



Newmarket

# TOWN OF NEWMARKET INFRASTRUCTURE REPORT CARD

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Reporting on the state of our Infrastructure



Date: October 2020

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## TOWN OF NEWMARKET INFRASTRUCTURE REPORT CARD



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## Purpose

As owners of more than \$2 billion of infrastructure, the Town of Newmarket is continually focused on the cost and quality of the services the Town's infrastructure provides. The sustainability of Town infrastructure depends on effective management, maintaining a state of good repair, and ensuring the optimal use of limited funds. Asset management delivers the framework for achieving these outcomes and will provide mechanisms for balancing performance, cost, and risk as capabilities develop.

The purpose of an Infrastructure Report Card is to communicate performance of the assets and to raise awareness of how each service area is performing. A common tool used by Canadian municipalities, a Report Card forms the basis for further discussions and decisions surrounding asset management and investment.

This is the Town's first-ever Infrastructure Report Card and includes all "core" assets (as defined by the Province) – roads, bridges, watermains, wastewater, and stormwater. It provides the baseline for the discussion of infrastructure and is intended as a prologue to the updated Asset Management Plan that will be delivered in accordance with regulatory requirements before July 1, 2021. The Plan will address the assets in greater detail by analyzing risk, maintenance, growth, and other factors to forecast investment needs and program costs. Projects like the Infrastructure Report Card demonstrate the value of asset management and the Town's commitment to financial sustainability.



The Town's roads are one of five categories of "core" assets as defined by the Province. The other core assets in this report card are our bridges, sewers, watermains, and stormwater assets.

# Executive Summary

Bringing together the analysis of each service area, the results of the infrastructure report cards answer three pivotal questions:

- What do we own?
- What is it worth?
- What condition is it in?

## What do we own?

The Town owns and is responsible for maintaining a large number of assets. The assets captured in this report card include:



249 Kilometers of Roads



68 Bridges and Culverts



303 Kilometers of Watermain



262 Kilometers of Wastewater Sewers



284 Kilometers of Storm Sewers and 47 Storm Ponds

Assets not covered in this report are non-core assets that will be reported in accordance with provincial regulatory timelines (2023) include 390 kilometers of sidewalks, 259 vehicles, 66 buildings and land improvements, 44 kilometers of trails, 45 parks, and many others.





Example of core assets in Newmarket. From the left, a stormwater sewer discharging at an outfall and into a pond and on the right, a pedestrian bridge located on Tom Taylor Trail.

## What Is It Worth?

The assets within the scope of this Report Card are estimated to cost \$1.75 Billion (2020 valuation). When non-core assets are considered, the asset valuation increases by \$408 Million to reach an estimated total of \$2.16 Billion.

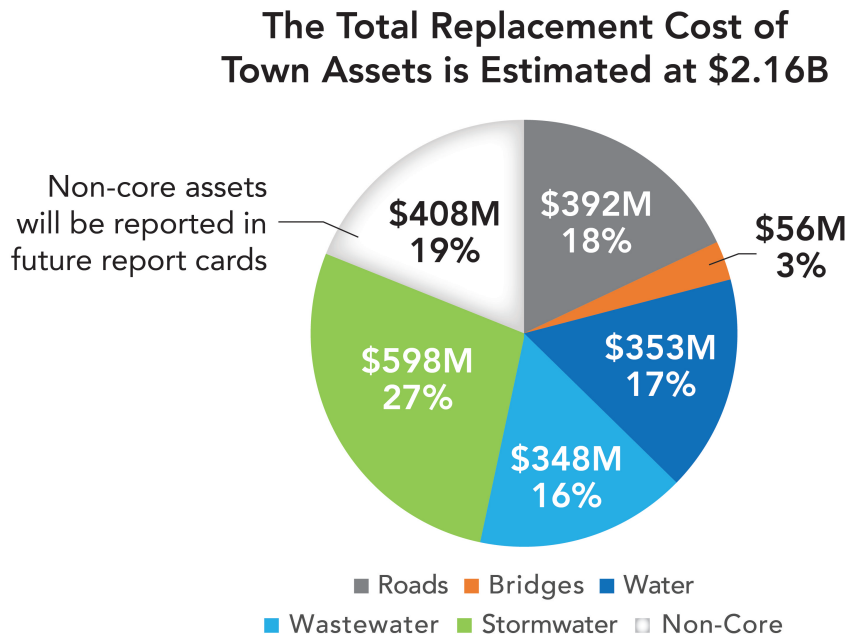


Regular maintenance and staff attention to assets are needed in order to maintain our investments and service levels. The photo above shows the Town's contractor conducting watermain swabbing at a Town fire hydrant and watermain.

The valuation of \$2.16 Billion represent the 2020 total contracted cost of replacing each asset the Town owns and does not consider staff time, maintenance, growth, climate change, service enhancements, or other cost factors. This valuation demonstrates that

the Town has made an important investment in infrastructure, and has a significant obligation to ensure the maximum return on this investment. See **Figure 1**.

**Figure 1:**



### What condition is it in?



Example of core assets with condition defects: winter freeze and thaw damage.

The Town’s assets are at varying stages of their lifecycle. As assets age, they will usually deteriorate and the need for reinvestment will arise (signified by a reduced condition rating). Assets are rated from Very Good to Very Poor. Having “Fair” to “Poor” rated assets before they are replaced is not necessarily bad. However, failure to maintain a state of good repair may lead to increased reactive maintenance, inefficient replacements, and drops in service levels.

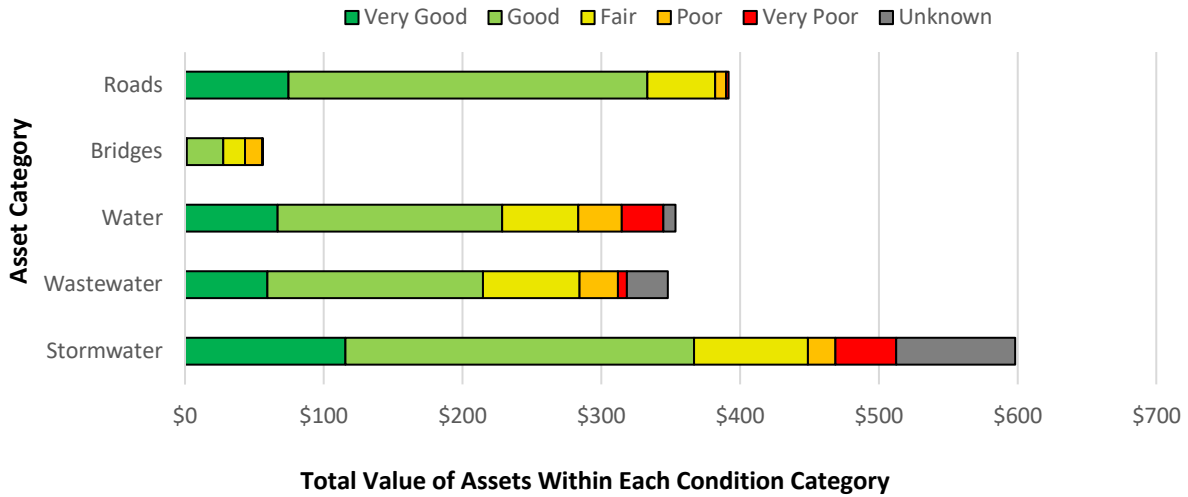
For further information, please see the [Methodology section](#) of this report.



Example of core assets with condition defects: drainage damage caused by a broken pipe.

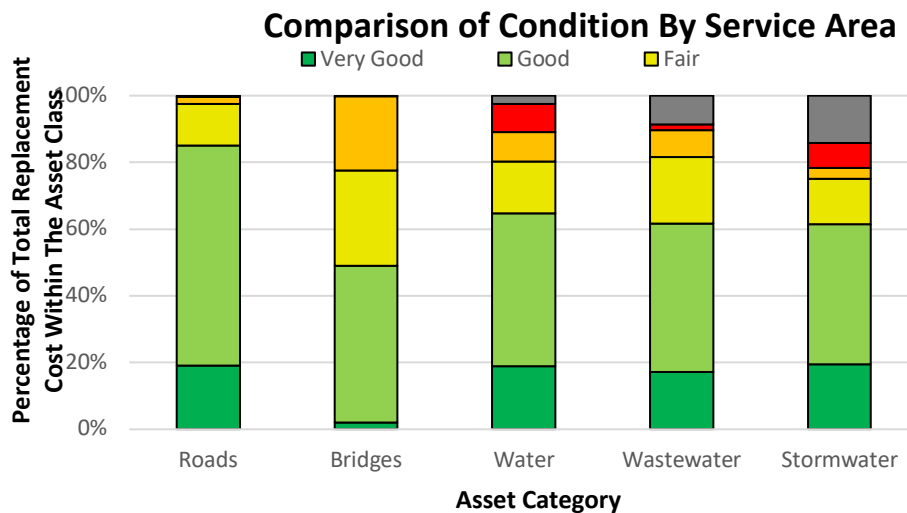
The results of this process are shown in two graphs as a breakdown of the total replacement value, followed by a service area comparison. See **Figure 2** and **Figure 3**.

**Figure 2: Breakdown of Replacement Cost and Condition by Asset Category**



While many of our assets are in Very Good or Good (\$1.2 Billion) condition, there are other assets in Fair to Very Poor condition (\$450 Million).

**Figure 3: Normalized Comparison of Asset Condition by Service Area as a Percentage of Total Replacement Value**



When service areas are compared to one another, the Town's inventory of bridges is rated in the Fair to Poor category, (as a percentage of their total) followed by Water and Wastewater assets. Approximately 9% of our water assets and 7% of our storm water assets are considered very poor.



## Methodology and how to read the Report Card

There are three sections to each report card: (1) A high-level summary, (2) a breakdown of details about the condition, and (3) a summary of historical capital investments in the assets.

### Life Expectancy

All assets have a finite life. Different types of infrastructure have different life expectancies. From the time an asset is constructed, it will require a replacement in the future at the end of the expected service life. There are generally accepted industry standards and best practices that predict how long assets should last.

Each asset category shows an overall life expectancy and an average age of the assets within the category. Life expectancy is weighted by the individual assets' replacement cost – individual assets vary in life expectancies and cost different amounts.

This demonstrates on a general basis how much useful life of the asset portfolio has been consumed.

**Figure 4: Age and Expected Service Life Methodology Condition Categories.**



Using the method of most Infrastructure Report Cards, assets are assigned condition ratings on a 5-point scale. Ratings are assigned based on age and life expectancy (Figure 5). Age is an industry-accepted benchmark for the high-level analysis of infrastructure portfolios, using the principles outlined above (Life Expectancy).

**Figure 5: Condition Rating Methodology**

Condition Ratings Based on Current Age of the Assets				
Very Good	Good	Fair	Poor	Very Poor
100% to 80%	80% to 60%	60% to 40%	40% to 20%	20% to 0%
<b>Percentage of Remaining Useful Life</b>				

A condition rating system identifies which stage assets are at in their lifecycle. While it is suitable for financial analysis, staff do not rely on age when making tactical decisions – instead, they use actual field observations. The methodology presented aligns with the Canadian Infrastructure Report Card, which provides benchmarks for how to use age data in the absence of condition observations collected by field professionals. The

exceptions to this approach are roads, bridges, and stormwater ponds, which had comprehensive condition information from recent inspections. More detail on the condition ratings are as follows (**Table 1**):

**Table 1: Condition Rating Definitions**

Condition Category	Condition Description*
Very Good	The asset is fit for the future. It is well maintained, in good condition, new or recently rehabilitated.
Good	The asset is adequate. It is acceptable and generally approaching the mid-stage of its expected service life.
Fair	The asset requires attention. The asset shows signs of deterioration and some elements exhibit deficiencies.
Poor	There is an increasing potential for its condition to affect the service it provides. The asset is approaching the end of its service life, the condition is below the standard and a large portion of the system exhibits significant deterioration.
Very Poor	The asset is unfit for sustained service. It is near or beyond its expected service life and shows widespread signs of advanced deterioration. Some assets may be unusable.
Unknown	Not enough data exists.
<p><i>*Definitions are sourced from the Canadian Infrastructure Report Card and Statistics Canada, 2019. The Town will be validating these definitions and expanding its condition assessment methodology over time.</i></p>	

**Current Capital Spending**

The Infrastructure Report Card is a snapshot in time showing the financial health of the assets. To add context to the condition ratings, the amount spent on capital reinvestment as a 5-year average (2015 to 2019) is provided. The amounts shown are the average yearly dollars that were spent on capital reinvestment from 2015 to 2019, and do not include staff time. This information can be benchmarked through a metric

called the Reinvestment Ratio (explained below).

The Report Cards do not answer the question of what replacing assets as they age will cost. With the baseline information established by the Report Cards, the 2021 Asset Management Plan will analyze and forecast the assets further to show this information, the findings of which will be presented to Council.

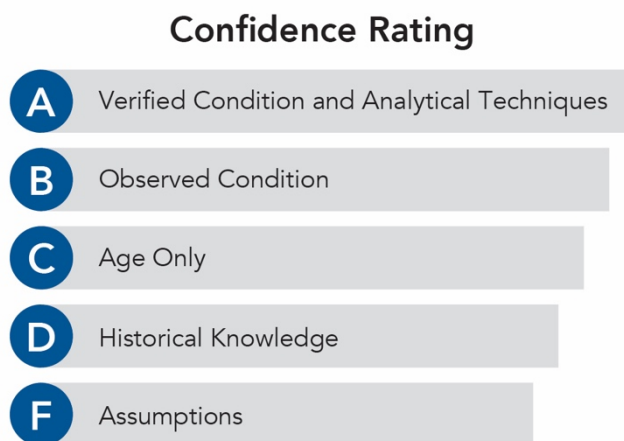
## Reinvestment Ratio

The reinvestment ratio benchmarks the financial health of the infrastructure by comparing annual budgets to total replacement value. The ratio follows the principles of age and expected service life (e.g. a 2% reinvestment rate would be needed to maintain assets on a 50-year cycle, on average). It is recommended by the Canadian Infrastructure Report Card to re-invest approximately a minimum of 1% every year, on average, back into your assets.

## Data Confidence Ratings

Asset management is a continuous improvement process. As the Town's capabilities advance, resources grow, and data improves, so too will the confidence in data and the ability to forecast or predict the cost. The scale presented (**Figure 6**) is a simplified measure of confidence based on the type of data that was used in the analysis. The scale shows how layers of analysis and data add to our confidence. As an example, if the Town has condition data (a "B" rating), this does not mean age and historical knowledge are ignored.

**Figure 6:** Data Confidence Rating System



## Results

Please see the appended Infrastructure Report Cards in the next few pages for the Town's roads, bridges, water, wastewater, and stormwater assets.





# Roads Network Infrastructure Report Card

## INFRASTRUCTURE PURPOSE

The Town's local and collector roads transport people and goods quickly and safely to where they need to go. Roads are maintained to ensure safe and smooth transportation.



**REPLACEMENT COST:**  
\$392 Million



**AVERAGE NETWORK CONDITION**

**GOOD**

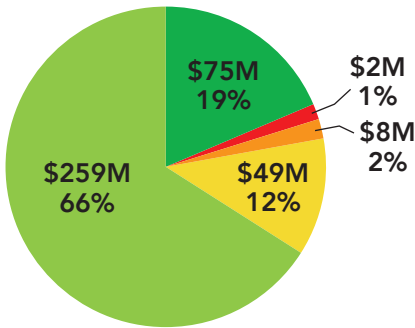


**INVENTORY**

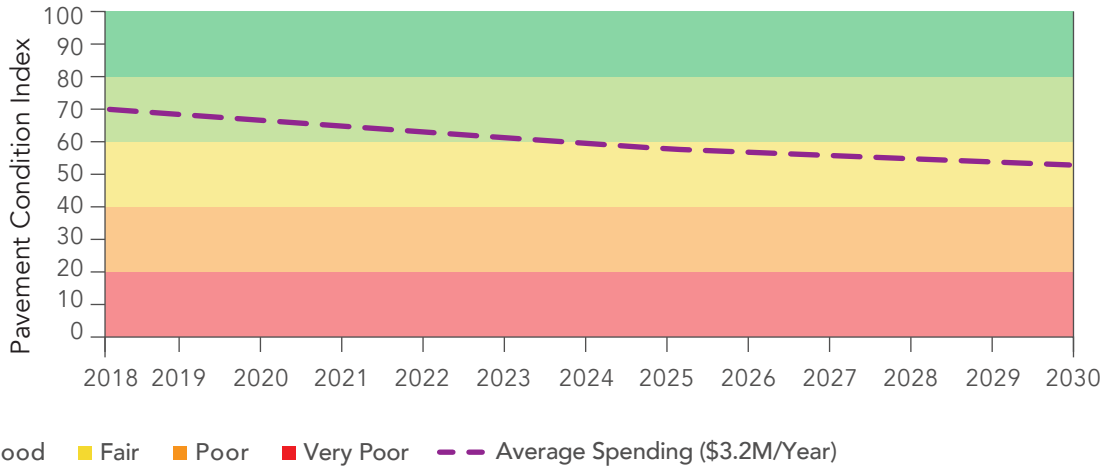
Local Roads: 182 centerline km  
Collector Roads: 67 centerline km

## DETAILS:

### Current Condition & Replacement Cost

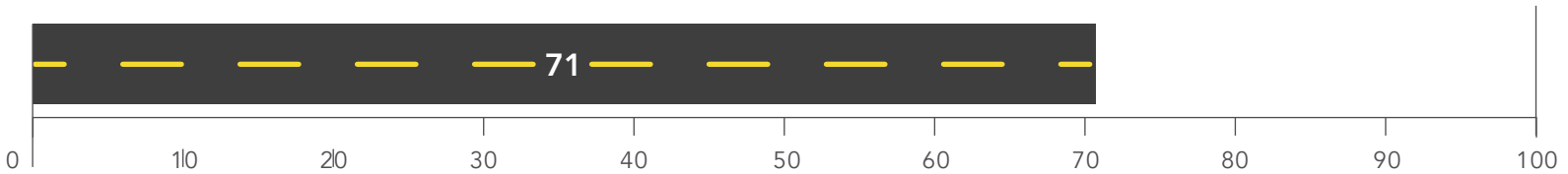


### Road Condition Level Service Trends



The road network average is forecasted using roads software that produces funding scenarios. The condition is forecasted from data that was collected in 2018.

### Average Road Pavement Condition (out of 100)



Road condition is collected by contracted services. Staff are working to convert condition observations into a life expectancy forecast

## CURRENT CAPITAL SPENDING

<b>CAPITAL REINVESTMENT (5 YEAR AVERAGE)</b>	\$3.28M
<b>REINVESTMENT RATIO * (5 YEAR AVERAGE)</b>	0.84%

## DATA CONFIDENCE RATING

### Confidence Rating

Please refer to 'Confidence Rating' in the report for more information.

- A** Verified Condition and Analytical Techniques
- B** Observed Condition
- C** Age Only
- D** Historical Knowledge
- F** Assumptions

\* Reinvestment Ratio: A financial measure indicating the Towns reinvestment into existing assets via the capital program. The Canada Infrastructure Report Card recommends a minimum annual reinvestment ratio of 1%



# Bridge Infrastructure Report Card

## INFRASTRUCTURE PURPOSE

The Town's bridges provide a safe passage to vehicles, cyclists, and pedestrians. Some also serve as local landmarks in Town. Each structure is inspected every two years as mandated by the Province of Ontario.



**REPLACEMENT COST:**  
\$56 Million



**AVERAGE NETWORK CONDITION**

**FAIR**



**INVENTORY**  
Vehicle Bridges: 13  
Foot Bridges: 36  
Major Culverts: 19

### Life Expectancy

To date, our bridges have consumed on average 70% of its expected lifespan. In spite of this, our bridges received an overall Fair rating based on biannual contracted engineering inspections that assess bridge's condition.

**Average Rating:** Fair.

## DETAILS:

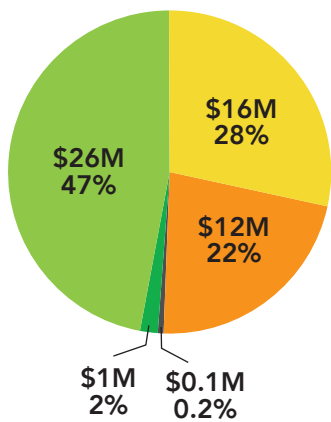
35 (70%)

15 (30%)

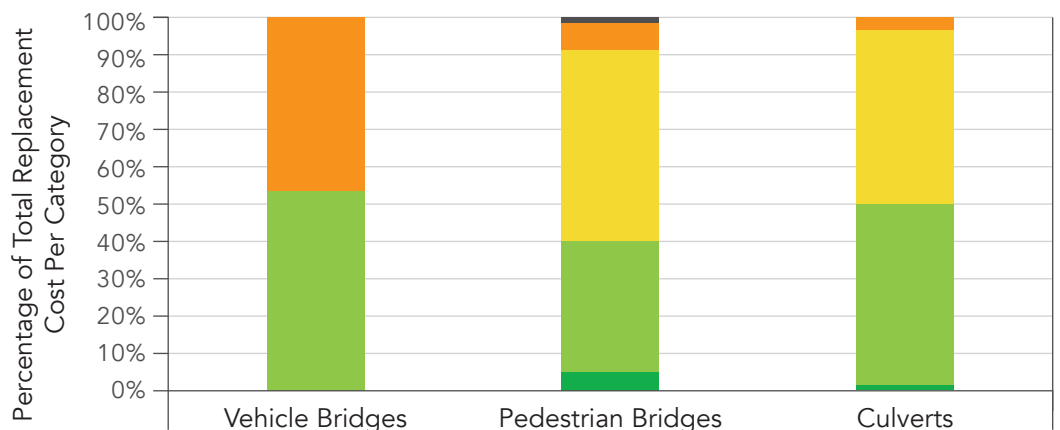
Average Expected Life: 50 Years

■ Current Average Age  
■ Average Remaining Life

### Current Condition & Replacement Cost



### Current Condition Breakdown



■ Very Good ■ Good ■ Fair ■ Poor ■ Very Poor ■ Unknown

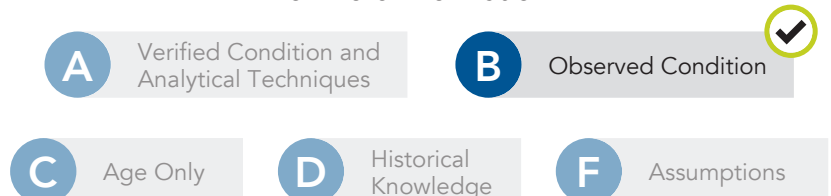
## CURRENT CAPITAL SPENDING

<b>CAPITAL REINVESTMENT (5 YEAR AVERAGE)</b>	\$0.37M
<b>REINVESTMENT RATIO * (5 YEAR AVERAGE)</b>	0.66%

## DATA CONFIDENCE RATING

### Confidence Rating

Please refer to 'Confidence Rating' in the report for more information.



\* Reinvestment Ratio: A financial measure indicating the Towns reinvestment into existing assets via the capital program. The Canada Infrastructure Report Card recommends a minimum annual reinvestment ratio of 1%



# Water Distribution Infrastructure Report Card

## INFRASTRUCTURE PURPOSE

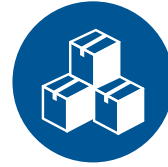
The Town provides drinking water distribution to service residents, business and customers with water purchased from York Region. The distribution system is maintained by the Town for high water quality and reliable supply.



**REPLACEMENT COST:**  
\$353 Million



**AVERAGE NETWORK CONDITION**  
**GOOD**



**INVENTORY**  
Watermains: 303 km  
Valves: 3,968  
Hydrants: 2,277

## DETAILS:

### Life Expectancy

To date, our water distribution system has used on average, 39% of its intended life span with 61% of its life span remaining.

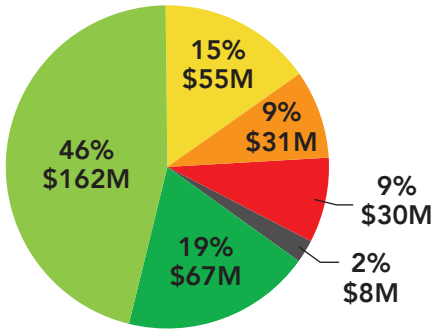
**Average Rating:** Good.



Average Expected Life: 73 Years

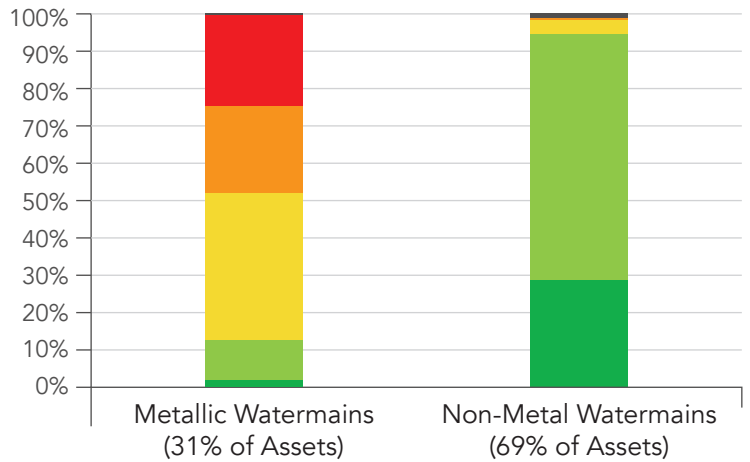
■ Current Average Age  
■ Average Remaining Life

### Current Condition & Replacement Cost



■ Unknown ■ Very Good ■ Good ■ Fair ■ Poor ■ Very Poor

### Watermain Condition by Material



Poor condition assets are mostly attributed to iron watermains, which are older and known to break easily. New PVC pipes do not have this vulnerability.

## CURRENT CAPITAL SPENDING

<b>CAPITAL REINVESTMENT (5 YEAR AVERAGE)</b>	\$1.65M
<b>REINVESTMENT RATIO * (5 YEAR AVERAGE)</b>	0.47%

## DATA CONFIDENCE RATING

### Confidence Rating

Please refer to 'Confidence Rating' in the report for more information.



\* Reinvestment Ratio: A financial measure indicating the Towns reinvestment into existing assets via the capital program. The Canada Infrastructure Report Card recommends a minimum annual reinvestment ratio of 1%





# Wastewater Collection Infrastructure Report Card

## INFRASTRUCTURE PURPOSE

The Town collects wastewater from residents, sending it to York Region trunk sewers and facilities. The Town maintains the wastewater system to ensure it has the capacity to support the community's wastewater needs.



**REPLACEMENT COST:**  
\$348 Million



**AVERAGE NETWORK CONDITION**  
**GOOD**



**INVENTORY**  
Gravity Sewers: 262 km  
Forcemains & Siphons: 10 assets  
Pump Stations: 6 assets  
Manholes: 4,284 assets

## DETAILS:

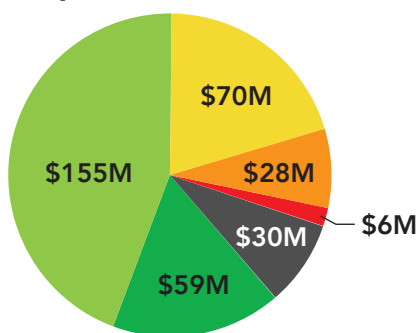
### Life Expectancy

To date, our wastewater collection system has consumed on average, 39% of its intended life span with 61% of its life span remaining.

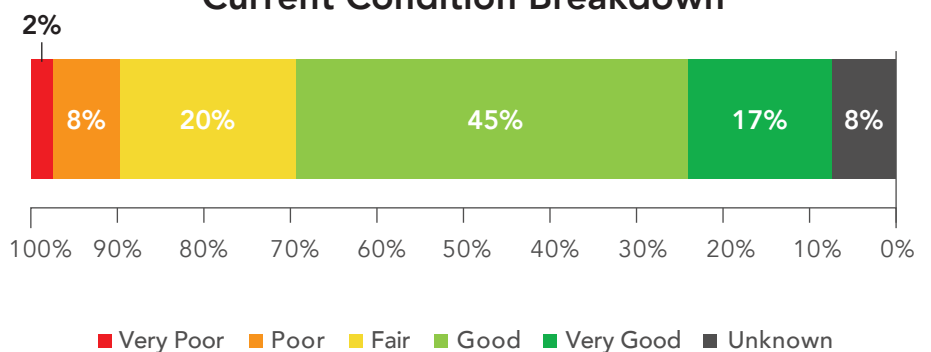
**Average Rating:** Fair to Good.



### Current Condition & Replacement Cost



### Current Condition Breakdown



## CURRENT CAPITAL SPENDING

<b>CAPITAL REINVESTMENT (5 YEAR AVERAGE)</b>	\$0.62M
<b>REINVESTMENT RATIO * (5 YEAR AVERAGE)</b>	0.18%

## DATA CONFIDENCE RATING

### Confidence Rating

Please refer to 'Confidence Rating' in the report for more information.



\* Reinvestment Ratio: A financial measure indicating the Towns reinvestment into existing assets via the capital program. The Canada Infrastructure Report Card recommends a minimum annual reinvestment ratio of 1%



# Stormwater System Infrastructure Report Card

## INFRASTRUCTURE PURPOSE

The Town provides stormwater collection, treatment, and infiltration using a combination of sewer, drainage features, and facilities. Stormwater is treated for both quality and quantity to ensure adequate drainage, safe passage, and environmental stewardship.



**REPLACEMENT COST:**  
\$598 Million



**AVERAGE NETWORK CONDITION**  
**GOOD**



**INVENTORY**  
Gravity Sewers: 284 km  
Manholes & Catchbasins: 10,851  
Oil Grit Separators: 37  
Stormwater Ponds and LID's (Low Impact Development): 65

## DETAILS:

### Life Expectancy

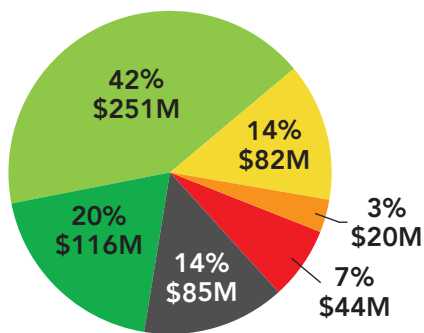
To date, our stormwater system has used on average, 35% of its intended life span with 65% of its life span remaining.  
**Average Rating: Good.**



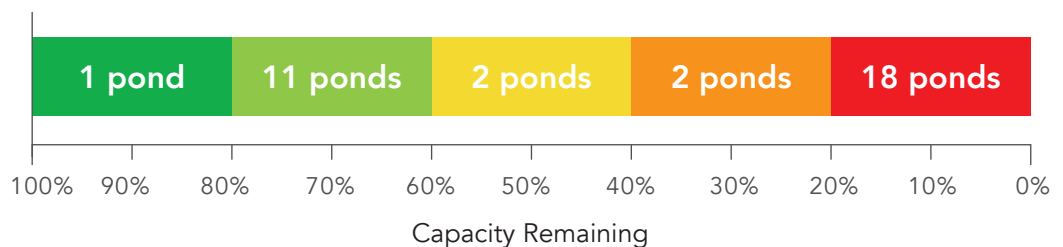
**Average Expected Life: 72 Years**

■ Current Average Age  
■ Average Remaining Life

### Current Condition Breakdown and Total Replacement Cost by Category



### Stormwater Ponds with Rehabilitation Needs



This graph shows the stormwater wet ponds in the Town of Newmarket, and their remaining capacity to hold sediment. Over time, wet ponds fill up with sediment and require dredging to retain their functionality.

■ Very Good ■ Good ■ Fair ■ Poor ■ Very Poor ■ Unknown

## CURRENT CAPITAL SPENDING

<b>CAPITAL REINVESTMENT (5 YEAR AVERAGE)</b>	\$0.52M
<b>REINVESTMENT RATIO * (5 YEAR AVERAGE)</b>	0.09%

## DATA CONFIDENCE RATING

### Confidence Rating

Please refer to 'Confidence Rating' in the report for more information.



\* **Reinvestment Ratio:** A financial measure indicating the Towns reinvestment into existing assets via the capital program. The Canada Infrastructure Report Card recommends a minimum annual reinvestment ratio of 1%