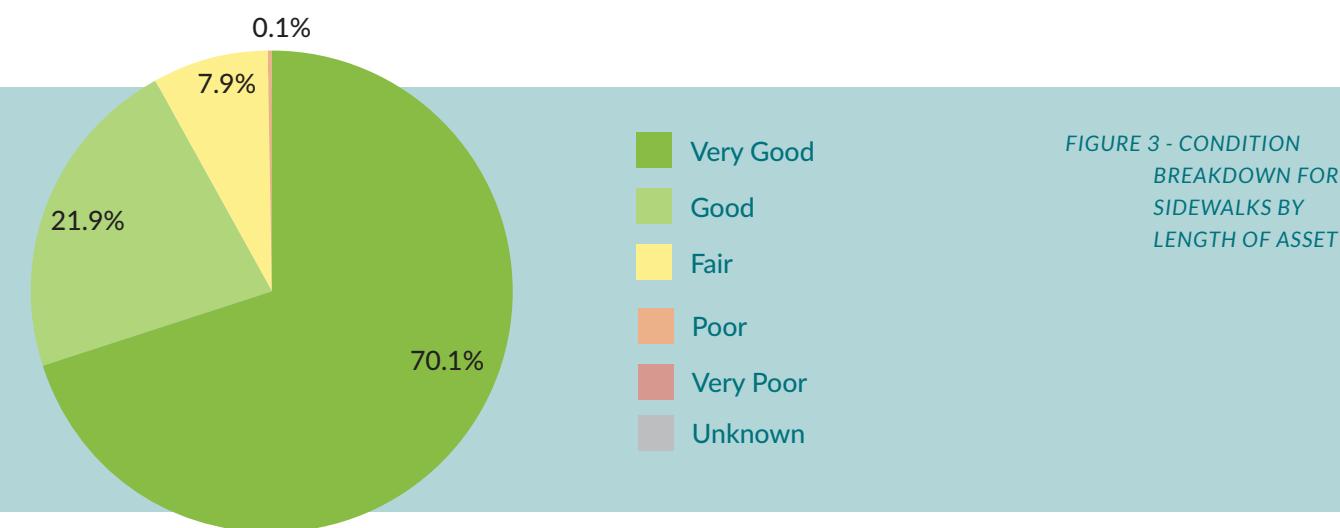


→ [Table 7: Sidewalks data confidence](#)

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Sidewalks	High	Good	Sidewalk condition assessment	Sidewalk condition assessment	Start developing elements of an Asset Management Plan

PAVED TRAILS

Based on information available within the City's GIS there are approximately 44 km of Paved Trails owned and maintained by the City. The paved trails had their condition provided through the same report as the roads in 2023 and they also use the same industry standard of PCI as their condition value. The assessment reviewed factors like smoothness, cracks, structural integrity, and surface wear and provided a score based on what was detected. Below is a diagram that shows the condition breakdown for sidewalks by length of asset.



→ [Table 8: Paved trails data confidence](#)

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Paved Trails	High	Very Good	Paved Trail condition assessment	Paved Trail condition assessment	Start developing elements of an Asset Management Plan

BRIDGES

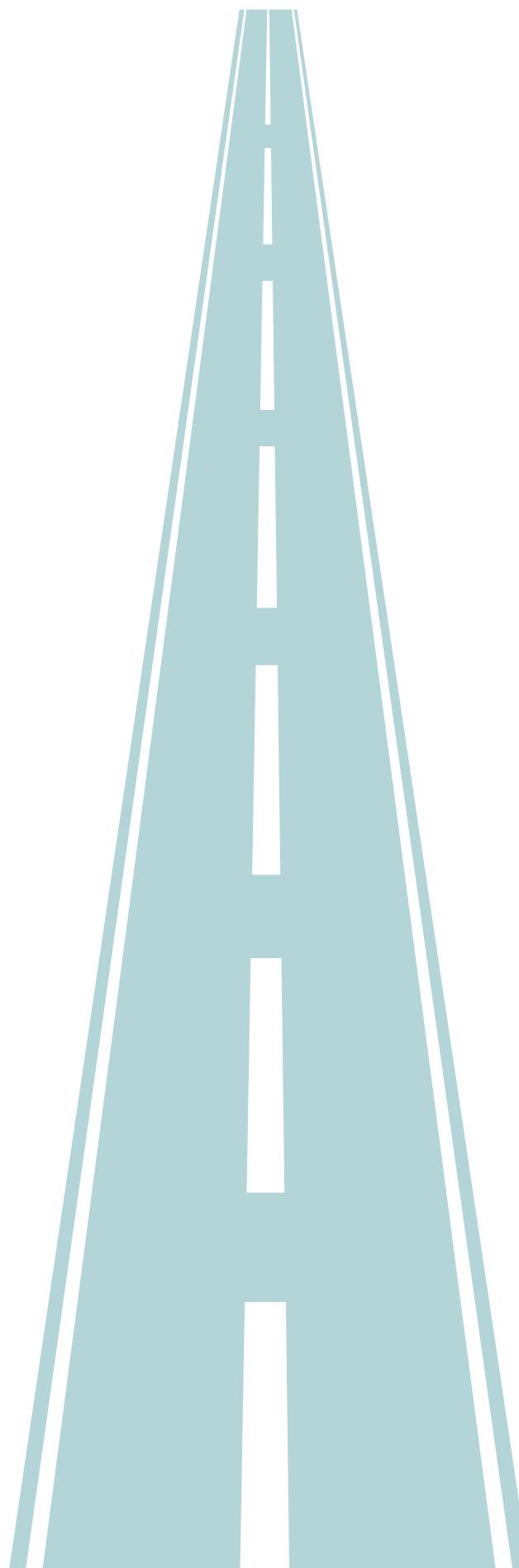
The City owns and maintains 15 bridges and 2 underpass based on information provided through the Bridge and Large Culvert Inspection Report done by Stantec in 2023. Eight of these bridges have steel as the major material type, seven have timber as the major material type and both underpasses are made up of a variety of material types. Five of the bridges, including the Hamilton Blvd underpass, are road type structures that allow traffic to pass over/under, while the remainder are pedestrian structures. Below is a table that summarizes some of the bridge attribute information.

→ *Table 9: Bridge attribute information*

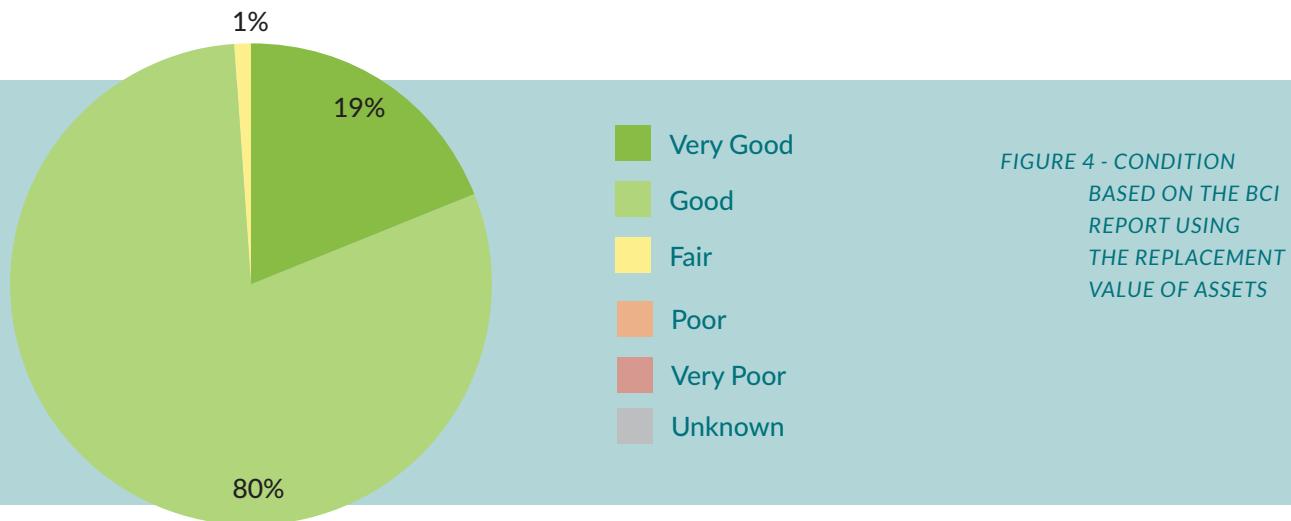
BRIDGE NAME	YR BUILT	BCI	CONDITION CATEGORY	MAJOR MATERIAL	TYPE
Croucher Creek Bridge	1995	69.62	Fair	Steel	Road
Bert-Law Bridge	1970	71.63	Good	Steel	Pedestrian
Mt.Sima Bridge	2012	72.52	Good	Steel	Road
Robert Campbell Bridge	1974	73.57	Good	Steel	Road
Wolf Creek Bridge	2011	72.25	Good	Steel	Road
Centennial Path Bridge	2012	96.83	Very Good	Timber	Pedestrian
Grizzly Crossing #1	2009	92.34	Very Good	Timber	Pedestrian
Grizzly Crossing #2	2009	83.4	Very Good	Timber	Pedestrian
Hamilton Blvd Multiplate (Underpass)	2009	98.99	Very Good	Multiplate	Road
Long Lake Pedestrian Bridge	2022	90.28	Very Good	Timber	Pedestrian
McIntyre Creek Pedestrian Bridge #1	2008	94.98	Very Good	Timber	Pedestrian
McIntyre Creek Pedestrian Bridge #2	2011	93.78	Very Good	Timber	Pedestrian
Millennium Trail Bridge	2009	86.39	Very Good	Timber	Pedestrian
Mt.McIntyre Ski Bridge	2020	88.28	Very Good	Steel	Pedestrian
Rotary Centennial Bridge	2005	83.07	Very Good	Steel	Pedestrian
Selkirk St Pedestrian Bridge	2021	94.18	Very Good	Steel	Pedestrian
Sumanik Drive Multiplate (Underpass)	2006	96.95	Very Good	Multiplate	Pedestrian

The City undertook bridge inspections utilizing the Ontario Structure Inspection Manual (OSIM) methodology, which yielded the Bridge Condition Index (BCI) for assessment. The bridge condition assessment conducted in 2018 used a different methodology, but both methodologies use a similar industry standard which makes it possible to compare values. The average bridge BCI from the 2023 assessed was 85.1, indicating a slight decline from 89.9 in 2018. This underscores the overall aging of bridges under City ownership. Below is a table in the report that describes how BCI values were divided into condition categories based on information provided in the Bridge and Culvert Inspection Report done by Stantec in 2023:

BCI VALUE	CONDITION CATEGORY
80-100	Very Good
70-80	Good
60-70	Fair
<60	Poor

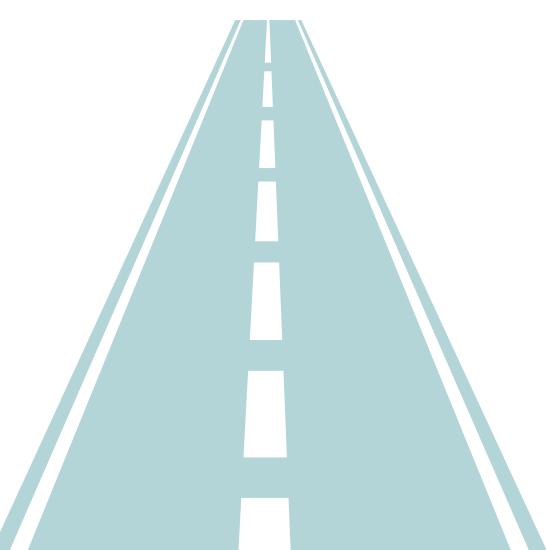


Below is a graphic that's shows the breakdown of condition based on the BCI report using the replacement value of assets. The replacement values came from the Stantec BCI report. It should be noted that even if an asset has a good or very good condition score it still may require treatments to various elements associated with the bridge to keep the asset in overall good health.



→ Table 10: Bridges data confidence

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2023	2026	2027 - 2028
Bridges	High	Good	Bridge condition assessment	Bridge condition assessment	Start developing elements of an Asset Management Plan



FLEET

The City owns and maintains 235 active vehicles based on information available within the work order management software Pearl/Worktech. A vehicle in this instance includes anything that is “drivable” and excludes vehicle attachments, within this report. Below is a table that breaks down vehicles into the various fleet types and provides their useful lives. It should be noted that most useful lives come from an existing admin directive from 2011-2012 titled Replacement of Vehicles and Equipment. However, some useful lives have been altered for this report using current staff knowledge. Useful lives altered by staff for this report will be bolded, useful lives taken from the admin directive are in normal font. The intent is that transportation staff will update the existing admin directive with these changes so that all useful life information is the same regardless of the source.

→ *Table 11: Vehicle fleet types and useful lives*

VEHICLE TYPE	NUMBER OF VEHICLE	USEFUL LIVES (YRS)
ATV	5	15
Bus	15	15
Car	8	10
Compact SUV	5	10
Excavator	4	15
Fire Truck	7	20
Forklift	2	15
Grader	8	10
Handy Bus	3	10
Heavy Truck	16	10
Ice Resurfacer	5	15
Loader	9	10
One Ton	26	10
Paver	2	15
Pickup	66	10
Roller	2	15
Skid Steer Loader	11	10
Snowmobile	2	15
Sweeper	7	12
Tractor	2	15
Vactor Truck	3	12
Van	21	12
Waste Packer	4	12
Water Truck	2	12
TOTAL	235	

Standardized condition assessment results are currently not available for the fleet inventory, however, they are maintained and inspected regularly based on admin directives/City policies. In this report vehicle condition was calculated using the formula 1-Age/Useful life, in the future there may be opportunity to use total kms used over replacement kms to provide a more accurate picture of condition, as most vehicles can be maintained to outlive their useful lives. Below is a table of how the performance numbers were placed into condition categories:

→ *Table 12: Performance in condition categories*

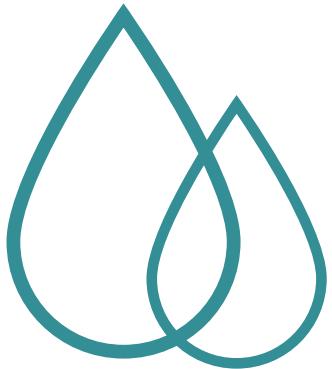
PERFORMANCE SCORE RANGE	CONDITION CATEGORY
≥0.80	Very Good
≥0.60 to >0.80	Good
≥0.40 to >0.60	Fair
≥0.20 to 0.40	Poor
<0.20	Very Poor
No Age Info Available	Unknown

Below is a graph that represents the breakdown of condition category for city owned and operated vehicles by acquisition costs.



→ *Table 13: Fleet data confidence*

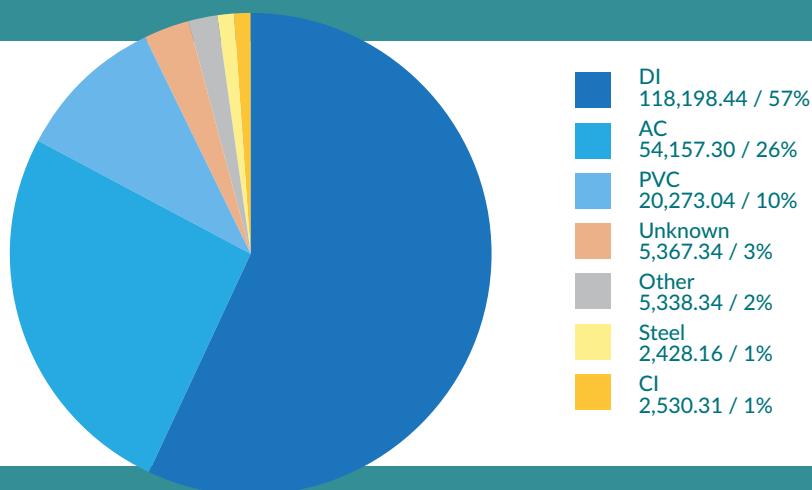
ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Fleet	Medium	Good	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan



WATER SYSTEMS

WATER MAINS

The majority of water main attribute information is available through the City's GIS data. The City owns and maintains approximately 208 km of water main, with various diameter and material types. Installation years range from 1954 to present day. Below are some figures that represent the breakdown of water mains by material, and diameter (mm) using main length in meters as the summary amount.



DI	118,198.44 / 57%
AC	54,157.30 / 26%
PVC	20,273.04 / 10%
Unknown	5,367.34 / 3%
Other	5,338.34 / 2%
Steel	2,428.16 / 1%
CI	2,530.31 / 1%

FIGURE 6 - SHOWS HOW
MANY METERS
OF WATER MAIN
WE HAVE IN EACH
MATERIAL TYPE

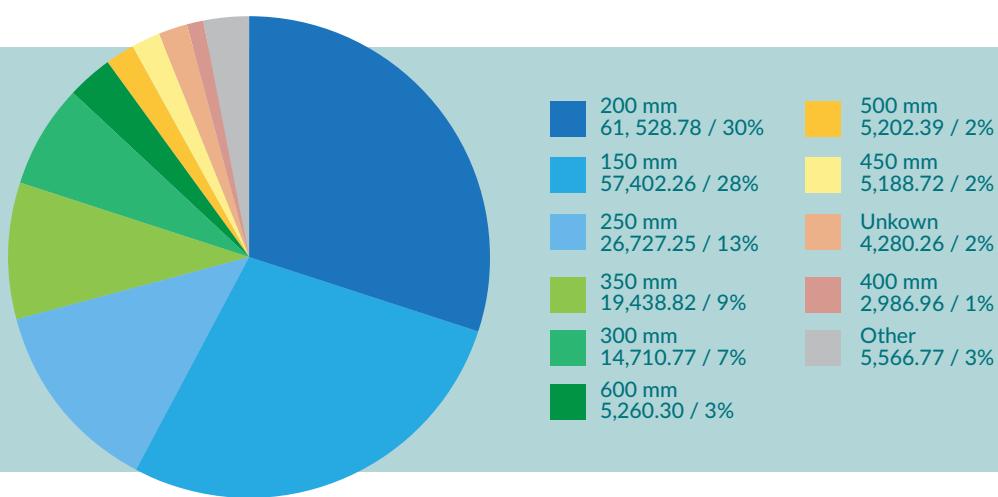


FIGURE 7 - SHOWS HOW MANY METERS OF WATER MAIN WE HAVE IN EACH DIAMETER (MM)

Water mains are currently not assessed through a standardized process at this time, so the assets age is used over its useful life to determine where it is at performance wise. Useful lives are determined by the material type, below is a table showing the current useful life information used for each material type.

→ Table 14: Current useful life for each material type

MATERIAL	USEFUL LIFE (YRS)
AC & TRANS	65
CI	80
CONC	70
DI, INSUL DI, HDPE, PVC	100
COPPER, PE, POLY, UNKNOWN	50

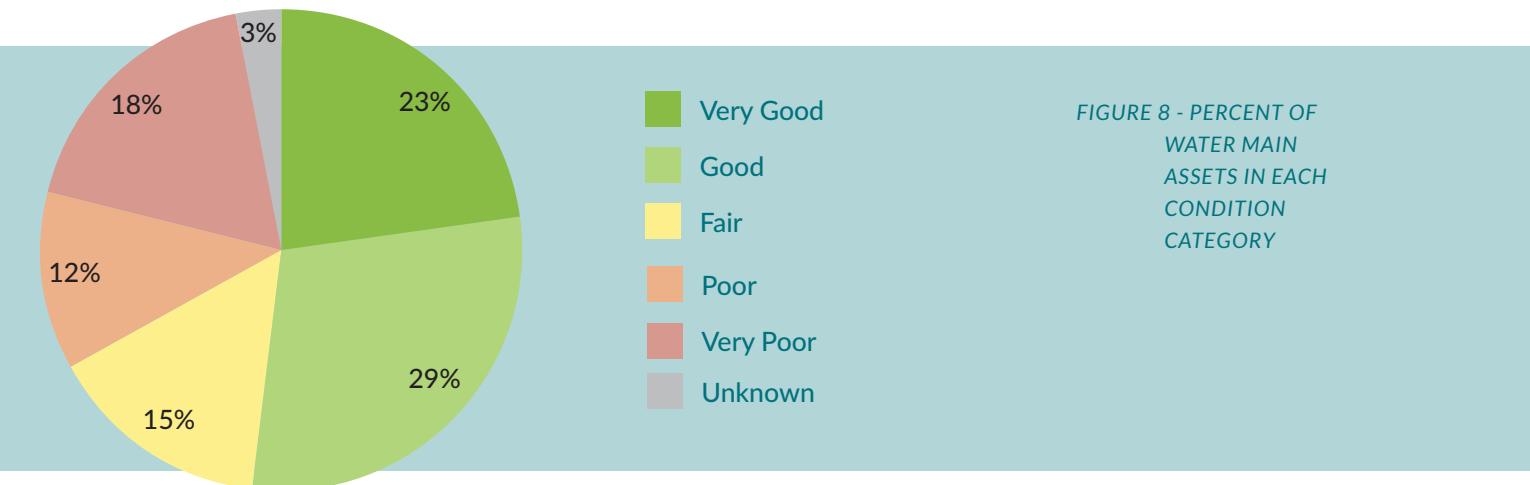


Once performance is calculated for each asset using the formula 1- Age/Useful life, assets were sorted into condition categories using the following ranges:

→ *Table 15: Performance in condition categories*

PERFORMANCE SCORE RANGE	CONDITION CATEGORY
≥ 0.80	Very Good
$\geq 0.60 \text{ to } < 0.80$	Good
$\geq 0.40 \text{ to } < 0.60$	Fair
$\geq 0.20 \text{ to } < 0.40$	Poor
< 0.20	Very Poor
No Age Info Available.	Unknown

Below is a chart that represents the percent of water main assets in each condition category, summarizing the information by water main length in meters. Assets missing installation year information were included in the unknown category below.

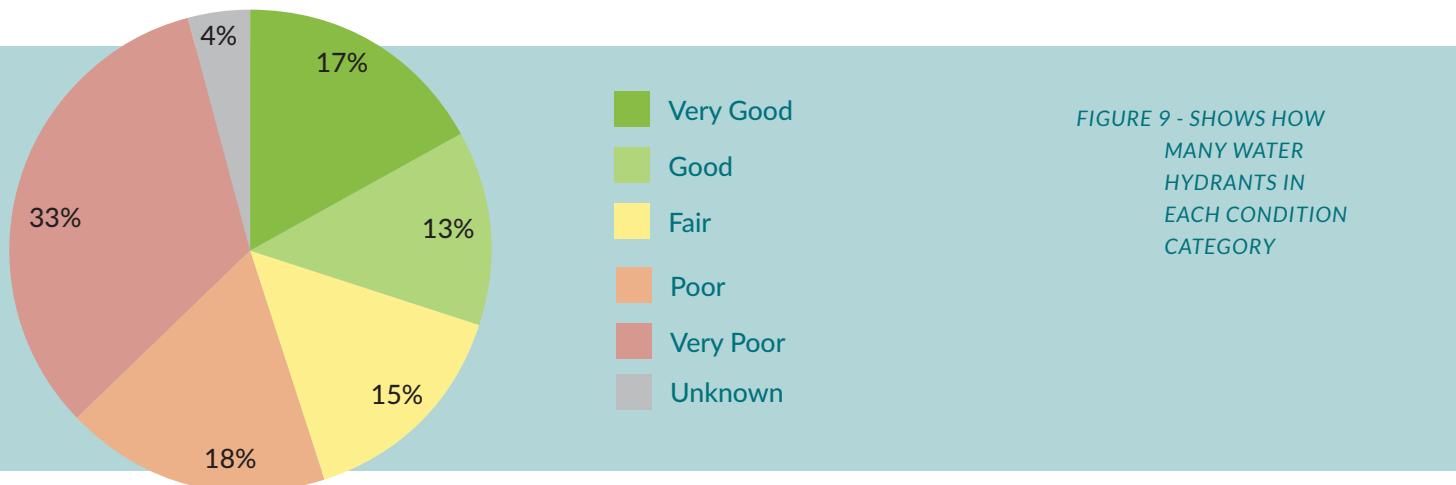


→ *Table 16: Water mains data confidence*

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Water Mains	Medium	Fair	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan

WATER HYDRANTS

Hydrant data for this report comes from the GIS data within the City. Currently, the City owns and maintains approximately 1024 water hydrants of various sizes. The useful life applied to hydrants was 50 years for every asset. Using the same formula used for water mains, hydrant performance was calculated using age over their useful lives on active and City owned hydrants. Performance categories were determined using the same methodology as the water mains. Below is a graphic that displays the number of hydrants in each condition category. Those without an installation year represent the unknown percentage.



→ Table 17: Water hydrants data confidence

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Water Hydrants	Medium	Fair	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan

WATER – VERTICAL ASSETS

The City's GIS information was combined with condition/asset information obtained from Stantec's Utility Station Audit Report from 2022. The City owns and maintains approximately 47 active vertical water assets between these two sources. Below is a table that represents the breakdown of assets based on asset type.

→ *Table 18: Breakdown of assets based on asset type*

ASSET TYPE	NUMBER OF ASSETS
Bleeder Station	3
Booster Station	8
Bulk Water Station	1
Meter Chamber	5
Pressure Sustaining Station	4
PRV Station	2
Recirculation Station	6
Reservoir	6
Valve Chamber	4
Groundwater Supply Wells	7
Water Treatment Plant	1
TOTAL	47

Stantec used a 1 to 5 scale to determine the condition of all assets within each facility that they looked at. The average of the condition of all assets assessed within a facility was used to provide each facility with an average condition value, if they were not assessed during the Stantec study they have unknown as their condition category value. Below is a table that represents how Stantec broke down the condition values.

CONDITION VALUE	CONDITION CATEGORY
1	Excellent
2	Good
3	Fair
4	Poor
5	Critical
0	Unknown/Not Evaluated

The consultant used slightly different terminology in their condition categories, but to make this more in sync with the information above, excellent was labelled as very good in the condition graphic below. The pie chart below represents asset condition based on replacement values. Replacement values are a combination of logic based on previous consultant data and cost estimates. Although most are being shown in good to very good condition it doesn't mean that elements within the stations don't require repair or replacement. The Utility study provided additional information on rehab and replacement

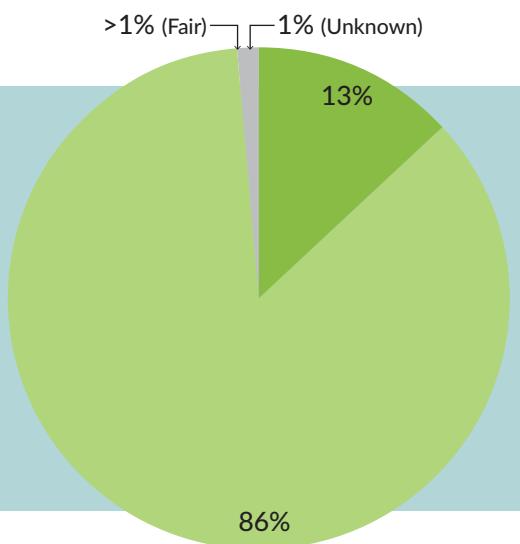


FIGURE 10 - AVERAGE CONDITION OF ALL ASSETS WTIHIN AN ASSESSED FACILITY

→ Table 19: Water vertical assets data confidence

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Water Vertical Assets	Medium	Good	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan





SANITARY SEWER SYSTEMS

SANITARY SEWER MAINS

The majority of sewer main attribute information is available through the City's GIS data. The City owns and maintains approximately 270 km of sewer main, with approximately 96% as gravity type mains, the remainder as forcemain. Below are some figures that represent the breakdown of sewer mains by material, and diameter (mm) using main length in meters as the summary amount.

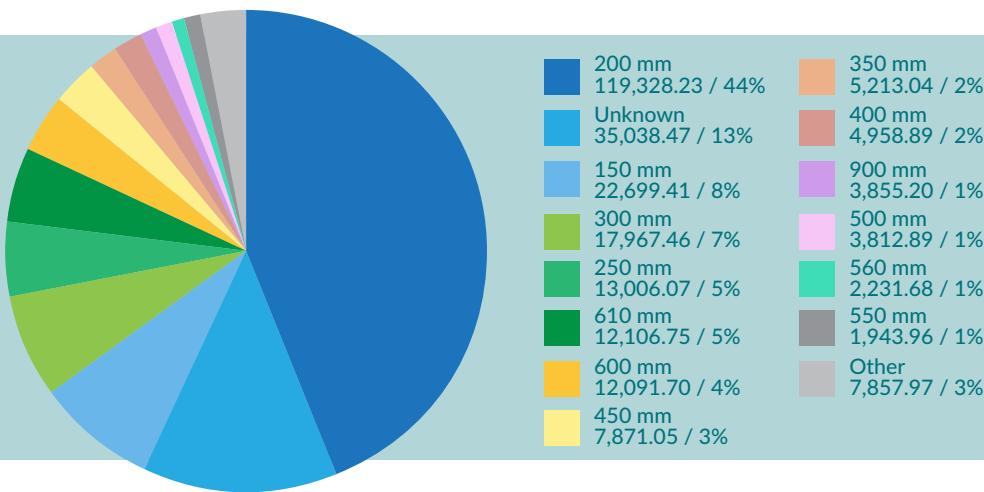


FIGURE 11 - SHOWS HOW MANY METERS OF SEWER MAIN WE HAVE IN EACH DIAMETER (MM).

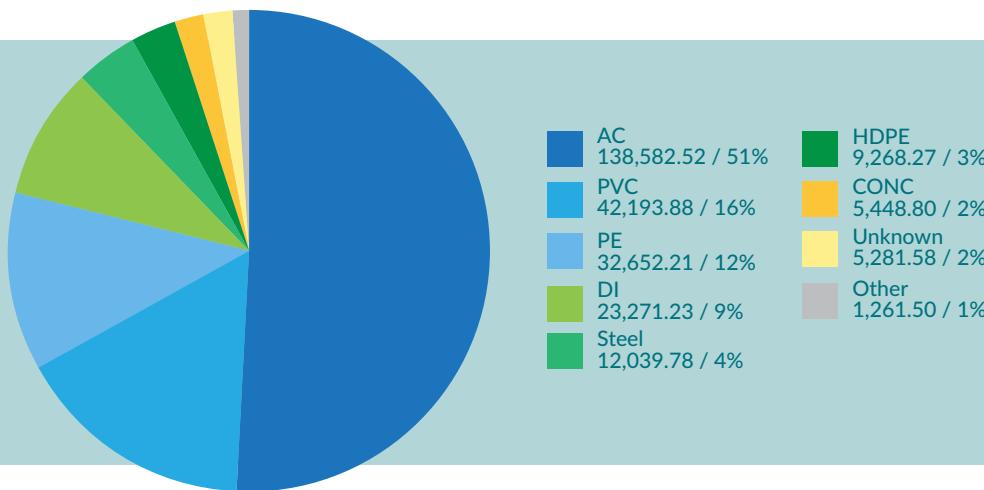


FIGURE 12 - SHOWS HOW MANY METERS OF SEWER MAIN IN EACH MATERIAL

Some CCTV PACP data (a standardized condition assessment for storm and sewer pipes) exists for some of the City's sewer mains, however, at this time it is not in a format that is easily attached to the City's GIS information. The performance values for sewer mains for this report use age over the useful life of the asset. Useful lives are determined by the material type, the following table shows the current useful life information used for each material type.

→ Table 20: Current useful life information for each material type

MATERIAL	USEFUL LIFE (YRS)
AC, AC (Lined)	65
CONC	70
DI, INSUL DI, HDPE, PVC	100
PE, STEEL, VIT, UNKNOWN	50

Once performance is calculated for each asset using the formula 1- Age/Useful life, assets were sorted into condition categories using the following ranges:

→ Table 21: Performance in each condition category

PERFORMANCE SCORE RANGE	CONDITION CATEGORY
≥ 0.80	Very Good
≥ 0.60 to < 0.80	Good
≥ 0.40 to < 0.60	Fair
≥ 0.20 to < 0.40	Poor
< 0.20	Very Poor
No Age Info Available.	Unknown

Below is a chart that represents the percent of sewer main assets in each condition category, summarizing the information by sewer main length in meters. Assets missing installation year information were included in the unknown category below.

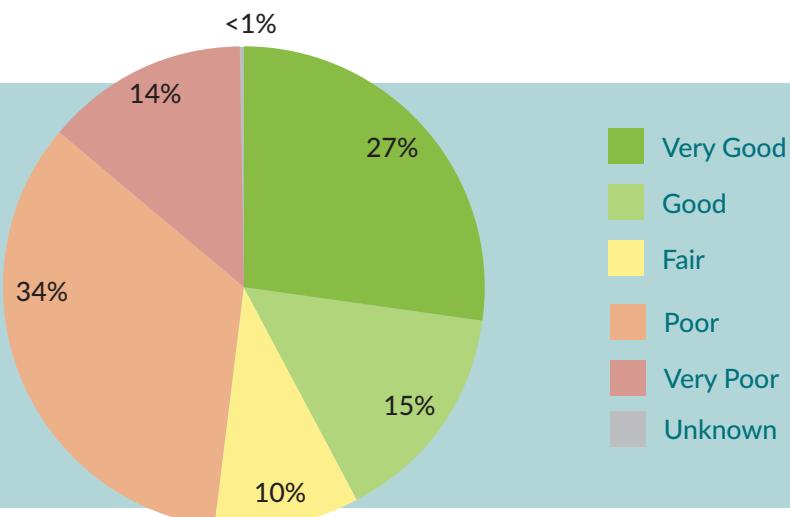


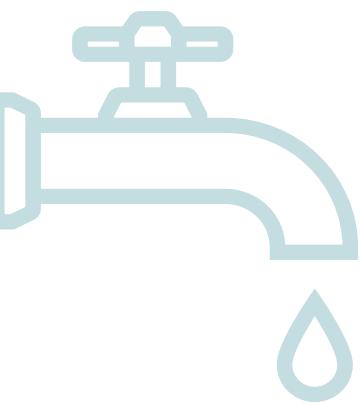
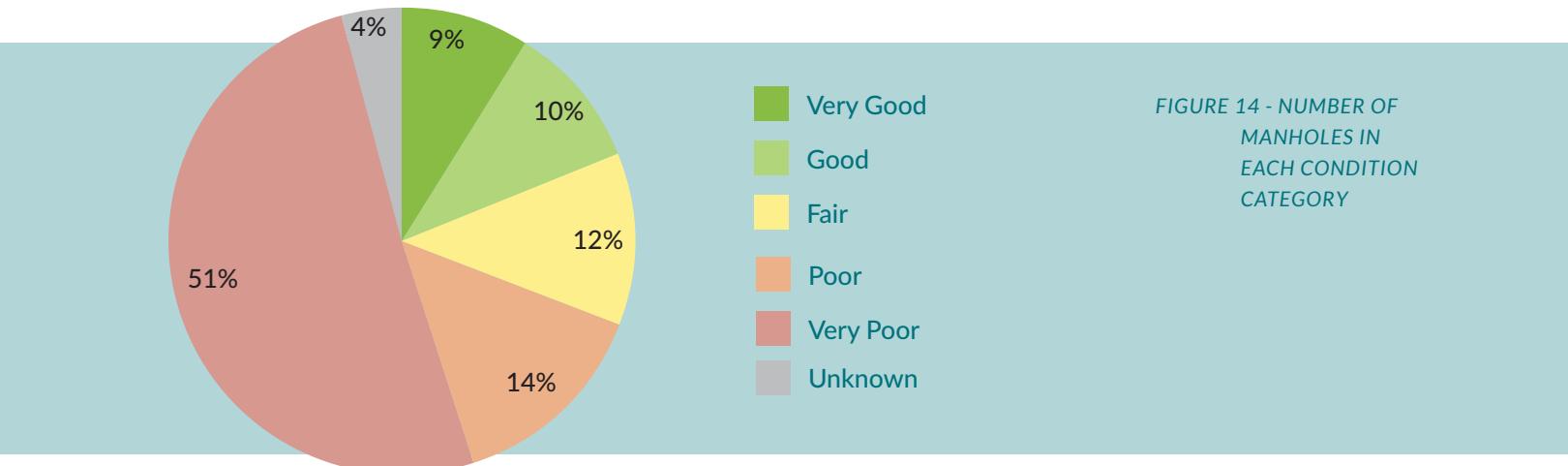
FIGURE 13 - PERCENT OF
SEWER MAIN
ASSETS IN EACH
CONDITION
CATEGORY

→ Table 22: Sewer Mains assets data confidence

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Sewer Mains	Medium	Fair	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan

SANITARY SEWER MANHOLES

Sewer manhole data for this report comes from the GIS data within the City. Currently, the City owns and maintains approximately 2043 sewer manholes. The useful life applied to manholes was 50 years for every asset. Using the same formula used for sewer mains, manhole performance was calculated using age over their useful lives on active and City owned assets. Performance categories were determined using the same methodology as the sewer mains. Below is a graphic that displays the number of manholes in each condition category. Those without an installation year represent the unknown percentage.



→ Table 23: Sewer Manholes assets data confidence

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Sewer Manholes	Medium	Poor	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan

SANITARY – VERTICAL ASSETS

The City's GIS information was combined with condition/asset information obtained from Stantec's Utility Station Audit Report from 2022. The City owns and maintains approximately 23 active vertical sewer assets between these two sources. Below is a table that represents the breakdown of assets based on asset type.

→ Table 24: Assets based on asset type

SUBTYPE	NUMBER OF ASSETS
Effluent Treatment Facility (Primary)	3
Flush Tank	1
Grinder Station	1
Lift Station	16
Valve Chamber	2
GRAND TOTAL	23

Stantec used a 1 to 5 scale to determine the condition of all assets within each facility that they looked at. The average of the condition of all assets assessed within a facility was used to provide each facility with an average condition value, if they were not assessed during the Stantec study they have unknown as their condition category value. Below is a table that represents how Stantec broke down the condition values.

→ Table 25: Condition categories for useful life

CONDITION VALUE	CONDITION CATEGORY
1	Excellent
2	Good
3	Fair
4	Poor
5	Very Poor
0	Unknown/ Not Evaluated

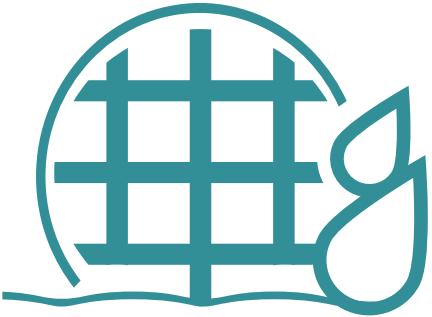
The consultant used slightly different terminology in their condition categories, but to make this more in sync with the information above, excellent was labelled as very good in the condition graphic below. The pie chart below represents asset condition based on replacement values. Replacement values are a combination of logic based on previous consultant data and cost estimates. Although most are being shown in good to very good condition it doesn't mean that elements within the stations don't require repair or replacement. The Utility study provided additional information on rehab and replacement recommendations for specific assets.



→ Table 26: Sewer Vertical Assets assets data confidence

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Sewer Vertical Assets	Medium	Good	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan





STORMWATER SYSTEMS

STORMWATER MAINS & NON-BRIDGE CULVERTS

Most stormwater mains and non-bridge culverts attribute information is available through the City's GIS data. The City owns and maintains approximately 80 km of storm mains and non-bridge culverts, 73 km of this length belongs to the storm mains. Below are some figures that represent the breakdown of storm mains and non-bridge culverts by material, and diameter (mm) using length in meters as the summary amount.

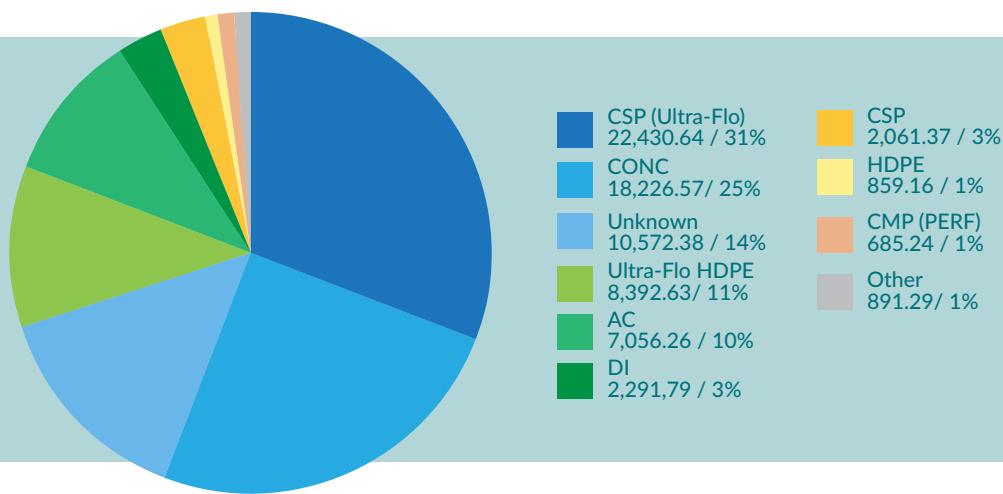


FIGURE 16 - SHOWS HOW MANY METERS OF STORM MAINS THERE ARE WITHIN EACH MATERIAL TYPE

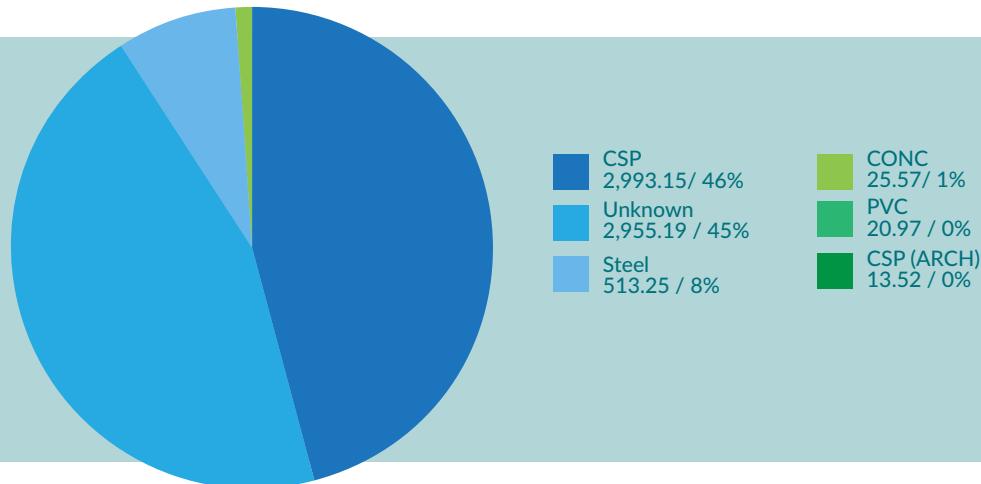


FIGURE 17 - SHOWS HOW MANY METERS OF STORM NON-BRIDGE CULVERTS THERE ARE WITHIN EACH MATERIAL TYPE

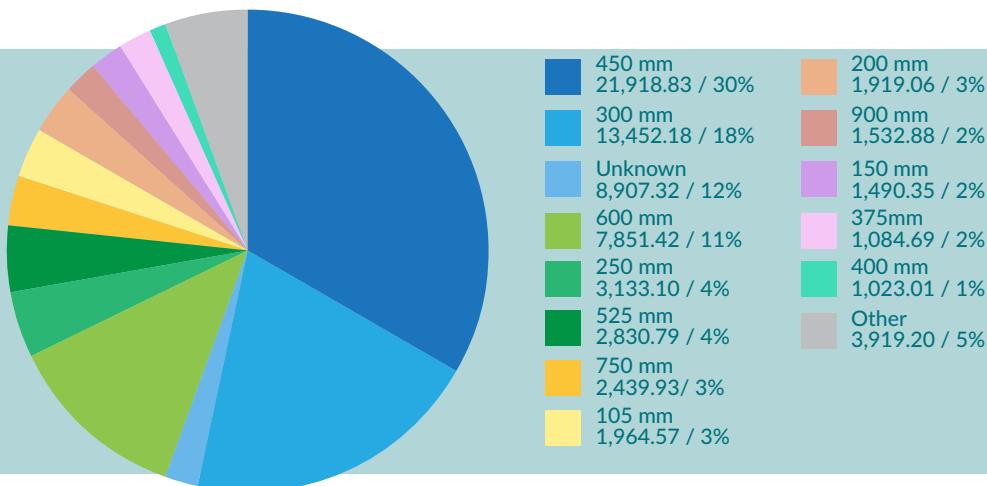


FIGURE 18 - SHOWS HOW MANY METERS OF STORM MAINS THERE ARE WITHIN EACH DIAMETER MM.

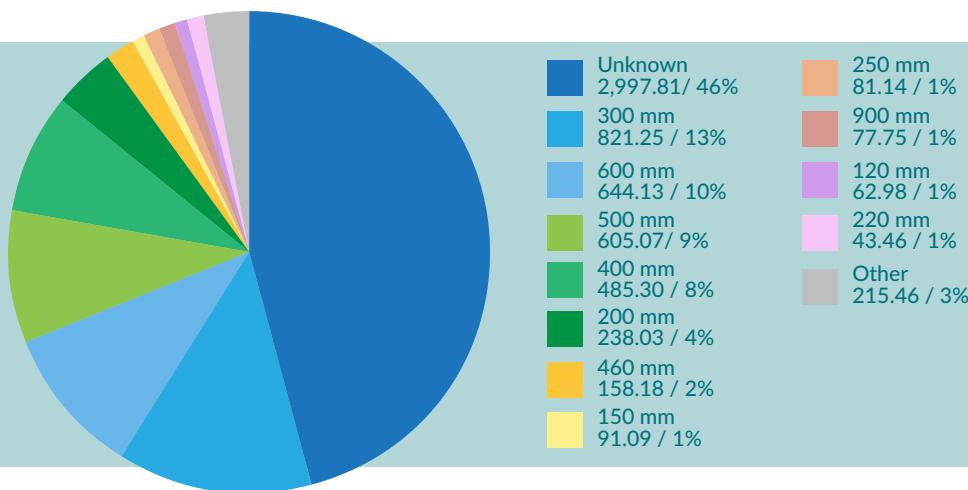


FIGURE 19 - SHOWS HOW MANY METERS OF NON-BRIDGE CULVERTS THERE ARE WITHIN EACH DIAMETER MM

Some CCTV PACP data (a standardized condition assessment for storm and sewer pipes) exists for some of the City's storm mains, however, currently it is not in a format that is easily attached to the City's GIS information. The performance values for storm mains and non-bridge culverts for this report use age over the useful life of the asset. Useful lives are determined by the material type, below is a table showing the current useful life information used for each material type.

→ Table 27: Useful life for each material type

MATERIAL	USEFUL LIFE (YRS)
AC	65
CONC	70
DI, HDPE, PVC	100
CSP, CMP, CMP (PERF), CSP (ULTRA-FLO), PE, STEEL, ULTRA-FLO HDPE, UNKNOWN	50

Once performance is calculated for each asset using the formula 1- Age/Useful life, assets were sorted into condition categories using the following ranges:

→ Table 28: Performance in each condition category

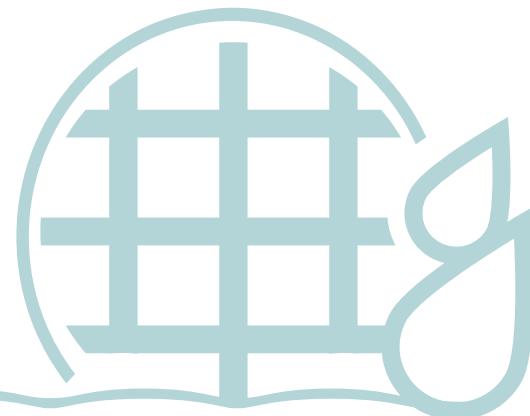
PERFORMANCE SCORE RANGE	CONDITION CATEGORY
≥ 0.80	Very Good
≥ 0.60 to < 0.80	Good
≥ 0.40 to < 0.60	Fair
≥ 0.20 to < 0.40	Poor
< 0.20	Very Poor
No Age Info Available.	Unknown

Below is a graphic that represents the percent of storm main and non-bridge culverts assets in each condition category, summarizing the information by length in meters. Assets missing installation year information were included in the unknown category below.



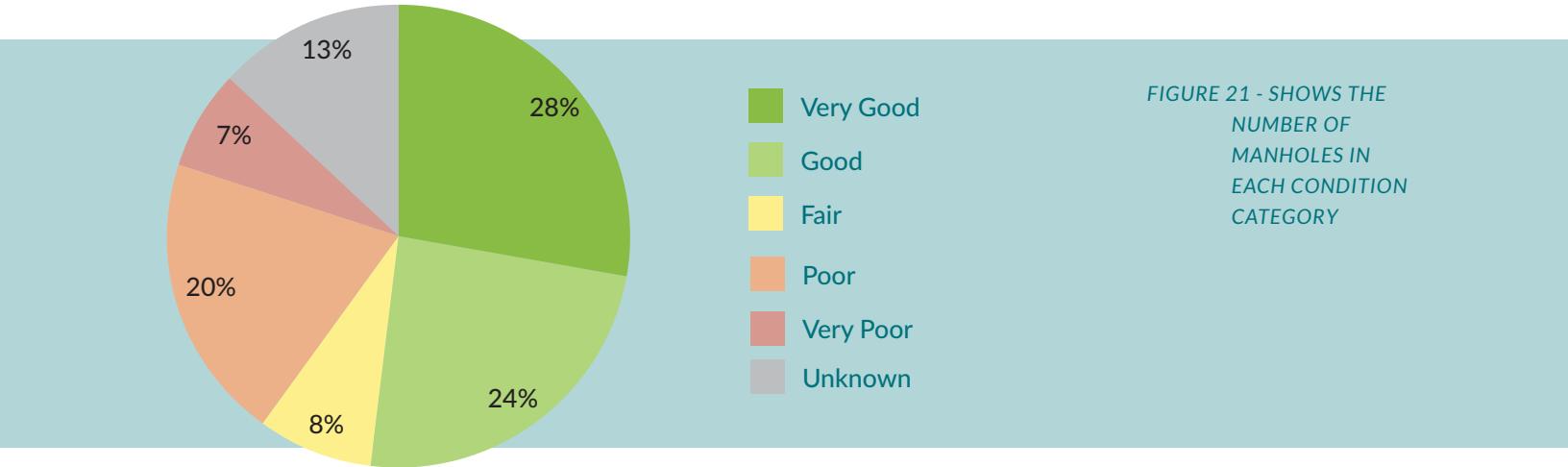
→ [Table 29: Storm Mains and Non-Bridge Culverts assets data confidence](#)

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Storm Mains and Non-Bridge Culverts	Medium	Good	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan



STORMWATER MANHOLES

Storm manhole data for this report comes from the GIS data within the City. Currently, the City owns and maintains approximately 1,056 storm manholes & CB manholes. The useful life applied to manholes was 50 years for every asset. Using the same formula used for storm mains, manhole performance was calculated using age over their useful lives on active and City owned assets. Performance categories were determined using the same methodology as the storm mains. Below is a graphic that displays the number of manholes in each condition category. Those without an installation year represent the unknown percentage.



→ [Table 30: Storm Manholes assets data confidence](#)

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Storm Manholes	Medium	Fair	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan

LARGE DIAMETER CULVERTS

The City owns and maintains 3 large diameter culverts based on information provided through the Bridge and Large Culvert Inspection Report done by Stantec in 2023. Below is a table that summarizes some of the attribute information.

→ *Table 31: Large diameter culvert attributes*

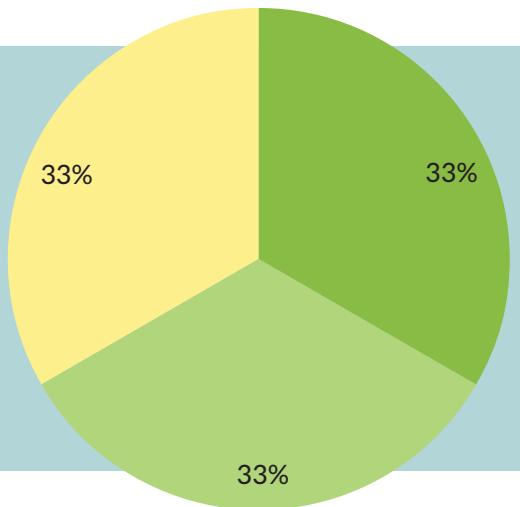
NAME	YEAR INSTALLED	BCI	CONDITION CATEGORY	TYPE	SIZE
Cowley Creek Culvert	1996	71.62	Good	Arch	13m
Mountainview Drive Culvert	1980	61.07	Fair	Twin Round	94m, 92.2m
Range Rd Multiplate Culvert	2011	96.28	Very Good	Single-Span	33m

The City undertook bridge inspections utilizing the Ontario Structure Inspection Manual (OSIM) methodology, which yielded the Bridge Condition Index (BCI) for assessment. The BCI value was also applied to large culverts. Below is a table in the report that describes how BCI values were divided into condition categories based on information provided in the Bridge and Culvert Inspection Report done by Stantec in 2023:

→ *Table 32: BCI values divided into condition categories*

BCI VALUE	CONDITION CATEGORY
80-100	Very Good
70-80	Good
60-70	Fair
<60	Poor

Below is a graphic that's shows the breakdown of condition based on the BCI report using the number of assets. It should be noted that even if an asset has a good or very good condition score it still may require treatments to various elements associated with the bridge to keep the asset in overall good health.

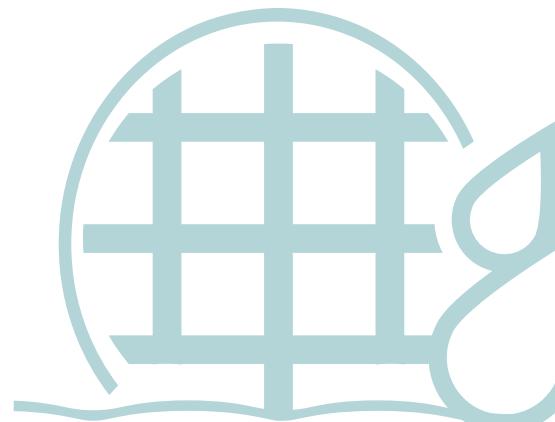


- Very Good
- Good
- Fair
- Poor
- Very Poor
- Unknown

FIGURE 22 - SHOWS THE BREAKDOWN OF CONDITION BASED ON THE BCI REPORT USING NUMBER OF ASSETS

→ Table 33: Bridge Culverts assets data confidence

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Large Diameter Culverts	High	Good	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan



CATCH BASINS

The City owns and maintains approximately 1,309 active catch basins. Information for this analysis includes the City's GIS info and the condition assessment information provided by TetraTech's Pavement Management Program and Condition Assessments report done in 2023. The assessment looked at the structural condition of catch basins and the drainage condition of catch basins. Below are the condition states for both of the assessed criteria, and those that were not assessed by TetraTech are included in the unknown portion of the graph.

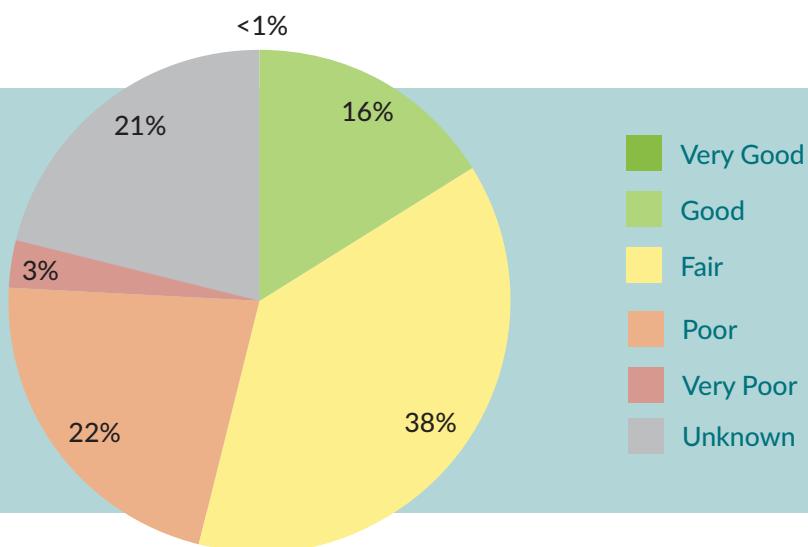


FIGURE 23 - SHOWS THE STRUCTURAL CONDITION OF CATCH BASINS BASED ON THE TETRATECH REPORT.

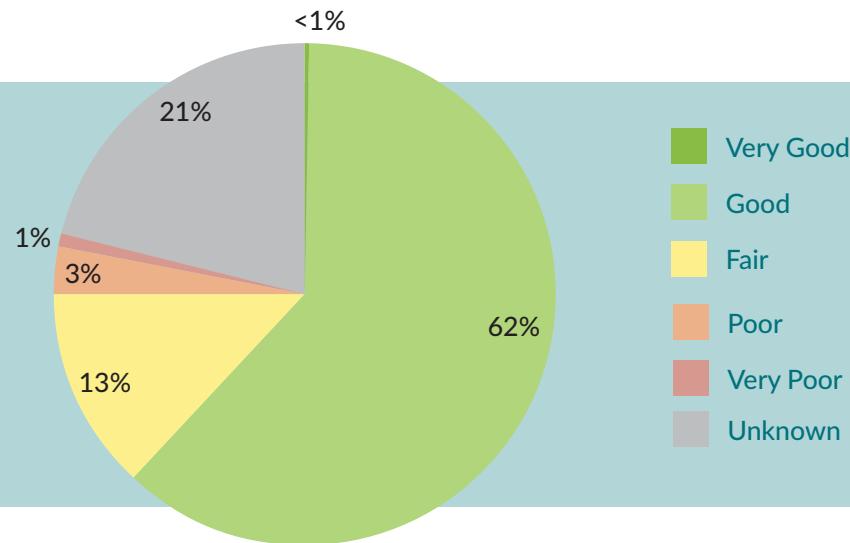


FIGURE 24 - SHOWS THE DRAINAGE CONDITION OF CATCH BASINS BASED ON THE TETRATECH REPORT.

→ Table 34: Catch Basins assets data confidence

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Catch Basins	High	Structural – Fair Drainage - Good	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan

STORMWATER – VERTICAL ASSETS

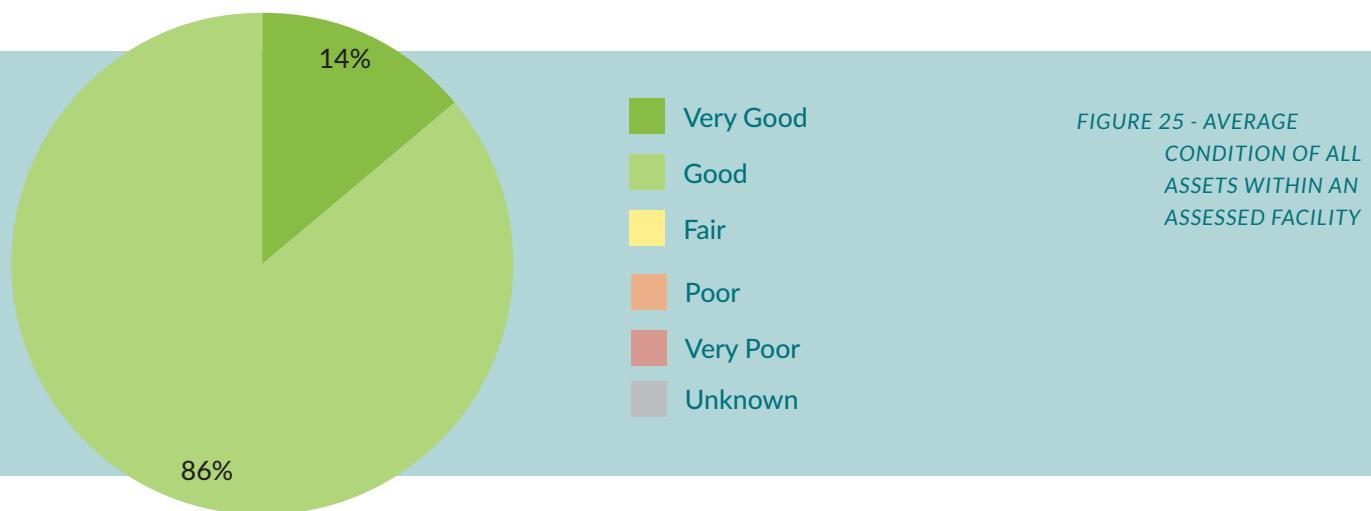
The City's GIS information was combined with condition/asset information obtained from Stantec's Utility Station Audit Report from 2022. The City owns and maintains approximately 3 active vertical storm assets between these two sources. All three of these assets are lift stations, 2 located downtown and 1 located in Whistle Bend.

Stantec used a 1 to 5 scale to determine the condition of all assets within each facility that they looked at. The average of the condition of all assets assessed within a facility was used to provide each facility with an average condition value, if they were not assessed during the Stantec study they have unknown as their condition category value. Below is a table that represents how Stantec broke down the condition values.

→ Table 35: Condition categories for useful life

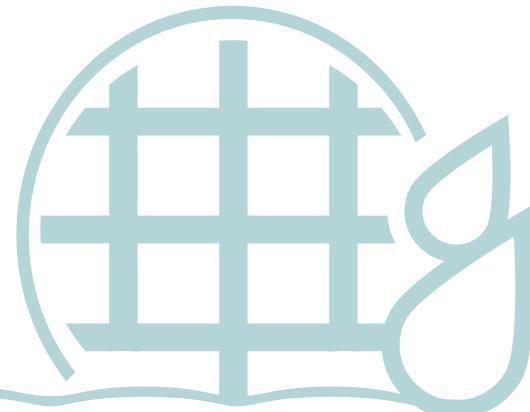
CONDITION VALUE	CONDITION CATEGORY
1	Excellent
2	Good
3	Fair
4	Poor
5	Very Poor
0	Unknown/ Not Evaluated

The consultant used slightly different terminology in their condition categories, but to make this more in sync with the information above, excellent was labelled as very good in the condition graphic below. The pie chart below represents asset condition based on replacement values. Replacement values are a combination of logic based on previous consultant data and cost estimates. Although most are being shown in good to very good condition it doesn't mean that elements within the stations don't require repair or replacement. The Utility study provided additional information on rehab and replacement



→ Table 36: Storm Vertical assets data confidence

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Storm Vertical Assets	High	Good	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan





FACILITIES

Besides the Water, Sewer and Storm facilities reported above, the City owns and maintains approximately 69 active other facility types. Facility assets were identified using multiple sources of information including GIS, an evaluation completed through property management and through staff knowledge. Below is a table displaying all of the remaining facility types.

→ Table 37: Breakdown of assets based on asset type

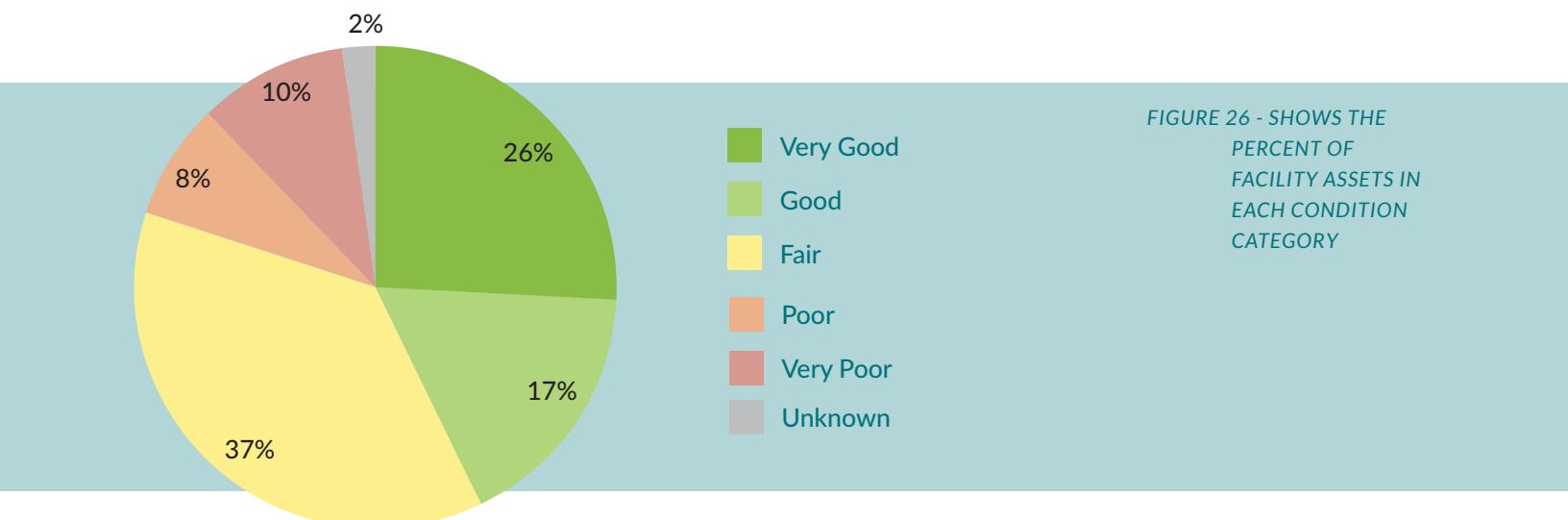
SUBTYPE	NUMBER OF ASSETS
Admin Building	4
Animal Shelter	1
Arena	1
Bike Shelter	1
Booster Station - Irrigation	1
Cabin	3
Fire Hall	2
Generator Building	1
Heritage Building	6
Landfill Building	4
Operations Building	4
Picnic Shelter	5
Recreation Centre	5
Storage Building	28
Valve Chamber (Parks – Splash Pad)	1
Washroom	2
TOTAL	69

Facilities are currently not assessed through a standardized process at this time, so the assets age is used over its useful life to determine where it is at performance wise. Facility useful lives are usually broken down by component, but at this time the City does not have a detailed asset list of these components, so a useful life of 50 years was applied to the facilities as a whole. It should be noted that if a renovation year was available, this was used to determine age instead of the year constructed.

Going forward the City will work on breaking out each facility into its various components to get a more accurate picture of what performance assets are actually in. For this report 1-Age/Useful life was used to determine performance and these performances were sorted into the following condition categories:

PERFORMANCE SCORE RANGE	CONDITION CATEGORY
≥ 0.80	Excellent
≥ 0.60 to < 0.80	Good
≥ 0.40 to < 0.60	Fair
≥ 0.20 to < 0.40	Poor
< 0.20	Critical
No Age Info Available.	Unknown/Not Evaluated

Below is a graph that represents the percent of facility assets in each condition category, summarizing the information by replacement value. Replacement values are a combination of logic based on previous consultant data and cost estimates. Assets missing installation year information were included in the unknown category below.



→ *Table 38: Facilities assets data confidence*

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Facilities	Medium	Fair	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan







B&TS

The City owns and maintains approximately 3,197 pieces of IT equipment which is managed by the Business and Technology Solutions department. IT asset information is stored in a software called Device42 which is an IT asset lifecycle management system and helps the department keep track of their asset inventory. The City has a policy that states most hardware is to be replaced within a 5-year replacement cycle, this would exclude assets such as fiber infrastructure. To help track which assets may be near end of life, or close to being out of warranty, BTS staff use a condition rating system to help determine where the asset is in its lifecycle. Below is a breakdown of asset types and the number of assets currently tracked by the BTS department under this policy.

→ Table 39: Asset types and the number of assets currently tracked by the BTS department under this policy

ASSET TYPE	COUNT
Network Equipment	507
Servers	30
Storage Devices	4
NAS Devices	3
Tape Libraries	1
Rack Equipment	43
Workstations	534
Mobile Phones	329
Tablets	86
Printers	66
Peripherals	403
Monitors	577
Radios	419
Security Cameras	195
TOTAL	3,197

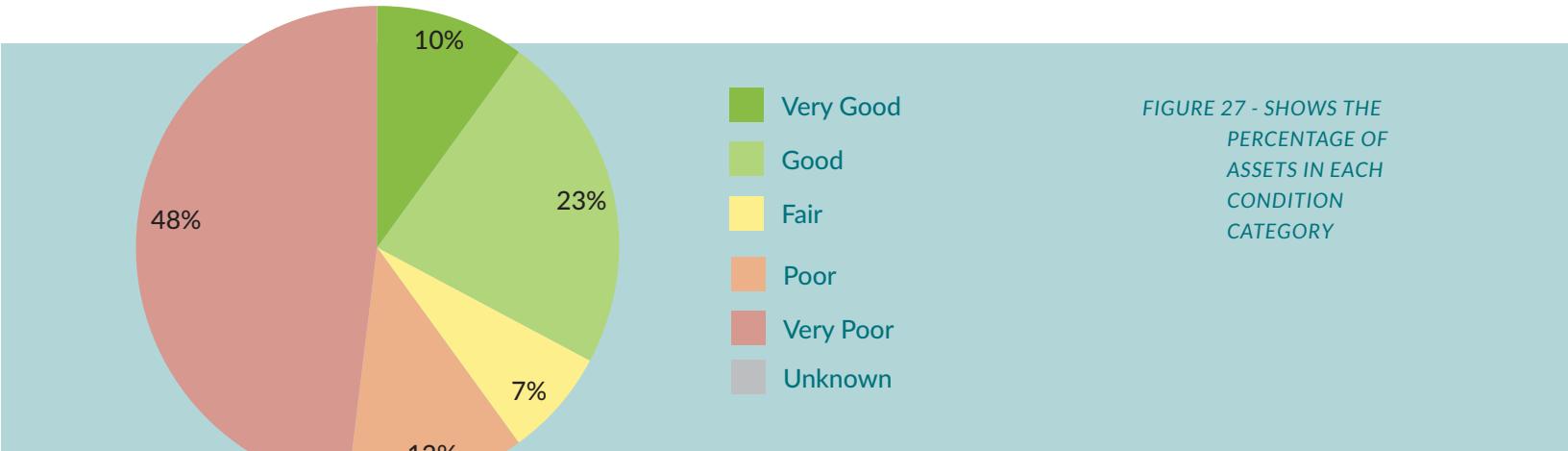
The condition system mentioned above is a scale of 1 to 5 and reflects the assets Age/Useful life. In some circumstances asset condition may be altered due to a visual assessment or if assets are not functioning as they should to more accurately reflect where they are in their lifecycle. Below is a table that describes the condition numbers applied and what condition categories they fall into based on how BTS has defined them.

PERFORMANCE SCORE RANGE	CONDITION CATEGORY
1	Excellent
2	Very Good
3	Good
4	Average
5	Poor

PERFORMANCE SCORE RANGE	CONDITION CATEGORY
1	Very Good
2	Good
3	Fair
4	Poor
5	Very Poor

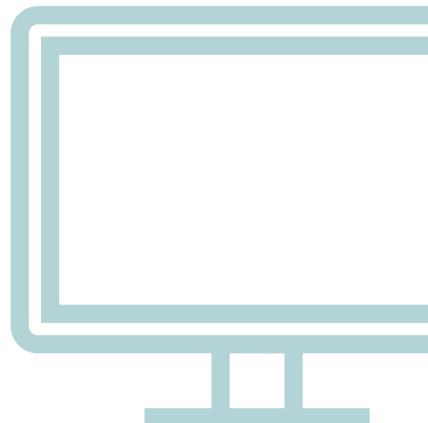
To keep consistency with the rest of the report, I have taken the above categories and have altered them, as reflected in the table below.

Below is a graph that represents the percentage of assets in each of the categories defined above. This is based on the total number of IT assets that are ranked under the policy. Other infrastructure that is more long-lived such as Fiber networks are inspected annually and are monitored to determine when replacement should be done.



→ Table 40: BTS Equipment assets data confidence

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
BTS Equipment	Medium - High High	Poor	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan







PARKS & PARK AMENITIES

The City owns approximately 694 km of parks space including one campground and approximately 91,530 km² of regional parks space. Not all parks' assets have playgrounds associated with them, but equipment such as dog bag dispensers, signage and benches are still maintained by staff. Regional parks do not require landscaping as the neighbourhood parks do, but trail networks through them are signed and maintained by staff as well. The City has a parks and trails maintenance policy that prioritizes work that staff follow to provide the community with a high level of service. It should be noted that the classes in the table below have not been adopted by the parks department yet and are subject to change. Below is a table that provides some information about the parks space available throughout the City.

→ Table 41: Park space availability throughout the City

TYPE	CLASS	AREA (KM ²)
Park	Campground	67
Park	Community	0.4
Park	Dog	4
Park	Downtown	103
Park	Greenspace	70
Park	Mountain Bike	42
Park	Neighbourhood	399
Park	Skateboard	9
Regional Park	Natural	91,530
TOTAL		92,224

The above information is just about the land designated as park space. Although this is an asset that receives treatments such as landscaping there is no formal way to gather the condition of these assets. Once full asset registers are completed on all the amenities within each park space we can provide a condition of each park as the sum of its parts. But at this time there will be no condition information provided at the park level.

→ Table 42: Parks assets data confidence

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Parks	Low	Not Available	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan



PLAYGROUNDS

The City owns and operates approximately 40 playgrounds. Of these assets, 11 playgrounds were installed in the 1990s, 15 were installed in the early 2000s, 5 in the 2020s and 9 assets have unknown installation dates. Below is a table that breaks down playgrounds by subdivision, showing the distribution of playground assets around the City area.

→ *Table 43: Park space availability throughout the City*

SUBDIVISION	NUMBER OF PLAYGROUNDS
Arkell	1
Canyon Crescent	1
Copper Ridge	4
Cowley	1
Cowley Creek	1
Crestview	1
Downtown	4
Granger	1
Hidden Valley	1
Hillcrest	1
Logan	1
Mary Lake	1
Pineridge	1
Porter Creek	5
Riverdale	5
Spruce Hill	1
Takhini	3
Valleyview	2
Whistlebend	3
Whitehorse Copper	1
Wolf Creek	1
TOTAL	40

Parks staff annually go out to digitally collect playground equipment assets and have provided some condition information in the past. However, past inspections were done with various types of condition ratings and were not consistently provided for each asset. Currently, we have used 1-Age/Useful life to provide performance values for the playground assets. Parks staff and Asset Management staff have sat down together to work on a condition methodology to use going forward that will make collection user friendly for staff and will provide consistent condition information about playground and other park amenity assets. Useful life in this case for playgrounds is 15 years. This number was selected based on industry best practices and can be refined going forward.

Below is a table of how the performance numbers were placed into condition categories:

→ *Table 44: Performance numbers by condition category*

PERFORMANCE SCORE RANGE	CONDITION CATEGORY
≥ 0.80	Very Good
$\geq 0.60 \text{ to } < 0.80$	Good
$\geq 0.40 \text{ to } < 0.60$	Fair
$\geq 0.20 \text{ to } < 0.40$	Poor
< 0.20	Very Poor
No Age Info Available.	Unknown

Below is a graph that represents the percentage of assets in each of the categories defined above. This is based on the total number of playground assets. Assets missing installation year information have been included in the unknown category.



→ Table 45: Asset count by tree species

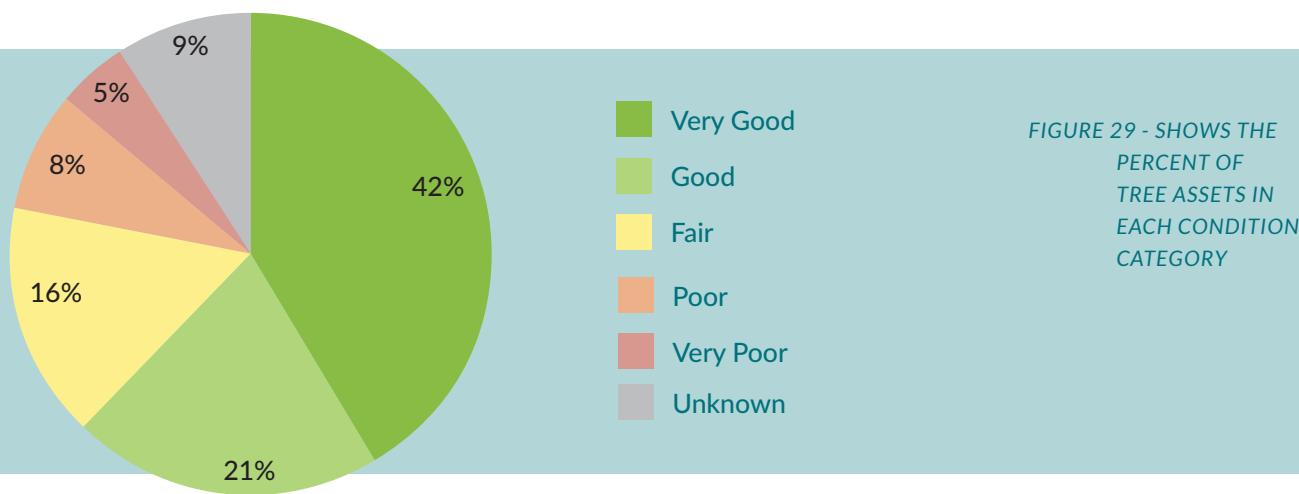
SPECIES	NUMBER OF ASSETS
Alder	2
American Basswood	1
Apple	1
Aspen	29
Birch	88
Birchbark Cherry	3
Blue Spruce	18
Catalpa	1
Cherry	1
Elm	1
Larch	2
Manchurian Cherry	48
Maple	1
Mayday	2
Mountain Ash	26
Mugo Pine	6
Pine	21
Poplar	46
Red Birch	1
Sand Cherry	1
Shubert Cherry	70
Silver Maple	1
Sitka Spruce	1
Spruce	128
Tamarack	11
Trembling Aspen	86
Unknown	96
Upright Willow	2
Weeping Birch	1
White Birch	4
White Spruce	4
Willow	8
TOTAL	711

URBAN TREES

The parks department started to collect the urban trees inventory in 2024 within GIS. As of right now there are currently 711 urban tree assets recorded. Information such as height, if the tree is used at Christmas for lights, if the tree has a tree grate and species were collected. Condition of the crown and roots was also done and an overall condition score was provided for most of the assets within the inventory. However, this scale for condition is not consistent throughout the dataset and has been redefined this year to create a consistent and comparable dataset going forward. Below is a table that breaks down asset count by tree species:



As discussed above, the condition scores and their meaning have been refined for this year's collection and for future years collection. Below is a graph that represents the percent of tree assets in each condition category, summarizing the information by number of trees. Assets missing condition information or with inconsistent condition information were included in the unknown category below.



It should be noted that the Parks department is responsible for many amenity types including signage, trail sign posts, access gates, benches, picnic tables, garbage cans, memorial benches, public artwork and landscaping around facilities, trails (paved and unpaved) and parks. They also are responsible for maintaining the campground and cemetery. These assets have inventories but have limited condition information. As the City develops asset registers more infrastructure can be reported on for the State of Infrastructure report.

→ [Table 46: Urban Trees assets data confidence](#)

ASSET CLASS	DATA CONFIDENCE	AVERAGE CONDITION	2025	2026	2027 - 2028
Urban Trees	Low	Good	Assess Inventory Gaps	Start Adjusting gaps	Start developing elements of an Asset Management Plan



CLOSING REMARKS

The City continues to improve its data confidence and asset inventory completeness to better support the Asset Management System. As the City's Asset Management Initiative matures, the goal is for future SOIR editions to become more comprehensive, evaluating more City assets with increasing precision. Key highlights of the report include:

Data Confidence and Inventory Management:

The SOIR emphasizes the importance of accurate and reliable asset information. Ongoing efforts in data collection, classification, and assessment contribute to improved data management.

Use of Inventory Data:

One of the City's priorities is to establish a robust data foundation for effective decision making. Every year improvements are being made to centralize, refine and utilize data to provide a reliable resource for the Asset Management System.

Progress and Initiatives:

The City has had advancements in the collection of condition data and inventory information from initiatives such as the 3-year pavement management assessment for roads, sidewalks, paved trails, and bridges. And the collection of additional asset inventories such as the urban tree inventory. Staff have currently completed an AM Strategy document to help guide Asset Management Initiatives at the corporate level. The next major initiative is to centralize all asset inventories within one digital repository.

Challenges and Future Focus:

The report acknowledges that existing inventories can present challenges in data confidence as they may have many existing gaps in their information. As inventories are centralized and tracked more digitally and as roles and responsibilities are more well-defined, gaps in existing data sets will reduce over time. This will allow future reports to have higher data quality and provide stronger support for decision making.

Technology:

The City has engaged ESRI to implement their work order management software Cityworks. The implementation of this software would provide the City with an opportunity to digitize and centralize all of its existing asset inventories and to use the work order management component to track works against the various asset classes. However, like any software implementation, this process will take time and integrations with existing City software needs to be considered and done so carefully to create a robust work order tool.

In conclusion, City staff are committed to the improvement of data collection to support the City's Asset Management journey and will continue to work on improving all aspects of the Asset Management System.





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