

Township of Oro-Medonte

# Asset Management Plan

Prepared in Accordance with  
the Infrastructure for Jobs and  
Prosperity Fund and Ontario  
Regulation 588/17

March 15, 2022



# Executive Summary

The *Infrastructure for Jobs and Prosperity Act, 2015* (the “Act”) was proclaimed by the Province of Ontario on May 1, 2016 and, along with *Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure* (O.Reg. 588/17), establishes the requirement for Ontario municipalities to adopt asset management plans for core infrastructure (roads, bridges, water and wastewater management) by July 1, 2022.

The Township of Oro-Medonte (the “Township”) has operates and maintains core infrastructure (roads, bridges and culverts, water) with a historical cost of \$95.3 million and an estimated replacement cost of \$436.0 million, the majority of which (\$364.4 million or 84%) relates to the Township’s municipal road network.

While the Township’s core infrastructure is considered to be in a good condition on average, specific components of its core infrastructure are approaching or are at the end of their useful lives. However, the Township’s annual funding for maintenance and capital replacement of core infrastructure is not sufficient to meet its requirements, with the Township forecasted to require between \$67.6 million to \$122.2 million for lifecycle maintenance activities for core infrastructure over the next ten years). As a result, maintenance and replacement requirements are necessarily deferred, resulting in an increasing infrastructure deficit, continued deterioration of its core infrastructure assets and the potential for reduced levels of service for residents and other users.

Asset management planning is an ongoing process that reflects the strategic asset management policy adopted by the Township in 2019 and is coordinated with other activities undertaken by the Township, including but not limited to the development of annual service plans for core infrastructure, ongoing needs and conditions assessments undertaken by municipal departments and, arguably most significantly, the Township’s operating and capital budgeting processes. By providing an indication as to the condition, replacement cost, service levels and lifecycle requirements associated with the Township’s core infrastructure, the asset management plan informs other aspects of the Township’s operations, contributing towards a better understanding of the Township’s infrastructure and associated funding requirements so as to ensure the Township meets its service delivery expectations and commitments.



Township of Oro-Medonte

# Introduction to the Asset Management Plan



# Introduction to the Asset Management Plan

## A. Background to the asset management plan

The *Infrastructure for Jobs and Prosperity Act, 2015* (the “Act”) was proclaimed by the Province of Ontario on May 1, 2016 and, along with *Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure* (O.Reg. 588/17), establishes the requirement for Ontario municipalities to adopt asset management plans for core infrastructure (roads, bridges, water and wastewater management) by July 1, 2022, with asset management plans for remaining municipal assets adopted by July 1, 2024.

The Act and Regulation outline a variety of requirements intended to enhance asset management planning by municipalities, including the need for a strategic asset management policy, prescribed information required to be addressed in the asset management plans and future efforts to be undertaken by the Township of Oro-Medonte (the “Township”) with respect to updating and expanding the level of analysis and planning associated with asset management planning for the Township’s assets and related levels of service.

In keeping with these requirements, the Township adopted a strategic asset management policy effective July 1, 2019, that supports the establishment of consistent standards and guidelines for management of the Township’s assets applying sound technical, social, economic and environmental principles that consider present and future needs of users, and the service expected from the assets. This means leveraging the lowest total lifecycle cost of ownership with regard to the service levels that best meet the needs of the community while ensuring risks are appropriately managed

The Township’s asset management plan addresses the legislative requirements of the Act and provides support for future decision-making with respect to the Township’s investment in its infrastructure and associated levels of service. As required by the Act, the asset management plan includes the following components:

- A summary of the Township’s assets, including average age and estimated replacement cost;
- An assessment of asset condition;
- Community levels of service that provide a general description of the infrastructure in place and linkages to customers; and
- Technical levels of service, representing quantitative indicators that reflect asset condition or performance.

# Introduction to the Asset Management Plan

## **B. Asset management planning defined**

Asset management planning is the process of making the best possible decisions regarding the acquisition, operating, maintaining, renewing, replacing and disposing of infrastructure assets. The objective of an asset management plan is to maximize benefits, manage risk and provide satisfactory levels of service to the public in a sustainable manner. In order to be effective, an asset management plan needs to be based on a thorough understanding of the characteristics and condition of infrastructure assets, as well as the service levels expected from them. Recognizing that funding for infrastructure acquisition and maintenance is often limited, a key element of an asset management plan is the setting of strategic priorities to optimize decision-making as to when and how to proceed with investments. The ultimate success or failure of an asset management plan is dependent on the associated financing strategy, which will identify and secure the funds necessary for asset management activities and allow the Township to move from planning to execution.

## **C. Scope of the asset management plan**

Consistent with the requirements of the Act, the asset management plan encompasses those components of the Township's infrastructure that are considered be core infrastructure assets, specifically:

- Roads
- Bridges and culverts
- Water infrastructure

For the purposes of developing the asset management plan, a ten year planning horizon was considered.

# Introduction to the Asset Management Plan

## D. Asset management planning objectives

In addition to meeting the legislative requirements under the Act, the asset management plan is intended to enhance the Township’s overall policy and planning framework for infrastructure management, while at the same time increasing its internal capacity (through people, information and processes) for effective asset management planning.

A summary of the Township’s current state of asset management planning, as well as the intended future state of its capabilities following adoption of the asset management plan is provided below.

Capacity Element	Current State	Future State
<p><b>Policy and Governance</b> – The Township has developed a formal asset management planning policy and roadmap and measures its progress over time.</p>	<p>The Township has adopted a strategic asset management policy. The Township considers asset management implications as part of its budgeting and forecasting activities.</p>	<p>The Township will establish a roadmap that details required asset management planning action items over the next three to five years, with associated performance measures to monitor progress.</p>
<p><b>People and Leadership</b> – The Township has cross-functional teams with clear accountabilities, resourcing and support to advance asset management planning.</p>	<p>The Township has identified a champion to advance asset management planning, with functional departments considering asset management planning as part of their budgeting and forecasting activities.</p>	<p>The Township will have an asset management team accountable for ongoing implementation, with each department having roles and responsibilities for managing their component of the overall plan.</p>

# Introduction to the Asset Management Plan

## D. Asset management planning objectives (continued)

Capacity Element	Current State	Future State
<p><b>Data and Information</b> – The Township is collecting and using relevant data to support effective asset management planning and decision-making.</p>	<p>The Township has an asset inventory based on its tangible capital asset reporting and other available information (e.g. roads needs assessment studies), with informal approaches to assessing asset condition and performance levels.</p>	<p>The Township will have a formal asset inventory that outlines condition assessments and service level standards for critical assets.</p>
<p><b>Planning and Decision-Making</b> – The Township is documenting and standardizing the approach to establishing asset management planning priorities, capital and operations planning and related budget impacts.</p>	<p>Departments plan for infrastructure renewal based on their individual needs, with a three year capital forecast introduced as part of the Township’s 2021 budget process. Infrastructure planning decisions are sometimes made in response to user needs and regulatory requirements, although planning based on service levels is carried out by certain departments.</p>	<p>Asset management planning will be carried out in a more coordinated fashion across the Township, with consideration given to the current and expected levels of service for critical assets.</p>
<p><b>Contribution to Asset Management Practice</b> – The Township supports asset management planning through internal and external knowledge sharing.</p>	<p>Asset management planning knowledge varies across the organization, with different approaches and formats used for data collection and analysis in support of asset management planning.</p>	<p>The Township will integrate asset management planning into its Enterprise Resource Planning system, providing a single repository for asset management planning data. The Township will also provide ongoing training and support for staff on asset management planning concepts.</p>

# Introduction to the Asset Management Plan

## E. Growth assumptions and implications

The Township continues to witness growth in population and households, with the 2021 census indicating a total population of 23,017 and 9,510 private households, an increase of 9.4% and 5.5%, respectively, from the 2016 census. Over the past ten years, the Township's total population has increased by just under 3,000 residents, with the number of private households increasing by just under 1,000 and under the Proposed Growth Plan for the Greater Golden Horseshoe, the Township's population is forecasted to increase to 27,000 residents by 2031.

With respect to core infrastructure, the continued growth of the Township can impact on its lifecycle requirements in two primary ways:

- Increased traffic volumes may require the Township to revise its approach to the replacement of roads. While the Township has not identified the need for additional lanes to accommodate the anticipated growth in traffic volumes, the increased volumes may require different surface treatments.
- Continued population growth may result in the ongoing assumption of private water and wastewater systems. However, the assumption of private systems cannot be reasonably forecasted at this time and as such, has not been considered in the asset management plan.



Township of Oro-Medonte

# Asset Management Planning for Roads

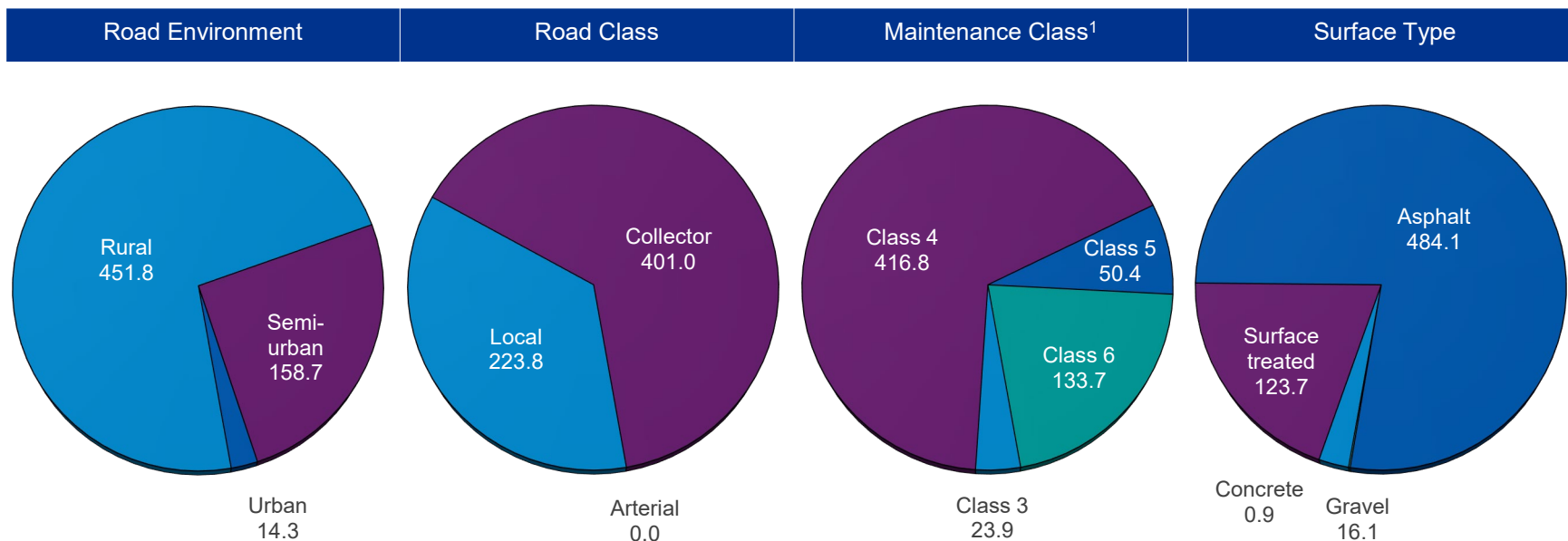


# Asset Management Planning for Roads

## A. Overview of the Township's road network

The Township's municipal road network is comprised of 624.8 kilometers of roads that connect properties within the municipality to each other and other communities through connections with the County of Simcoe road network and the Provincial Highway system. As identified by the recent roads need study completed in October 2020 (the "Roads Needs Study"), the majority of the Township's road network is classified as Class 4 roads under *Ontario Regulation 239/02: Minimum Maintenance Standards for Municipal Highways* ("O.Reg. 239/20").

A summary of the Township's road network is provided below.



<sup>1</sup> Reflects the classification of roads under O.Reg. 239/20, which is determined based on traffic volumes and speed limits. O.Reg. 239/20 establishes minimum maintenance standards based on the classification of roads, with Class 1 roads having the highest standards and Class 6 roads having no minimum standards. The Township currently does not have any roads that classify as Class 1 or Class 2 roads.

# Asset Management Planning for Roads

## A. Overview of the Township’s road network (continued)

For financial reporting purposes, the Township accounts for roads as two separate components:

- Road subsurface, comprised of the granular base that provides drainage and structural support;
- Road surface, which consists of a top layer of either concrete, gravel, surface treatment (i.e. low class bituminous that is initially applied as a single layer then reapplied to provide a double layer of surface treatment) or asphalt (i.e. high class bituminous) that transfers the weight of vehicles to the granular subsurface and underlying ground.

As at December 31, 2021, the historical cost of the Township’s road network was reported to be \$71.0 million, with an estimated replacement cost in the order of \$364.4 million.

Surface Type	Average Age (in years)			Replacement Cost		
	Estimated Useful Life <sup>2</sup>	Average Age	Average Remaining Useful Life	Number of Kilometers	Reconstruction Cost per Kilometer <sup>3</sup>	Total Reconstruction Cost
Gravel	10	19	0%	16.1	\$451,980	\$7.3 million
Surface treated	12	11	9%	123.7	\$502,683	\$62.2 million
Asphalt	15	9	40%	484.1	\$608,157	\$294.4 million
Concrete	15	2	13%	0.9	\$608,157	\$0.5 million
<b>Total</b>				<b>624.8</b>		<b>\$364.4 million</b>

<sup>2</sup> Represents the estimated useful life for the road surface. The subsurface component of the Township’s road network has an estimated useful life of 40 years.

<sup>3</sup> Based on reconstruction cost estimates outlined in the Roads Need Study, which quantify costs for different components of road reconstruction (e.g. excavation, ditching, granular materials, surface application). The reconstruction cost has been increased by 6.9% to reflect the rate of inflation in non-residential construction costs from 2020 to 2021. The Roads Need Study did not provide reconstruction costs for concrete roads. As such, we have based our estimates on the reconstruction cost for asphalt roads.

# Asset Management Planning for Roads

## **B. Condition assessment**

Condition assessments for the Township's road network were determined as part of the Roads Needs Study based on authoritative guidance that reflect engineering best practices and standards, including:

- Pavement Condition Index (PCI) for Flexible Pavement, Ministry of Transportation
- SP-021 Manual for Condition Rating of Surface-Treated Pavements, Distress Manifestations, Ministry of Transportation
- SP-022 Flexible Pavement Condition Rating Guidelines for Municipalities, Ministry of Transportation
- SP-024 Manual for Condition Rating of Flexible Pavements, Distress Manifestations, Ministry of Transportation
- SP-025 Manual for Condition Rating of Gravel Surface Roads, Ministry of Transportation
- Measuring the Condition of Municipal Roads, Ontario Good Roads Association, Ministry of Transportation

As outlined in the Roads Needs Study, condition assessments involved visual inspections of the Township's road network in order to assess the severity and density of distresses in road segments (surface defects, surface deformations and cracking). In addition, the Roads Needs Study also provided an assessment of the ride comfort rating, which is an indication of the ride comfort as determined by a drive through of a road section at the posted speed limit.

The results of the visual inspections and ride comfort ratings were used to determine pavement condition index, which provides an indication as to the overall condition of the road segment, as well as the nature and timing of required capital improvements. A summary of condition indices and the associated impact on reinvestment requirements is provided on the following page.

# Asset Management Planning for Roads

## B. Condition assessment (continued)

Condition Rating	Reinvestment Requirement	Asphalt and Surface Treated Roads		Gravel Roads	
		Collector	Local	Collector	Local
Very Good	None	PCI of 80-100	PCI of 80-100	PCI of 65-100	PCI of 60-100
Good	Rehabilitate	PCI of 70-80	PCI of 65-80		
Fair	Resurface (1-5 years)	PCI of 50-70	PCI of 45-65	PCI of 45-65	PCI of 40-60
Poor	Resurface (immediate)	PCI of 45-50	PCI of 40-45	PCI of 25-45	PCI of 20-40
Very Poor	Reconstruct	PCI of 0-45	PCI of 0-40	PCI of 0-25	PCI of 0-20

Based on this approach, the majority of the Township's road network has been classified as being in good condition (54%), with an average PCI of 63.0.

Condition Rating	Gravel		Surface Treated		Asphalt		Total <sup>4</sup>	
	Length (km)	Percentage	Length (km)	Percentage	Length (km)	Percentage	Length (km)	Percentage
Very Good	1.5	7%	22.2	21%	132.3	28%	154.5	25%
Good			19.6	16%	155.7	34%	176.8	29%
Fair	12.5	58%	21.3	17%	65.7	14%	99.5	16%
Poor	7.4	35%	29.4	24%	69.9	15%	106.7	18%
Very Poor	0.1	0%	27.2	22%	42.8	9%	70.1	12%
<b>Average PCI</b>	46.1		56.2		65.6		63.0	

<sup>4</sup> The total length of the municipal road network by condition assessment varies slightly from the length of the road network for replacement costing purposes (i.e. 17.2 kilometers), which is not considered to be material for the purposes of the asset management plan.



# Asset Management Planning for Roads

## C. Current service levels

The majority of the Township’s road network (452 kilometers or 72%) is considered to be rural roads, with semi-urban and urban roads accounting for 25% and 3% of the road network, respectively. Traffic counts conducted as part of the Roads Needs Study indicated that the majority of roads (62%) are used by less than 500 vehicles per day, with seven roads having traffic counts of more than 2,000 vehicles per day. Based on the anticipated population growth of the Township and the associated impact on usage of the municipal road network, traffic volumes are projected to experience annual growth rates of:

- 1% for local roads
- 2% for collector roads
- 3% for arterial roads

The current and projected traffic volumes for the Township’s road network are provided below.

Average Annual Daily Traffic Volumes	Current	Projected (2039)
Less than 50 vehicles per day	4%	4%
50 to 199 vehicles per day	27%	22%
200 to 499 vehicles per day	35%	30%
500 to 999 vehicles per day	22%	21%
1,000 to 1,999 vehicles per day	10%	18%
2,000 or more vehicles per day	2%	5%

# Asset Management Planning for Roads

## C. Current service levels (continued)

Based on the estimated capacity of the Township’s road network, the Roads Needs Study did not identify the need for the Township to add additional lanes to accommodate the anticipated growth in traffic volumes, notwithstanding the fact that several road segments were expected to experience significant increases in overall traffic volumes (see next page).

Road Segment		Maximum Average Annual Daily Traffic		
Road	Segment	2019	2039	Increase
Bass Lake Sideroad	Twp Boundary to Line 13	1,700	2,100	+23.5%
Jamieson Drive	Line 15 S to Forest Plain Road	2,250	2,650	+17.8%
Line 10 S	Ridge Road to Rosemarie Drive	2,150	3,200	+48.8%
Line 11 S	Ridge Road to Mill Street	1,500	2,250	+50.0%
Line 15 N	Highway 12 to Memorial Avenue	4,400	6,550	+48.9%
Line 15 S	Jamieson Drive to Peterson Drive	2,150	3,200	+48.8%
Line 3 N	Vasey Road to Moonstone Road W	1,250	2,300	+84.0%
Line 3 N	Horseshoe Valley Road to Highland Drive	1,500	2,250	+50.0%
Line 4 N	Horseshoe Valley Road to Highland Drive	1,425	2,150	+50.9%
Line 7 N	Highway 11 to Old Barrie Road	1,700	3,100	+82.4%
Line 7 S	Highway 11 to Lakeshore Road E	2,275	3,400	+49.5%
Line 9 S	Highway 11 to Lakeshore Road E	2,000	3,000	+50.0%
Mount St. Louis Road W	Between High 400 ramps	1,100	2,000	+81.8%
Warminster Sideroad	Highway 12 to Townline	3,000	4,500	+50.0%

# Asset Management Planning for Roads

## C. Current service levels (continued)

In addition to requiring a general description of the road network, O.Reg. 588/17 also outlines the qualitative descriptions and technical metrics to be use for describing the current service levels relating to the Township’s road network and includes:

- The number of lane kilometers of each category of road (arterial, collector, local) as a proportion of square kilometers of land area of the Township;
- For paved roads, the average PCI value; and
- For unpaved roads, the average surface condition (e.g. excellent, good, fair, poor).

As summary of these service level indicators are provided below.

	Arterial	Collector	Local	Total
Number of lane kilometers	0.0	802.0	447.6	1,249.6
Township geographic area (in square kilometers)	587.08	587.08	587.08	587.08
Lane kilometers of roads per square kilometer	0.00	1.37	0.76	2.13

	Gravel	Surface Treated	Asphalt	Total
Average PCI value	46.1	56.2	65.6	63.0
Average condition rating	Fair	Good	Good	Good

# Asset Management Planning for Roads

## D. Required lifecycle activities

As defined in O.Reg.588/17, lifecycle activities include “*activities undertaken with respect to a municipal infrastructure asset over its service life, including constructing, maintaining, renewing, operating and decommissioning, and all engineering and design work associated with those activities*”. The determination of required lifecycle activities, including the related cost and timing, is identified in the Roads Needs Study and includes the following:

- Resurfacing of roads to address minor surface deficiencies, as well as repairs to approximately 10% of the road base (subsurface);
- Rehabilitation of roads with deficiencies in both the road surface and road base, with a requirement to replace approximately 25% of the road base as part of the rehabilitation; and
- Reconstruction of roads with deficiencies requiring the full removal and replacement of both the road surface and underlying base.

In addition to these capital reinvestments, the Roads Needs Study also outlines recommended maintenance requirements, including (i) crack routing and sealing and slurry sealing for asphalt roads; (ii) slurry sealing for surface treated roads; and (iii) the application of maintenance gravel for gravel roads.

The determination of required lifecycle activities reflects different scenarios concerning the nature of the road improvements to be made:

- **Scenario 1** – This scenario anticipates the Township would implement minimum standards with respect to its road networks, with capital improvements bringing the road in question up to these minimum standards (if the road currently does not meet these standards). This scenario represents a change in service levels as the nature of the road (e.g. width) would be improved to meet the minimum standards.
- **Scenario 2** – This scenario represents a reduction in service levels as it anticipates the Township would substitute road surfaces based on the minimum requirements associated with traffic volumes and other considerations. Under this scenario, for example, 191 kilometers of paved roads would be replaced with either surface treated (140 km) or gravel (51 km) roads.

# Asset Management Planning for Roads

## D. Required lifecycle activities (continued)

- **Scenario 3** – Under this scenario, the Township would not reconstruct roads with major deficiencies but rather would resurface these roads, reducing the cost associated with capital improvements.
- **Scenario 4** – Representing a combination of Scenarios 2 and 3, the scenario would require the Township to both substitute road surfaces based on the minimum requirements as well as utilize resurfacing as opposed to reconstruction. This scenario represents the lowest cost strategy for capital improvements.
- **Scenario 5** - This scenario is consistent with Scenario 4 in terms of overall strategy; however, the extent of resurfacing would be consistent with the Township’s current practice for resurfacing, as opposed to the recommended approach considered in Scenario 4 which involves a reduced amount of asphalt applied as part of the resurfacing process.

As summarized on below, Roads Needs Study indicated an estimated cost of capital improvements over the next ten years, based on the above-noted scenarios, of between \$53.9 million to \$104.9 million. When adjusted for recent rates of inflation (6.9%), we have estimated these costs to be in the range of \$57.7 million to \$112.2 million as at December 31, 2021.

<i>(Dollar amounts in thousands)</i>	Option 1 – Minimum Standard		Option 2 – Alternative Surface Type		Option 3 – Resurface vs. Reconstruct		Option 4 – Alternative Surface Type + Resurface vs. Reconstruct		Option 5 – Alternative Surface Type + Town Practice for Resurfacing	
	Km	Cost	Km	Cost	Km	Cost	Km	Cost	Km	Cost
No maintenance required	218.3	–	218.3	–	218.3	–	218.3	–	218.3	–
Resurface	3.7	\$512	3.7	\$512	4.0	\$558	4.0	\$558	4.0	\$558
Pulverize and resurface	265.9	\$47,802	265.9	\$33,256	349.3	\$62,651	349.3	\$45,043	402.5	\$56,062
Base and surface	56.0	\$12,032	56.0	\$8,842	53.1	\$11,386	53.1	\$8,348	–	–
Reconstruction	80.8	\$44,638	80.8	\$39,196	–	–	–	–	–	–
Widen and resurface	–	–	–	–	–	–	–	–	–	–
Total (per Roads Needs Study)	624.8	\$104,984	624.8	\$81,806	624.8	\$74,595	624.8	\$53,949	624.8	\$56,620
Total (Inflation adjusted to 2021)		\$112,228		\$87,451		\$79,742		\$57,671		\$60,527



Township of Oro-Medonte

# Asset Management Planning for Bridges and Culverts

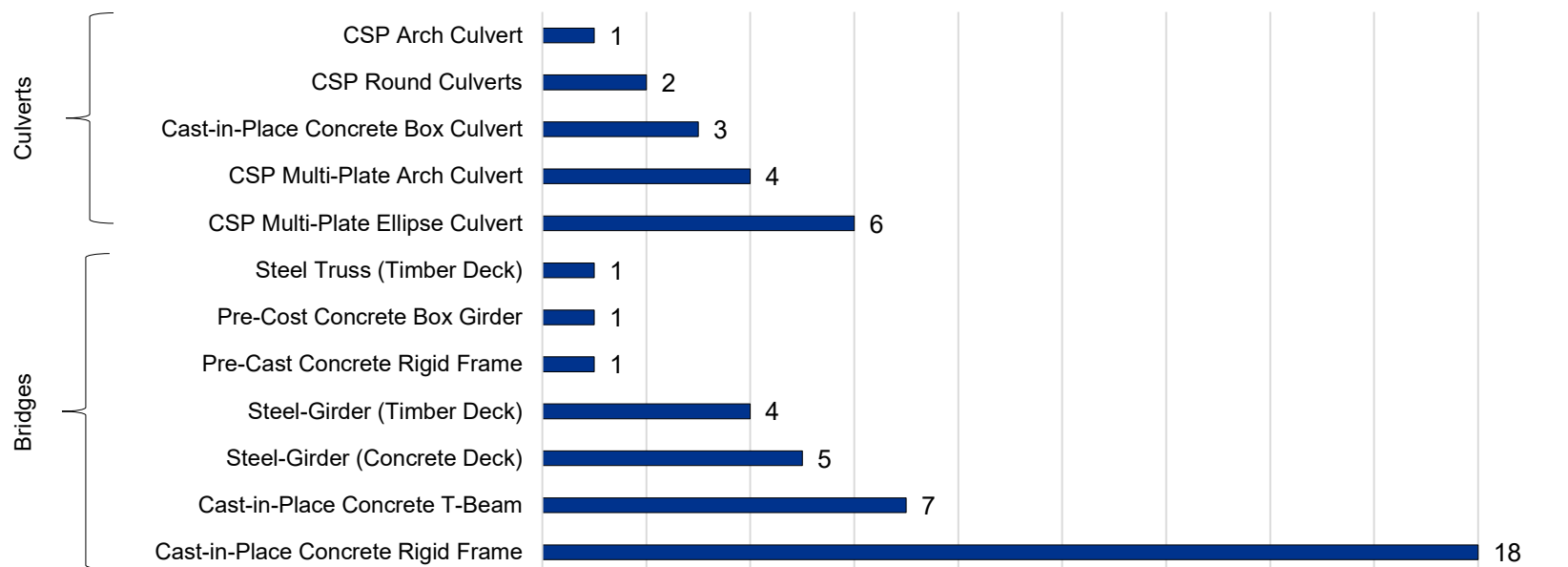


# Asset Management Planning for Bridges and Structures

## A. Overview of the Township’s bridges and structures

The Township’s municipal road network includes a total of 53 structures, comprising 16 culverts with spans in excess of three metres<sup>5</sup> and 37 bridges. As noted below, the majority of the Township’s structures are cast-in-place or corrugated steel plate construction.

### Structures by Type of Construction



<sup>5</sup> Culverts with spans of less than three metres are not subject to the provisions of Ontario Regulation 472/10: Standards for Bridges and as such do not require inspection.

# Asset Management Planning for Bridges and Structures

## A. Overview of the Township’s bridges and structures (continued)

As at December 31, 2021, the historical cost of the Township’s bridges was reported to be \$3,358,842, with a further \$2,264,384 reported for culverts with spans in excess of three metres. Based on the most recent engineering assessments and estimates, the replacement cost of the Township’s structures was estimated to be \$29,924,500<sup>6</sup>, with an inflation-adjusted replacement cost of \$31,989,000<sup>7</sup>.

For TCA reporting purposes, the Township has adopted a 60 year useful life for bridges with a 40 year estimated useful life for culverts and as at December 31, 2021, the average age of the Township’s bridges and culverts was 67 and 40 years, respectively.

Structure Type	Estimated Useful Life				Replacement Cost (Per OSIM Inspection Report) <sup>6</sup>	Replacement Cost (Inflation Adjusted) <sup>7</sup>
	Estimated Useful Life	Maximum Age	Average Age	Average Remaining Useful Life		
Bridges	60	103	67	20%	\$17,802,500	\$19,030,000
Culverts	40	71	40	39%	\$12,122,000	\$12,959,000
<b>Total</b>					<b>\$29,924,500</b>	<b>\$31,989,000</b>

<sup>6</sup> Based on reconstruction and rehabilitation cost estimates provided in the OSIM Inspection Report, which include provisions for associated work, staging, environmental assessments, engineering design and contingencies.

<sup>7</sup> The replacement cost has been increased by 6.9% to reflect the rate of inflation in non-residential construction costs from 2020 to 2021.

# Asset Management Planning for Bridges and Structures

## B. Condition assessment

Under Ontario Regulation 104/97: Standards for Bridges (amended by Ontario Regulation 472/10), all municipalities are required to undertake detailed visual inspections in accordance with the Ontario Structure Inspection Manual ('OSIM') of all:

- Bridges, culverts and tunnels with spans of three metres or greater; and
- All movable bridges.

Under Ontario Regulation 104/97, inspections are required every second calendar year.

In addition to establishing the requirements for bi-annual visual inspections, the OSIM defines the guidelines for bridge inspections. Specifically, the OSIM includes Condition State Tables that are used to assess the condition of various bridge components, based on the following ratings:

Condition Rating	Description	Examples
Excellent	<ul style="list-style-type: none"> <li>• New (as constructed) condition</li> <li>• No visible deterioration-type defects noted, with minor construction defects excluded</li> <li>• No remedial action required</li> </ul>	
Good	<ul style="list-style-type: none"> <li>• First signs of minor defects noted</li> <li>• Defects would not normally require remedial action as overall performance is not affected</li> </ul>	<ul style="list-style-type: none"> <li>• Light corrosion</li> <li>• Narrow cracks in concrete</li> </ul>
Fair	<ul style="list-style-type: none"> <li>• Medium defects are visible</li> <li>• May require preventative maintenance where it is economic to do so</li> </ul>	<ul style="list-style-type: none"> <li>• Medium corrosion (up to 10% section loss)</li> <li>• Medium cracks in concrete</li> </ul>
Poor	<ul style="list-style-type: none"> <li>• Severe and very severe defects are noted</li> <li>• Rehabilitation or replacement required if overall performance is affected</li> </ul>	<ul style="list-style-type: none"> <li>• Severe corrosion</li> <li>• Spalling</li> </ul>

# Asset Management Planning for Bridges and Structures

## B. Condition assessment

The results of the inspection of individual elements is then weighted to provide an overall Bridge Condition Index ('BCI'), which determines the timing of required maintenance activities for the structure under inspection.

BCI	Condition	Maintenance Schedule
70 to 100	Good	No maintenance requirements are identified within the next five years
60 to 69	Fair	Maintenance requirements are identified within the next five years
<60	Poor	Maintenance requirements are identified within one year

Based on this approach, just under half of the Township's structures are classified as being in good condition (49%), with an additional 32% of structures classified as being in fair condition.

BCI	Condition	Bridges		Culverts		Total	
		Number	Percentage	Number	Percentage	Number	Percentage
70 to 100	Good	7	20%	3	17%	10	19%
60 to 69	Fair	15	43%	2	11%	17	32%
<60	Poor	13	37%	13	72%	26	49%

## C. Current service levels

O.Reg. 588/17 outlines the qualitative descriptions and technical metrics to be use for describing the current service levels relating to the Township's bridges and culverts, as summarized on the following page.



# Asset Management Planning for Bridges and Structures

## C. Current service levels

O.Reg. 588/17 outlines the qualitative descriptions and technical metrics to be use for describing the current service levels relating to the Township’s bridges and culverts, as summarized below.

Service Level Consideration	Assessment
Description of the traffic that is supported by municipal bridges	While the Township’s structures provide access for commercial and passenger vehicles, cyclists and pedestrians, the majority of structures serve rural roads and associated residential passenger vehicle movements.
Description of the condition of bridges and how this would affect use of the bridges	While the current condition of the Township’s bridges does not have a significant impact on usage at the present time, the requirement for weight restrictions and other aspects of deferred maintenance can impact the ability of certain vehicles to use bridges. In addition, the condition of many bridges and culverts presents a potential a risk of failure which will have an impact on level of service through either closure of the bridges or the imposition of further weight limitations. The prospect of a bridge or culvert failure would also be accompanied by the need for the Township to incur significant expenses with respect to the repair or replacement of the structure in question.
Description of the condition of culverts and how this would affect use of the culverts	
Percentage of bridges with loading or dimensional restrictions	16% - Five bridges have load restrictions of either 5 tonnes or 15 tonnes (B04, B06, B07, B10, B23) with one bridge closed to traffic (B11)
Average bridge condition index for bridges	66.20
Average bridge condition index for culverts	71.87

# Asset Management Planning for Bridges and Structures

## D. Required lifecycle activities

As defined in O.Reg.588/17, lifecycle activities include “*activities undertaken with respect to a municipal infrastructure asset over its service life, including constructing, maintaining, renewing, operating and decommissioning, and all engineering and design work associated with those activities*”. The determination of required lifecycle activities, including the related cost and timing, is identified in the OSIM Inspection Report and includes the following:

- Routine maintenance, which includes cleaning of vegetation and sand from structures, installation of minor components (e.g. scour protection, warning signs) and other minor repairs. At the present time, the Township’s maintenance program for bridges includes only limited funding to flush drains and some deck washing and brushing for certain structures and as such, is not aligned with the level of routine maintenance contemplated in the OSIM Inspection Report.
- Additional studies, investigations and monitoring programs for structures with significant deficiencies, the purpose of which is to provide more a more detailed assessment of capital requirements.
- Installation of guide rails and other equipment to address roadside safety needs.
- Capital works (repairs, rehabilitation or replacement) that would extend the service life of the structure or increase its BCI. The OSIM Inspection Report identifies six structures that are currently in need of rehabilitation, with an additional six structures that are currently in need of replacement and one structure slated for removal. Furthermore, 14 structures have been identified as requiring rehabilitation within the next five years, with one additional structure requiring replacement in the same timeframe.

As summarized on the following page, the estimated level of lifecycle investments over the next ten years as identified in the OSIM Inspection Report is \$9,953,100. Based on the 2020 to 2021 rate of inflation (6.9%), the required level of lifecycle investment has been calculated to be \$10,639,900.

# Asset Management Planning for Bridges and Structures

## D. Required lifecycle activities (continued)

Year	Routine Maintenance	Additional Studies	Roadside Safety Needs	Capital Works	Total
2021	\$184,600	\$65,000	\$1,932,500	\$629,500	\$2,811,600
2022	The OSIM Inspection Report has only identified requirements based on the current condition of the Township's structures and has not outlined requirements associated with an ongoing maintenance program that would address future requirements over the ten-year planning period.			\$828,500	\$828,500
2023				\$506,500	\$506,500
2024				\$715,500	\$715,500
2025				\$1,033,500	\$1,033,500
2026				\$968,500	\$968,500
2027				\$858,000	\$858,000
2028				\$388,000	\$388,000
2029				\$924,500	\$924,500
2030				\$918,500	\$918,500
<b>Total</b>				<b>\$184,600</b>	<b>\$65,000</b>

In arriving at the recommended lifecycle requirements, the OSIM Inspection Report identifies capital requirements necessary to (1) address potential health and safety risks to users; and/or (2) replace or rehabilitate bridges based on the recommended schedule in the OSIM. As a result, the required lifecycle activities accommodates a gradual reduction in the overall BCI of the Township's structures while still maintaining BCI's in the good to fair range, which allows for minimal impact on service levels.

# Asset Management Planning for Bridges and Structures

## **D. Required lifecycle activities (continued)**

The current level of funding for both the maintenance of structures and their eventual replacement at the end of useful life is not sufficient to meet the identified needs for the Township's bridges and culverts. While deferral of maintenance and replacement can be considered, this is expected to increase the potential risk of failure for a structure. Additionally, while the abandonment of structures can be considered, this is not expected to be a viable strategy as most structures are located on concession roads (i.e. collectors) and cannot be abandoned as they are required to provide road access to residents, emergency vehicles and other users.

Township of Oro-Medonte

# Asset Management Planning for Water



# Asset Management Planning for Water

## A. Overview of the Township's water assets

The Township has operational control over 12 water systems located within its boundaries, as well as individual water systems that provide potable water to municipal halls and other facilities. The delivery of water services is in compliance with various Provincial legislation and regulations, most notably (but not limited to) the Safe Drinking Water Act.

The Township's water infrastructure encompasses all assets necessary for the production, treatment, storage and delivery of potable water, as well as hydrants used for fire protection. As at December 31, 2020, the historical cost of the Township's water assets was reported to be \$18,715,359, with an estimated replacement value of \$39,710,364.

For TCA reporting purposes, the Township has established useful lives ranging from 25 to 80 years, depending on the type of asset. As noted on the following page, the majority of the Township's water assets have a relatively high percentage of remaining useful life, reflecting the combination of (i) the relatively long useful lives of water assets; and (ii) the recency of acquisitions of water systems.



# Asset Management Planning for Water

## A. Overview of the Township's water assets (continued)

Asset Type	Useful Life (Years)	Inventory	Age (Years)				Historical Cost	Replacement Cost <sup>8</sup>
			Minimum	Maximum	Average	Average Remaining Useful Life		
Wells	50	35	4	50	28	44%	\$1,189,865	\$3,451,957
Water monitoring equipment	25	35	4	19	17	31%	\$506,136	\$1,239,723
Pumps	25	31	3	31	11	59%	\$769,409	\$1,380,555
Distribution mains	80	57,494 m	4	48	23	71%	\$6,266,708	\$16,090,537
Contact mains	80	12	1	17	8	89%	\$882,476	\$1,354,577
Service connections	80	1,391	4	40	13	83%	\$1,391,252	\$3,974,343
Reservoirs	50	19	1	48	19	56%	\$7,084,200	\$10,656,651
Hydrants	80	183	4	30	12	85%	\$625,313	\$1,562,021
<b>Total</b>							<b>\$18,715,359</b>	<b>\$39,710,364</b>

<sup>8</sup> The replacement value of the Township's water assets was determined based on its historical cost adjusted for an annual inflation rate of 5%.

# Asset Management Planning for Water

## B. Condition assessment

The condition of the Township’s water assets has been assessed based on the remaining percentage of their estimated useful lives, reflecting the fact that water assets are typically held until the end of their useful lives and the difficulties inherent in assessing the condition of underground infrastructure. As summarized below, most of the Township’s water assets are rated as being in good to very good condition, with the Township’s wells, reservoirs and water monitoring equipment having the highest percentage of assets rated as poor or very poor, reflecting their approaching end of useful life.

Condition Rating	Remaining Useful Life	Wells	Water Monitoring Equipment	Pumps	Distribution Mains	Contact Mains	Service Connections	Reservoirs	Hydrants
Very Good	More than 75%	20%	9%	32%	39%	100%	45%	42%	49%
Good	50% to 75%	20%	9%	35%	44%	0%	55%	21%	51%
Fair	25% to 49%	29%	5%	23%	17%	0%	0%	21%	0%
Poor	10% to 25%	14%	77%	6%	0%	0%	0%	4%	0%
Very Poor	Less than 10%	17%	0%	3%	0%	0%	0%	13%	0%

## C. Current service levels

O.Reg. 588/17 outlines the qualitative descriptions and technical metrics to be use for describing the current service levels relating to the Township’s water infrastructure and includes the following, which are described in the following pages.

# Asset Management Planning for Water

## C. Current service levels

### Qualitative Descriptions

<ul style="list-style-type: none"> <li>A description of the user groups or areas of the municipality that are connected to the municipal water system.</li> </ul>	<p>The Township currently manages 12 water systems in the following communities, with approximately 1,000 water customers</p> <table border="1" data-bbox="954 479 1802 639"> <tr> <td data-bbox="954 479 1244 639"> <ul style="list-style-type: none"> <li>Canterbury</li> <li>Carley Hall</li> <li>Cedarbrook</li> <li>Habourwood</li> </ul> </td> <td data-bbox="1244 479 1534 639"> <ul style="list-style-type: none"> <li>Horseshoe Highlands</li> <li>Maplewood</li> <li>Medonte Hills</li> <li>Robincrest</li> </ul> </td> <td data-bbox="1534 479 1802 639"> <ul style="list-style-type: none"> <li>Shanty Bay</li> <li>Sugarbush</li> <li>Warminster</li> </ul> </td> </tr> </table>	<ul style="list-style-type: none"> <li>Canterbury</li> <li>Carley Hall</li> <li>Cedarbrook</li> <li>Habourwood</li> </ul>	<ul style="list-style-type: none"> <li>Horseshoe Highlands</li> <li>Maplewood</li> <li>Medonte Hills</li> <li>Robincrest</li> </ul>	<ul style="list-style-type: none"> <li>Shanty Bay</li> <li>Sugarbush</li> <li>Warminster</li> </ul>
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<ul style="list-style-type: none"> <li>A description of the user groups or areas of the municipality that have fire flow.</li> </ul>	<p>The Township has established fire hydrants in the following communities:</p> <ul style="list-style-type: none"> <li>Horseshoe Highlands</li> <li>Robincrest</li> <li>Shanty Bay</li> <li>Sugar Bush</li> <li>Warminster</li> </ul>			
<ul style="list-style-type: none"> <li>A description of boil water advisories and service interruptions.</li> </ul>	<p>The Township has not declared boil water advisories in the past two years. The Township typically experiences between zero to two water main breaks per year.</p>			

### Technical Levels of Service

<ul style="list-style-type: none"> <li>The percentage of properties connected to the municipal water system.</li> </ul>	<p>The Township currently provides water services to approximately 1,000 customers, representing approximately 10% of total households within the Township.</p>
<ul style="list-style-type: none"> <li>The percentage of properties where fire flow is available.</li> </ul>	<p>Fire flows are available to approximately 5% of households in the Township.</p>
<ul style="list-style-type: none"> <li>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.</li> </ul>	<p>The Township has not declared a boil water advisory in the past two years.</p>
<ul style="list-style-type: none"> <li>The number of connection-days per year due to water main breaks compared to the total number of properties connected to the municipal water system.</li> </ul>	<p>The Township typically experiences between zero to two water main breaks per year, resulting in as much as 200 connection-days per year. This represents less than 1% of the total connection-days per year in the Township.</p>

# Asset Management Planning for Water

## D. Required lifecycle activities

As defined in O.Reg.588/17, lifecycle activities include “*activities undertaken with respect to a municipal infrastructure asset over its service life, including constructing, maintaining, renewing, operating and decommissioning, and all engineering and design work associated with those activities*”.

Typically, asset management strategies for water mains will depend on the nature of the mains (ductile iron, PVC, concrete) but will generally commence within 20 years of the installation of the main and continue at recommended intervals until complete replacement of the main is required.

Year	Activity	Estimated Cost per KM
20	Valve exercise and swabbing	\$55,000
40	Appurtenance replacement and swabbing	\$143,000
60	Valve exercising and swabbing	\$55,000
Total cost of lifecycle asset activities (excluding replacement)		\$253,000
Average cost per year		\$3,200
Number of kilometers of water mains (rounded)		58
Estimated annual cost of lifecycle activities (excluding end-of-life replacement requirements)		\$185,600

Criteria typically used to determine replacement of water mains include, but are not limited to, surrounding soil conditions, pressure related issues, and hydrant spacing. In addition to these criteria other factors, such as the intent of future road rehabilitation, will modify the priority of the replacement schedule accordingly. Available historical data, which includes but is not limited to pipe failures and pipe break history, is used to aid in the replacement criteria. When a continued increase in maintenance costs reaches an uneconomical value, the replacement of the pipe is justified. Due to unaccounted circumstances and unpredictable events, it is possible that some pipe materials will require replacement earlier than expected. In contrast, pipe materials may have the service life extended, with timely maintenance and rehabilitation.

# Asset Management Planning for Water

## D. Required lifecycle activities (continued)

As summarized on the following page, the required lifecycle activities associated with the replacement of water assets reaching end of useful life over the next ten years, which is based on the existing useful lives adopted for TCA reporting purposes, is \$4,521,367.

Year	Wells	Water Monitoring Equipment	Pumps	Distribution Mains	Contact Mains	Service Connections	Reservoirs	Hydrants	Total
2021	\$148,984	–	\$97,300	–	–	–	\$142,438	–	\$388,722
2022	–	–	–	–	–	–	\$0	–	–
2023	\$279,117	–	–	–	–	–	\$242,627	–	\$521,744
2024	–	–	–	–	–	–	–	–	–
2025	\$181,426	–	\$138,958	–	–	–	–	–	\$320,384
2026	\$216,963	–	–	–	–	–	–	–	\$216,963
2027	–	\$1,316,974	–	–	–	–	–	–	\$1,316,974
2028	–	\$48,695	\$169,276	–	–	–	\$379,147	–	\$597,118
2029	\$441,977	\$82,540	\$180,784	–	–	–	\$248,453	–	\$953,754
2030	–	–	\$205,708	–	–	–	–	–	\$205,708
<b>Total</b>	<b>\$1,268,467</b>	<b>\$1,448,209</b>	<b>\$792,026</b>	<b>–</b>	<b>–</b>	<b>–</b>	<b>\$1,012,665</b>	<b>–</b>	<b>\$4,521,367</b>

Township of Oro-Medonte

## Next Steps





# Next Steps

As required by the Act, the Township will undertake the following ongoing activities related to asset management planning:

- Updating the strategic asset management policy every five years, with the next update expected in 2024;
- Updating the asset management plan for core infrastructure every five years, with the next update expected in 2027;
- Completing a similar asset management plan for other assets on or before July 1, 2024;
- Updating the asset management plan for proposed levels of service (which may differ from current levels of service) on or before July 1, 2025; and
- Providing Council with an annual update as to the Township's progress against the asset management plan.

In addition to these requirements, the Township will be providing ongoing training for asset management planning to municipal personnel and will also be integrating asset management planning into its new information management system, providing a better linkage between asset management planning and the Township's financial reporting systems.