



# Village of Merrickville-Wolford Asset Management Plan – Core Assets

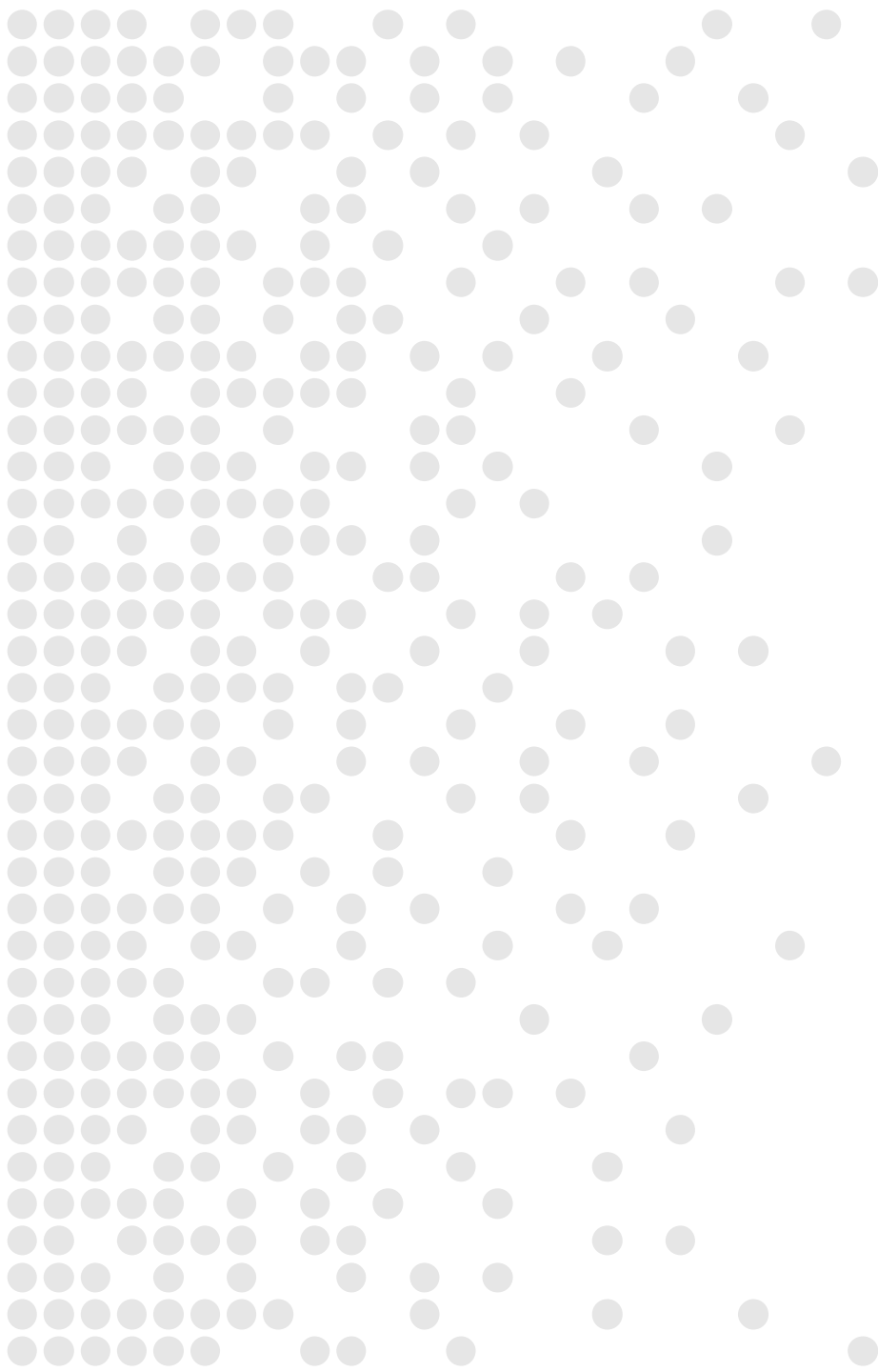
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Council Presentation – Part I  
November 29, 2021

# Introduction



- Watson & Associates Economists Ltd. (Watson) was retained to develop an Asset Management Plan (AMP) covering core assets for the Village of Merrickville-Wolford (Village)
- The goals of this iteration of the AMP are:
  - Develop a better understanding of the Village's existing core assets
  - Develop a Levels of Service framework for tracking performance and setting future targets
  - Bring the Village into compliance with the next phase of O. Reg. 588/17 (July 1, 2022 requirements)
  - Establish a sustainable level of annual capital investment for core assets by examining the lifecycle needs of assets



# Background

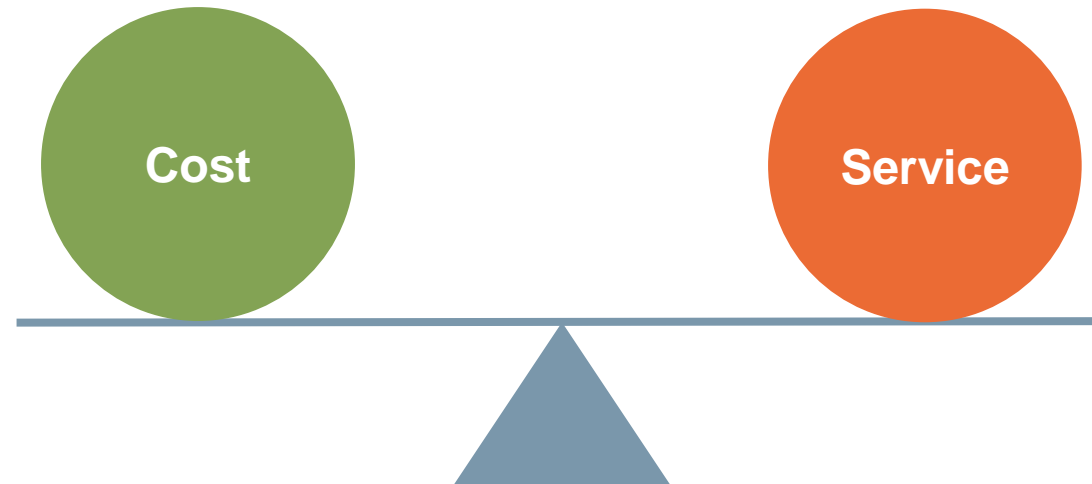
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# Background

## Asset Management – what is it?



- “the **set of planned actions** that will enable the **assets** to provide the **desired level of service** in a **sustainable way**, while **managing risk**, at the **lowest lifecycle cost**”
- Balancing **lifecycle costs** and **levels of service**

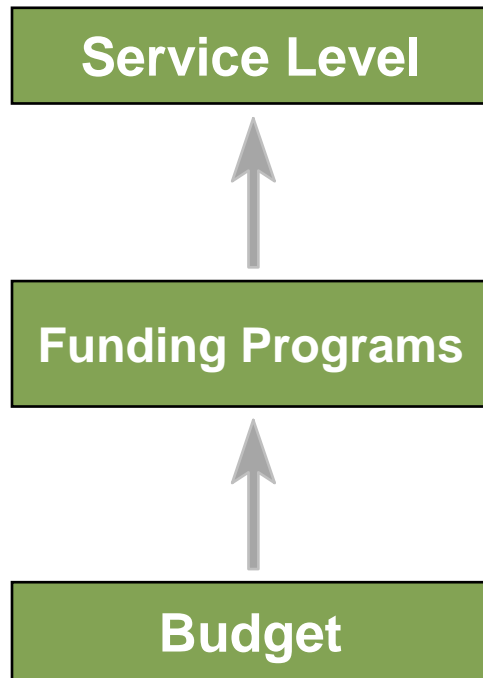


# Background

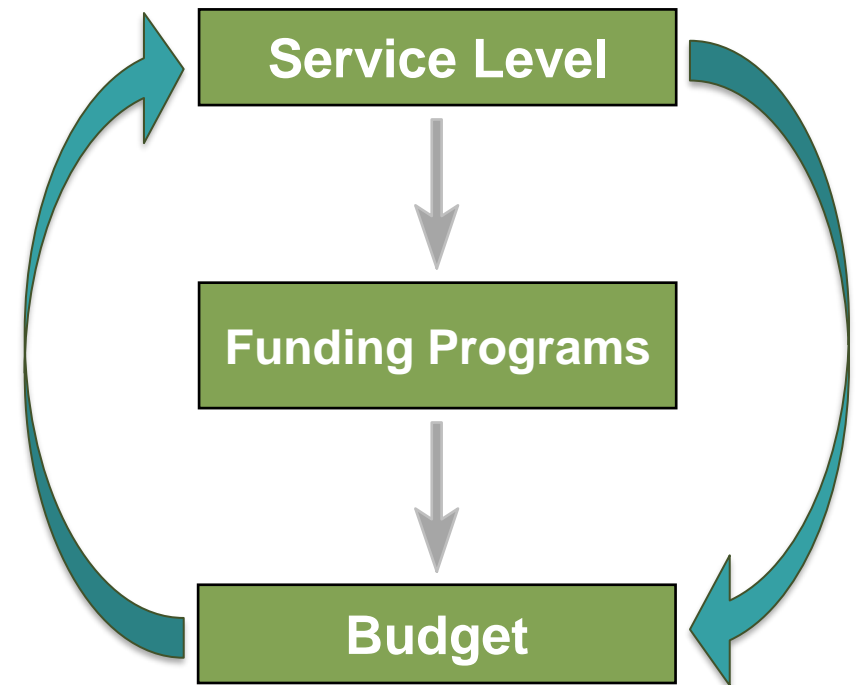
## Asset Management – Budget vs. Service Driven



### Budget Driven Framework

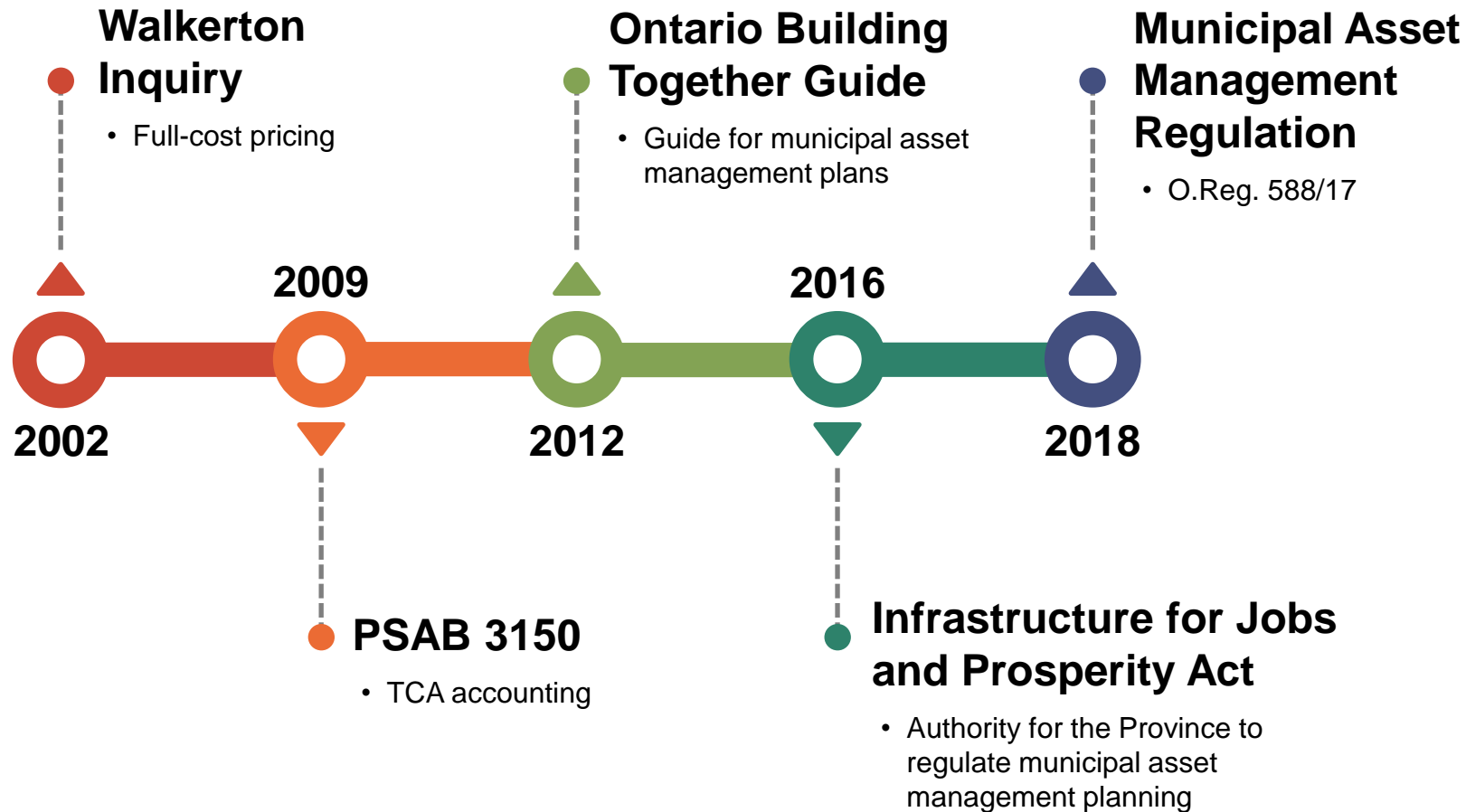


### Service Driven Framework



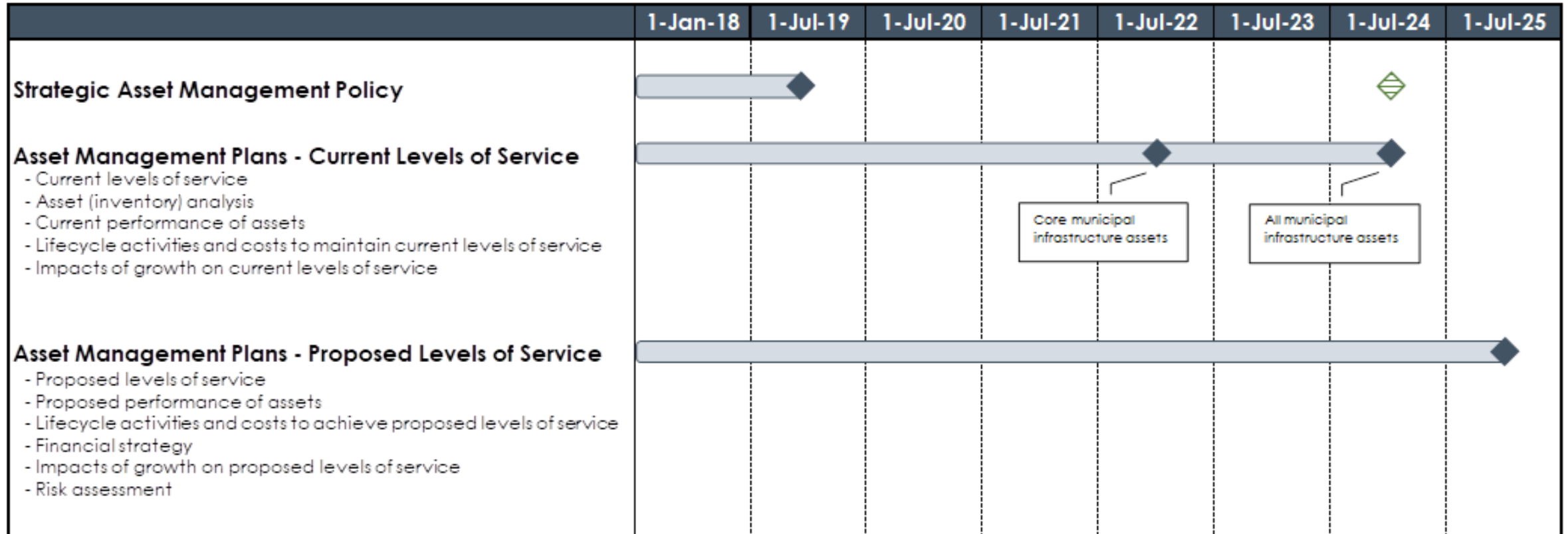
# Background

## Asset Management in Ontario



# Background

## Ontario Regulation 588/17



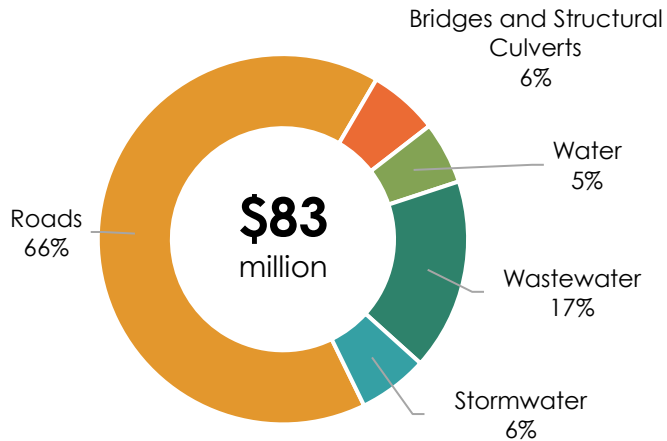
- ◆ Deadline for completion
- ◇ Update

# Background

## Assets & Replacement Costs

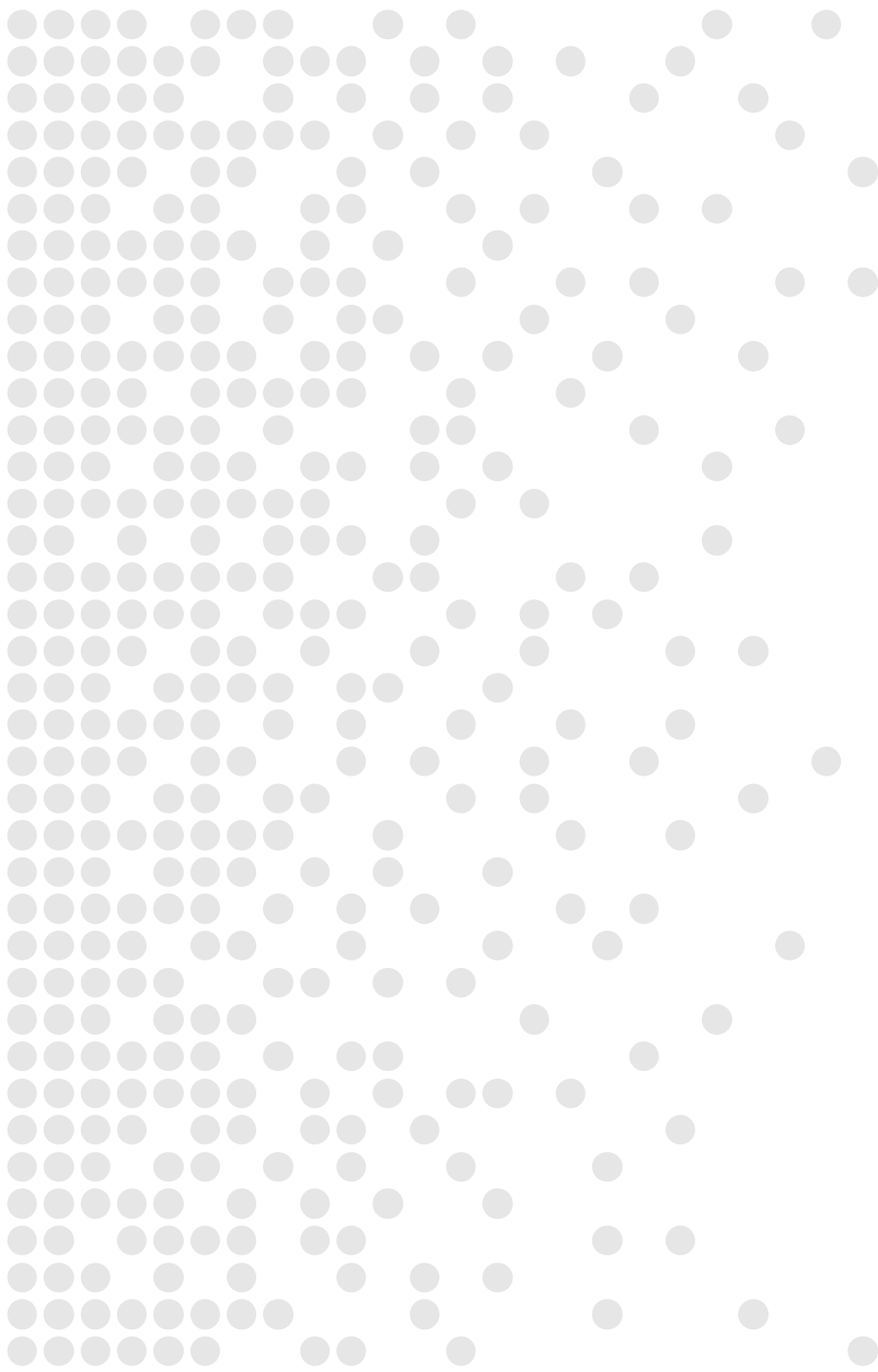


### Asset Replacement Cost



Asset Class	Description
Roads	99 centreline km roads (31% HCB, 18% LCB, 51% Gravel)
Bridges and Culverts	5 bridges; 1 structural culvert
Water	8.2 km of watermains; well supply and treatment system
Wastewater	5.6 km of wastewater mains; wastewater treatment plant; pumping station
Stormwater	8.5 km of stormwater mains





# Levels of Service

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# Levels of Service



## Why develop levels of service?

- A fully developed Levels-of-Service Framework describes qualitatively and quantitatively the outputs or objectives the Village intends its assets to deliver. This is important because:
  - It allows the Village to communicate its objectives to stakeholders and inform them of any planned changes.
  - The Village can track its performance against the objectives to identify problem areas.
  - Budget decisions can be linked to outcomes, enabling rational trade-offs to be made.

# Levels of Service

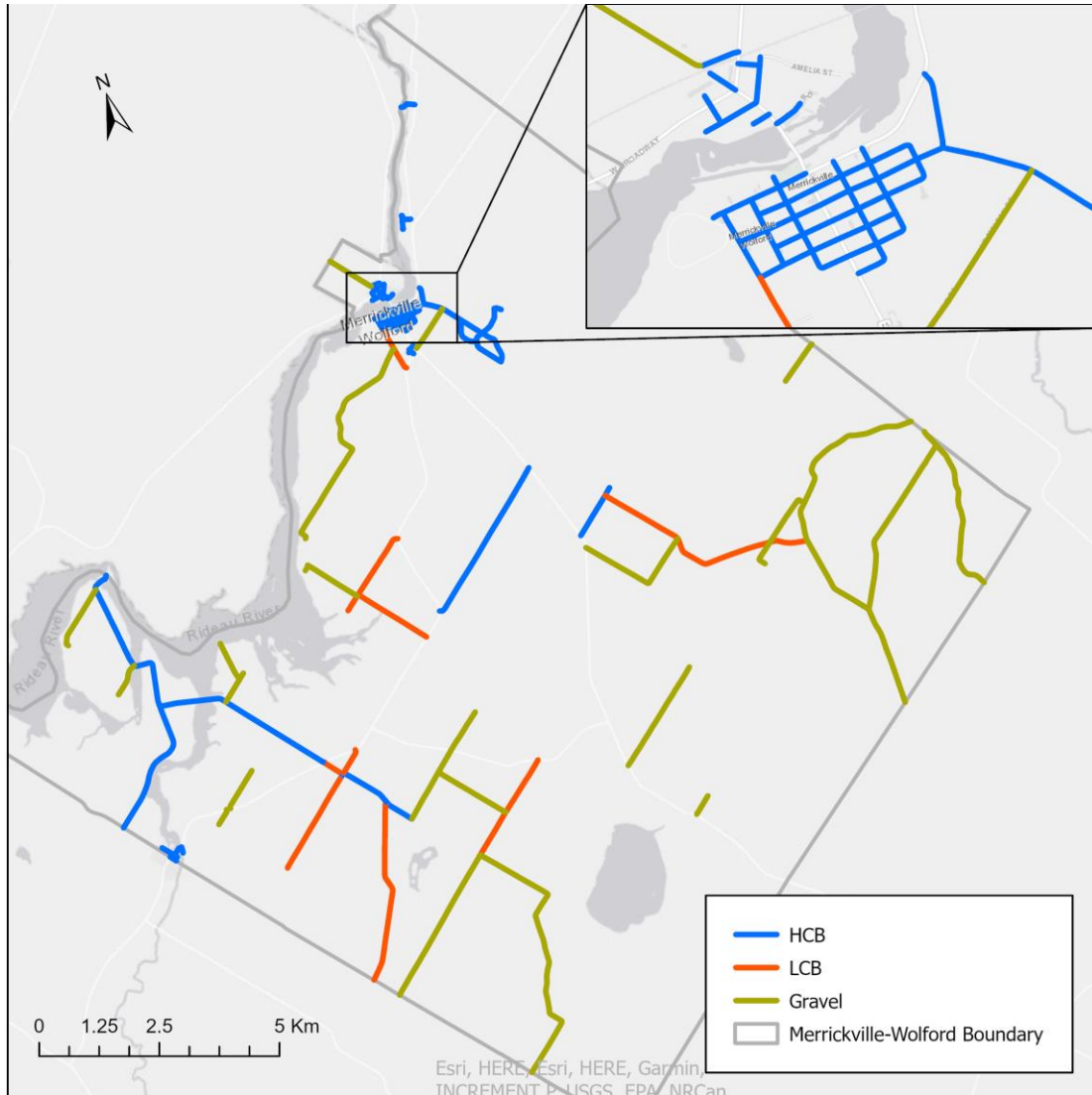
## Transportation – Community Levels of Service (Part 1)



Service Attribute	Community Levels of Service
<b>Scope</b>	<p>The Village's transportation assets enable the movement of people and goods within the Village and provide connectivity to regional roads. The Village's transportation assets also support tourism and through traffic from neighbouring municipalities. The Village's transportation assets support commercial and industrial truck traffic, movement of agricultural equipment, shipping and receiving of agricultural products, and reliable emergency vehicle access to all areas of the Village. Transportation assets also support other transportation modes such as walking and cycling.</p>
	<p>The scope of the Village's transportation assets is illustrated by maps on the following slide. The maps show the geographical distribution of roads and identify locations of the Village's bridges and structural culverts.</p>

# Levels of Service

## Transportation – Community Levels of Service (Part 2)



# Levels of Service

## Transportation – Community Levels of Service (Part 3)



Service Attribute	Community Levels of Service
<b>Quality</b>	The Village strives to maintain road and bridge surfaces to a level such that they support an adequate travel experience for road users.
	Photos of roads, bridges and structural culverts in different condition states are shown in tables on the next two slides. A general description of how each condition state may affect the use of these assets is also provided in these tables.

# Levels of Service

## Transportation – Community Levels of Service (Part 4)





Condition State	Example Photo	Description <sup>[A]</sup>	Condition State	Example Photo	Description <sup>[A]</sup>
<b>Excellent</b> $85 < \text{PCI} \leq 100$		A very smooth ride. Pavement is in excellent condition with few cracks.	<b>Poor</b> $40 < \text{PCI} \leq 55$		An uncomfortable ride with frequent to extensive bumps or depressions. Cannot maintain the posted speed at lower end of the scale. The pavement is in poor to fair condition with frequent moderate cracking and distortion, and intermittent moderate alligating.
<b>Good</b> $70 < \text{PCI} \leq 85$		A smooth ride with just a few bumps or depressions. The pavement is in good condition with frequent very slight or slight cracking.	<b>Very Poor</b> $25 < \text{PCI} \leq 40$		A very uncomfortable ride with constant jarring bumps and depressions. Cannot maintain the posted speed and must steer constantly to avoid bumps and depressions. The pavement is in poor condition with moderate alligating and extensive severe cracking and distortion.
<b>Fair</b> $55 < \text{PCI} \leq 70$		A comfortable ride with intermittent bumps or depressions. The pavement is in fair condition with intermittent moderate and frequent slight cracking, and with intermittent slight or moderate alligating and distortion.	<b>Serious</b> $10 < \text{PCI} \leq 25$		The pavement is in poor to very poor condition with extensive severe cracking, alligating and distortion.

[A] Descriptions are adapted from SP-024 Manual for Condition Rating of Flexible Pavements (Ontario Ministry of Transportation, 2016)

# Levels of Service

## Transportation – Community Levels of Service (Part 5)



Condition State	Photos	Description [A]
<b>Good</b> $70 < \text{BCI} \leq 100$		Maintenance is not usually required within the next five years
<b>Fair</b> $60 < \text{BCI} \leq 70$		Maintenance work is usually scheduled within the next five years. This is the ideal time to schedule major bridge repairs to get the most out of bridge spending..
<b>Poor</b> $0 < \text{BCI} \leq 60$	No Village bridges or culverts in this condition state	Maintenance work is usually scheduled within one year. Structure may be at increased risk of requiring a loading restriction to be posted.

[A] Descriptions are based on the Ontario Structure Inspection Manual (Ontario Ministry of Transportation, 2008)

# Levels of Service

## Transportation – Community Levels of Service (Part 6)



<b>Service Attribute</b>	<b>Community Levels of Service</b>
<b>Affordability/ Cost</b>	The Village strives to deliver transportation services efficiently and at a cost that is acceptable to Village tax payers.
<b>Reliability</b>	The Village endeavors to provide transportation services with minimal interruptions.
<b>Accessibility</b>	The Village aims to have all sidewalks accessible to persons with disabilities.



# Levels of Service

## Transportation – Technical Levels of Service (Part 1)



Service Attribute	Performance Measure	2020 Performance
<b>Scope</b>	Number of lane-kilometres of arterial roads as a proportion of square kilometres of land area of the Village	Not applicable
	Number of lane-kilometres of collector roads as a proportion of square kilometres of land area of the Village	Not applicable
	Number of lane-kilometres of local roads as a proportion of square kilometres of land area of the Village	0.92 lane-km/km <sup>2</sup>
	Percentage of bridges in the Village with loading or dimensional restrictions	20%

# Levels of Service

## Transportation – Technical Levels of Service (Part 2)



Service Attribute	Performance Measure	2020 Performance
<b>Quality</b>	For paved roads in the Village, the average pavement condition index value	61
	Centreline-kilometres of paved roads with PCI less than 40	6.2 km
	For unpaved roads in the municipality, the average surface condition	Fair
	Centreline kilometres of gravel roads with condition of Poor	0 km
	For bridges in the municipality, the average bridge condition index value	73.3
	For structural culverts in the municipality, the average bridge condition index value	62.9

# Levels of Service

## Transportation – Technical Levels of Service (Part 3)



Service Attribute	Performance Measure	2020 Performance
<b>Affordability/ Cost</b>	For paved roads in the Village, average annual lifecycle capital cost per centreline-kilometre	\$16,123
	For paved roads, average annual lifecycle capital cost per household	\$568
	Maintenance cost per centreline-kilometre	
<b>Reliability</b>	Number of unplanned road closures	0

# Levels of Service

## Water – Community Levels of Service



<b>Service Attribute</b>	<b>Community Levels of Service</b>
<b>Scope</b>	The water system provides potable water for residential, business, and institutional consumption, as well as maintenance operations, and firefighting in the core urban area.
	The water system serves the urban areas of the Village of Merrickville both north and south of the Rideau River.
<b>Reliability</b>	The water distribution system is managed with the goal of providing safe and reliable delivery of water, minimizing service interruptions and occurrences of adverse water quality events (measured by occurrences of boil water advisories).
<b>Affordability</b>	The Village aims to deliver water services to customers at a reasonable cost while ensuring long-term financial sustainability of the water system.
<b>Efficiency</b>	The Village strives to deliver water services efficiently and sustainably.

# Levels of Service

## Water – Technical Levels of Service (Part 1)



Service Attribute	Performance Measure	2020 Performance
<b>Scope</b>	Percentage of properties connected to the municipal water system	23%
	Percentage of properties where fire flow is available	23%
<b>Reliability</b>	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0 connection-days/ connection
	The number of connection-days per year lost due to water main breaks compared to the total number of properties connected to the municipal water system	0.043 connection-days/ connection

# Levels of Service

## Water – Technical Levels of Service (Part 2)



Service Attribute	Performance Measure	2020 Performance
<b>Affordability</b>	Typical annual residential water bill, assuming annual water consumption of 150 cubic metres.	\$740
	Typical annual residential water bill as percentage of median after tax household income	1.1%
	Percentage of water accounts three months or more in arrears	3%
<b>Efficiency</b>	Kilowatt-hours of electricity consumption for water treatment and pumping per cubic metre of water produced	1.35 kWh/m <sup>3</sup>

# Levels of Service

## Wastewater – Community Levels of Service (Part 1)



<b>Service Attribute</b>	<b>Community Levels of Service</b>
<b>Scope</b>	The Village provides wastewater services to residential, business, and institutional customers.
	The wastewater system serves the urban areas of the Village of Merrickville south of the Rideau River.
<b>Reliability</b>	The wastewater collection system is separated, meaning that sanitary and stormwater flows are carried in different pipes with different destinations. Despite this, stormwater can enter the wastewater system through numerous sources.
	The Municipality's Wastewater Treatment Plant discharges effluent into the Rideau River. Municipal staff put forth all efforts to operate the plant at maximum removal efficiencies and within the rated capacity of the facility. The final effluent design objectives are identified in the facility's Environmental Compliance Approval (1121-7YRQLF).

# Levels of Service

## Wastewater – Community Levels of Service (Part 2)



<b>Service Attribute</b>	<b>Community Levels of Service</b>
<b>Affordability</b>	The Village aims to deliver wastewater services to customers at a reasonable cost while ensuring long-term financial sustainability of the water system.
<b>Efficiency</b>	The Village strives to deliver wastewater services efficiently and sustainably.



# Levels of Service

## Wastewater – Technical Levels of Service (Part 1)



Service Attribute	Performance Measure	2020 Performance
<b>Scope</b>	Percentage of properties connected to the municipal wastewater system	20%
	Septage receiving capacity measured in cubic metres per day.	6.5 m <sup>3</sup> /day
<b>Reliability</b>	The number of connection-days lost per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system	0 connection-days/ connection
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system	0.0025 violations / connection
	Average annual daily flow as a percentage of treatment capacity	77%

# Levels of Service

## Wastewater – Technical Levels of Service (Part 2)



Service Attribute	Performance Measure	2020 Performance
<b>Affordability</b>	Typical annual residential wastewater bill, assuming annual water consumption of 150 cubic metres.	\$1,482
	Typical annual residential wastewater bill as a percentage of median after tax household income	2.1%
	Percentage of wastewater accounts that are in arrears	2.5%
<b>Efficiency</b>	Kilowatt-hours of electricity consumption for wastewater treatment and pumping per cubic metre of water produced	1.50 kWh/m <sup>3</sup>

# Levels of Service

## Stormwater – Community Levels of Service



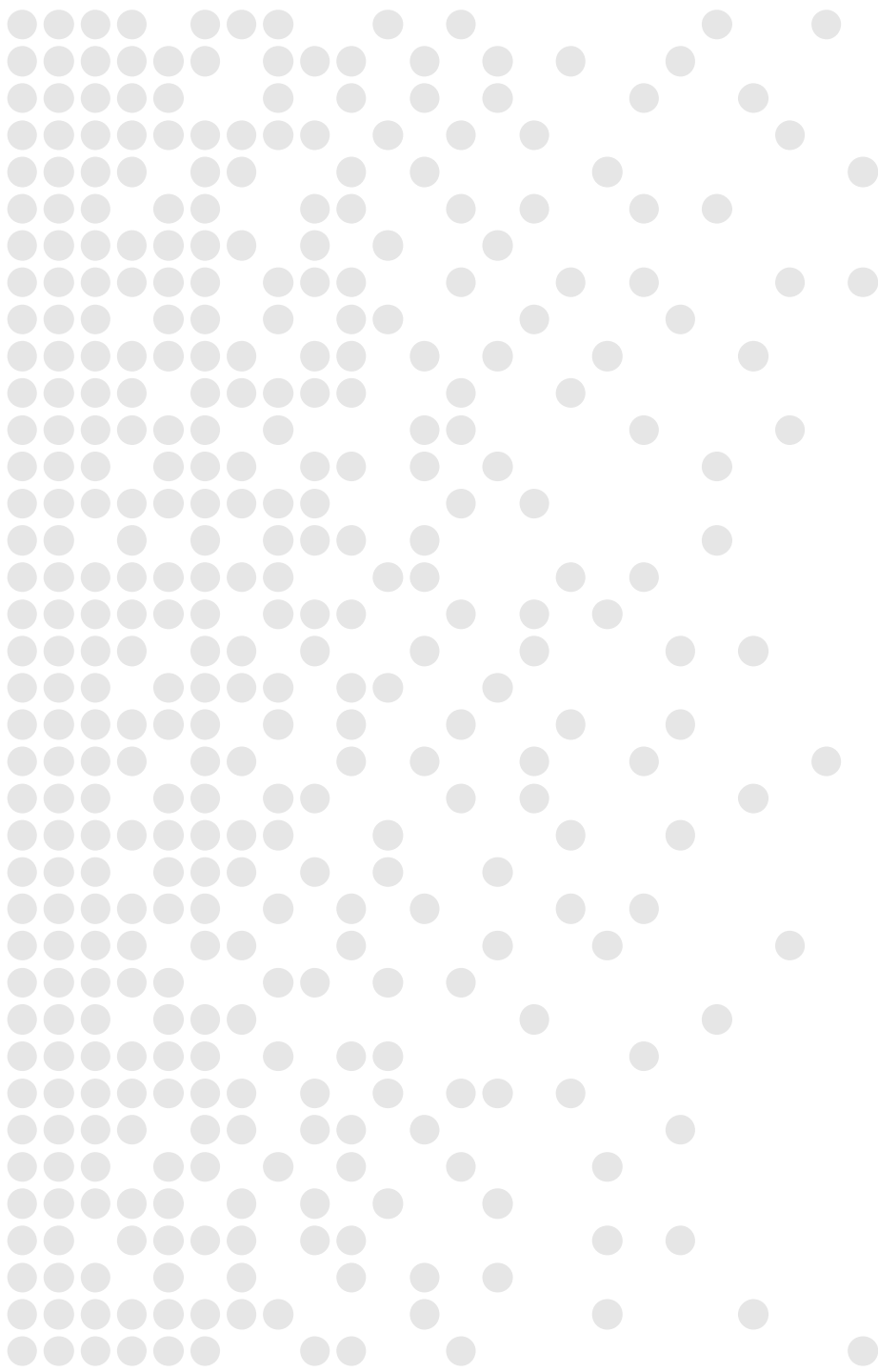
<b>Service Attribute</b>	<b>Community Levels of Service</b>
<b>Scope</b>	The stormwater management system provides for the collection of stormwater in order to protect properties and roads from flooding, to manage the discharge rate into the environment, and to remove contaminants .
	The stormwater system serves the urban areas of the Village of Merrickville both north and south of the Rideau River.
	The stormwater management system is resilient to 5-year storms and ensures most properties in serviced areas are resilient to 100-year storms.

# Levels of Service

## Stormwater – Technical Levels of Service



Service Attribute	Performance Measure	2020 Performance
<b>Scope</b>	Percentage of properties in the Village resilient to a 100-year storm	98.4%
	Percentage of the municipal stormwater management system resilient to a 5-year storm	100%
<b>Reliability</b>	Percentage of catch basins inspected and cleaned out annually	100%



## Next Steps

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# Next Steps



- Refinement of lifecycle management strategies and high-level financial analysis
  - Final asset management plan presented to Council on December 13, 2021
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- Future expansions of the AMP to incorporate all assets (by July 1, 2024), establish level of service targets, and develop a financial strategy (by July 1, 2025)
  - Annual review of asset management progress