

# **Asset Management Plan – Core Infrastructure**

## **2022 Update**



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## Overview – Core Infrastructure

Core infrastructure comprise the majority of the Township of Drummond/North Elmsley's infrastructure portfolio. The current levels of service for the Township's assets are, on average, appropriate to deliver adequate and cost effective services to residents while managing risk at reasonable levels. The challenge for the Township will be maintaining the current levels of service given its relatively small tax base and therefore, low source of revenues.

This report presents the municipality's challenges to maintain long-term financial and service sustainability. According to the 10-year projections of asset investment needs and the Township's current reserves and revenues levels, the major asset classes that are underfunded are paved roads and the stormwater management system. There appears to be adequate funding available to fund bridges and major (structural) culverts.

## Valuation

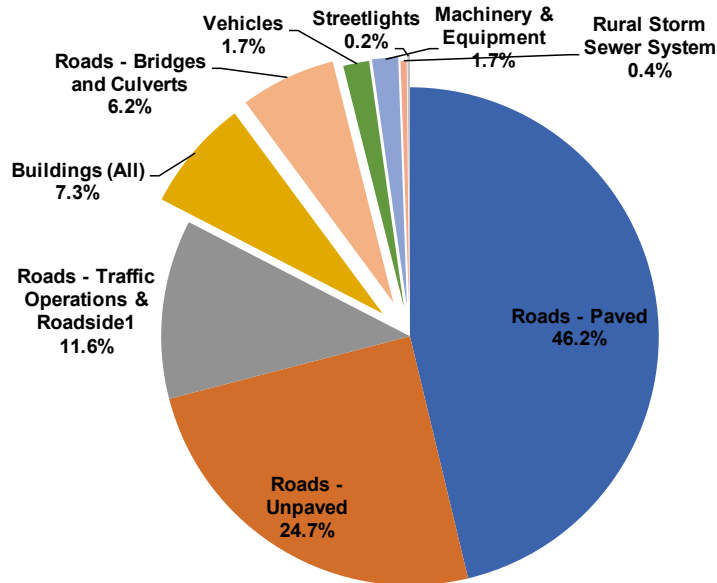
The Township of Drummond/North Elmsley manages approximately \$137.0 million of infrastructure by current replacement value (CRV).

*Figure 1 Drummond/North Elmsley Assets by Current Replacement Value (2022)*

Asset Category	Current Replacement Value
Roads - Paved	\$ 63,360,231
Roads - Unpaved	\$ 33,861,600
Roads - Traffic Operations & Roadside	\$ 15,918,843
Buildings (All)	\$ 9,975,000
Roads - Bridges and Culverts	\$ 8,505,700
Vehicles	\$ 2,314,380
Machinery & Equipment	\$ 2,311,331
Rural Storm Sewer System	\$ 545,377
Streetlights	\$ 220,340
<b>Total</b>	<b>\$ 137,012,802</b>

The infrastructure-related services that the Township provides to residents are primarily connected to transportation. 71.0% of the Township's entire infrastructure portfolio consists of Paved and Unpaved Roads. This proportion jumps to 82.6% when including traffic operations and roadside assets.

**Figure 2 Drummond/North Elmsley Assets by Proportion (CRV, 2022)**



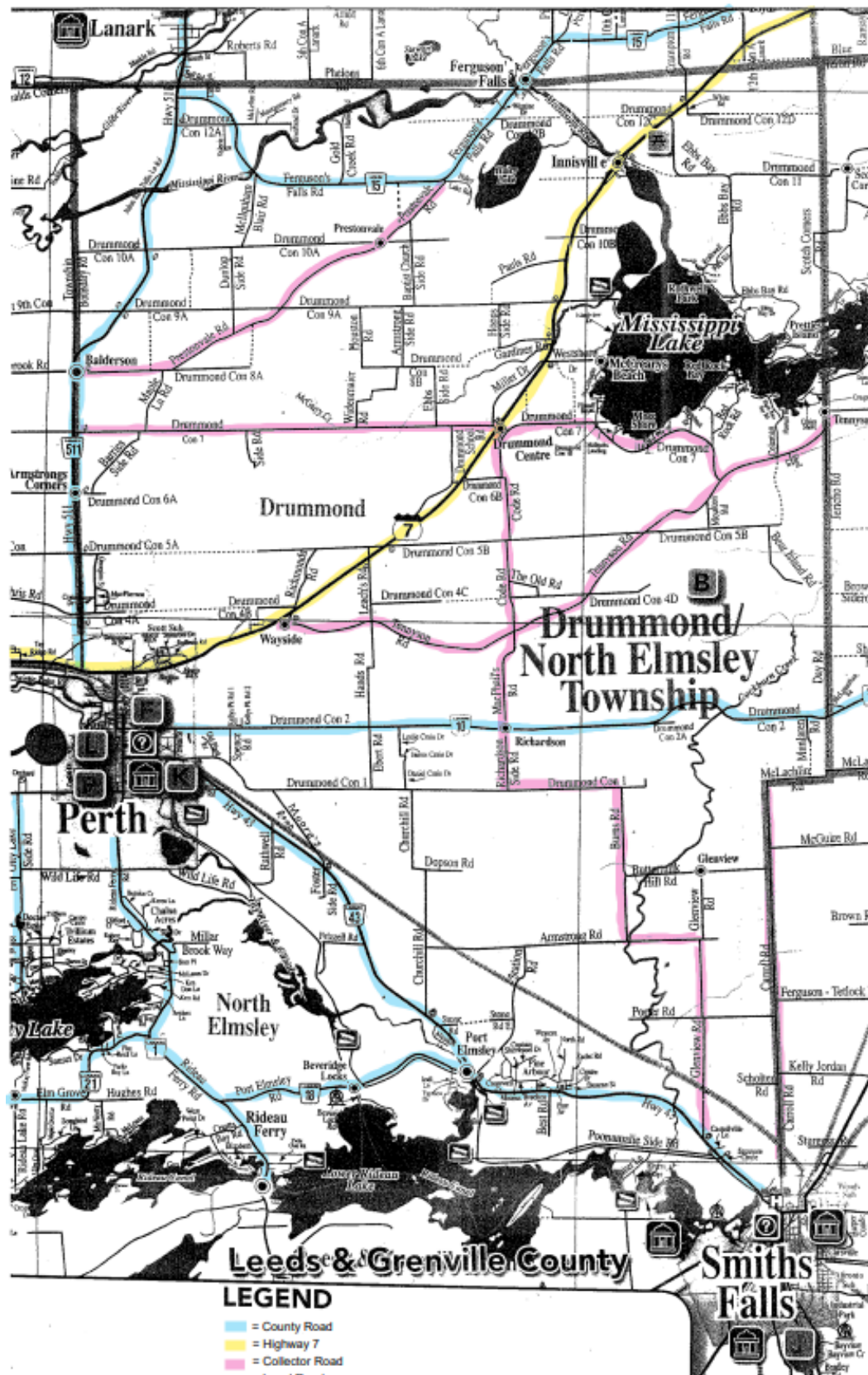
96.1% of the Township's infrastructure are roads, buildings, bridges and culverts.

## Roads

The Township maintains 73.36 km of collector roads and 190.884 km of local roads. There are no arterial roads. The total area of Drummond/North Elmsley is 366.03 km<sup>2</sup>. As a proportion of Township's land area in square kilometres, the total area of the Township's roads is 1.436 km<sup>2</sup> (0.456 km<sup>2</sup>, collector roads; 0.980 km<sup>2</sup> local roads).

The Township's roads network is mapped in Figure 3.

Figure 3 Drummond/North Elmsley Road Network



The Township's service-level objectives for its Roads network are to deliver for residents:

- Appealing roads that are efficiently managed at lowest reasonable costs; and
- Readily accessible and responsive road services.

To achieve the service-level objectives, Drummond/North Elmsley is committed to the following community levels of service, each with associated technical measures:

- Township roads are safe and accessible to travel on year-round; and
- Roads are kept in good condition and are comfortable to drive; and
- Issues with road maintenance are addressed in a timely fashion.

The average Pavement Condition Index (PCI) value of the Township's paved roads is 71.1, which is considered Good. The average surface condition of the Township's unpaved roads is 65, also considered Good.

PCI ratings are used by the Township as Technical Levels of Service to measure the condition of the road pavement and to measure the likelihood of failure to meet desired service quality and safety targets per Figure 4.

**Figure 4 Pavement Condition Index Ratings for Different Road Asset Categories**

Asset Classes	Asset Ratings and Corresponding Likelihood of Failure				
	Very Unlikely Estimated beyond 20 yrs. OR Estimated <10%	Unlikely Estimated 11 - 20 yrs. OR Estimated 10% -30%	Possible Estimated 6 - 10 yrs. OR Estimated 30% - 60%	Likely Estimated 1 - 5 yrs. OR Estimated 60% - 90%	Very Likely or Certain Estimated within 1 yr. or Now OR Estimated >90%
HCB Pavement - Collector Roads	PCI >95 Very Good	PCI = 70 - 95 Good to Very Good	PCI = 51 - 69 Fair to Good	PCI = 45 - 50 Poor	PCI <45 Very Poor to Failed
HCB Pavement - Local Roads	PCI >90 Very Good	PCI = 65 - 90 Good to Very Good	PCI = 46 - 64 Fair to Good	PCI = 40 - 45 Poor	PCI <40 Very Poor to Failed
LCB Pavement - Collector Roads	NA	PCI >69 Good to Very Good	PCI = 51 - 69 Fair to Good	PCI = 45 - 50 Poor	PCI <45 Very Poor to Failed
LCB Pavement - Local Roads	NA	Good to Very Good PCI >69	PCI = 46 - 64 Fair to Good	PCI = 40 - 45 Poor	PCI <40 Very Poor to Failed
Collector Gravel Roads >400 AADT	NA	Good to Very Good PCI >69	Fair PCI = 45 - 69	Poor PCI = 25 - 44	Very Poor to Failed PCI <25
Local Gravel Roads <400 AADT	NA	Good to Very Good PCI >64	Fair PCI = 41 - 64	Poor PCI = 20 - 40	Very Poor to Failed PCI <20

The challenge for the Township is that its proposed investments over the next decade for the paved roads (High Class Bituminous and Low Class Bituminous) are significantly underfunded relative to the level of investment identified to maintain current service level standards as outlined in the Township's 2022 Roads Needs Study.

**Figure 5 Drummond/North Elmsley Roads 10-Year Forecast Funding**

Asset Class	Current Level of Service (Technical)	10-year Investment Requirements <sup>2</sup> (\$,000's)	Proposed 10-year Investments (\$,000's)	Infrastructure Funding Gap (\$,000's)
HCB Roads	PCI = 66	\$ 21,068	\$ 5,100	\$ 15,968
LCB Roads	PCI = 72	\$ 2,492	\$ 500	\$ 1,992
Gravel Roads	PCI = 65	\$ 1,700	\$ 1,700	\$ -

If the funding gap is not substantially addressed, the Township may, over time, have to accept declining levels of service for residents, higher maintenance costs and increased risk to the quality of road services currently enjoyed by the community.

## Bridges & Culverts

The Township of Drummond/North Elmsley's bridges support heavy traffic vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists, and farm equipment. No bridges in the municipality have any loading or dimensional restrictions.

Drummond/North Elmsley rates its bridges and major culverts using the Bridge Condition Index (BCI).

BCI ratings are used by the Township as Technical Levels of Service to measure the condition of the structures and to measure the likelihood of failure to meet the desired service quality and safety targets as per Figure 6.

**Figure 6 BCI Rating Range**

Asset Classes	Asset Ratings and Corresponding Likelihood of Failure				
	Very Unlikely Estimated beyond 20 yrs. OR Estimated <10%	Unlikely Estimated 11 - 20 yrs. OR Estimated 10% -30%	Possible Estimated 6 - 10 yrs. OR Estimated 30% - 60%	Likely Estimated 1 - 5 yrs. OR Estimated 60% - 90%	Very Likely or Certain Estimated within 1 yr. or Now OR Estimated >90%
Bridges & Major Culverts	BCI >80 Elements Very Good to Good	BCI = 70 to 80 Elements Good to Fair	BCI = 60 - 69 Elements Fair to Poor	BCI = 40 - 59 Elements Poor to Very Poor	BCI <40 Elements Very Poor to Failed

The Township has five bridges with an average Bridge Condition Index (BCI) rating of 83.4, which is considered Good to Very Good.



**Figure 7 Drummond/North Elmsley Bridge Inventory & BCI Ratings**

Asset Class	Asset ID	Road Location	BCI
Bridge	15-107	Armstrong Road	100
Bridge	15-108	Buttermilk Hill Road	100
Bridge	15-081	Drummond CON 9A	71.7
Bridge	15-110	Poonamlie Side Road	74.4
Bridge	15-150	Drummond CON 7	71.4

In addition, Drummond/North Elmsley has nine major (or structural) culverts with an average BCI of 69.6. One culvert (Maple Lane) is in Poor condition, and another (CON 8A) is in Very Poor condition as per Figure 8.

**Figure 8 Drummond/North Elmsley Culvert Inventory & BCI Ratings**

Asset Class	Asset ID	Road Location	BCI
Major Culvert	15-A01	Tennyson Road	74.3
Major Culvert	15-A02	Tennyson Road	71.8
Major Culvert	15-A04	Glenview Road	72.2
Major Culvert	15-A05	Mores Road	69.5
Major Culvert	15-079	Drummond CON 7	73.3
Major Culvert	15-080	Ebbs Side Road	84.2
Major Culvert	15-A06	Drummond CON 7	84.8
Major Culvert	15-A07	Drummond CON 8A	37
Major Culvert	15-A08	Maple Lane Road	59

The Township has made it a priority to finance the major culvert needs in its 10-year capital plan. As a result of these efforts, no notable funding gap was identified for bridges and major (structural) culverts as per Figure 9.

**Figure 9 Drummond/North Elmsley Bridges & Culverts 10-Year Forecast Funding**

Asset Class	Current Level of Service (Technical)	10-year Investment Requirements <sup>2</sup> (\$,000's)	Proposed 10-year Investments (\$,000's)	Infrastructure Funding Gap (\$,000's)
Bridges	BCI = 78	\$ -		\$ -
Major Culverts	BCI = 68	\$ 693	\$ 693	\$ -

## Stormwater Management

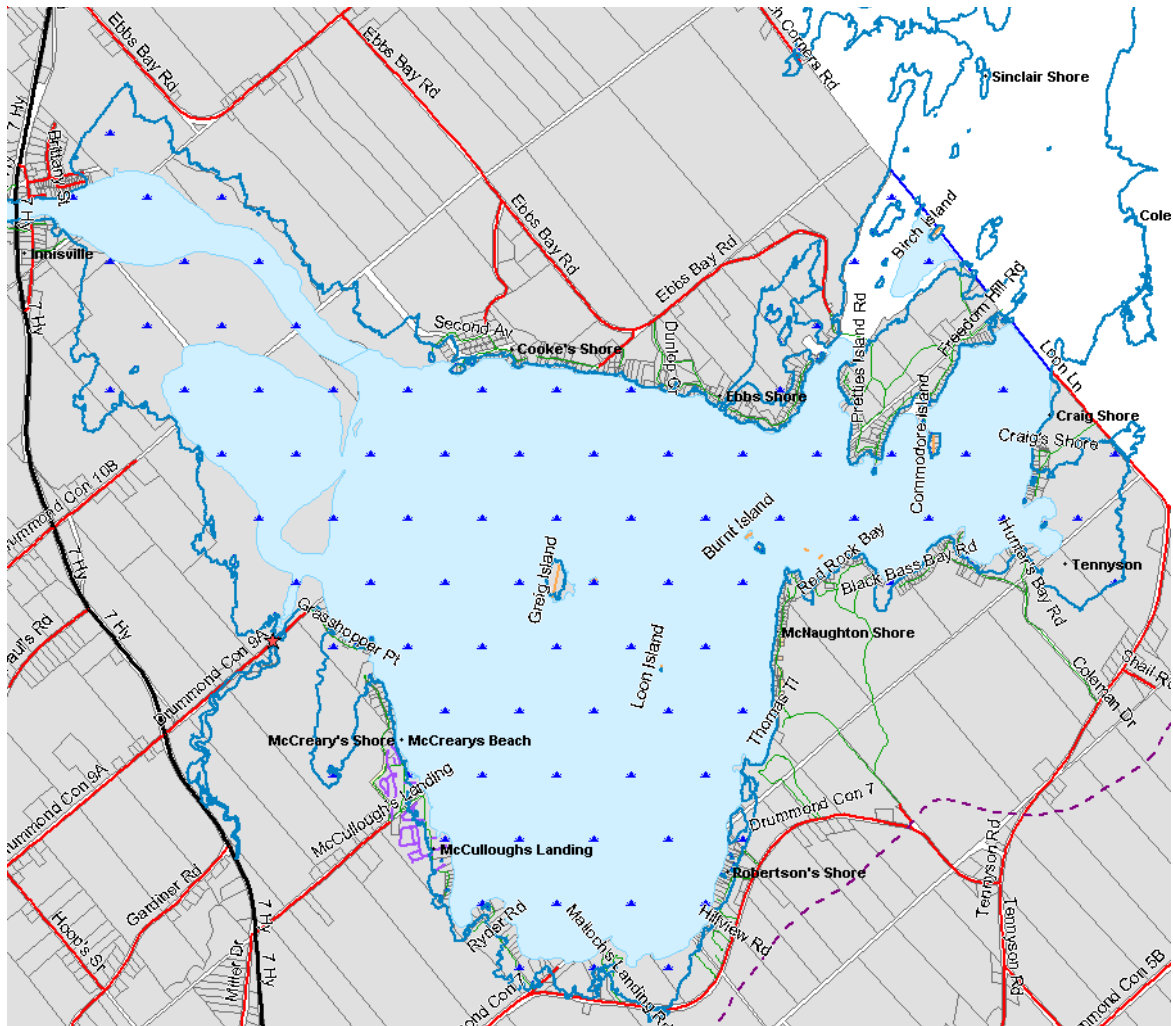
The Township's stormwater management system is comprised of storm sewers and minor culverts. Drummond/North Elmsley's stormwater management system impacts 4,871 properties across the municipality. The entire municipal stormwater management system is projected to be resilient to a 5-year storm.



About 515 properties, or 10.6% of total properties in the Township, would be affected by a 100-year storm. Approximately 4,356 properties, or 89.4%, would be expected to be resilient to a 100-year storm.

Figure 10 shows the flood lines within the municipality to a 100-year storm.

**Figure 10 Drummond/North Elmsley Flood Lines for 100-Year Storm**



## Stormwater Management – Minor Culverts (<3.0 metres span)

Drummond North Elmsley has approximately 672 minor culverts located on Township lands.

Drummond/North Elmsley rates its minor culverts between Very Good to Very Poor as indicated in Figure 11. The ratings are used by the Township as Technical Levels of Service to measure the condition of the minor culverts and to measure the likelihood of failure to meet the desired service targets. Currently, the average condition of the Township's minor culverts is Good.

**Figure 11 Drummond/North Elmsley Minor Culvert Condition Ratings**

Asset Class	Asset Ratings and Corresponding Likelihood of Failure				
	Very Unlikely Estimated beyond 20 yrs. OR Estimated <10%	Unlikely Estimated 11 - 20 yrs. OR Estimated 10% -30%	Possible Estimated 6 - 10 yrs. OR Estimated 30% - 60%	Likely Estimated 1 - 5 yrs. OR Estimated 60% - 90%	Very Likely or Certain Estimated within 1 yr. or Now OR Estimated >90%
Minor Culverts	<b>Very Good</b>	<b>Good</b>	<b>Fair</b>	<b>Poor</b>	<b>Severe</b>
	- New/like new - Deterioration: None to little - Structurally sound - Functionally adequate	- Deterioration: None to little - Structurally sound - Functionally adequate	- Deterioration: Some - Structurally sound - Functionally adequate	- Deterioration: Significant and/or - Functionally inadequate - Requires maintenance or repair	- Very Poor - Deterioration: Severe - Structurally unsound - Functionally inadequate - Possible imminent failure or threat to public safety.

## Stormwater Management – Storm Sewers

Drummond/North Elmsley has approximately 804 metres of storm sewers which service the road rights-of-way in the hamlets of Balderson and Innisville.

Drummond/North Elmsley rates its storm sewers between 1 to 5 as indicated in Figure 12. The ratings are used by the Township as Technical Levels of Service to measure the condition of the sewers and to measure the likelihood of failure to meet the desired service targets. Currently the average condition of the Township's Storm Sewers is 3.3 (Fair).

**Figure 12 Drummond/North Elmsley Storm Sewer Condition Ratings**

Asset Class	Asset Ratings and Corresponding Likelihood of Failure				
	Very Unlikely Estimated beyond 20 yrs. OR Estimated <10%	Unlikely Estimated 11 - 20 yrs. OR Estimated 10% -30%	Possible Estimated 6 - 10 yrs. OR Estimated 30% - 60%	Likely Estimated 1 - 5 yrs. OR Estimated 60% - 90%	Very Likely or Certain Estimated within 1 yr. or Now OR Estimated >90%
Sewer Pipes	1 or 2 Very Good or Good  Pipe segment has minor defects - pipe unlikely to fail for at least 20 years.	3 Fair  Pipe segment has moderate defects - deterioration may continue, at a ten to twenty year timeframe.	4 Poor  Pipe segment has severe defects - risk of failure within the next five to ten years	5 Very Poor  Pipe segment has failed or <u>will likely fail within the next five years</u> - requires immediate attention.	5 Failed  Pipe segment <b>has failed</b> or will likely fail within the next five years - requires immediate attention.

However, the Township's stormwater management system is funded at only about 40% of its forecast 10-year requirements as per Figure 13. If significant underfunding for the stormwater management assets persist, levels of service will decline and corporate risks will increase, ultimately costing the Township more on a lifecycle management basis.

**Figure 13 Drummond/North Elmsley Storm Sewer 10-Year Forecast Funding**

Asset Class	Current Level of Service (Technical)	10-year Investment Requirements <sup>2</sup> (\$,000's)	Proposed 10-year Investments (\$,000's)	Infrastructure Funding Gap (\$,000's)
Minor Culverts	Culvert Rating = Good	\$ 1,070	\$ 548	\$ 522
Storm Sewers	Pipe Condition Rating = 3.3	\$ 297		\$ 297