Township of South Glengarry
Asset Management Plan

July 1, 2022

Executive Summary

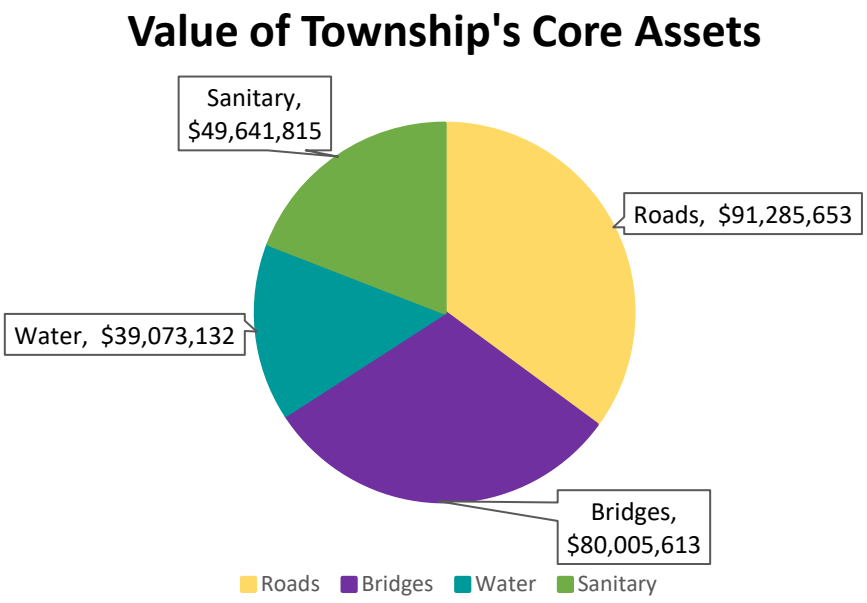
Existing infrastructure in South Glengarry Township is ageing while demand for community services continues to grow for better roads, bridges, signs, and equipment. Municipalities are held to higher standards based on health and safety, bylaws and regulations, or community expectations. As small Townships such as South Glengarry continue to grow/maintain, they are forced to adapt to these changes. To meet these standards, we must change the way we plan, design, and manage infrastructure/services.

Long term planning about infrastructure is not a new concept. It has more recently become known as Asset Management and has come to be a process of reviewing strategies, current practices, and financial budgeting to create and consolidate existing infrastructure situations into a more formal Asset Management Plan.

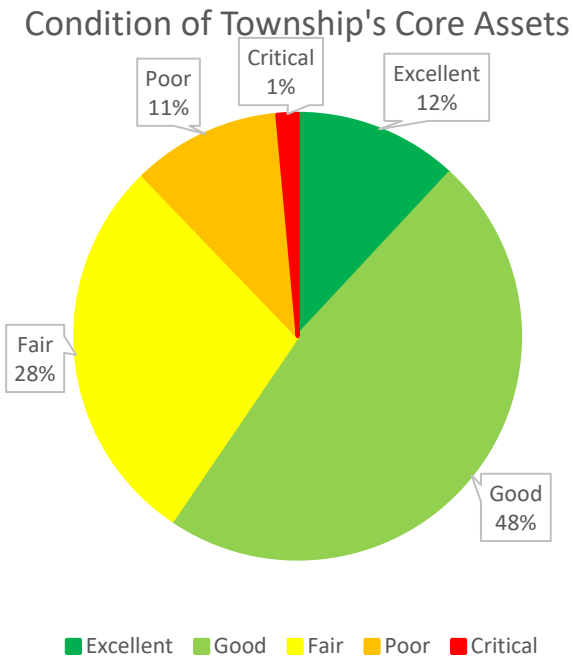
The Asset Management Plan is a process that allows for maintenance, upgrading, and operations of physical assets owned by the Township: roads, bridges, culverts, storm water, and water/wastewater infrastructure. The plan details the state of these infrastructure as well as provide a ten-year financial plan. To be sustainable, the financial plan requires secure and stable funding from the Provincial and Federal governments.

The intent is that by implementing an Asset Management Plan, the Township of South Glengarry can meet current/new demands in a financially accountable framework while preserving the Township's quality of life.

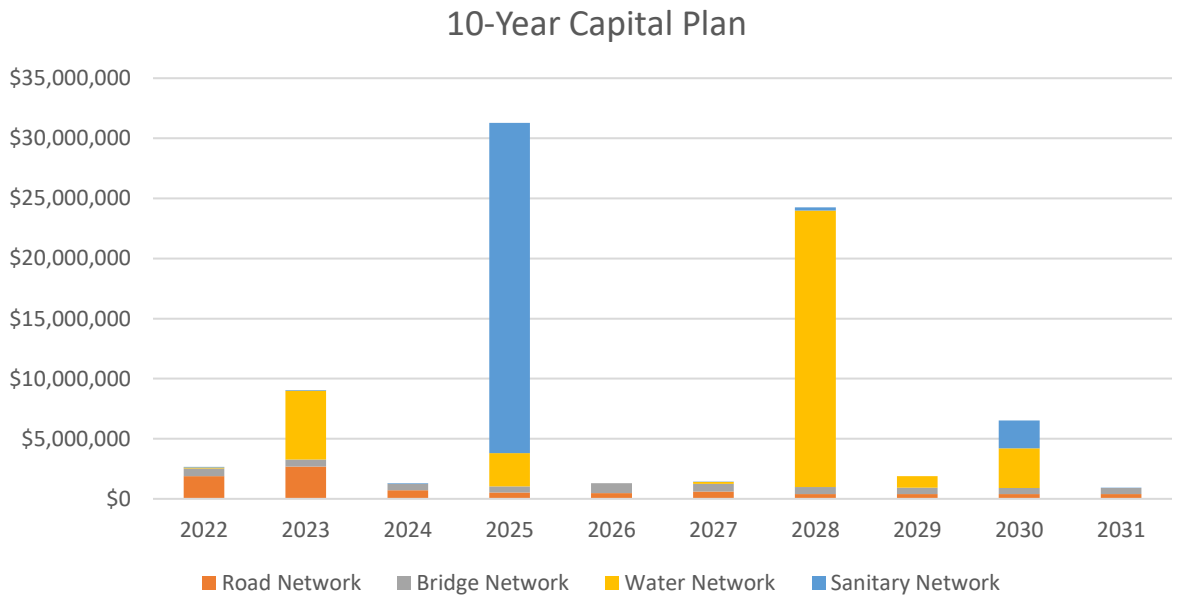
The AMP provides the value of the Township's core infrastructure, a measurement of the current level of service, and a 10-year capital plan to address the Township's immediate infrastructure needs. The following figure illustrates a breakdown of the Township's core infrastructure.



A combination of visual condition assessments and aged based assessments have been used to provide an overall assessment of the Township's core infrastructure as illustrated on the following figure.



The Township has planned capital costs for the next ten years which includes the construction of a water tower in Glen Walter, expansion of the Glen Walter Water and Wastewater Treatment facilities, road projects, bridge capital projects, various capital projects at the other Township water treatment plants and water pollution control plants, and engineering studies for the improvement of the Township's infrastructure.



Liability Disclaimer

This Asset Management Plan (AMP) has been prepared and publicly disclosed in accordance with the requirements established by the Province of Ontario in its Building Together Guide for Municipal Asset Management Plans.

Some of the information and statements contained in this AMP are comprised of, or are based on, assumptions, estimates, forecasts, predictions, and projections made by the Corporation of the Township of South Glengarry (Township). In addition, some of the information and statements are based on actions that the Township currently intends to take in the future. Circumstances will change, assumptions and estimates may prove to be wrong, events may not occur as forecasted, predicted, or projected, and the Township may later decide to take different actions to those it currently intends to take.

Except for any statutory liability which cannot be excluded, the Township will not be liable, whether in contract, tort (including negligence), equity or otherwise, to compensate or indemnify any person for any loss, injury or damage arising directly or indirectly from any person, using, or relying on any content of, this AMP.

When considering the content of this AMP, persons should take appropriate expert advice in relation to their own circumstances and must rely solely on their own judgment and expert advice obtained.

List of Revisions

Date	Revision #	Issued For
0	June 10, 2022	Draft for Internal Review
1	July 1, 2022	Final for Circulation

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1. Introduction

1.1. Township of South Glengarry

The Township of South Glengarry is a vibrant rural municipality boasting beautiful parks and natural areas, family-friendly events, rich heritage and strong Celtic traditions. Ontario's easternmost municipality, South Glengarry is close to major highways and is within commuting distance to Ottawa and Montreal. With over 13,000 residents, South Glengarry's agricultural roots are highlighted annually in Canada's oldest annual fair. Spanning an impressive 45 kilometers along the St. Lawrence River, residents and tourists alike enjoy South Glengarry's waterfront vistas and activities.

The Township of South Glengarry is a lower-tier municipality belonging to the municipality of the United Counties of Stormont, Dundas, and Glengarry. It was established on January 1, 1998, with the amalgamation of the former Townships of Charlottenburgh and Lancaster, along with the Village of Lancaster. A map of the Township showing the hamlets, County and Township roads, and main waterways is provided as **Figure 1**.

The Township of South Glengarry offers a wide range of municipal services for residents, including:

- Infrastructure
- Planning, Building, and Enforcement
- Parks, Recreation and Culture
- Corporate
- Fire

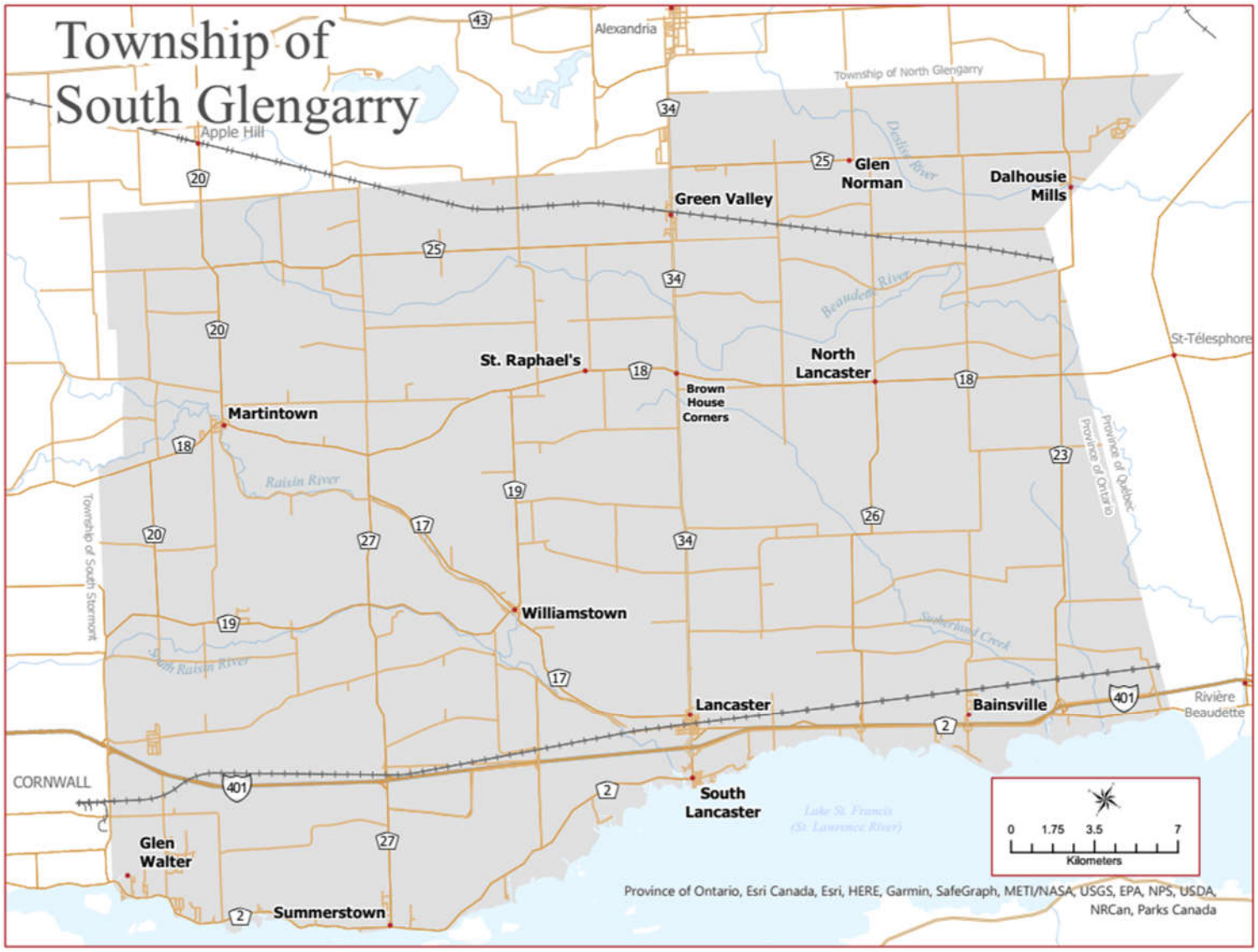
1.2. Regulatory Compliance

This Asset Management Plan meets the requirements of the Ontario Regular 588/17, Asset Management Planning for Municipal Infrastructure. The regulation provided a phased approach for completing a municipal asset management plan that is summarized in **Table 1**. The original deadlines for phases 2, 3, and 4 were each extended by one-year to accommodate the impacts of the COVID-19 pandemic.

Table 1 – O. Reg. 588/17 – Phases and Deadlines

Phase	**Deadline**	**Activity**	**Township Status**
1	July 1, 2019	Prepare and Publish a Strategic Asset Management Policy	Completed June 29, 2019
2	July 1, 2022	Develop an Asset Management Plan for Core municipal Infrastructure Assets.	Completed June 28, 2022
3	July 1, 2024	Develop an Asset Management Plan for all other municipal infrastructure	In-progress
4	July 1, 2025	Develop an Expanded Asset Management Plan for all infrastructure Assets	Not yet started

Figure 1. South Glengarry (Map)



1.3. Report Overview

The purpose of an Asset Management Plan (AMP) is to provide a municipality with a system that clearly demonstrates evidence-based choices and roadmaps for financial planning. This strategy is set in place to provide the expected service levels through the sustainable use of its assets.

This version of the Asset Management Plan includes the Township's core infrastructure assets only. Core infrastructure assets include Roads; Bridges and structural culverts; Water; and Sanitary networks.

The following is a summary of how the regulation details the major components of the required core infrastructure asset management plan:

Current Level of Service and Performance: The level of service is broadly defined as the scope and reliability of service with qualitative descriptions and technical metrics. The data that the level of service is based must be from, at most, the two previous calendar years. The current performance of each asset category is based on measures established that are established by the Township.

Lifecycle Information and Activities: For each core asset category, this asset management plan considers replacement cost, average age, condition, along with a description of the condition parameters used. Activities would include the costs required to maintain current level of service for each of the next ten-years.

The above requirements are provided **Section 3** of this report for all core assets. The remainder of the Township's assets will be included in a future version of this asset management plan to meet the requirements of O. Reg. 588/17.

1.4. Limitations

The Asset Management Plan is a tool to use in the decision-making process. There are external forces that were not considered or included in the AMP that may contribute to future adjustments to the implementation of the AMP. The AMP uses primary physical and fiscal characteristics in analysis. External forces may include sociology, environmental, political, and future development factors.

Data restrictions and quality of data will reduce the overall quality of the plan, as assumptions were made in lieu of asset life and expected life expectancy became the main assessment of asset condition. Ideally, the asset registry for each asset would have description, valuation, maintenance, condition, life cycle, predication of future maintenance, risk evaluations, and optimized life cycle. This information would lead to more refined decisions. Dependent on the data confidence of the current figures used in the AMP, inaccuracy can be projected throughout this plan. The information will continuously be improved and as we learn more, we will do better.

2. Asset Management Process

There are four key stages in the management of an asset's life cycle and decisions made decisions made at any point in the life cycle of an asset could affect the remaining life and have

operational implications and related costs. There are four key stages in the management of an asset's life cycle which are described in **Table 2**.

The Township of South Glengarry is an established municipality, and the majority of the Township's core assets are currently in the operations and maintenance stage.

Table 2. Stages of Asset Management

Planning	• This involves establishing and verifying asset requirements, evaluating your existing assets and their potential to meet your service delivery needs, and ensuring that the ongoing development of said asset adds value to your organization • Proper planning will ensure that your organization is assessing the sufficiency of your existing assets, ensuring the necessary resources are available when you need them, finding under-performing or excess assets, ensuring proper maintenance of assets, and estimating options for asset provision as well as the funding for asset acquisitions
Acquisition	• Once the procurement of a new asset is properly planned for, your organization can begin the process of acquiring said asset • The acquisition planning phase includes all activities involved with the purchase of an asset, in a cost-efficient manner • It is crucial not only to consider the initial investment but the lifecycle cost (total cost of ownership)
Operations and Maintenance	• This is the 'useful life' of the asset. All operation and maintenance activities are performed and tracked during this stage • Efforts should be focused on keeping the asset in good running order so that it can continue to provide the service required. The better maintained assets are from the beginning, the longer they tend to last • Beyond appropriate maintenance, we should monitor the asset to look for potential improvements and adjustments in our operations as required • If an asset is not functioning and cannot be repaired, it has reached the end of its 'useful life' regardless of when it was anticipated to be disposed. Similarly, if the asset is redundant to operational needs, it has reached the end of its 'useful life'
Disposal	• When the asset reaches its 'useful life' it can be treated as surplus (via Council) and disposed of accordingly

3. Levels of Service

3.1. Background

The level of service (LOS) is a measurement of the quality of service that the Township is providing to the community. O.Reg. 588/17 establishes two categories for LOS:

- Community Level of Service: a description of how customers expect to receive the service. As the customer's expectations may vary from customer to customer this group of matrixes are subjective and difficult to directly measure.
- Technical Level of Service: a measurable attribute that reflects the assets ability to achieve the desired community level of service.

The approved Asset Management Plan concentrates on developing an understanding of the current level of service in accordance with O. Reg. 588/17. The next phase of asset management planning will be to identify the proposed level of service which will meet the community's expectation with a full understanding of the financial implications of striving for the proposed level of service.

3.2. Current Asset Conditions

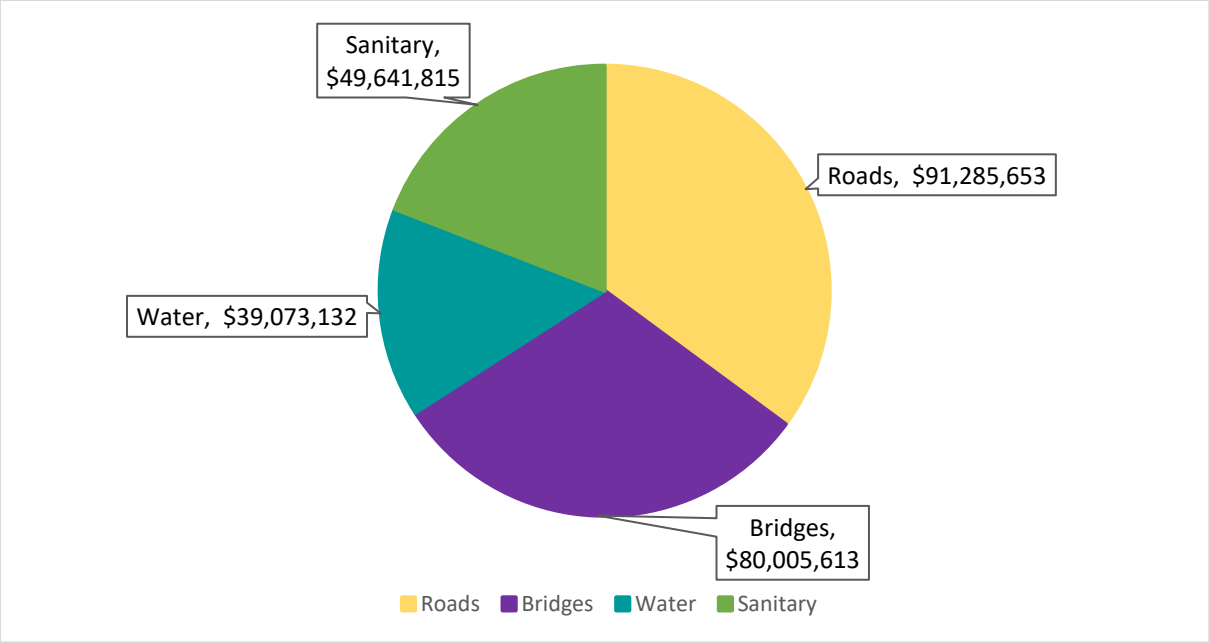
The assets that the Township of South Glengarry are currently maintained and operated in accordance with the following regulations and guidelines:

- Minimum Maintenance Standards for Municipal Highways (O. Reg. 239/02)
- Ontario Provincial Standards Specifications (OPSS)
- Ontario Provincial Standard Drawings (OPSD)
- Standards for Bridges (O. Reg. 104/97)
- Ontario Structure Inspection
- Drinking Water Quality Management Standard
- Municipal Drinking Water Licence
- Drinking Water Works Permits
- Safe Drinking Water Act
- Provincial Drinking Water Guidelines
- Ontario Water Resources Act
- Environmental Compliance Approvals
- Ontario Building Code
- Provincial Fire Code
- Acceptable Standards as set forth by administration

3.3. Asset Breakdown

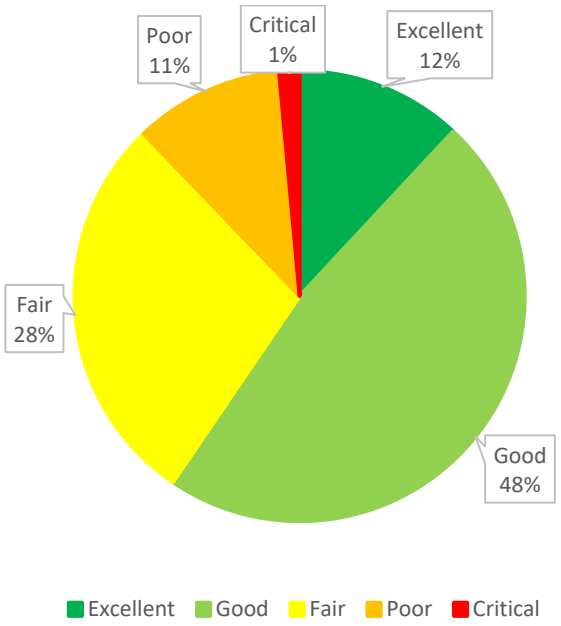
This version of the Township's Asset Management Plan focuses on the core asset categories: road network, bridges, water network, and sanitary network. The Township owns core assets totaling a replacement value of approximately $236M. The breakdown of these assets by core asset category is as follows:

Figure 2 – Township's Total Core Infrastructure Replacement Value



The following sections provide supporting information for the condition of the core assets, based on the grading scale presented in the following sections, and summarized in the following figure.

Figure 3 – Township's Core Infrastructure Consolidated Condition



3.4. Road Network

3.4.1. What we Own and its Current Replacement Value

The Township owns the following road network assets:

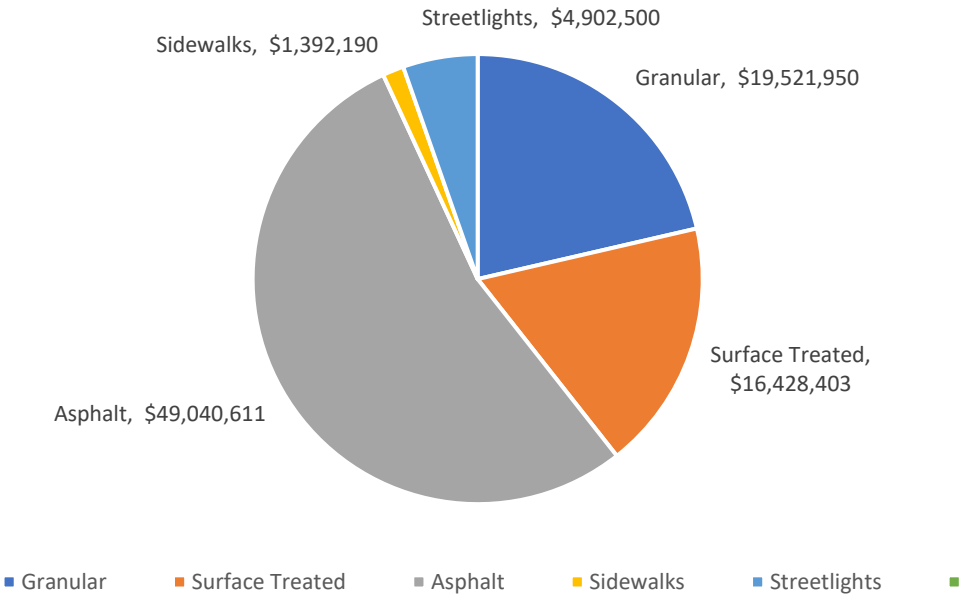
Table 3 – Road Network Assets

Road Assets	# of Roads	Length	Replacement Value
Granular	108	145.5 km	$19,521,950
Surface Treated	39	84.2 km	$16,428,403
Asphalt	212	156.2 km	$49,040,611
Sidewalks	37	12,106 m	$1,392,190
Streetlights	935		$4,902,500

Although granular roads are included in the valuation of the road network, the maintenance and replacement of granular roads are an annual operational function. Only projects where granular roads are upgraded to surface treatment or asphalt will be identified and included within the capital plan for this asset management plan.

The following figure illustrates a breakdown of the road network by asset category.

Figure 4 – Road Network by Component



3.4.2. Expected Useful Service Life

"Useful Service Life" is the industries best estimate of the expected period of time an asset can be used for their intended purpose. Depending on the maintenance and rehabilitation efforts over the course of the life span of an asset, the useful service life can be extended. The useful service life is used to determine replacement needs of individual assets.

The following table provides a comparison of the expected service life compared to the actual average age of the Township 's road network.

Table 4 – Road Network – Useful Service Life

ASSET COMPONENT	ESTIMATED USEFUL LIFE (YEARS)	AVERAGE AGE (YEARS)	AVERAGE SERVICE LIFE REMAINING (YEARS)
SURFACE TREATED ROADS	12	5	7
ASPHALT ROADS	60	30	30
STREETLIGHTS	30	12	18
SIDEWALKS	60	30	30

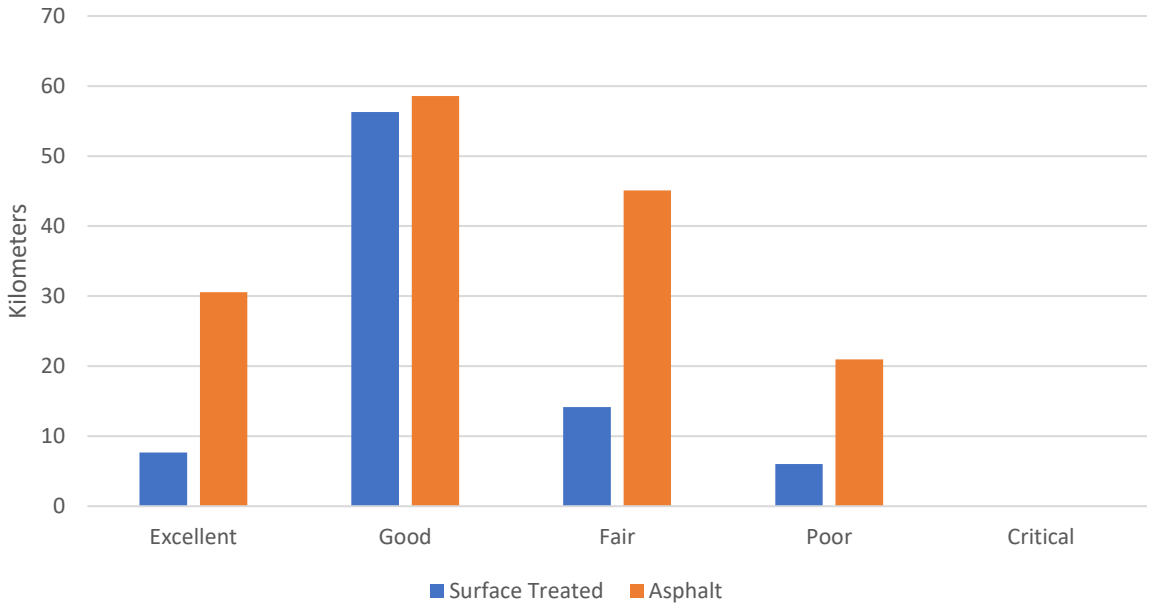
The condition of the road network was established based on the following matrix.

Table 5 – Road Network Condition Rating System

Colour Indicator	Pavement Condition Index	
	Greater than 80%	Requires regular maintenance
	60% < PCI < 80%	Minor local improvements
	40% < PCI 60%	Requires rehabilitation and continued maintenance
	20% < PCI < 40%	Requires major rehabilitation or reconstruction
	Less than 20%	Requires Reconstruction

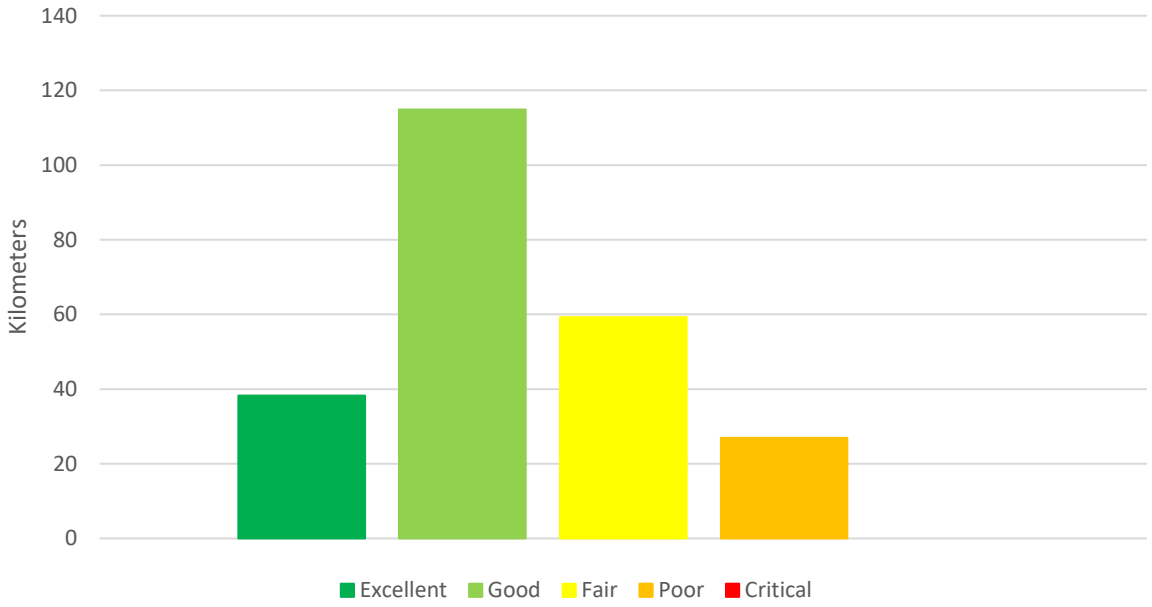
Based on the pavement condition index, provided in the 2020 Road Needs Study, the overall condition of the surface treated and asphalt roads is shown in the following figure.

Figure 5 – Condition of Road Assets by Component



The combined condition of all road network assets is shown in the following figure.

Figure 6 – Road Network Overall Condition



3.4.3. Current Level of Service

Based on the asset inventory compiled for the road network, the Township has identified the current level of service being provided to the community. The Community and Technical Level of Service is reflected in the following table meeting the requirements of O.Reg. 588/17.

Table 6 – Current Level of Service - Road Network

Level of Service Category	Matrix	Current Level of Service
Community LOS	Description, which may include maps, of the road network in the municipality and its level of connectivity.	Refer to Appendix B
	Description or images that illustrate the different levels of road class pavement condition.	Road network condition rating system is defined in Table 5.
Technical LOS	Lane-km of Municipal Roads per land area[1]	0.63 km/km^2
	For paved roads in the municipality, the average pavement condition index value.	62 (fair)
	Maintain an up-to-date Road Needs Study	Every Five Years
	Maintain a condition assessment of sidewalks	Every Five Years

1 based on 605 km^2

3.4.4. Lifecycle Management

The Township has two levels of budgeting for the upkeep of their road network:

- Annual Operation and Maintenance Budget (Operating Budget)
  - Summer Activities including pavement patching, line painting, roadside mowing, tree trimming, road sign maintenance, street light maintenance, sidewalk repairs, etc.
  - Winter Activities including snow plowing, sanding/salting, sidewalk clearing, etc.
- Planned Rehabilitation and Replacement Budget (Capital Budget)
  - Paved road rehabilitation and replacement is scheduled based on the PCI of the road infrastructure as well as the condition of the underground infrastructure.

The current strategy is to maintain roads that are in good condition in good condition and concentrate road rehabilitation works in the areas where the underground infrastructure is in poor condition.

3.5. Bridge Network

3.5.1. What we Own and Its Current Replacement Value

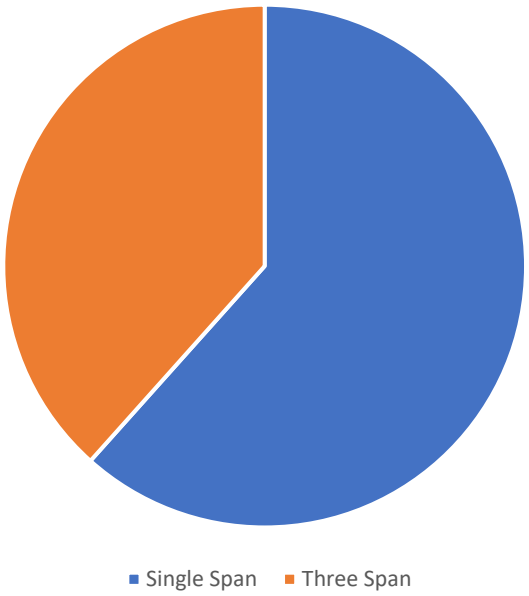
The Township's bridge network consists of 50 structures with spans of 3m or greater. These structures may be a structural bridges or large culverts. Any structures with less than a 3m span are included in the road network. The Township owns the following bridge network assets:

Table 7 – Bridge Network Assets

Bridge Assets	**# of Structures**	**Length**	**Replacement Value**
Single Span	44	398.35	$ 49,295,813
Three Span	6	206.8	$ 30,709,800

The following figure illustrates a breakdown of the bridge network by asset category.

Figure 7 – Bridge Network by Component



3.5.2. Expected Useful Service Life

"Useful Service Life" is the industries best estimate of the expected period of time an asset can be used for their intended purpose. Depending on the maintenance and rehabilitation efforts over the course of the life span of an asset, the useful service life can be extended. The useful service life is used to determine replacement needs of individual assets.

The following table provides a comparison of the expected service life compared to the actual average age of the Township 's bridge network.

Table 8 – Bridge Network – Useful Service Life

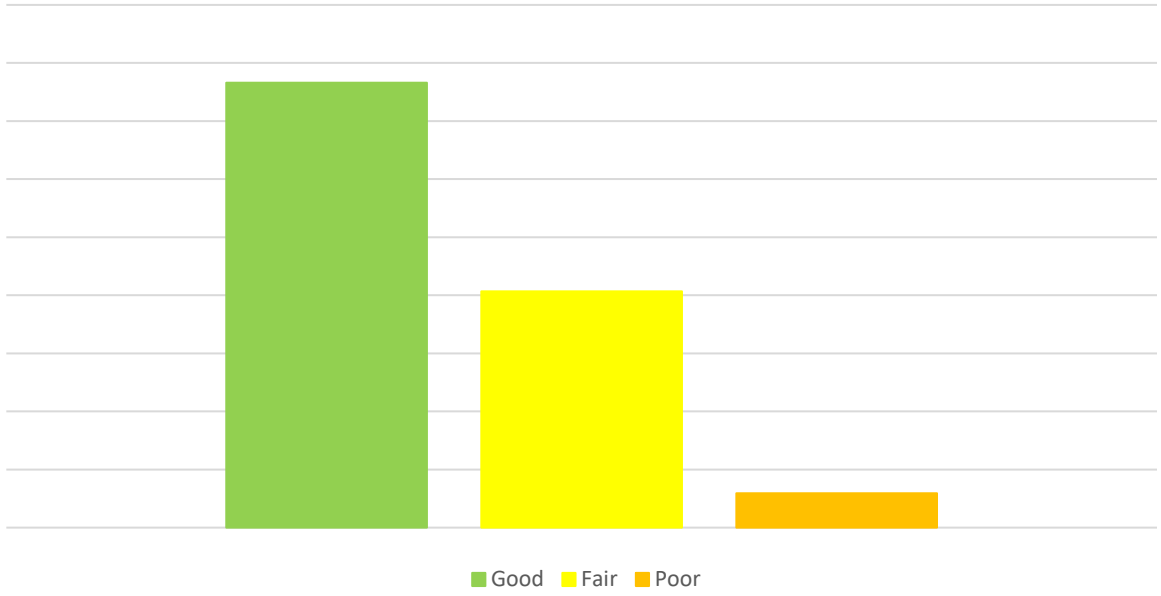
Asset Component	Estimated Useful Life (Years)	Average Age (Years)	Average Service Life Remaining (Years)
Bridges	70	30	40
Culverts	50	30	20

Based on the bridge condition index, provided in the 2021 OSIM Report, the overall condition of the bridge structures is shown in the following figure.

Table 9 – OSIM Bridge Condition Index

Rating		Maintenance Schedule
	Good: BCI: 70-100	Maintenance is not usually required within the next five years
	Fair: BCI: 60-70	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.
	Poor: BCI: <60	Maintenance work is usually scheduled within one year.

Table 10 – Bridge Condition by Rating



3.5.3. Current Level of Service

Based on the asset inventory compiled for the bridge network, the Township has identified the current level of service being provided to the community. The Community and Technical Level of Service is reflected in the following table meeting the requirements of O.Reg. 588/17.

Table 11 – Current Level of Service - Bridges

Level of Service Category	Matrix	Current Level of Service
Community LOS	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	Currently no vehicle restrictions on bridges
	Description or images of the condition of bridges and how this would affect use of the bridges.	Refer to OSIM Report
Technical LOS	Percentage of bridges in the municipality with loading or dimensional restrictions	Currently no-load restrictions
	For bridges in the municipality, the average bridge condition index value.	72 (Good)
	Completion of OSIM Report	Every Two Years

3.5.4. Lifecycle Management

The Township has two levels of budgeting for the upkeep of their bridge infrastructure:

- Annual Operation and Maintenance Budget (Operating Budget)
  - Summer Activities including pavement patching, line painting, sign maintenance, , power-washing, sidewalk repairs, etc.
  - Winter Activities including snow plowing, sanding/salting, sidewalk clearing, etc.
- Planned Rehabilitation and Replacement Budget (Capital Budget)
  - Capital items are identified in the OSIM report and integrated into the 10-year capital plan to ensure the structure is maintained in good condition.

The Township has budgeted to undertake the following work presented in the OSIM reports over the course of the next 10 years.

3.6. Water Network

3.6.1. What we Own and Its Current Replacement Value

The Township is the owner of several drinking water systems, including the following:

- Glen Walter Drinking Water System
- Lancaster Drinking Water System
- Redwood Estates Drinking Water System

The combined drinking water systems consist of three drinking water treatment plants, one elevated tower 25.1 km of watermains and appurtenances consisting of hydrants, water valves and water services.

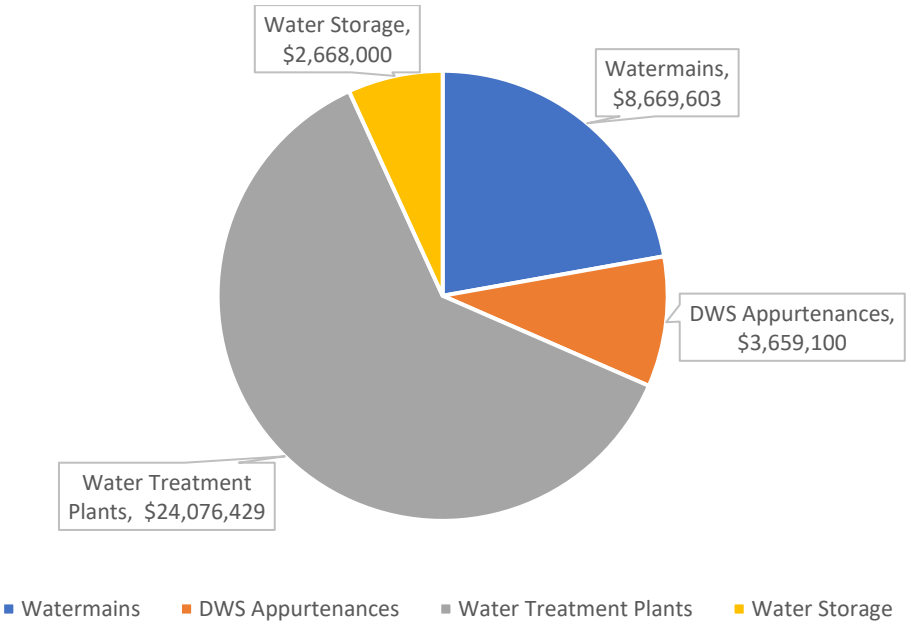
A summary of the Township's water assets is presented in the following table.

Table 12 – Township's Water Network Assets

Asset	Lancaster	Glen Walter	Redwood	Total Units	Total Cost
20mm Watermain		34.89		35	$6,978
50mm Watermain		199.23		199	$39,845
75mm Watermain		102.49		102	$20,498
100mm Watermain		357.38	1214.84	1,572	$314,445
150mm Watermain	9075.52	2882.71		11,958	$3,288,513
200mm Watermain	2673.65	3111.50		5,785	$2,169,430
250mm Watermain	15.54	1555.01		1,571	$706,744
300mm Watermain	2264.11	661.58		2,926	$1,535,987
350mm Watermain	619.47			619	$356,194
450mm Watermain	329.96			330	$230,970
# of Hydrants	72	29	2	103	$772,500
# of Water Valves	101	70	7	178	$391,600
# of Services	510	460	28	998	$2,495,000
Glen Walter WTP		$10,461,000		$10,461,000	$10,461,000
Lancaster WTP	$12,430,000			$12,430,000	$12,430,000
Redwood Estates WTP			$1,185,000	$1,185,429	$1,185,429
Lancaster Water Tower	$2,668,000			$2,668,000	$2,668,000
Total Asset Value					$39,073,132

The following figure illustrates a breakdown of the water network by asset category.

Figure 8 – Water Network by Component



3.6.2. Expected Useful Service Life

"Useful Service Life" is the industries best estimate of the expected period of time an asset can be used for their intended purpose. Depending on the maintenance and rehabilitation efforts over the course of the life span of an asset, the useful service life can be extended. The useful service life is used to determine replacement needs of individual assets.

The following table provides a comparison of the expected service life compared to the actual average age of the Township's water network.

Table 13 – Water Network – Useful Service Life

Asset Type	Asset Component	Useful Life in Years
Water Network	Watermains	80
	House Services	60
	Fire Hydrants	50
	Valves	50
	Elevated Water Storage	60
	Water Treatment Facilities – Mechanical Systems	25
	Water Treatment Facilities – Electrical Systems	40
	Water Treatment Facilities – Piping Networks	80
	Water Treatment Facilities – Concrete Works	100

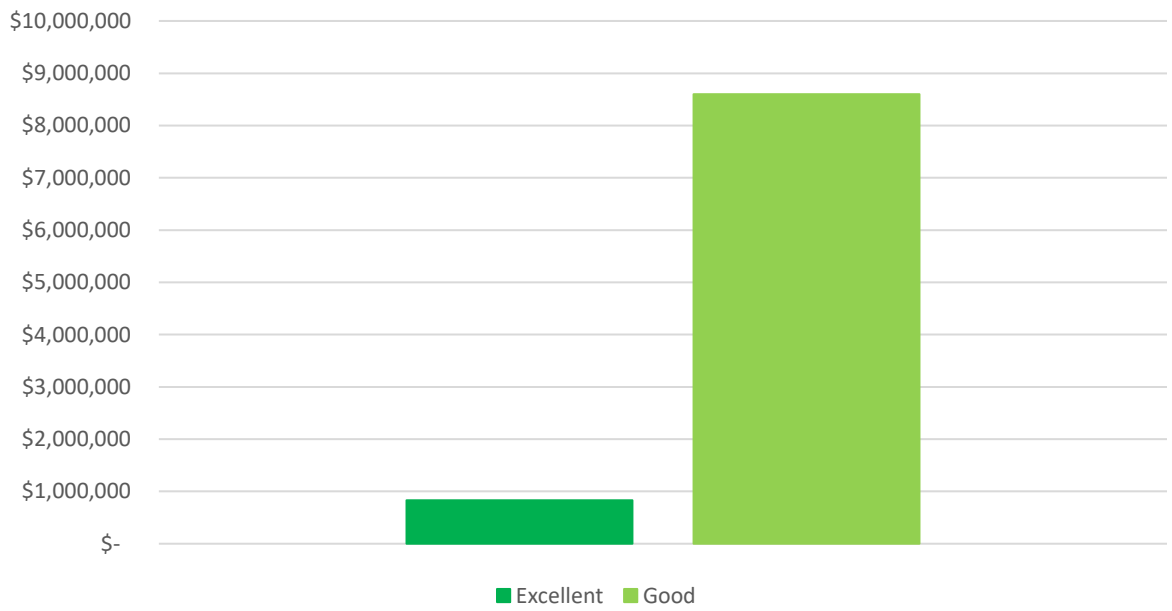
The Township has adopted the following Key Performance Indicators for the evaluation of the condition of the Township's watermains.

Table 14 – Key Performance Factors for Assessing Condition of Watermains

Baseline		
All Pipe less than 30 years old	1	Excellent
All Pipe older than 30 years old	2	Good
Pipe Material		
AC/Transit	+1	
Watermain Breaks		
7 Breaks in past 5 Years per km	+3	
5 Breaks in past 5 Years per km	+2	
3 Break in past 5 Years per km	+1	
Ability to Convey Fire Flows		
Unable to provide fire flows under all operating conditions	+3	
Low Water Pressure (Not Related to Watermain Break)		
Watermain dropped below 20 psi	+3	
Water Quality Complaints (Unrelated to Maintenance Activities)		
15% of customers complained about water	+3	
10% of customers complained about water	+2	
5% of customers complained about water	+1	

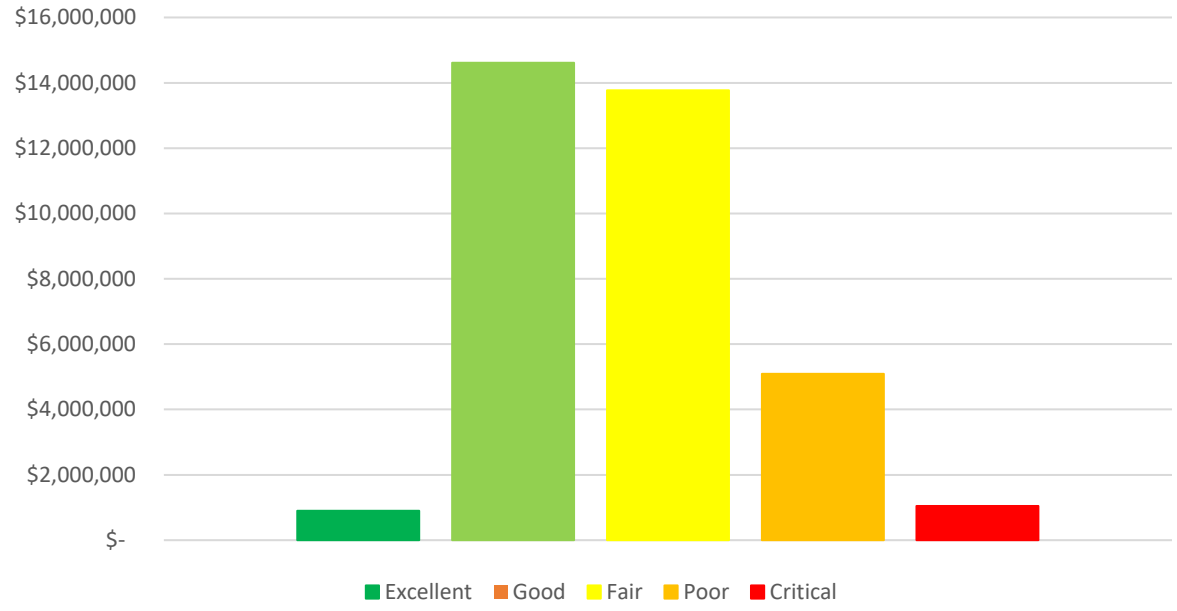
Based on the KPI, the condition of the Township's watermains is reflected in the following figure

Figure 9 – Condition of Watermains



The condition of all of the water network assets is provided in the following figure.

Figure 10 – Condition of Water Network Assets



Boil Water Advisories and Service Interruptions

The number of boil water advisory and service interruptions can also be an indication of the condition of the water distribution system. The following table provides a summary of the boil water advisories that have been issued on the three systems operated by the Township

Table 15 – History of Boil Water Advisories

System	Glen Walter	Lancaster	Redwood
Dates of Boil Water Advisories	• Dec 15, 2014 • PRECAUTIONARY Nov 17 – Nov 19, 2021 • Feb 8 – Feb 10, 2022	• PRECAUTIONARY Jan 27, 2022 – Jan 29, 2022	• None

3.6.3. Current Level of Service

Based on the asset inventory compiled for the water network, the Township has identified the current level of service being provided to the community. The Community and Technical Level of Service is reflected in the following table meeting the requirements of O.Reg. 588/17.

Table 16 – Current Level of Service – Water Network

Level of Service Category	Matrix	Current Level of Service
Community LOS	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system.	Refer to Appendix C
	Description, which may include maps, of the user groups or areas of the municipality that have fire flow.	Refer to Appendix C
	Description of boil water advisories and service interruptions.	Refer to Table 15.
Technical LOS	Percentage of properties connected to the municipal water system.[1]	18.4% Glen Walter: 440 Connections Lancaster: 508 Connections Redwood Estates: 26 Connections
	Percentage of properties where fire flow is available.	9.6% Lancaster only
	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.	Negligible
	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.	Negligible

1 Based on 5,300 residential properties in the Township

3.6.4. Lifecycle Management

The Township has two levels of budgeting for the upkeep of their water infrastructure:

- Annual Operation and Maintenance Budget (Operating Budget)
  - Summer Activities including flushing, pressure regulator valve testing, valve exercising, etc.
  - Winter Activities including winterization of hydrants, etc.
- Planned Rehabilitation and Replacement Budget (Capital Budget)
  - Capital items are identified through the tracking of watermain breaks, and leak detection surveys and then coordinated with the road network capital projects.

3.7. Sanitary Network

3.7.1. What we Own and Its Current Replacement Value

The Township is the owner of several wastewater treatment systems, including the following:

- Glen Walter Water Pollution Control Plant

- Green Valley Lagoons
- Lancaster Lagoons

The combined sanitary systems consist of three wastewater treatment plants, seven sewage pumping stations, 22 km of sanitary sewers, 13 km of forcemains and appurtenances consisting of manholes and services connections.

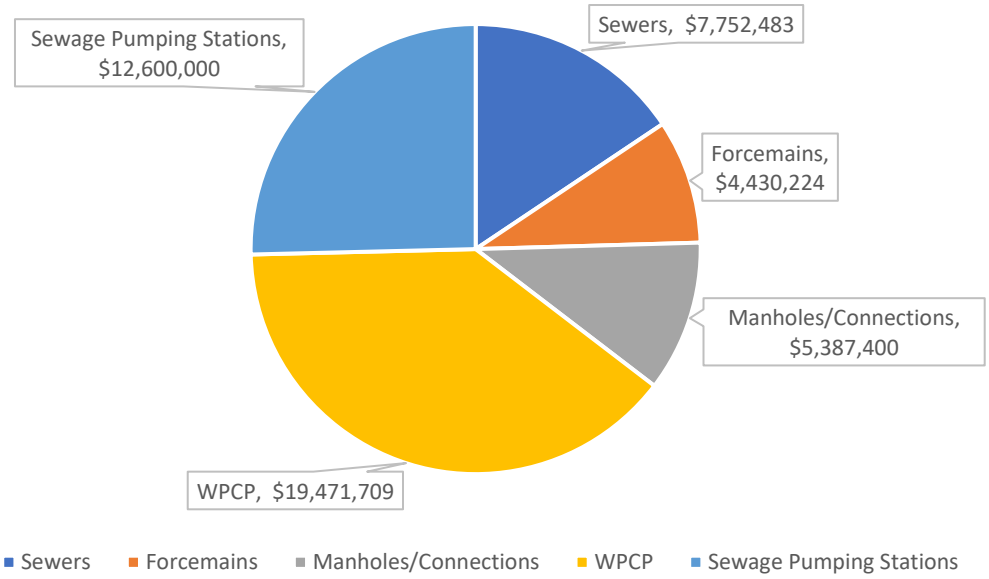
A summary of the Township's water assets is presented in the following table.

Table 17 – Township's Sanitary Network Assets

Asset	Lancaster	Glen Walter	Green Valley	Total Units	Total Cost
150mm Sewer		23		23	$8,032
200mm Sewer	8717	5088	4254	18,058	$6,320,327
250mm Sewer	1406	1287	171	2,863	$1,073,745
300mm Sewer	610	203		812	$324,941
900mm Sewer			30	30	$25,438
50mm Forcemain	428			428	$107,050
100mm Forcemain	1085	251	670	2,006	$501,486
150mm Forcemain		917	1523	2,441	$610,129
200mm Forcemain	3953	37	144	4,133	$1,446,692
250mm Forcemain	293			293	$117,091
300mm Forcemain	2118	255		2,373	$1,008,477
350mm Forcemain	1346			1,346	$639,298
# of Manholes	139	118	54	311	$2,612,400
# of Services	510	440	160	1,110	$2,775,000
Glen Walter WPCP		$9,557,200			$9,557,200
Lancaster Lagoons	$7,235,209				$7,235,209
Green Valley Lagoons			$2,679,300		$2,679,300
SPS	2.00	3.00	2.00	7	$12,600,000
Total Asset Value					$49,641,815

The following figure illustrates a breakdown of the sanitary network by asset category.

Figure 11 – Sanitary Network by Component



3.7.2. Expected Useful Service Life

"Useful Service Life" is the industries best estimate of the expected period of time an asset can be used for their intended purpose. Depending on the maintenance and rehabilitation efforts over the course of the life span of an asset, the useful service life can be extended. The useful service life is used to determine replacement needs of individual assets.

The following table provides a comparison of the expected service life compared to the actual average age of the Township's sanitary network.

Table 18 – Sanitary Network – Useful Service Life

Asset Type	Asset Component	Useful Life in Years
Sanitary Network	Sewers	75
	Manholes	60
	Service Connections	60
	WWTP/SPS – Mechanical	25
	WWTP/SPS – Electrical	40
	WWTP/SPS – Civil	75

The Township has adopted the following Key Performance Indicators for the evaluation of the condition of the Township's sanitary sewers.

Table 19 – Key Performance Factors for Assessing Condition of Sanitary Sewers

Baseline		
All Pipe less than 20 years old	1	Excellent
All pipe older than 20 years old	2	Good

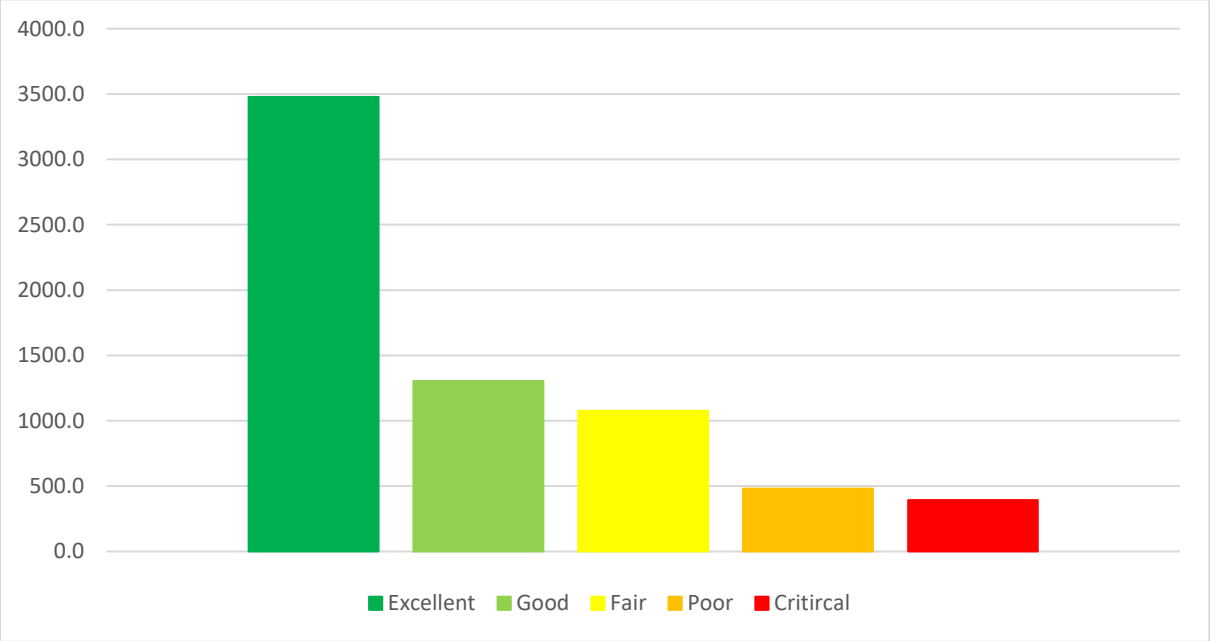
Pipe Material	
AC	+1
Steel Pipe	+1

Structural Performance Factors	
Broken Soil Visible	+3
Deformed Rigid (10%)	+3
Deformed Flexible Bulging Round (25%)	+3
Joint Offset Large	+2
Joint Separated Large	+2
Deformed Flexible Bulging Round (5%)	+2
Fracture Multiple	+2
Broken	+1
Joint Offset Medium	+1
Crack Multiple	+1
Deformed Flexible Elliptical (15%)	+1
Joint Separated Medium	+1
Deformed Flexible Bulging Round (2%)	+1
Miscellaneous Water Level Sag (5%)	+1
Deposits Attached Encrustation (5%)	+1

Inflow and Infiltration Factors	
Multiple Gushers in same length of Pipe	+3
Single Medium-Large Gusher	+2
Single Small Gusher	+1

Based on the KPI and the available CCTV footage and reports for the sanitary collection system, the condition of the Township's sanitary sewers is reflected in the following figure.

Figure 12 – Condition of Sanitary Sewers



3.7.3. Current Level of Service

Based on the asset inventory compiled for the sanitary network, the Township has identified the current level of service being provided to the community. The Community and Technical Level of Service is reflected in the following table meeting the requirements of O.Reg. 588/17.

Table 20 – Current Level of Service – Sanitary Network

Level of Service Category	Matrix	Current Level of Service
Community LOS	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system.	Appendix D
	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches.	Refer to Table 20
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or backup into homes.	Stormwater can enter the sanitary network through inflow (i.e. sump pumps, footing drains, rain leader connections, etc.) or infiltration (i.e. seepage through cracks in sewers or manholes, loose joints, etc.)

	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid events described above.	The Township ensures that new construction is completed in accordance with the MECP design guidelines.
	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system.	Final effluent from the Glen Walter WPCP and Lancaster Sewage Treatment Plant is discharges by gravity to the St. Lawrence River. Final effluent from the Green Valley Sewage Treatment Plant is discharges by gravity, seasonally to the Beaudette River.
Technical LOS	Percentage of properties connected to the municipal wastewater system.[1]	21.6% Glen Walter: 424 Connections Lancaster: 508 Connections Green Valley: 215 Connections
	The number of connection-days per year due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.	0 days
	The number of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.	Refer to Table 21

1 Based on 5,300 residential properties in the Township

Table 21 – Sanitary Bypass Events

Bypasses	Units	2016	2017	2018	2019	2020	2021
Glen Walter Sanitary System							
# of Events	No.	3	3	3	8	4	No by-passes
Duration	hours	4.4	11.4	10.0	51.1	43.2	
Volume	m^3	420	1109	964	4880	2020	
Green Valley Sanitary System							
# of Events	No.	1	2	3	4	4	3
Duration	hours	5.6	12.8	75.3	52	63.2	22.5
Volume	m^3	58	321	729	1050	1350	223
Lancaster Sanitary System							
# of Events	No.	No by-passes	No by-passes	No by-passes	No by-passes	No by-passes	No by-passes
Duration	hours						
Volume	m^3						

Table 22 – Number of Annual Exceedances of Effluent Limits

System	*2016*	*2017*	*2018*	*2019*	*2020*
Glen Walter	0	0	0	0	0
Green Valley	2 (TSS) 2 (TP)	0	0	0	2 (TSS)
Lancaster	0	1 (TP)	0	0	0

3.7.4. Lifecycle Management

The Township has two levels of budgeting for the upkeep of their water infrastructure:

- Annual Operation and Maintenance Budget (Operating Budget)
  - Summer Activities including flushing, CCTV inspection, etc.
  - Winter Activities including winterization of hydrants, etc.
- Planned Rehabilitation and Replacement Budget (Capital Budget)
  - Capital items are identified through prioritizing replacement of pipe made from fragile materials (i.e. clay and/or asbestosis concrete) and CCTV surveys and then coordinated with the road network capital projects.

3.8. Desired Level of Service

To be detailed in the 2024 AMP Update.

3.9. Lifecycle Management Strategies

The purpose of developing a lifecycle strategy, for each of the asset categories, is to assist the Township staff with planning for various activities requires for the upkeep of the Township's assets. The strategy should address which activity should be performed and when the activity should be performed to maximize and/or extend the useful life of an asset. The lifecycle management activities can be grouped into one of three event types:

Table 23 – Life Cycle Management Strategies

Event Type	Description	Cost
Maintenance	Activities that prevent defects and/or the deterioration of assets	$
Rehabilitation	Activities that rectify defects and/or deficiencies that are already present and reducing the useful service life of the asset.	$$
Replacement	The removal of an existing asset with a new asset.	$$$

3.10. Climate Change Risk

Climate change is evolving to a considerable risk when managing infrastructure and the Township must take the impacts into consideration when determining levels of service. This can most prudently be done through contingency/emergency funds as well as taking into consideration the potential impacts when designing our infrastructure. The following table identified design intent to minimize the impact of climate change on our infrastructure.

Table 24 – Minimize Impact of Climate Change on Infrastructure

Asset Category	Potential Impact of Climate Change	Build Resilience in New Works
Roads, Sidewalks	Unpredictable storm events potentially damaging or undermining roads or sidewalks.	Consider increasing size and frequency of design storm events in the Township's Design Manual. Consider location of new assets in relation to flood prone areas. Ensure adequate geotechnical testing prior to rehabilitation or reconstruction
Culverts, Bridges	Unpredictable storm events potentially overflowing and/or damaging culverts & bridges in flood prone areas.	Consider increasing size and frequency of design storm events in the Township's Design Manual. Consider location of new assets in relation to flood prone areas. Ensure adequate geotechnical testing prior to rehabilitation or reconstruction
Water Network	Potential for more frequent and prolonged drought	Monitor water usage and have policies in place to implement water

Asset Category	Potential Impact of Climate Change	Build Resilience in New Works
	conditions require the management of the water storage within the systems	restrictions should drought conditions persist.
Sanitary Network	Potential for more frequent and higher intensity rainfall events increasing amounts of I/I into sanitary system.	Repair major sources of infiltration and remove sources of inflow of stormwater into sanitary system.
Sanitary Network	Potential for more frequency and higher peak flow events.	Reduce stormwater inflow and infiltration into the sanitary collection system to reduce the magnitude and frequency of high peak flow events.
Storm Network	Potential for more frequent and higher intensity rainfall events.	Consider changing guidelines to increase the size and frequency of design storm events. This will increase stormwater pond sizes and increase the size of stormwater pipes to increase the conveyance capacity of the system.

3.11. Current Funding Levels

To identify the state of the municipality's infrastructure today and the projected state in the future if current funding levels and management practices remain status quo.

The analysis and subsequent communication tools will outline future asset requirements, will start the development of tactical implementation plans, and ultimately assist the organization to provide cost effective sustainable services to the current and future community.

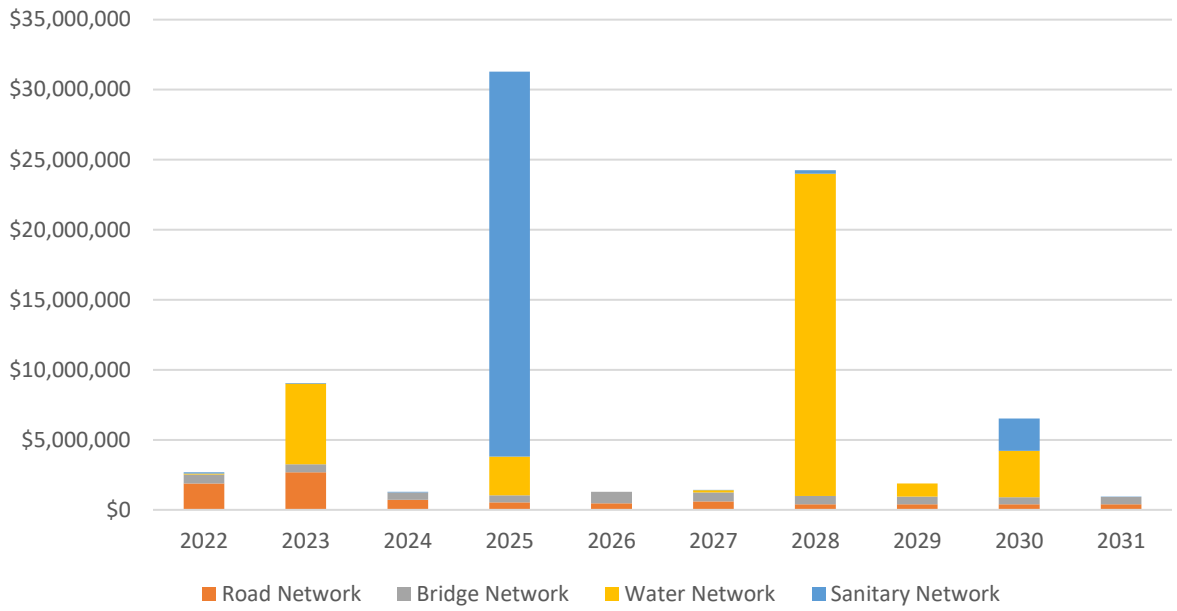
3.11.1. Planned Capital Expenses

The Township has prepared the following 10-year capital plan to identify both replacement and rehabilitation needs for their core infrastructure. Details for each asset category are contained in Appendix E. Highlights of the plan include:

- The Township has taken an aggressive approach for the capital upgrades for the road network, having applied for a load from the Ontario Ministry of Infrastructure to complete up to $4.8M of road work in 2022 and 2023.
- The Township has based their bridge funding requirements upon the recommendations of the Ontario Structure Inspection Manual Report (OSIM Report) completed in 2021.
- New Glen Walter Water Tower and Upgrades to the Water Distribution System, which has received funding through the Investing in Canada Infrastructure Program (ICIP) which provided $3.6M towards this $5M project.
- The Glen Walter Water and Wastewater Master Servicing Plan identified the need to complete a schedule "C" Environmental Assessment for the expansion of the Glen Walter Water Treatment Plant and the Glen Walter Water Pollution Control Plant which has been budgeted for 2022.
- It is expected that the Schedule "C" Environmental Assessment will recommend the expansion of both the Glen Walter Water Pollution Control Plant (WPCP) and the Glen Walter Water Treatment Plant (WTP). Based on the uncommitted reserve calculations, the Township anticipates that the Glen Walter WPCP expansion would happen in 2025

and the Glen Walter WTP expansion would follow in 2028. As the construction cost of both undertakings are expected create a significant strain on the municipality, the Township will be seeking funding opportunities to reduce the burden of these projects on the residents.

Figure 13 – 10-Year Capital Plan



Appendix A

Strategic Asset Management Policy

South Glengarry			POLICY
Policy Number:	40-2019	Review Frequency:	**Every five years**
Approved By:	Council of the Township of South Glengarry	Date Approved:	**June 17, 2019**
		Revision Date:	**June 20, 2022**
Subject:	**Strategic Asset Management Policy**		

1. Purpose

The purpose of this policy is to provide a framework for the development and implementation of the Township's asset management program. It is intended to guide the consistent use of **asset management** across the organization, to facilitate logical and evidence-based decision-making for the management of **municipal infrastructure assets** and to support the delivery of sustainable community services now and in the future.

By using sound asset management practices, the Township will work to ensure that all municipal infrastructure assets meet expected performance levels and continue to provide desired service levels in the most efficient and effective manner. Linking service outcomes to infrastructure investment decisions will assist the Township in focusing on service driven, rather than budget driven, asset management approaches.

This policy demonstrates an organization-wide commitment to the good stewardship of municipal infrastructure assets, and to be accountable and transparent to the community through the adoption of best practices regarding asset management planning.

2. Background

The Township is responsible for providing a range of essential services to the community, including transportation networks, water and wastewater, fire protection, landfill and recycling, land use planning, parks and recreation. To provide services, the Township owns and manages a diverse municipal infrastructure and asset portfolio of roads, bridges, culverts, fleet, land & land improvements, water and wastewater network, storm water network, buildings, and equipment. As the social, economic, and environmental wellbeing of the community depends on the reliable performance of these municipal infrastructure assets it is critical to maintain a systemic, sustainable approach to their management.

Asset management is such an approach, and refers to the set of policies, practices and procedures that allow an organization to realize maximum value from its municipal infrastructure assets. Asset management allows organizations to make informed decisions regarding the

planning, building, operating, maintaining, renewing, rehabilitation, replacing and disposing of municipal infrastructure assets through a wide range of **lifecycle activities**. Furthermore, it is an organization-wide process that involves the coordination of activities across all Township departments. As such, it is useful to adopt a structured and coordinated approach to outlining the activities, roles and responsibilities required of organizational factors, as well as the key principles that should guide all asset management decision-making.

A comprehensive and holistic asset management approach will support efficient and effective delivery of **established levels of service** and ensure that due regard and process are applied to the long-term management and stewardship of all municipal infrastructure assets. In addition, it will align the Township with provincial and national standards and regulations such as the Infrastructure for *Jobs and Prosperity Act, 2015* and Ontario Regulation 588/17, enabling the organization to take full advantage of available grant funding opportunities.

The approval of this policy is an important step towards integrating the Township's strategic mission, vision and goals with its asset management program, and ensuring that critical municipal infrastructure assets and vital services are maintained and provided to the community in a reliable, sustainable manner.

3. Alignment with the Township's Strategic Direction

This policy aligns with the Township of South Glengarry's Mission Statement and the United Counties of Stormont, Dundas, and Glengarry's Official Plan. The following strategic priorities have been identified to meet the municipality's service goals.

1. Invest in infrastructure and its sustainability
2. Improve and implement asset management plan based on capital and condition assessments
3. Pursue funding sources and partnerships to maintain infrastructure
4. Develop internal financial strategy to support infrastructure sustainability
5. Review and assess levels of service

The Official Plan identifies several objectives within the document, the following closely align with asset management initiatives:

1. To promote development where it can be adequately serviced with existing capacity or planned expansion of public service facilities and infrastructure to ensure development is financially viable.

2. To maintain the well-being of Hamlets and main streets by encouraging development of Township-centered, pedestrian, and active transportation communities that promote well-designed built form that conserves and protects cultural heritage resources

3. To conserve and protect natural heritage features and areas and biodiversity and consider the impacts of a changing climate in the design, development and maintenance of land uses and activities

4. To develop public services and infrastructure that are accessible, available, cost-effective, and efficient at meeting the needs of existing and new development and considers the effects of climate change

5. To provide a level and quality of public service facilities and infrastructure commensurate with planned growth and development of settlement areas and the rural area of the Township

6. To improve and enhance the quality of existing public service facilities and infrastructure

4. Policy Statement

To guide the Township, the following policy statements have been developed:

1. The Township will implement an enterprise-wide asset management program through all departments. The program will promote lifecycle and risk management of all municipal infrastructure assets, with the goal of achieving the lowest total cost of ownership while meeting desired levels of service.

2. The Township will implement continuous improvement protocols and adopt best practices regarding asset management planning, including:
   i. Complete and Accurate Asset Data
   ii. Condition Assessment Protocols
   iii. Risk and Criticality Models
   iv. Whole Lifecycle Management
   v. Financial Strategy Development
   vi. Level of Service Framework

3. The Township will develop and maintain an asset inventory of all municipal infrastructure assets which includes unique ID, description, location information, value (both historical and replacement), performance characteristics and/or condition, estimated remaining life and estimated repair, rehabilitation or replacement date; and estimated repair, rehabilitation or replacement costs.

4. The Township has developed an **asset management plan** that incorporates all municipal infrastructure assets that meet the **capitalization threshold** for tangible capital assets. The asset management plan will be updated at least every five years in accordance with O. Reg. 588/17 requirements, to promote, document and communicate continuous improvement of the asset management program.

   For management purposes, it can be advantageous to inventory, track, and document municipal infrastructure assets that fall below the relevant capitalization threshold. Recognizing that it may be beneficial to include these types of assets in the asset management plan &/or inventory database, the Township will consider incorporating

such assets at their own discretion, based on the objective of sustainably managing municipal infrastructure assets.

5. The Township will integrate asset management planning and practices with its long-term financial planning and budgeting strategies. This includes the development of financial plans that determine the level of funding required to achieve short-term operating and maintenance needs, in addition to long-term funding needs to replace and/or renew municipal infrastructure assets based on full lifecycle costing.

6. The Township will explore innovative funding and service delivery opportunities, including but not limited to grant programs, public-private partnerships (P3), alternative financing and procurement (AFP) approaches, and shared provision of services, as appropriate.

7. The Township will consider the risks and vulnerabilities of municipal infrastructure assets to climate change and the actions that may be required including, but not limited to, anticipated costs that could arise from these impacts, adaptation opportunities, mitigation approaches, disaster planning and contingency funding. Impacts may include matters relating to operations, levels of service and lifecycle management.

8. The Township will align where applicable, all asset management planning with the Province of Ontario's land-use planning framework, including any relevant policy statements issued under section 3(1) of the *Planning Act*; shall conform with the provincial plans that are in effect on that date; and, shall be consistent with all municipal official plans.

9. The Township will coordinate planning for asset management, where municipal infrastructure assets connect or are interrelated with those of its neighbouring municipalities or jointly-owned municipal bodies wherever viable and beneficial.

10. The Township will develop processes and provide opportunities for municipal residents and other interested parties to offer input into asset management planning wherever and whenever possible.

11. The Strategic Asset Management Policy will be reviewed and, if necessary, updated at least every five years.

12. Council will conduct an annual review of the Township's asset management progress on or before July 1 in each year, to meet the requirements outlined in O.Reg. 588/17

The annual review must address:

i. The Township's progress in implementing its asset management plan;
ii. Any factors impeding the Township's ability to implement its asset management plan;

iii. A strategy to address the factors identified as impeding the Township's ability to implement its asset management plan.

13. The Township will post its asset management policy and asset management plan on a website that is available to the public and will provide a copy of the policy and plan to any person who requests it.

5. Roles and Responsibilities

The development and continuous support of the Township's asset management program requires a wide range of duties and responsibilities. The following passages outline the persons or bodies responsible for these tasks:

1. **Council**
   i. Approve the Asset Management Policy and provide direction
   ii. Maintain adequate organizational capacity to support the core practices of the asset management plan
   iii. Prioritize effective stewardship of assets in adoption and ongoing review of policy and budgets
   iv. Establish and monitor levels of service
   v. Review & approve the Asset Management Plan by resolution every 5 years
   vi. Review the Township's asset management progress annually

2. **Senior Management Team**
   i. Development of policy and policy updates
   ii. Provide corporate oversight to goals and directions and ensure the asset management program aligns with the Township's mission
   iii. Ensure that adequate resources are available to implement and maintain core asset management practices
   iv. Provide departmental staff coordination
   v. Develop and monitor levels of service and make recommendations to Council
   vi. Track, analyze and report on asset management program progress and results

3. **General Manager of Infrastructure**
   i. Manage policy and policy updates
   ii. Provide organization-wide leadership in asset management practices and concepts
   iii. Provide corporate wide staff coordination
   iv. Monitor levels of service
   v. Coordinate and track asset management program implementation and progress
   vi. Endorse and champion the Asset Management Plan

4. **Treasurer**
   i. Provide organization-wide leadership in asset management practices and concepts
   ii. Track and maintain the Township's Financial Plan for all infrastructure

5. **Township Staff**
   i. Utilize any new business processes and technology tools developed as part of the asset management program
   ii. Participate in implementation task teams to carry-out asset management activities
   iii. Implement and maintain levels of service
   iv. Provide support and direction for asset management practices within their department
   v. Track and analyze asset management program progress and results

6. Key Principles

The Township shall consider the following principles as outlined in section 3 of the *Infrastructure for Jobs and Prosperity Act, 2015*, when making decisions regarding asset management:

1. Infrastructure planning and investment should take a long-term view, and decision-makers should consider the needs of citizens by being mindful of, among other things, demographic and economic trends.

2. Infrastructure planning and investment should consider any applicable budgets or fiscal plans.

3. Infrastructure priorities should be clearly identified in order to better inform investment decisions respecting infrastructure.

4. Infrastructure planning and investment should ensure the continued provision of core public services.

5. Infrastructure planning and investment should promote economic competitiveness, productivity, job creation and training opportunities.

6. Infrastructure planning and investment should ensure that the health and safety of workers involved in the construction and maintenance of infrastructure assets is protected.

7. Infrastructure planning and investment should foster innovation by creating opportunities to make use of innovative technologies, services and practices, particularly where doing so would utilize technology, techniques and practices developed in Ontario.

8. Infrastructure planning and investment should be evidence based and transparent, and, subject to any restrictions or prohibitions under an Act or otherwise by law on the collection, use or disclosure of information,
    i. investment decisions respecting infrastructure should be made on the basis of information that is either publicly available or is made available to the public, and
    ii. information with implications for infrastructure planning should be shared between the Township and broader public sector entities and should factor into investment decisions respecting infrastructure.

9. Where provincial or municipal plans or strategies have been established in Ontario, under an Act or otherwise, but do not bind or apply to the Township, as the case may be, the Township should nevertheless be mindful of those plans and strategies and make investment decisions respecting infrastructure that support them, to the extent that they are relevant.

10. Infrastructure planning and investment should promote accessibility for persons with disabilities per Accessibility for Ontarians with Disabilities Act (AODA) requirements

11. Infrastructure planning and investment should minimize the impact of infrastructure on the environment and respect and help maintain ecological and biological diversity, and infrastructure should be designed to be resilient to the effects of climate change as much as practical.

12. Infrastructure planning and investment should endeavour to make use of acceptable recycled aggregates.

13. Infrastructure planning and investment should promote community benefits, being the supplementary social and economic benefits arising from an infrastructure project that are intended to improve the well-being of a community affected by the project

7. Definitions

1. **Asset management (AM)** – the coordinated activity of an organization to realize value from assets. It considers all asset types, and includes all activities involved in the asset's life cycle from planning and acquisition/creation; to operational and maintenance activities, rehabilitation, and renewal; to replacement or disposal and any remaining liabilities. Asset management is holistic and normally involves balancing costs, risks, opportunities and performance benefits to achieve the total lowest lifecycle cost for each asset.

2. **Asset management plan (AMP)** – Documented information that specifies the activities, resources, and timescales required for an individual asset, or a grouping of assets, to achieve the organization's asset management objectives.

3. **Capitalization threshold** – the value of a municipal infrastructure asset at or above which municipality will capitalize the value of it and below which it will expense the value of it.

4. **Core infrastructure asset** – any municipal infrastructure asset that is a water asset, wastewater asset, stormwater management asset, road, bridge, or structural culvert.

5. **Green infrastructure asset** – an infrastructure asset consisting of natural or human-made elements that provide ecological and hydrological functions and processes and includes natural heritage features and systems, parklands, stormwater management systems, street trees, urban forests, natural channels, permeable surfaces and green roofs.

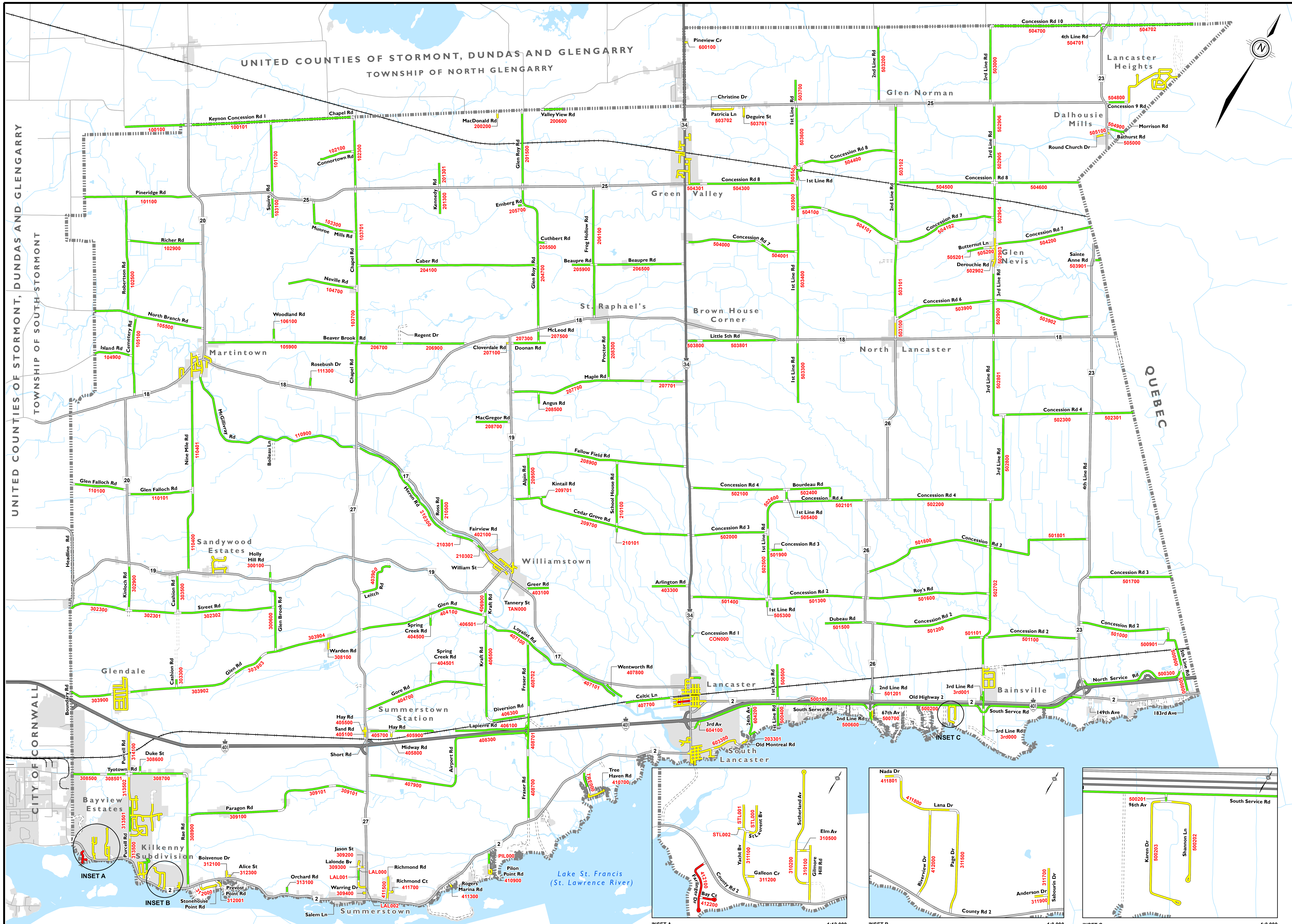
6. **Level of service** – parameters, or combination of parameters, which reflect social, political, environmental and economic outcomes that the organization delivers. Parameters can include, but are not necessarily limited to, Legislative requirements, Minimum Maintenance Standards, safety, customer satisfaction, quality, quantity, capacity, reliability, responsiveness, environmental acceptability, cost, and availability.

7. **Lifecycle activities** – 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.

8. **Municipal infrastructure asset** – an infrastructure asset, including a green infrastructure asset, directly owned by a municipality or included on the consolidated financial statements of a municipality, but does not include an infrastructure asset that is managed by a joint municipal water board.

Appendix B

Road Network



LEGEND

ROADSIDE ENVIRONMENT

- RURAL
- SEMI-URBAN
- URBAN

OTHER FEATURES

- PROVINCIAL HIGHWAY
- COUNTY ROAD
- ROAD ALLOWANCE
- PRIVATE ROAD
- RAILWAY
- MUNICIPAL BOUNDARY

NOTE:
RAILWAY CONTAINED ON THIS MAP WAS OBTAINED FROM LAND INFORMATION ONTARIO (2014) AND ARE LICENSED UNDER THE OPEN GOVERNMENT LICENSE - ONTARIO (HTTP://WWW.ONTARIO.CA/PAGE/OPEN-GOVERNMENT-LICENCE-ONTARIO#SECTION-0).

CIMA+

Roads Management Services Inc.

CLIENT

SOUTH GLENGARRY
Ontario's Celtic Heartland

PROJECT NAME:

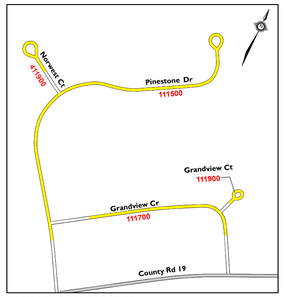
2016 ROAD NEEDS STUDY

SHEET TITLE:

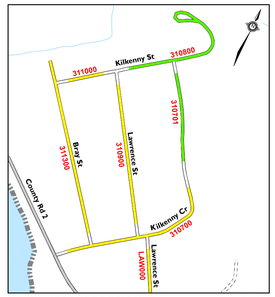
ROADSIDE ENVIRONMENT OVERALL

SCALE:
1,000 500 0 1,000 2,000 3,000
meters
1:50,000

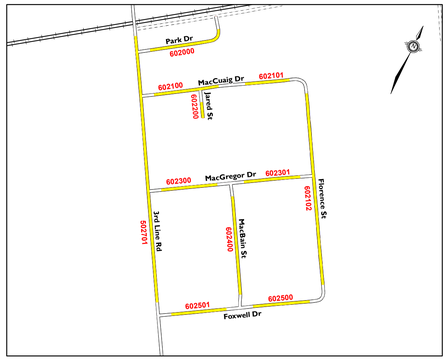
PROJECT No: C14-0116	CLIENT FILE No: --
DRAFTER: S. ELLIOTT / DESIGNER: ---	DRAWING No: 3A
APPROVER: D. CAMPBELL / APPROVER: ---	
DATE: 5/10/2016	SHEET No: 1 of 1



SANDYWOOD ESTATES 1:5,000



KILKENNY SUBDIVISION 1:5,000



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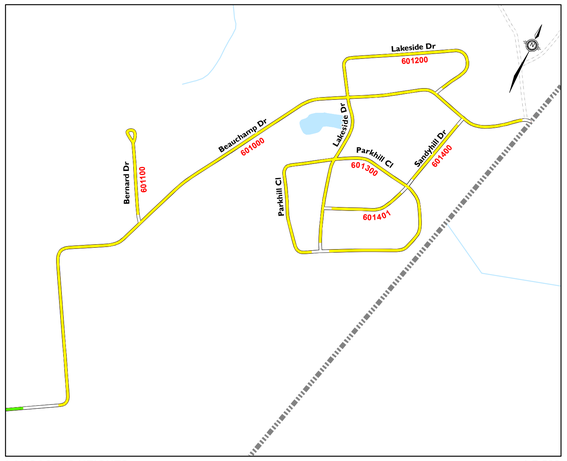
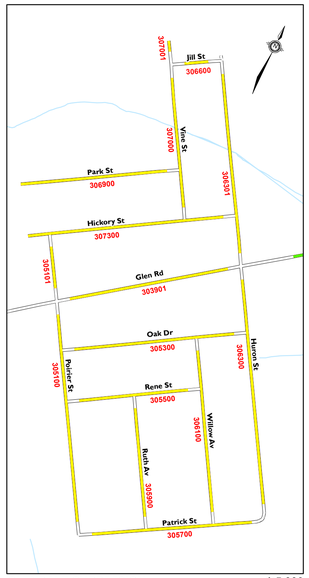
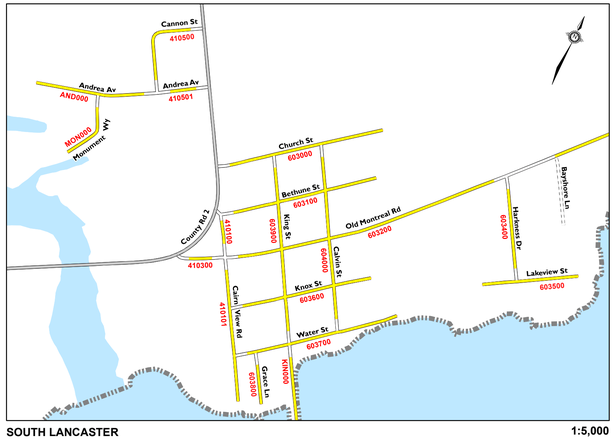


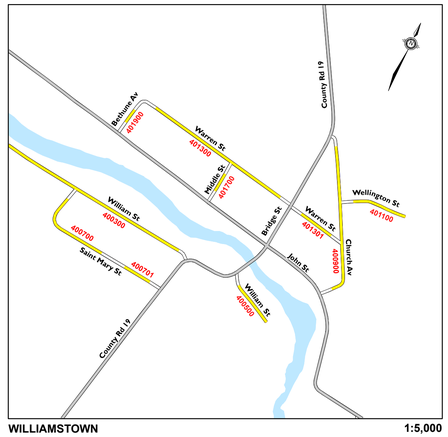
LANCASTER HEIGHTS 1:7,500



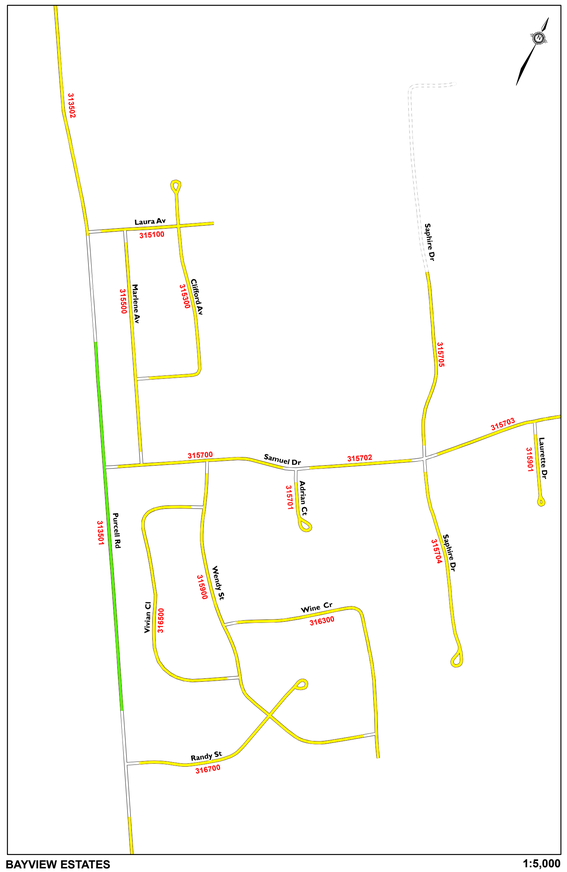
GLENDALE SUBDIVISION 1:5,000



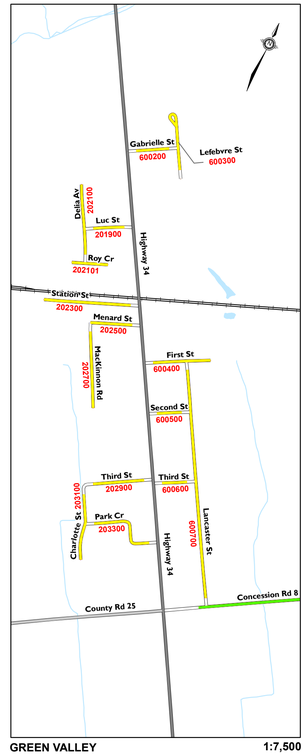
SOUTH LANCASTER 1:5,000



WILLIAMSTOWN 1:5,000

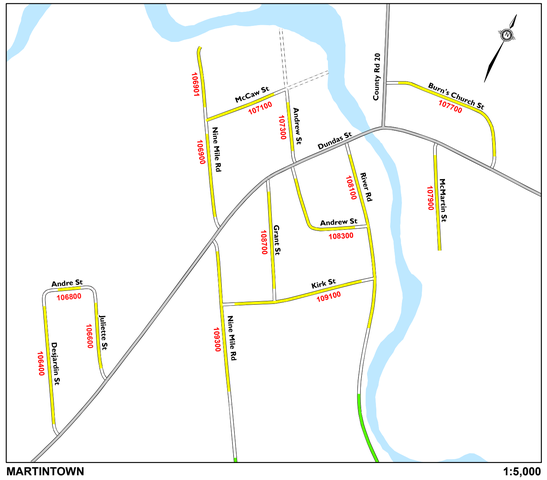


BAYVIEW ESTATES 1:5,000



GREEN VALLEY 1:7,500

LANCASTER 1:5,000



MARTINTOWN 1:5,000

LEGEND

ROADSIDE ENVIRONMENT

- RURAL
- SEMI-URBAN
- URBAN

OTHER FEATURES

- PROVINCIAL HIGHWAY
- COUNTY ROAD
- ROAD ALLOWANCE
- PRIVATE ROAD
- RAILWAY
- MUNICIPAL BOUNDARY

NOTE:

RAILWAY CONTAINED ON THIS MAP WAS OBTAINED FROM LAND INFORMATION ONTARIO (2014) AND ARE LICENSED UNDER THE OPEN GOVERNMENT LICENSE - ONTARIO (HTTP://WWW.ONTARIO.CA/PAGE/OPEN-GOVERNMENT-LICENCE-ONTARIO#SECTION-0).

CIMA+ 4 Roads Management Services Inc.

CLIENT

SOUTH GLENGARRY Ontario's Celtic Heartland

PROJECT NAME:

2016 ROAD NEEDS STUDY

SHEET TITLE:

ROADSIDE ENVIRONMENT URBAN AREA DETAILS

SCALE: AS NOTED

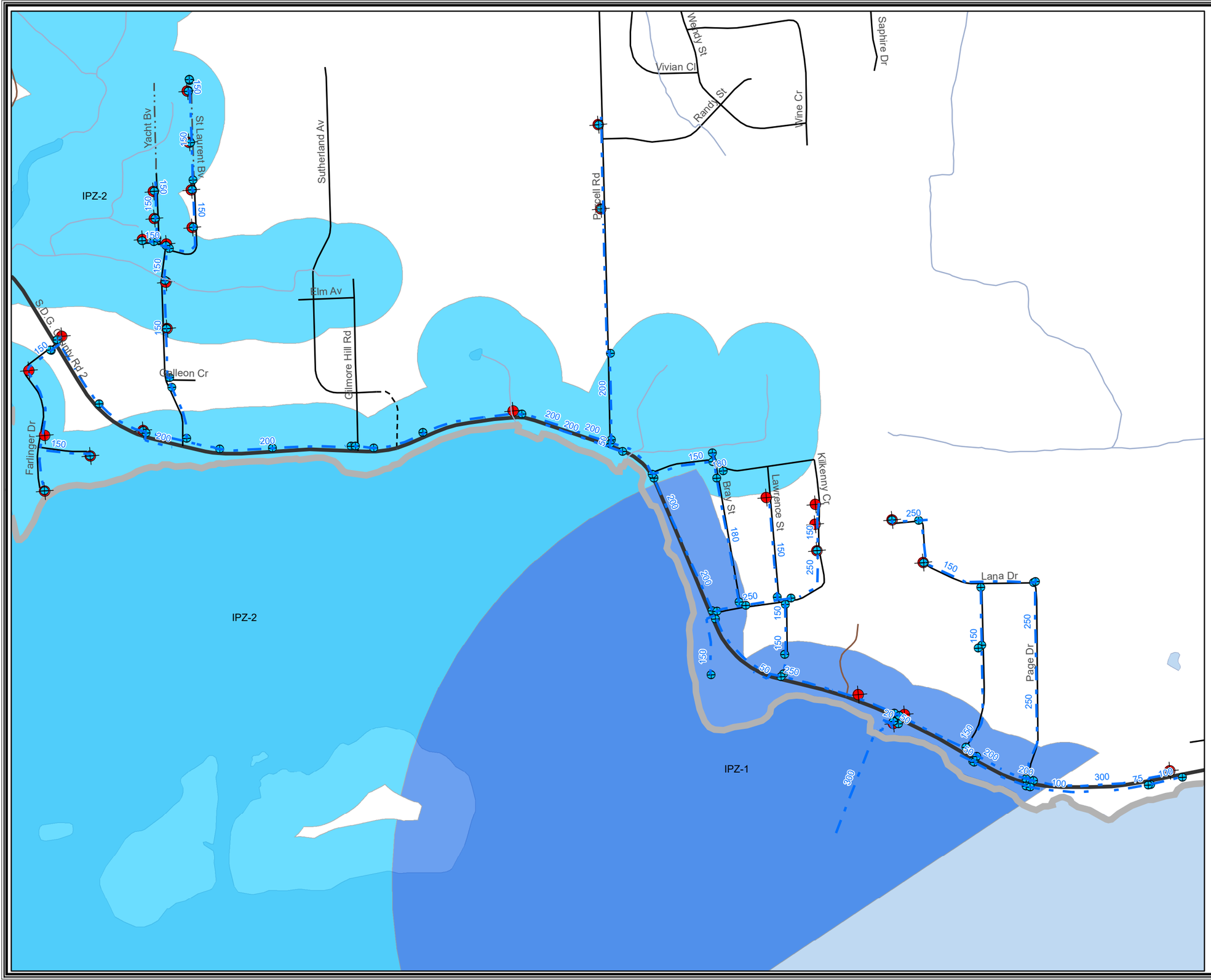
PROJECT No: C14-0116			CLIENT FILE No: ---
DRAFTER: S. ELLIOTT	DESIGNER ---		DRAWING No: 3B
APPROVER D. CAMPBELL	APPROVER ---		
DATE: 5/10/2016			SHEET No: 1 of 1

Appendix C

Water Network

Township of South Glengarry

Servicing Glen Walter WATER



Water Line
Power Line
Oil Gas Pipeline
Railway
Water Valve
Fire Hydrant
South Glengarry Boundary
IPZ-1
IPZ-2
IPZ-3a
IPZ-3b
IPZ-3c

0 0.125 0.25 0.5 Km

1:12,000

SOUTH GLENGARRY
Ontario's Celtic Heartland

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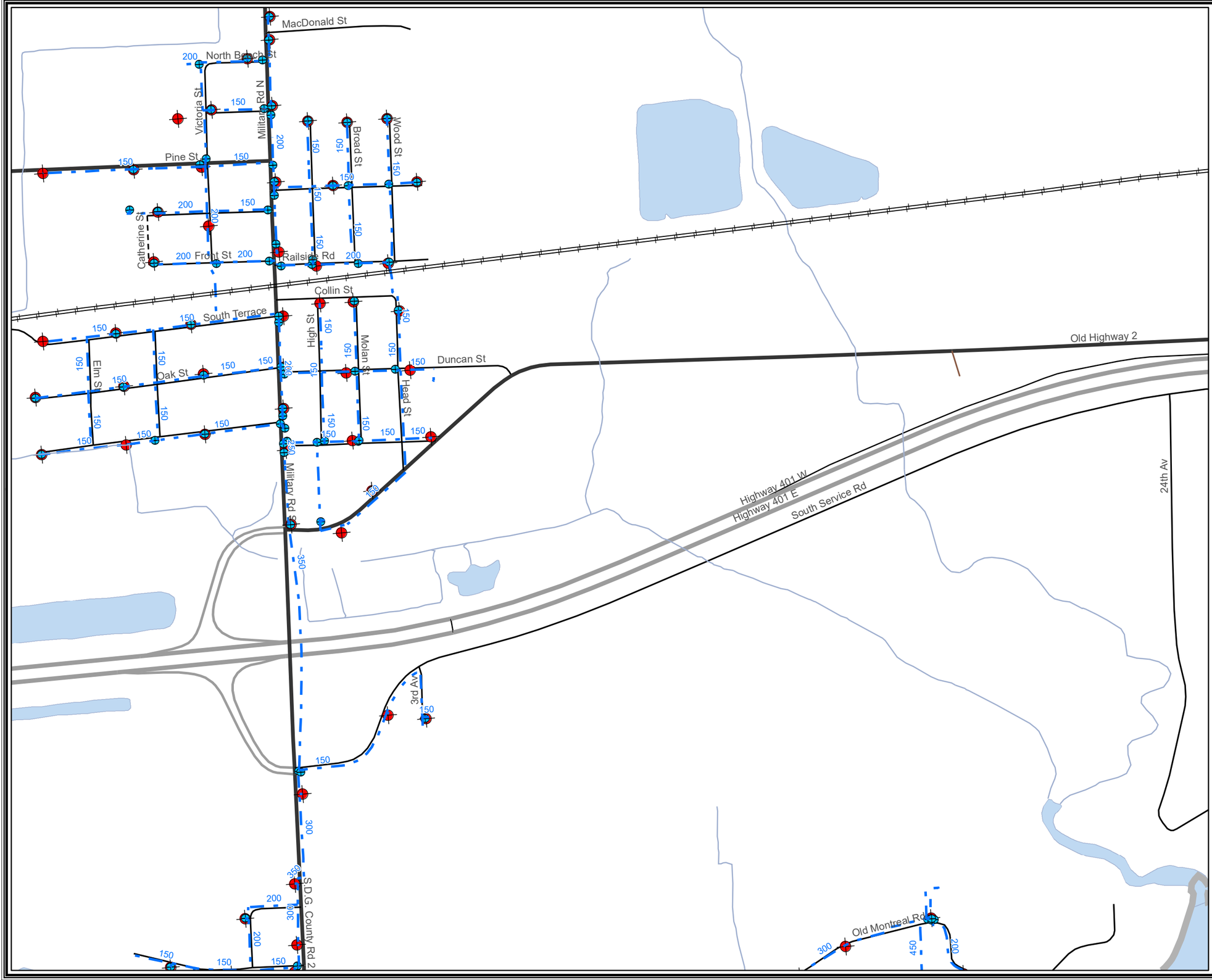
Township of South Glengarry

Servicing Lancaster WATER



- Water Line
- Power Line
- Oil Gas Pipeline
- Railway
- Water Valve
- Fire Hydrant
- South Glengarry Boundary
- IPZ-1
- IPZ-2
- IPZ-3a
- IPZ-3b
- IPZ-3c

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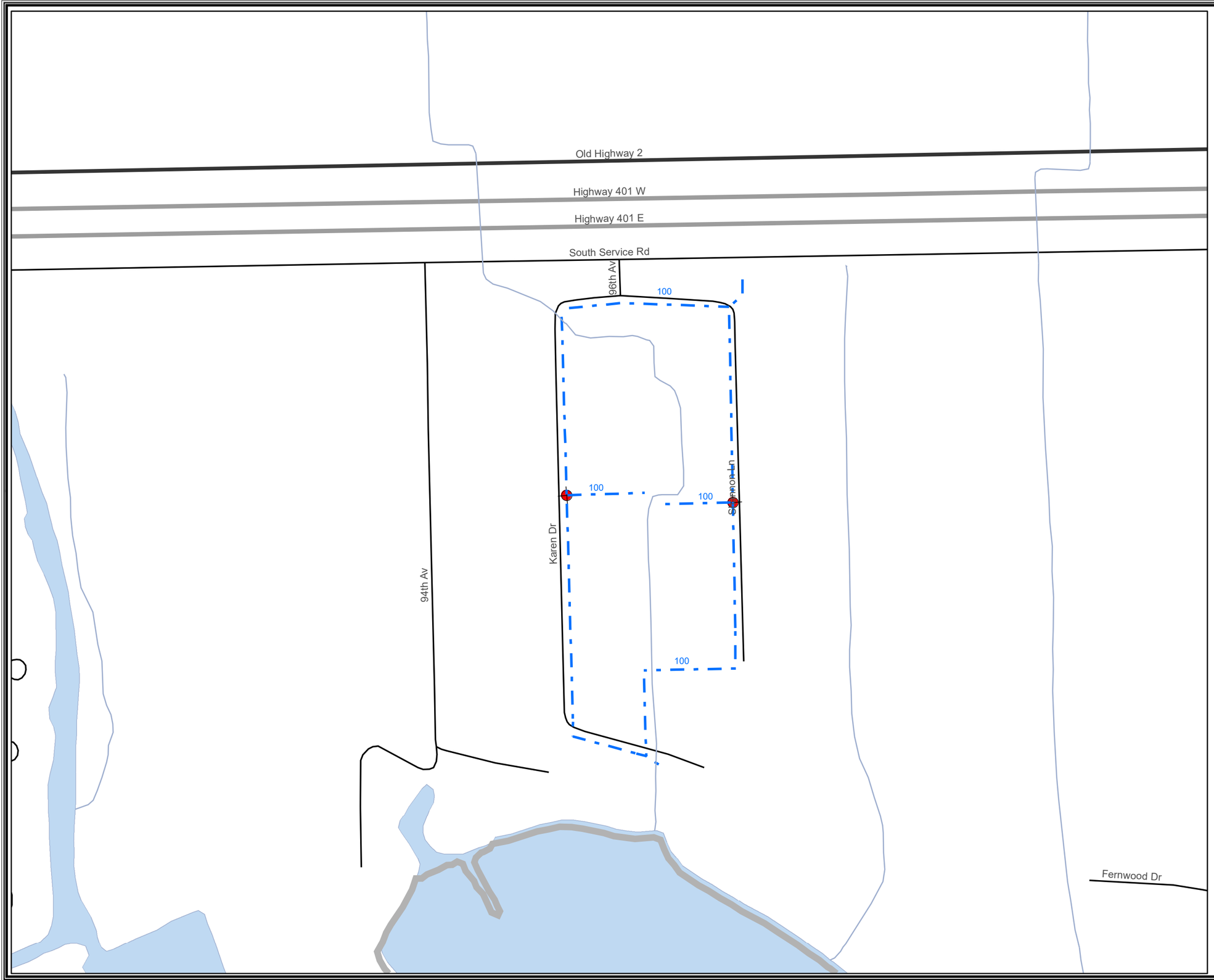
1:10,000

SOUTH GLENGARRY
Ontario's Celtic Heartland

Township of South Glengarry

Servicing Redwood Estates WATER



- Water Line
- Power Line
- Oil Gas Pipeline
- Railway
- Water Valve
- Fire Hydrant
- South Glengarry Boundary
- IPZ-1
- IPZ-2
- IPZ-3a
- IPZ-3b
- IPZ-3c

0 0.075 0.15 0.3 Km

1:5,000

SOUTH GLENGARRY
Ontario's Celtic Heartland

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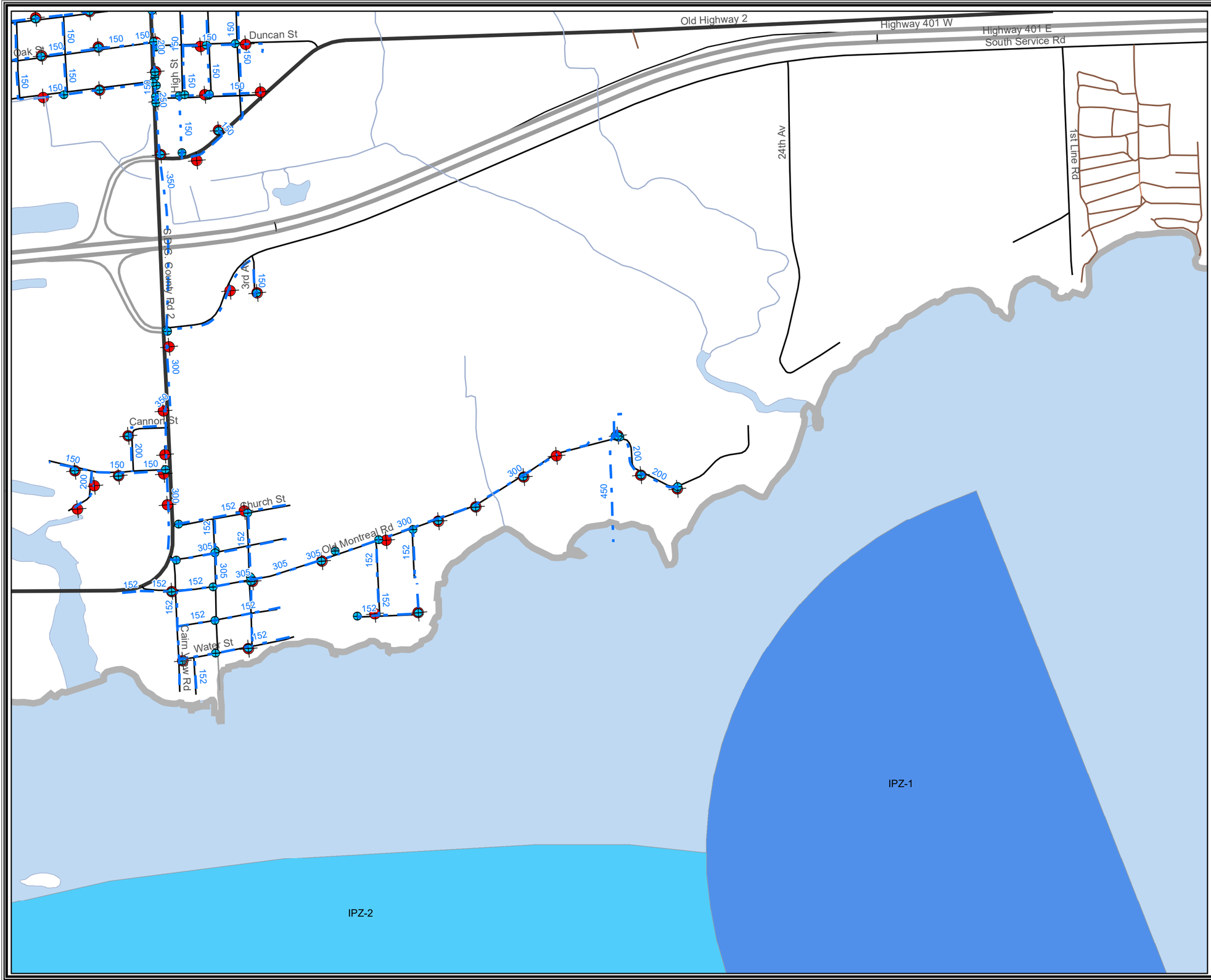
Township of South Glengarry

Servicing South Lancaster WATER



- Water Line
- Power Line
- Oil Gas Pipeline
- Railway
- Water Valve
- Fire Hydrant
- South Glengarry Boundary
- IPZ-1
- IPZ-2
- IPZ-3a
- IPZ-3b
- IPZ-3c

0 0.25 0.5 1 Km

1:14,000

SOUTH GLENGARRY
Ontario's Celtic Heartland

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Appendix D

Sanitary Network

Township of South Glengarry

Servicing Glen Walter

- South Glengarry Stations
- Power Line
- Oil Gas Pipeline
- Railway
- Gravity Fed
- Forcemain
- South Glengarry Boundary
- IPZ-1
- IPZ-2
- IPZ-3a
- IPZ-3b
- IPZ-3c

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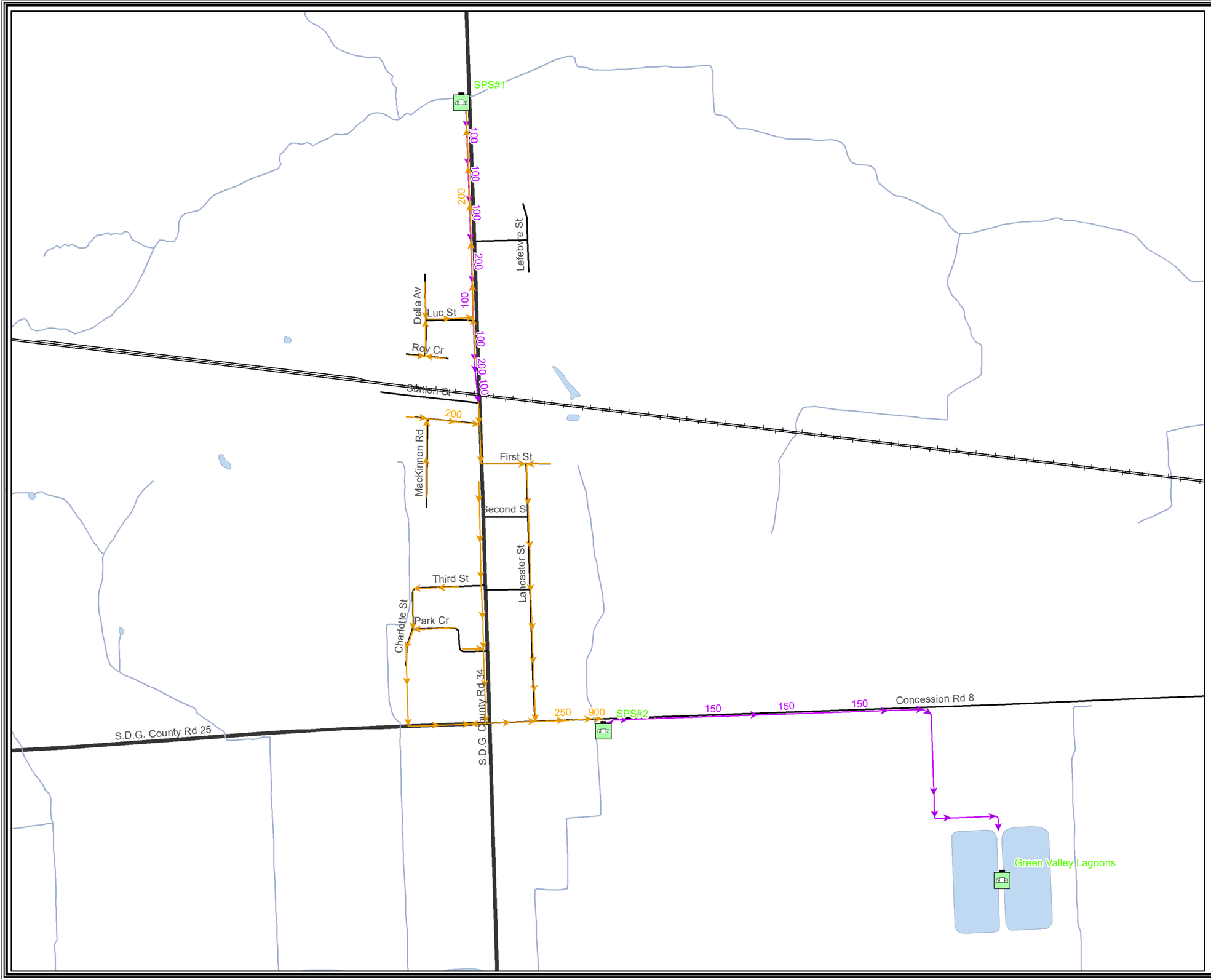
1:12,000

SOUTH GLENGARRY
Ontario's Celtic Heartland

Township of South Glengarry

Servicing Green Valley



- South Glengarry Stations
- Power Line
- Oil Gas Pipeline
- Railway
- Gravity Fed
- Forcemain
- South Glengarry Boundary
- IPZ-1
- IPZ-2
- IPZ-3a
- IPZ-3b
- IPZ-3c

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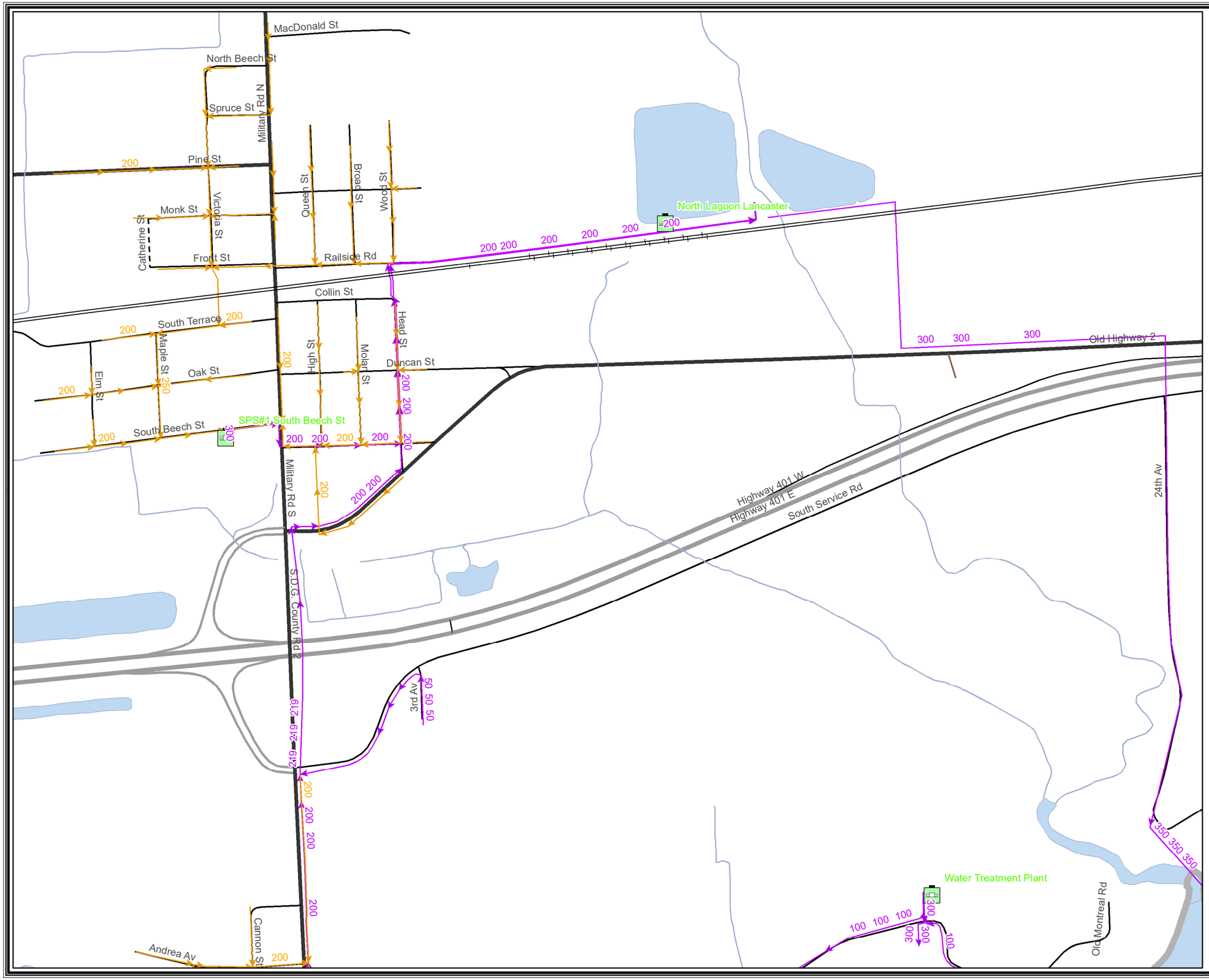
1:14,000

SOUTH GLENGARRY
Ontario's Celtic Heartland

Township of South Glengarry

Servicing Lancaster



South Glengarry Stations

Power Line

Oil Gas Pipeline

Railway

Gravity Fed

Forcemain

South Glengarry Boundary

IPZ-1

IPZ-2

IPZ-3a

IPZ-3b

IPZ-3c

0 0.175 0.35 0.7 Km

1:10,000

SOUTH GLENGARRY
Ontario's Celtic Heartland

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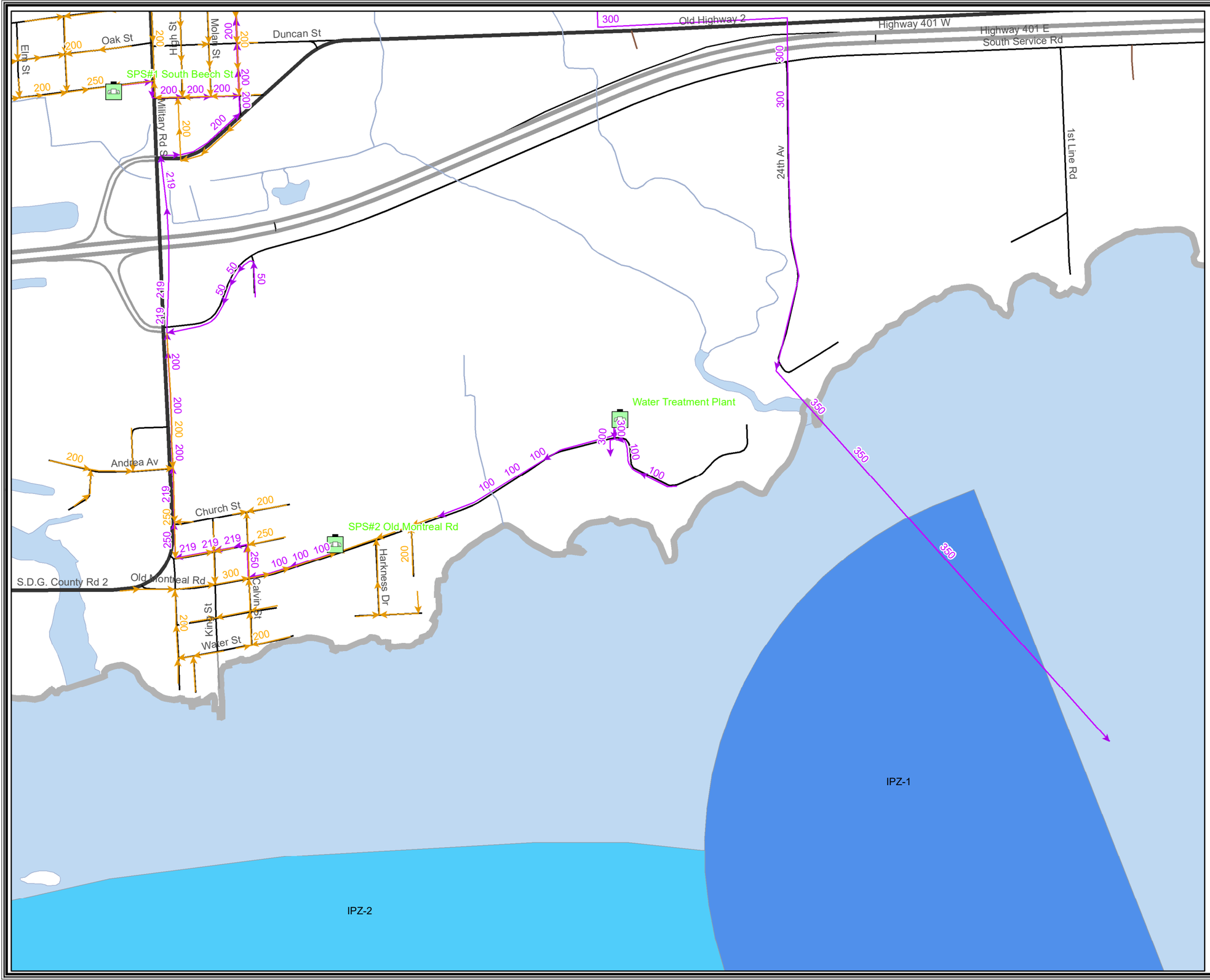
Township of South Glengarry

Servicing South Lancaster



South Glengarry Station

Power Line

Oil Gas Pipeline

Railway

Gravity Fed

Forcemain

South Glengarry Boundary

IPZ-1

IPZ-2

IPZ-3a

IPZ-3b

IPZ-3c

0 0.25 0.5 1 Km

1:14,000

SOUTH GLENGARRY
Ontario's Celtic Heartland

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Appendix E

10-Year Capital Plan by Core Asset

10-Year Road Capital Plan

Asset Id	Road	From	To	Description	PCI/SC	Require Geotech		Length (km	Cost/km	Cost	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
200200	MacDonald	Kenyon Co	Dead End	Road to service property (need to determine Township's obligations to complete the work)				0.085		$36,922																
105100	Cemetry R	SDG #18	North Brar	Pulverize plus add 150mm granular material plus double surface treatment and fog seal	69	y	Upgrade	2.280	$113,000	$257,640	$257,640															
105500	North Brar	SDG #20	South Stor	Pulverize plus add 150mm granular material plus double surface treatment and fog seal	67	y	Upgrade	4.960	$113,000	$560,480		$560,480														
407700	Celtic Lane	South Terr	Dead End	Asphalt Grindings Existing	46		Downgrade	1.347		$15,596	$15,596															
503100 50	2nd Line R	SDG#18	SDG #25	Asphalt Reconstruction	59,79,80	y	Asphalt	6.610		$675,000			$337,500	$337,500												
201500	Glen Roy R	SDG#25	Kenyon Co	Pulverize plus add 150mm granular material plus double surface treatment and fog seal	63		Upgrade	2.150	$113,000	$242,950														$242,950	
103701	Chapel Rd	Neville Rd	SDG # 18	Asphalt Reconstruction	73	y	Asphalt	3.113	$300,000	$933,900												$311,300	$311,300	$311,300		
502100	Concessior	SDG#34	1st Line Ro	Pulverize existing plus double surface treatment and fog seal	83		DST	2.715	$73,500	$199,553														$66,518	$133,035	
502101	Concessior	1st Line Rd	SDG#26	Pulverize existing plus double surface treatment and fog seal	80		DST	2.234	$73,500	$164,199										$164,199						
502200	Concessior	SDG#26	3rd Line Rd	Pulverize existing plus double surface treatment and fog seal	78		DST	2.882	$73,500	$211,827	$211,827															
206700	Beaverbro	Landfill	Chapel Rd	Pulverize plus add 150mm granular material plus double surface treatment and fog seal	66		Upgrade	1.190	$130,000	$154,700	$154,700															
105900	Beaverbro	Chapel Rd	SDG #20	Pulverize existing plus double surface treatment and fog seal	73		DST	4.271	$73,500	$313,919																$313,919
504300 50	Concessior	SDG #34	1st Line Ro	Asphalt Reconstruction	80		Asphalt	1.500	$130,000	$195,000										$195,000						
401300	Warren Street			Asphalt Existing (Williamstown)	51	y		0.350	$130,000	$45,500	$45,500															
401700	Middle Street			Asphalt Existing (Williamstown)	27	y		0.080	$300,000	$24,000	$24,000															
401900	Bethune Street			Asphalt Existing (Williamstown)	39	y		0.080	$300,000	$24,000	$24,000															
311700	Sabourin D	SDG #2	Dead End	Asphalt Existing (Glen Walter)	39	y		0.190	$300,000	$57,000	$57,000															
311900	Anderson I	Sabourin D	Dead End	Asphalt Existing (Glen Walter)	43	y		0.060	$300,000	$18,000	$18,000															
305300	Oak Drive			Asphalt Reconstruction (Glendale Subdivisio	53	y		0.352	$937,500	$330,000		$330,000														
305500	Rene St.			Asphalt Reconstruction (Glendale Subdivisio	53	y		0.245	$130,000	$31,850		$31,850														
306100	Willow St	Patrick St	Oak St	Asphalt Reconstruction (Glendale Subdivisio	57	y		0.354	$130,000	$46,020		$46,020														
305101 30	Poirier Ave			Overlay (Glendale Subdivision)	55			0.557	$130,000	$72,410		$72,410														
306301	Huron St			Overlay (Glendale Subdivision)	52			0.922	$13,000	$11,986		$11,986														
307000	Vine St			Overlay (Glendale Subdivision)	53			0.366	$130,000	$47,580		$47,580														
602000	Park St			Overlay (Glendale Subdivision)	61			0.304	$130,000	$39,520		$39,520														
307300	Hickory St			Overlay (Glendale Subdivision)	55			0.376	$130,000	$48,880		$48,880														
315300	Clifford Street			Asphalt Reconstruction (Bayview Estates)	45	y		0.353	$300,000	$105,900	$105,900															
315100	Laura St			Overlay (Bayview Estates)	57	y		0.234	$130,000	$30,420	$30,420															
500600	Marlene St			Overlay (Bayview Estates)	51			0.450	$130,000	$58,500	$58,500															
	Lancaster	NW			40-50	y		1.015	$130,000	$131,950	$131,950															
	Lancaster	NE			39-58	y		1.100	$130,000	$143,000	$143,000															
	Lancaster	SW			28-66	y		1.269	$130,000	$164,970		$164,970														
	Lancaster	SE			41-60	y		1.100	$130,000	$143,000		$143,000														
	Green Vall	East				y		1.386	$130,000	$180,180	$180,180															
	Green Vall	West				y		1.514	$130,000	$196,820	$196,820															
	South Land	All				y		4.497	$130,000	$584,610		$584,610														
210300 & 2	Heron	Peanut Lin	Co Rd 27	Granular	74	y	DST	4.491	$73,500	$330,089		$330,089														
	Heron			Culverts 18@14m				252.000	$400																	
110900	MacGilliva	Kirk Street	Cty Rd 27	Gravel Road		y		5.936	$45,000	$267,120		$267,120														
	MacGillivary			Culverts 25@14m				450.000	$400																	
407900	Airport Rd	Cty Rd #27	Lot 7/8	Asphalt	88		Asphalt	2.863	$130,000	$372,190					$372,190											
408300 B	Airport Rd	700m nort	Fraser Rd	Granular			DST	2.353	$73,500	$172,946											$172,946					
408300 A	Airport Ro	Lot 7/8	700m nort	Granular		Y	Asphalt	0.700	$300,000	$210,000						$210,000										
408701	Fraser	Airport Rd	North of C	Asphalt	88	Y	Asphalt	1.202	$300,000	$360,600																
408700 & 4	Fraser	Co RD 2	Loyalist -	408701	66	y	DST	3.846	$73,500	$282,681			$282,681								$282,681					
300600	Glen Brook	Glen Rd	Cty Rd #19	Double Surface Treatment + fog seal		y	DST	2.099	$45,000	$94,455			$94,455													
110100	Glen Falloc	SS Bounda	Cty Rd #20	Double Surface Treatment + fog seal		y	DST	1.571	$45,000	$70,695					$70,695											
500100 50	South Serv	SDG 34	SDG 23	extra lift of asphalt	84 91		Asphalt	11.616	$134,750	########						$391,314	$391,314	$391,314	$391,314							

10-Year Road Capital Plan

Asset Id	Road	From	To	Description	PCI/SC	Require Geotech	Length (km		Cost/km	Cost	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037
308500 30	Tyotown R	Boundary	Purcell Rd	extra lift of asphalt	82 90		Asphalt	1.562	$130,000	$203,060				$203,060												
313501 31	Purcell Roa	SDG # 2	Tyotown R	(1km has double lift of asphalt, do remainde	80 60		Asphalt	1.727	$130,000	$224,510	$224,510															
				ROAD NEEDS STUDY											$24,000					$24,000						
				SAFE SIDEWALKS STUDY											$5,000					$5,000						
											$1,879,543	$2,678,515	$714,636	$540,560	$471,885	$601,314	$391,314	$391,314	$391,314	$388,199	$455,627	$311,300	$311,300	$377,818	$375,985	$313,919

10-Year Bridge Capital Plan

Asset Id	Bridge	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
30003	Kinloch Road (Twin 4m SPCSP)										
	Engineering				$50,000						
	Construction					$495,000					
20004	Cemetery Road (3-span Thin Slab)										
	Engineering					$28,000	$41,000				
	Construction							$165,000			
30010	Glen Road (3m Span)										
	Engineering									$6,000	
	Construction										$22,000
30011	Cashion Road (15.2m Thin Slab)										
	Engineering	$72,000	$7,500								
	Construction		$118,000								
30016	Squire Road (twin 3.6m SPCSP)										
	Engineering				$45,000						
	Construction					$250,000					
30017	Squire Road (twin 3.6m SPCSP)								$45,000		
	Engineering									$450,000	
	Construction										
30018	Chapel Road (3-span)	$45,000									
	Engineering		$62,000								
	Construction										
30019	Glen Donald Rd (3m Culvert)										
	Engineering	$17,000									
	Construction		$50,000								
30020	Spring Creek Rd (4.1m SPCSPA)										
	Engineering						$38,000				
	Construction							$330,000			
30023	Glen Roy Rd (15.2m Box)										
	Engineering	$43,000									
	Construction		$104,000								
30024	Glen Roy Rd (3.1m Culvert)										
	Engineering	$17,000									
	Construction		$40,000								
30026	Frog Hollow Rd (3-span Box)										
	Engineering			$63,500							
	Construction				$143,000						
30027	Cedar Grive Road (4.8m culvert)										
	Engineering										$17,000
	Construction										$45,000
30033	1st Line Rd (21.5m Thin Slab)										
	Engineering						$22,000				
	Construction										
30034	Concession 7 (4.3m Culvert)										
	Engineering							$17,000			
	Construction								$106,000		
30035	1st Line Rd (3.6m Culvert)										
	Engineering	$17,000									
	Construction		$77,000								
30036	1st Line Rd (3.3m SPCSPA)										
	Engineering		$33,000								
	Construction			$380,000							
30039	South Service Rd (8.6m Span)										
	Engineering							$17,000			
	Construction								$69,000		
30043	2nd Line Rd (15m Box)										
	Engineering										
	Construction	$380,000									
30047	Roy's Rd (3.6m Culvert)										
	Engineering									$17,000	
	Construction										$88,000
30050	Butternut Lane (15m span)										
	Engineering	$32,500									
	Construction										
30052	Roy's Rd (4.9m Span)										
	Engineering	$17,000									
	Construction		$44,000								
30053	3rd Line Rd (21m Span)										
	Engineering						$25,000	$35,000			
	Construction								$139,000		
30054	3rd Line Rd (28m Span)										

10-Year Bridge Capital Plan

Asset Id	Bridge	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
	Engineering			$85,000							
	Construction				$225,000						
30056	South Service Rd (3-Span Thin)										
	Engineering							$33,000			
	Construction								$138,000		
30057	Concession Rd 7 (16.4m Span)										
	Engineering								$28,000		
	Construction										
30061	Lot 9 Concession III (3.9m span)										
	Engineering									$33,000	
	Construction										$330,000
30062	1st Line Bridge (2.5m Span)					$50,000					
	Engineering						$495,000				
	Construction										
30044	2nd Line Rd (28.5m Thin Slab)										
	Engineering										
	Construction		$15,000								
30050	Butternut Lane (15m span)										
	Engineering										
	Construction		$15,000								
	OSIM REPORT	$2,000	$19,000	$2,000	$24,000	$2,000	$20,000	$2,000	$19,000	$2,000	$24,000
	TOTAL	$642,500	$584,500	$530,500	$487,000	$825,000	$641,000	$599,000	$544,000	$508,000	$526,000

Updated to reflect 2021 OSIM Report

10-Year Water Capital Plan

Location	Facility	Year	Cate.	YRGRP	Type of W	Description of Work	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Glen Walte	Water Tow	2023	Expense	Previous	Install	New Water Tower		$3,620,506.28									
Glen Walte	WDS	2023	Expense	30 + YR H	Replace ar	Watermains and hydrants		$2,120,000.00									
Glen Walte	WTP	2025	Expense	5 YR Horiz	Upgrade	Electrical				$984,256.89							
Glen Walte	WTP	2025	Expense	5 YR Horiz	Upgrade	Mechanical				$562,432.51							
Glen Walte	WTP	2025	Expense	5 YR Horiz	Install	Package Treatment Unit				$413,553.31							
Glen Walte	WTP	2025	Expense	5 YR Horiz	Install	Standby Power (110 kW)				$169,556.86							
Glen Walte	WTP	2025	Expense	5 YR Horiz	Install	Standby Power (110 kW)				$82,710.66							
Glen Walte	WTP	2025	Expense	5 YR Horiz	Replace ar	Process Piping and Valves				$48,247.89							
Glen Walte	WTP	2025	Expense	5 YR Horiz	Install	Magnetic Flowmeters				$4,273.38							
Glen Walte	WTP	2025	Expense	5 YR Horiz	Install	Magnetic Flowmeters				$4,273.38							
Glen Walte	WTP	2025	Expense	5 YR Horiz	Install	Coagulant Feed Pump 1.89 L/hr @ 1,000 kPa				$1,378.51							
Glen Walte	WTP	2025	Expense	5 YR Horiz	Install	Coagulant Feed Pump 1.89 L/hr @ 1,000 kPa				$1,378.51							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Chemical Solution Prepartion System				$51,934.03							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Backwash Pump 28 L/s @ 18.39 m TDH				$38,598.31							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Backwash Pump 28 L/s @ 18.39 m TDH				$38,598.31							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Coagulant Storage Tank (15 m^3)				$11,028.09							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Composite Sampler				$8,960.32							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Magnetic Flowmeters (50, 100, and 150 mm)				$8,271.07							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Magnetic Flowmeters (50, 100, and 150 mm)				$8,271.07							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Magnetic Flowmeters (50, 100, and 150 mm)				$8,271.07							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Magnetic Flowmeters (50, 100, and 150 mm)				$8,271.07							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Magnetic Flowmeters (50, 100, and 150 mm)				$8,271.07							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Coagulant Feed Pump (Duty/Standby)				$5,661.54							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Coagulant Feed Pump (Duty/Standby)				$5,661.54							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Chemical Metering Pumps				$5,285.21							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Chemical Metering Pumps				$5,285.21							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Chemical Metering Pumps				$5,285.21							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Chemical Metering Pumps				$5,285.21							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Level Detectors				$2,757.02							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Level Detectors				$2,757.02							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Level Detectors				$2,757.02							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Level Detectors				$2,757.02							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Coagulant Day Tank (450 L)				$2,251.11							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Chemical Solution Tank (160 L)				$2,251.11							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Chemical Solution Tank (450 L)				$2,251.11							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Chemical Solution Tank (450 L)				$2,251.11							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	High Lift Turbine Pumps (15.9 L/s @ 42.6 m TDH				$29,637.99							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	High Lift Turbine Pumps (15.9 L/s @ 42.6 m TDH				$29,637.99							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Sewage/Sludge Pump 7.5L/s @ 15.0 m TDH				$27,570.22							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	High Lift Turbine Pumps (6.3 L/s @ 42.6 m TDH)				$19,124.08							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Decant Pump 10.0 L/s @ 6.3 m TDH				$17,920.64							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Sub. Low Lift Pump 8.33 L/s @ 10.1 TDH				$14,639.79							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Sub. Low Lift Pump 8.33 L/s @ 10.1 TDH				$14,639.79							
Lancaster	WTP	2025	Expense	5 YR Horiz	Install	Sub. Low Lift Pump 8.33 L/s @ 10.1 TDH				$14,639.79							
RW Estates	WTP	2025	Expense	5 YR Horiz	Replace ar	Sampling Locations				$2,757.02							
RW Estates	WTP	2025	Expense	5 YR Horiz	Upgrade	Clearwell				$48,247.89							
RW Estates	WTP	2025	Expense	5 YR Horiz	Install	Genset				$48,247.89							
Glen Walte	WTP	2027	Expense	6-10 YR H	Install	Sodium Hypochlorination						$165,421.33					
Glen Walte	WTP	2028	Expense	6-10 YR h	New	New Glen Walter WTP							$23,000,000.00				
Glen Walte	WTP	2029	Expense	6-10 YR H	Replace ar	Architectual								$949,104.85			
Lancaster	WTP	2030	Expense	6-10 YR H	Modify	Process Piping and Valves									$1,003,556.04		
Lancaster	WTP	2030	Expense	6-10 YR H	Install	Package Treatment Unit									$673,869.96		
Lancaster	WTP	2030	Expense	6-10 YR H	Upgrade	Electrical									$645,143.17		
Lancaster	WTP	2030	Expense	6-10 YR H	Install	Intake Work									$358,412.87		
Lancaster	WTP	2030	Expense	6-10 YR H	Upgrade	Mechanical									$358,412.87		
Lancaster	WTP	2030	Expense	6-10 YR H	Install	Stationary Screen									$71,682.57		

10-Year Water Capital Plan

Location	Facility	Year	Cate.	YRGRP	Type of W	Description of Work	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Lancaster	WTP	2030	Expense	6-10 YR H	Install	Diesel Generator Set (125 kW)									$98,680.71		
RW Estates	WTP	2030	Expense	6-10 YR H	Replace ar	Static Inline Mixer									$482.48		
Lancaster	Water Tow	2030	Expense		Repaint	Repaint Water Tower									$100,000.00		
Glen Walte	WTP	2032	Expense	11-20 YR H	Replace ar	Chemical Storage Tank (4.5m^3)											$1,792.06
Lancaster	WTP	2032	Expense	11-20 YR H	Install	SCADA											$34,462.78
Lancaster	WTP	2032	Expense	11-20 YR H	Install	Chlorine Residual Analyzer (Treated Water)											$8,960.32
RW Estates	WTP	2032	Expense	11-20 YR H	Replace ar	Well Pump											$9,649.58
Glen Walte	Water Tow	2033	Expense	Previous	Repaint	Repaint Water Tower											$100,000.00
						Schedule C EA for Glen Walter WTP	75000										
						ANNUAL COST	$75,000	$5,740,506	$0	$2,782,096	$0	$165,421	$23,000,000	$949,105	$3,310,241	$0	$154,865

10-Year Sanitary Capital Plan

Location	Facility	Year	Cate.	YRGRP	Type of W	Description of Work	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Glen Walte	Sewage PS	2023	Expense	5 YR Horiz	Replace	Raw Sewage Pumps (10 HP, 575/3/60)		$27,570.22									
Glen Walte	Sewage PS	2023	Expense	5 YR Horiz	Replace an	Chlorine Analyzer		$4,135.53									
Lancaster	Sewage PS	2023	Expense	5 YR Horiz	Install	Chlorine Analyzer		$13,785.11									
Lancaster	Sewage PS	2024	Expense	5 YR Horiz	Replace an	Raw Sewage Pump			$24,813.20								
Lancaster	Sewage PS	2024	Expense	5 YR Horiz	Replace an	Raw Sewage Pump			$24,813.20								
Glen Walte	Sewage PS	2025	Expense	5 YR Horiz	Modify	Process Piping and Valves				$41,010.70							
Glen Walte	Waste WTF	2025	Expense	5 YR Horiz	Upgrade	Sewage Treatment Plant				$27,000,000.00							
Green Valle	Sewage PS	2025	Expense	5 YR Horiz	Upgrade	Electrical				$5,514.04							
Lancaster	Sewage PS	2025	Expense	5 YR Horiz	Replace an	200 mm Forcemain				$27,570.22							
Lancaster	Sewage PS	2025	Expense	5 YR Horiz	Install	Flowmeter (Kent Taylor Magmaster)				$4,824.79							
Lancaster	Sewage PS	2025	Expense	5 YR Horiz	Upgrade	Roofs				$4,284.41							
Lancaster	Sewage PS	2025	Expense	5 YR Horiz	Install	Refrigerated Sewage Sampler				$11,717.34							
Lancaster	Waste WTF	2025	Expense	5 YR Horiz	Upgrade	Effluent Pumping Station Controls				$4,135.53							
Lancaster	Waste WTF	2025	Expense	5 YR Horiz	Install	Aerators - Aeration Cell and Faculative Cell				$110,280.88							
Lancaster	Waste WTF	2025	Expense	5 YR Horiz	Replace an	Forcemain				$45,490.86							
Lancaster	Waste WTF	2025	Expense	5 YR Horiz	Install	Refridgerated Auto Sampler				$11,028.09							
Lancaster	Waste WTF	2025	Expense	5 YR Horiz	Install	Effluent Pumps (60.0 L/s and 7.8 m TDH)				$31,705.75							
Lancaster	Waste WTF	2025	Expense	5 YR Horiz	Install	Effluent Pumps (60.0 L/s and 7.8 m TDH)				$31,705.75							
Lancaster	Waste WTF	2025	Expense	5 YR Horiz	Install	Alum Storage Tank (cap 17,275 L)				$16,542.13							
Lancaster	Waste WTF	2025	Expense	5 YR Horiz	Install	Flowmeter				$12,406.60							
Lancaster	Water Mai	2025	Expense	5 YR Horiz	Replace an	Distribution System (Pipe and Fire Hydrant)				$110,280.88							
Glen Walte	Waste WTF	2027	Expense	6-10 YR Ho	Replace an	Refrigerated Effluent Sampler						$11,717.34					
Glen Walte	Sewage PS	2028	Expense	6-10 YR Ho	Install	Raw Sewage Pumps							$82,710.66				
Glen Walte	Sewage PS	2028	Expense	6-10 YR Ho	Install	Raw Sewage Pumps							$46,869.38				
Glen Walte	Sewage PS	2028	Expense	6-10 YR Ho	Replace an	Chlorine Analyzer							$13,785.11				
Glen Walte	Sewage PS	2028	Expense	6-10 YR Ho	Replace an	Electrical							$87,363.14				
Glen Walte	Sewage PS	2028	Expense	6-10 YR Ho	Replace an	Process Piping and Valves							$38,081.37				
Glen Walte	Sewage PS	2030	Expense	6-10 YR Ho	Install	Flowmeter									$20,677.67		
Glen Walte	Waste WTF	2030	Expense	6-10 YR Ho	Install	Aeration Blowers									$13,785.11		
Lancaster	Sewage PS	2030	Expense	6-10 YR Ho	Install	Diesel Generator Set (30 kW)									$34,462.78		
Lancaster	Sewage PS	2030	Expense	6-10 YR Ho	Replace an	Diesel Generate Set (30 Kw)									$36,530.54		
Lancaster	Sewage PS	2030	Expense	6-10 YR Ho	Modify	Process Piping and Valves									$134,404.83		
Lancaster	Sewage PS	2030	Expense	6-10 YR Ho	Upgrade	Architectual									$99,459.57		
Lancaster	Sewage PS	2030	Expense	6-10 YR Ho	Install	Raw Sewage Pumps with VFDs									$99,252.80		
Lancaster	Waste WTF	2030	Expense	6-10 YR Ho	Install	Aeration Cell No. 1, (Volume 3,500 m^3 and 3.0 m Depth)									$1,860,989.91		
Lancaster	Waste WTF	2030	Expense	6-10 YR Ho	Install	Level Transducer									$13,785.11		
Glen Walte	Sewage PS	2031	Expense	6-10 YR Ho	Install	Raw Sewage Pumps										$13,785.11	

Schedule "C" EA for Glen Walter WPCP	$75,000										
ANNUAL COST	$75,000	$45,491	$49,626	$27,468,498	$0	$11,717	$268,810	$0	$2,313,348	$13,785	