middlesex centre

in the centre of it all

ASSET MANAGEMENT PLAN 2025

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1 EXECUTIVE SUMMARY

The **2025 Asset Management Plan** for the Municipality of Middlesex Centre presents a comprehensive, data-driven framework for managing over **$1.5 billion** in municipal infrastructure. It supports the sustainable delivery of essential services – including water, wastewater, stormwater, roads, bridges, fleet, facilities, and parks – while aligning with provincial regulations, community expectations, and long-term financial planning.

STRATEGIC MATURITY AND PROGRESS

Since the 2021 plan, Middlesex Centre has made substantial advancement in asset management maturity, as measured by the Federation of Canadian Municipalities' **Asset Management Readiness Scale**. Key competencies such as accountability, training, and policy integration have reached or exceeded best-practice benchmark, reflecting a strong organizational commitment to continuous improvement.

ASSET PORTFOLIO OVERVIEW

The Municipality manages a diverse infrastructure portfolio with the following replacement values:

- **Roads and Bridges:** $724.0 million – average condition rated *Good*.
- **Water, Wastewater, and Stormwater Systems:** $611.0 million – water assets rated *Fair*, others *Good*.
- **Facilities, Parks, and Fleet:** $172.0 million – conditions range from *Very Good* to *Very Poor*.

54.0% of the total asset portfolio is currently rated in **good or better condition**, supported by reinvestment strategies designed to address aging infrastructure and evolving service needs.

LEVELS OF SERVICE AND RISK MANAGEMENT

The plan defines current, target, and proposed **Levels of Service (LOS)** for each asset category, in compliance with **Ontario Regulation 588/17**. It also identifies key risks – including climate change, population growth, regulatory shifts, and funding constraints – and outlines mitigation strategies to maintain service reliability and resilience.

FINANCIAL PLANNING AND INFRASTRUCTURE DEFICIT

Middlesex Centre has adopted long-range financial plans that include:

- An annual tax levy increase of 8.4%
- Utility rate increases ranging from 6.1% - 10.0%, supporting water, wastewater, and stormwater systems
- Strategic use of reserve funds and debt, focused on lifecycle investment and risk-based asset renewal

Despite these measures, the Municipality is projected to face a cumulative **infrastructure deficit of $219.3 million by 2034**, primarily in tax-supported assets.

IMPORTANT NOTE:

While these increases support overall municipal operations, only a portion is dedicated specifically to asset management.

GROWTH AND FUTURE READINESS

With a **33.0% population increase projected by 2034**, the plan integrates growth forecasts into infrastructure planning. It emphasizes scalable infrastructure, development charges, and alignment with master plans to ensure readiness for future demands.

COMMITMENT TO CONTINUOUS IMPROVEMENT

The Plan outlines a structured 5-year improvement roadmap, including enhanced data governance, condition assessments, and performance monitoring. It commits to annual reviews and formal updates every five-years, ensuring asset management remains responsive, transparent, and aligned with community needs.

2 REACHING NEW LEVELS IN ASSET MANAGEMENT MATURITY

Middlesex Centre uses the **Asset Management Readiness Scale (AMRS)** to assess and advance the maturity of its asset management practices. Developed by the Federation of Canadian Municipalities (FCM), the AMRS is a self-assessment tool that helps municipalities evaluate their current capabilities and identify areas for improvement. It is structured around five core competency areas:

- Policy and Governance
- People and Leadership
- Data and Information
- Planning and Decision-Making
- Contribution to Asset Management Practice

Each of these areas represents a foundational element of effective asset management and supports the delivery of sustainable municipal services.

Municipalities apply the AMRS to determine their current maturity level, uncover gaps, and prioritize actions for improvement. For example:

- *Policy and Governance* assesses the existence and implementation of formal asset management policies.
- *People and Leadership* focuses on cross-functional collaboration and leadership engagement.
- *Data and Information* evaluates the quality and use of asset data in decision-making.
- *Planning and Decision-Making* examines how asset management is integrated into budgeting and capital planning.
- *Contribution to Asset Management Practice* encourages knowledge sharing and continuous improvement.

The AMRS is particularly valuable for municipalities at varying stages of asset management development. It provides a structured framework for internal discussions, supports strategic planning, and helps justify funding applications and policy development. For municipalities like Middlesex Centre, the AMRS offers a clear view of current strengths and areas for growth, ultimately enabling more informed, transparent, and sustainable infrastructure decisions.

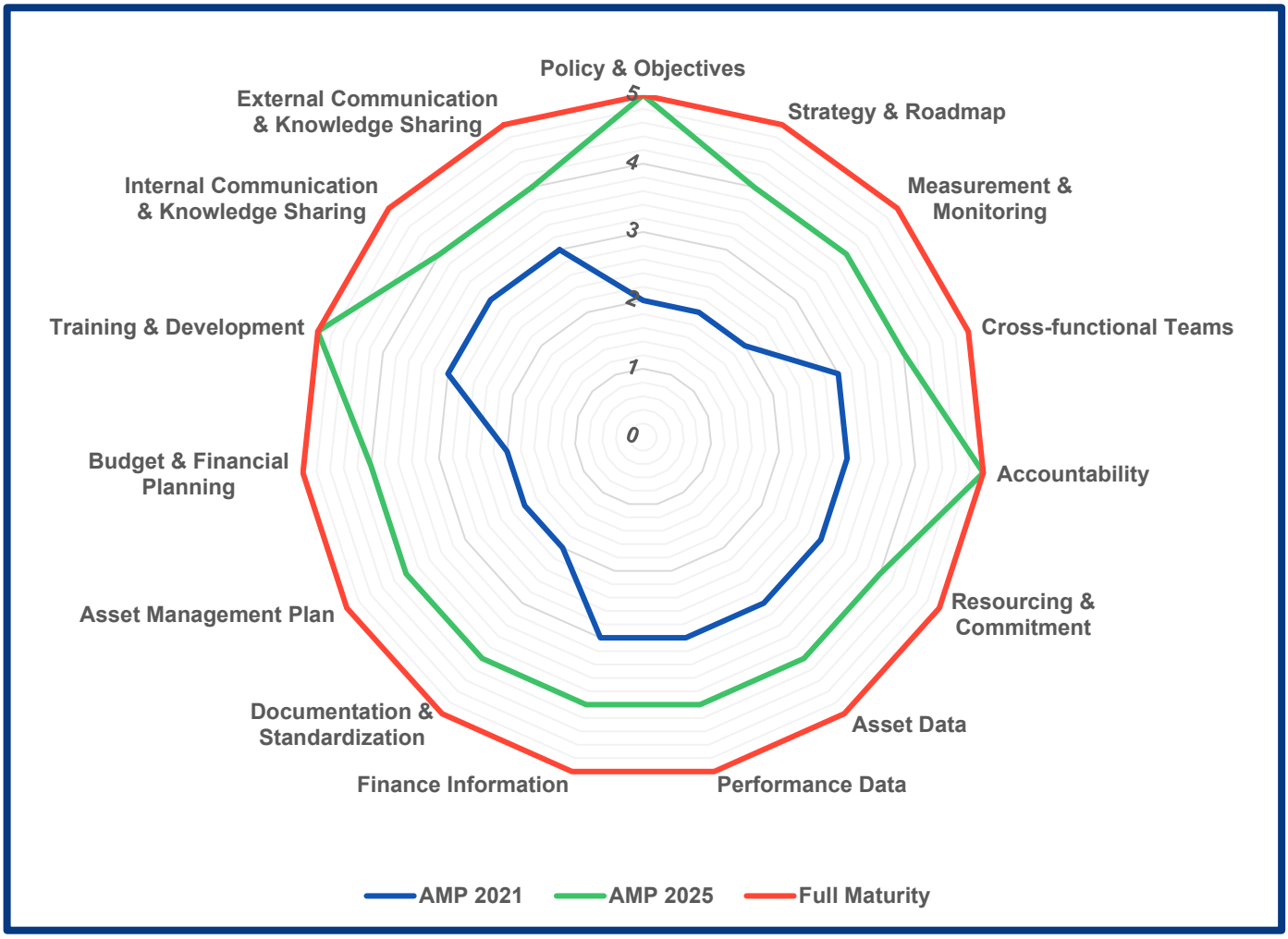
Between its 2021 and 2025 Asset Management Plans (AMPs), Middlesex Centre has made significant strides in advancing its asset management maturity. In 2021, the Municipality was largely at a foundational or developing stage across most categories. For example, Strategy & Roadmap, Measurement & Monitoring, Resourcing & Commitment, Asset Data, and Policy & Objectives were all rated at Level 2, reflecting early-stage practices with considerable room for growth. In contrast, Training & Development, Budget & Financial Planning, and both Internal and External Communication & Knowledge Sharing were relatively more developed, each achieving a Level 3 rating.

By 2025, Middlesex Centre shows a strong upward trajectory. Most categories have advanced to a level of 4 or higher, reflecting well-established practices and the successful integration of asset management into broader municipal operations. Notably, Policy & Objectives, Accountability and Training & Development have reached the target level of 5, reflecting full alignment with best practices and a strong commitment to continuous improvement. Other key areas, such as Resourcing & Commitment, Measurement & Monitoring, and Asset Data, are also nearing full maturity, further reinforcing the Municipality's strategic progress.

Overall, Middlesex Centre is well-positioned to meet or exceed its asset management objectives in the next reporting cycle. The AMRS has played a pivotal role in guiding the Municipality's strategic advancements, ensuring that asset management practices are not only technically sound but also fully integrated into governance, planning, and communication frameworks.

Figure 1 presents a radar chart comparing Middlesex Centre's asset management maturity across 15 key competency areas. The **blue line** represents the 2021 baseline, the **green line** shows the 2025 assessment, and the **orange line** indicates the full maturity rating of 5. The chart visually highlights the Municipality's significant progress, particularly in Accountability, Training & Development, and Policy & Objectives. The figure serves as a valuable tool for tracking progress and guiding future asset management initiatives.

FIGURE 1. MIDDLESEX CENTRE'S PROGRESS IN ASSET MANAGEMENT



3 INTRODUCTION

The Municipality of Middlesex Centre is committed to delivering reliable, sustainable, and high-quality services that support the well-being of its residents, businesses, and natural environment. These services – ranging from transportation and water systems to community facilities and parks – are underpinned by a diverse and valuation portfolio of municipal assets valued at over **$1.5 billion**.

As the community continues to grow and evolve, so too does the demand on its infrastructure. To meet these demands, the Municipality must ensure that existing assets are maintained in a state of good repair, renewed strategically, and expanded responsibly. This requires a balanced approach that considers **levels of service**, **risk**, and **cost** across the full lifecycle of each asset.

The Asset Management Plan 2025 (AMP) provides a comprehensive roadmap for how Middlesex Centre will manage its infrastructure over the next decade. It outlines:

- The current state and condition of municipal assets
- Defined levels of service and performance targets
- Lifecycle strategies and reinvestment priorities
- Financial planning and funding strategies
- Risks identification and mitigation approaches
- Alignment with growth forecasts and regulatory requirement

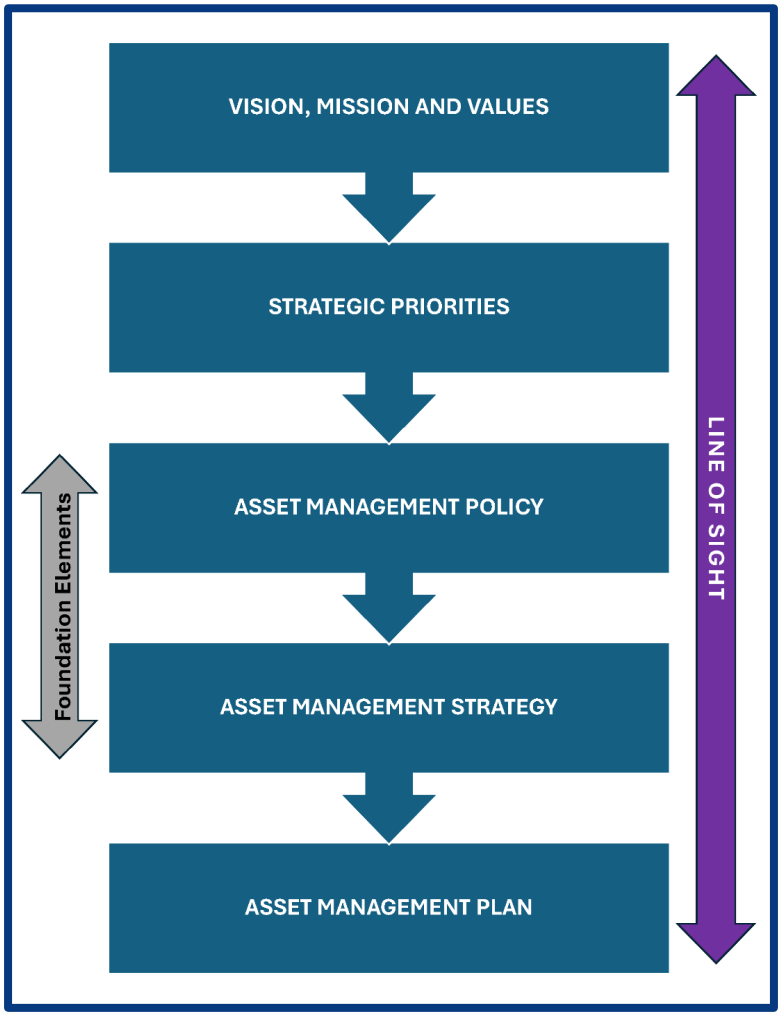
This plan has been developed in accordance with the *Infrastructure for Jobs and Prosperity Act, 2015* and **Ontario Regulation 588/17**, and is also informed by the principles of the **ISO 55000 series**, the international standard for asset management. These frameworks emphasize transparency, accountability, and value-based decision-making.

By integrating provincial legislation, international best-practices, and local priorities, Middlesex Centre ensures that its asset management practices remain resilient, responsive and aligned with the needs of a thriving, future ready-community.

4 STRATEGIC ALIGNMENT

At the core Middlesex Centre's asset management approach is the line-of-sight framework (**Figure 2**), which ensures that all asset management activities are strategically aligned with the Municipality's broader goals. This alignment begins with our **vision** – a thriving, progressive, and welcoming community that honours our rural roots and embraces our natural spaces – and our **mission** to deliver the highest standard in municipal services in a sustainable, professional, and innovative manner.

FIGURE 2. THE HIERARCHY OF ASSET MANAGEMENT SYSTEM AT THE MUNICIPALITY OF MIDDLESEX CENTRE



Our **values** – Respect, Cooperation, Innovation, and Integrity – guide every decision we make. These are complemented by our **Strategic Priorities** which shape the direction of our asset management efforts:

- Engaging the Community
- Balanced Growth
- Vibrant Local Economy
- Sustainable Infrastructure and Services
- Responsive Municipal Government

By aligning asset management practices with these guiding principles, Municipality of Middlesex Centre ensures a cohesive and integrated approach to managing municipal infrastructure. This strategic alignment is essential for effective governance and the long-term, sustainable delivery of services to the community.

The Municipality's asset management framework is designed to align with the following key documents, including but not limited to:

- Strategic Plan
- Official Plan
- Annual Budgets
- Community Improvement Plan
- Drinking Water Quality Management Standard
- Tax Long-Range Financial Plan
- Water, Wastewater and Stormwater Long-Range Financial Plan
- Reserve and Reserve Fund Policy
- Development Charges Study
- Issuance of Debt Policy
- Master Servicing Plan
- Transportation Master Plan
- Various other master plans and technical studies

When any of these documents are updated or significantly revised, the Municipality will assess the implications for the asset management framework to ensure continued alignment. This process reinforces the Municipality's commitment for strategic planning and responsive service delivery.

In addition, this Asset Management Plan will be reviewed annually to monitor progress and adapt to changing conditions. A formal update will occur at least once every five years, in accordance with Ontario Regulation 588/17, ensuring that the plan remains current, relevant, and effective.

VISION – MISSION – VALUES – PRIORITIES

VISION:

A thriving, progressive and welcoming community that honours our rural roots and embraces our natural spaces.

MISSION:

To deliver the highest standard in municipal services in a sustainable, professional and innovative manner.

VALUES:

RESPECT:
We are an open, courteous and inclusive workplace that values and celebrates the varied backgrounds and experiences of our community. We ensure every resident can participate in our community and engage with our municipal government.

COOPERATION:
We work in a spirit of trust, collaboration and partnership across departments and with our community to achieve our shared goals.

INNOVATION:
We embrace innovation to improve our delivery of services. We take initiative, and are flexible and creative in anticipating and adapting to changing conditions.

INTEGRITY:
We take accountability for our actions and deliver what we promise. We are truthful and honest in how we do our job. We inspire public confidence and trust in our municipal government.

STRATEGIC PRIORITIES:

5 ASSET MANAGEMENT PLANNING IN MIDDLESEX CENTRE

5.1 ASSET MANAGEMENT POLICY

The Asset Management Policy (Appendix A) establishes clear goals for managing municipal assets across all service areas. The planning process begins by aligning legislative requirements and community expectations with the Municipality's vision, mission, values, and strategic priorities. This alignment ensures a consistent, coordinated, and sustainable approach to asset management, one that supports the long-term delivery of reliable municipal services.

The following commitments will guide asset management practices within the Municipality:

- Maintain assets at condition levels that are aligned with the expected levels of service and strategic intents.
- Provide services and maintaining assets in financially sustainable manner. Decisions will be made by considering all stages of the asset life cycle.
- Using asset management to inform the annual budget process and long-term financial plans.
- Use Asset Management Plan as a tool to communicate the needs related to assets to deliver municipal services and the approaches required to meet those needs.

5.2 GOVERNANCE

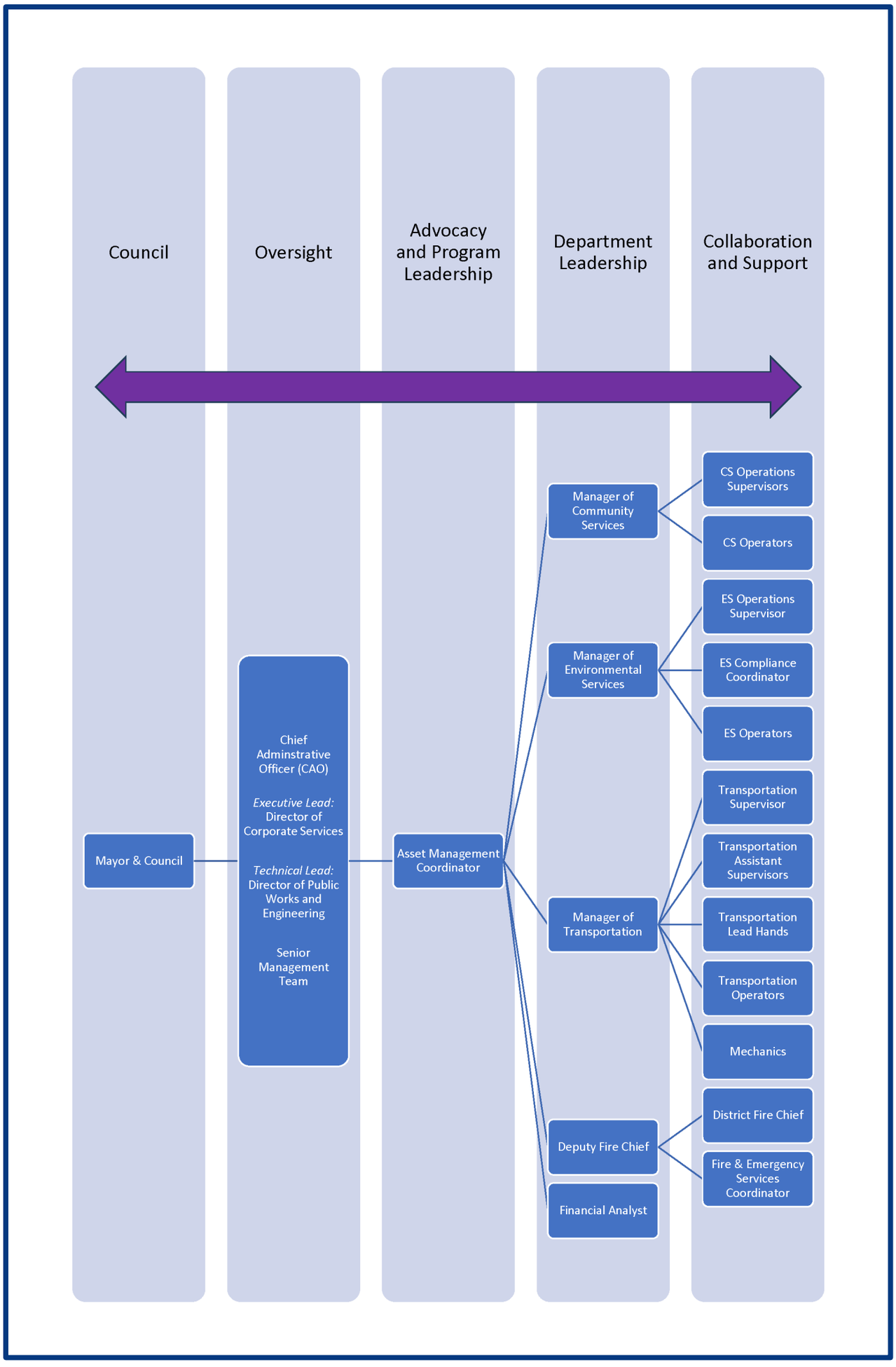
Figure 3 illustrates the governance structure for that supports asset management planning at Middlesex Centre. It outlines the roles, responsibilities, and decision-making pathways that ensure asset management is integrated across departments and aligned with the Municipality's strategic objectives.

The governance model includes the following key roles:

- **Municipal Council:** Provides overall direction and policy approval. Council ensures that asset management aligns with community values, legislative requirements, and long-term financial sustainability.

- **Senior Management Team (SMT):** Oversees strategic integration of asset management across departments. SMT ensures that asset management objectives are reflected in corporate planning, budgeting, and service delivery.
- **Asset Management Steering Committee:** Facilitates cross-departmental collaboration and monitors progress on asset management initiatives. The committee supports continuous improvement and ensures alignment with regulatory requirements.
- **Departmental Leads:** Responsible for implementing asset management practices within their respective areas. This includes maintaining asset inventories, conducting condition assessments, and developing lifecycle strategies.
- **Asset Management Coordinator:** Serves as the central resource for asset management planning, data governance, and reporting. The coordinator supports departments, manages the asset management system, and ensures compliance with Ontario Regulation 588/17.
- **Collaboration and Support Group:** Composed of staff from Finance, Public Works, Community Services, and other operational teams. This group provides technical expertise, data input, and operational insights. Their collaboration ensure that asset management decisions are grounded in practical realities and reflect the needs of service delivery teams.

FIGURE 3. ASSET MANAGEMENT GOVERNANCE



5.3 ASSET PORTFOLIO AT-A-GLANCE

Figure 4 provides a high-level summary of Middlesex Centre's municipal asset portfolio, categorized by service area. This summary sets the stage for the detailed analysis and discussion of each asset category, which begins on page 69 of this plan.

FIGURE 4. ASSET PORTFOLIO OVERVIEW BY MUNICIPAL SERVICE AREA

SERVICE GROUP	ASSET CATEGORY	ASSETS
Public Works	Water	Structures and systems used to collect, treat, distribute and manage potable water including by not limited to water treatment facilities, groundwater wells, elevated tanks, pumping stations, storage reservoirs, transmission mains, fire hydrants, valves, water laterals, water chambers
	Wastewater	Network of infrastructure designed to collect, transport, treat, and safely discharge wastewater generated by homes and businesses. It typically includes sanitary sewers, manholes, lift stations, treatment facilities, sanitary forcemains, and chambers, among other components.
	Stormwater	Infrastructure designed to manage rainwater and melted snow, helping to prevent flooding, erosion, and water pollution. Key components include storm sewers, catch basins, manholes and access chambers, oil and grit separators, and stormwater management ponds.
	Roads	A system of interconnected roads designed to facilitate the safe and efficient movement of vehicles, cyclists, and pedestrians throughout the Municipality. Key components include road surfaces, sidewalks, traffic signs and signals, street lighting, and other supporting infrastructure.

SERVICE GROUP	ASSET CATEGORY	ASSETS
Public Works	Bridges and Culverts	Essential structural components of the Municipality's transportation and drainage system. They provide critical connectivity, ensure safe and accessible travel, manage water flow, and help prevent flooding and erosion.
	Fleet	Vehicles and equipment for carrying out public service and operations.
Community Services	Facilities	Buildings that support public services and community functions including administrative offices, public works facilities, community and recreational centres.
	Parks & Open Spaces	Publicly accessible areas that are preserved, developed, or maintained for recreation, leisure and community well-being.

5.4 PROPOSED LEVELS OF SERVICE

The Municipality of Middlesex Centre defines its level of service (LOS) through a strategic and structured asset management approach, as outlined in its Asset Management Strategy. This strategy document emphasizes the importance of maintaining municipal assets, such as roads, water systems, and public facilities, at condition levels that align with both community expectations and long-term strategic goals. The LOS framework in Middlesex Centre is designed to ensure that services are delivered in a sustainable, efficient, and financially responsible manner.

The Municipality links service outcomes directly to infrastructure investment decisions, shifting the focus from purely budget-driven planning to a service-oriented model. This means that decisions about asset maintenance, renewal, and replacement are guided by how well those assets support the delivery of essential services to residents. The strategy aligns with Ontario Regulation 588/17, which mandates municipalities to define current and proposed levels of service for core infrastructure, ensuring transparency and accountability.

Levels of service – categorized as Current (CLOS), Target (TLOS), and Proposed (PLOS) – are fundamental to effective asset management and financial planning. Each level provides a distinct lens through which service performance is evaluated and budget decisions are made. **Figure 5** outlines how each level of service guides budgeting strategies and investment priorities.

FIGURE 5. LEVELS OF SERVICE AND THEIR IMPACTS ON BUDGETING DECISIONS

LEVEL OF SERVICE	DEFINITION	EFFECT ON BUDGETING
Current LOS (CLOS)	The actual performance of assets and services today	• Helps determine how much is currently being spent to maintain that level. • If CLOS is acceptable, the budget can focus on maintaining the status quo with routine maintenance and minor upgrades. • If CLOS is below acceptable standards, it may signal underfunding or deferred maintenance prompting a need for increased investment.
Target LOS (TLOS)	The desired or optimal performance level to maintain over time.	• Guides long-term financial planning. • May require increased investment. • Budgeting for TLOS involves evaluating the trade-offs between service quality and affordability.
Proposed LOS (PLOS)	Future service levels being considered or planned.	• Allows for "what-if" scenario, e.g. what would it cost to improved road conditions by 10.0%? • If differs from the CLOS, may require higher funding.

Ontario Regulation 588/17 requires municipalities to define and report their proposed levels of service for all asset categories by July 1, 2025. This Asset Management Plan fulfills that requirement by establishing clear, measurable LOS targets across the Muncipality's infrastructure portfolio.

Figure 6 through 13 summarizes the proposed levels of service for each asset category, including potable water, wastewater, stormwater, roads, bridges and culverts, fleet, facilities, and parks.

The current performance data, drawn from the most recent available information between 2020 and 2024, forms the foundation for the proposed LOS. This approach ensures that future targets are both achievable and reflective of actual asset conditions, supporting transparent, evidence-based planning and service delivery.

FIGURE 6. MIDDLESEX CENTRE'S CURRENT & PROPOSED LEVELS OF SERVICE: A 10-YEAR OUTLOOK

POTABLE WATER NETWORK				
TYPE	**PERFORMANCE METRICS**	**CURRENT PERFORMANCE**	**TARGET**	**PROPOSED LEVEL OF SERVICE**
Customer Service	% of proactive maintenance	76.0%	> 60.0% Total # of Work Orders	No change
	% of reactive maintenance	24.0%	< 40.0% of Total # of Work Orders	No change
Access and Capacity	% of properties connected to the municipal water system	56.0%		No change
	% of properties where fire flow is available	100.0%	100.0%	No change
Condition and Reliability	The number of connection-days lost per year due to water main breaks compared to the total number of properties connected to the municipal water system	0.01	0	No change
	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system	0	0	No change

POTABLE WATER NETWORK

TYPE	PERFORMANCE METRICS	CURRENT PERFORMANCE	TARGET	PROPOSED LEVEL OF SERVICE
Condition and Reliability	Average asset condition	Fair	Good	No change
	Assets with “Poor” to “Very Poor” condition as a percentage of total replacement cost	28.9%	< 10.0%	No change
Safety	# of water boil advisories	0	0	No change
Financial Sustainability	Reinvestment ratio %: minimum annual investment as a percentage of total replacement cost	0.4%	> = 1.7%	No change

FIGURE 7. MIDDLESEX CENTRE'S CURRENT & PROPOSED LEVELS OF SERVICE: A 10-YEAR OUTLOOK

WASTEWATER NETWORK				
TYPE	**PERFORMANCE METRICS**	**CURRENT PERFORMANCE**	**TARGET**	**PROPOSED LEVEL OF SERVICE**
Customer Service	% of proactive maintenance	88.0%	> 60.0% Total # of Work Orders	No change
	% of reactive maintenance	12.0%	< 40.0% of Total # of Work Orders	No change
Access and Capacity	% of properties connected to the municipal wastewater system	44.0%	44.0%	No change
	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system	Middlesex Centre has no combined sewer		
	# of connection-days per year with service disruptions due to wastewater backups compared to the total number of properties connected to the municipal wastewater system	0	0	No change
Condition and Reliability	Average asset condition	Good	Good	No change

WASTEWATER NETWORK				
TYPE	**PERFORMANCE METRICS**	**CURRENT PERFORMANCE**	**TARGET**	**PROPOSED LEVEL OF SERVICE**
	Assets with “Poor” to “Very Poor” condition as a percentage of total replacement cost	4.8%	< 10.0%	No change
Safety	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.	0	0	No change
Financial Sustainability	Reinvestment ratio %: minimum annual investment as a percentage of total replacement cost	0.7%	> = 1.4%	No change

FIGURE 8. MIDDLESEX CENTRE'S CURRENT & PROPOSED LEVELS OF SERVICE: A 10-YEAR OUTLOOK

STORM NETWORK				
TYPE	**PERFORMANCE METRICS**	**CURRENT PERFORMANCE**	**TARGET**	**PROPOSED LEVEL OF SERVICE**
Customer Service	% of proactive maintenance	100.0%	> 60.0% Total # of Work Orders	No change
	% of reactive maintenance	0.0%	< 40.0% of Total # of Work Orders	No change
Access and Capacity	% of properties in the Municipality resilient to a 100-year storm	97.0%	100.0%	No change
	% of the municipal stormwater management system resilient to a 5-year storm	100.0%	100.00%	No change
Condition and Reliability	Average asset condition	Good	Good	No change
	Assets with “Poor” to “Very Poor” condition as a percentage of total replacement cost	6.8%	< 10.0%	No change
	% of culverts inspected and cleaned	50.0%	50.0%	No change
	% of OGS[1] cleaned	0.0%	20.0%	Maximize

[1] **Oil and Grit Separator** – a type of stormwater treatment devise to remove pollutants specifically oil, grease, sediment, and grit.

STORM NETWORK				
TYPE	**PERFORMANCE METRICS**	**CURRENT PERFORMANCE**	**TARGET**	**PROPOSED LEVEL OF SERVICE**
Condition and Reliability	% storm sewer inspected - CCTV[2]	5.0%	20.0%	No change
Financial Sustainability	Reinvestment ratio %: minimum annual investment as a percentage of total replacement cost	0.7%	> = 2.5%	No change

FIGURE 9. MIDDLESEX CENTRE'S CURRENT & PROPOSED LEVELS OF SERVICE: A 10-YEAR OUTLOOK

ROAD NETWORK				
TYPE	**PERFORMANCE METRICS**	**CURRENT PERFORMANCE**	**TARGET**	**PROPOSED LEVEL OF SERVICE**
Customer Service	% of proactive maintenance	12.5%	> 25.0% Total # of Work Orders	No change
	% of reactive maintenance	87.5%	< 75.0% of Total # of Work Orders	No change

[2] **Closed-Circuit Television** – cameras to visually inspect the interior condition of underground sewer and stormwater pipes.

ROAD NETWORK

TYPE	PERFORMANCE METRICS	CURRENT PERFORMANCE	TARGET	PROPOSED LEVEL OF SERVICE
Access and Capacity	% of local roads with sidewalks	50.4%	TBD – Awaiting results of Active Transportation Master Plan	TBD
	Lane kilometres of road with year-round load restriction	42.6	0	Minimize
Condition and Reliability	Average asset condition	Good	Good	No change
	Assets with “Poor” to “Very Poor” condition as a percentage of total replacement cost	7.5%	< 10.0%	Minimize
Safety	Centreline-kilometres of roads with deficiencies (geometric, drainage, structural, width, surface type)	117.3	Minimize	No change
Financial Sustainability	Reinvestment ratio %: minimum annual investment as a percentage of total replacement cost	0.7%	> = 2.5%	No change

FIGURE 10. MIDDLESEX CENTRE'S CURRENT & PROPOSED LEVELS OF SERVICE: A 10-YEAR OUTLOOK

BRIDGES & CULVERTS				
TYPE	**PERFORMANCE METRICS**	**CURRENT PERFORMANCE**	**TARGET**	**PROPOSED LEVEL OF SERVICE**
Customer Service	% of proactive maintenance	100.0%	> 60.0% Total # of Work Orders	60.0%
	% of reactive maintenance	0.0%	< 40.0% of Total # of Work Orders	40.0%
Access and Capacity	# of bridges and culverts currently have load or dimensional restrictions	0	0	No change
Condition and Reliability	Average BCI[3] out of 100: Bridges	67.5	> = 70.0	No change
	Average BCI out of 100: Culverts	64.4	> = 70.0	No change
	Average BCI out of 100: Retaining walls	67.5	> = 70.0	No change
	Average asset condition	Good	Good	No change
	Assets with "Poor" to "Very Poor" condition as a percentage of total replacement cost	6.8%	< 10.0%	No change
Condition and Reliability	Number of bridges and culverts with BCI of < 40.0 out of 100	21	Minimize	Minimize

[3] Bridge Condition Index – numerical rating system used to assess the overall condition of a bridge.

BRIDGES & CULVERTS				
TYPE	**PERFORMANCE METRICS**	**CURRENT PERFORMANCE**	**TARGET**	**PROPOSED LEVEL OF SERVICE**
Safety	Number of incidences of failure	0	0	No change
Financial Sustainability	Reinvestment ratio %: minimum annual investment as a percentage of total replacement cost	0.7%	> = 1.3%	No change

FIGURE 11. MIDDLESEX CENTRE'S CURRENT & PROPOSED LEVELS OF SERVICE: A 10-YEAR OUTLOOK

FLEET				
TYPE	**PERFORMANCE METRICS**	**CURRENT PERFORMANCE**	**TARGET**	**PROPOSED LEVEL OF SERVICE**
Customer Service	% of proactive maintenance	57.1%	> 60.0% Total # of Work Orders	60.0%
	% of reactive maintenance	42.9%	< 40.0% of Total # of Work Orders	40.0%
Condition and Reliability	Average asset condition	Poor	Fair	No change
	Assets with “Poor” to “Very Poor” condition as a percentage of total replacement cost	52.6%	< 10.0%	No change
Safety	# of vehicles failed annual safety inspection	0	0	No change
Financial Sustainability	Reinvestment ratio %: minimum annual investment as a percentage of total replacement cost	9.6%	> = 7.2%	No change

FIGURE 12. MIDDLESEX CENTRE'S CURRENT & PROPOSED LEVELS OF SERVICE: A 10-YEAR OUTLOOK

FACILITIES (EXCLUDING PARKS)				
TYPE	**PERFORMANCE METRICS**	**CURRENT PERFORMANCE**	**TARGET**	**PROPOSED LEVEL OF SERVICE**
Customer Service	% of proactive maintenance	23.8%	> 60.0% Total # of Work Orders	60.0%
	% of reactive maintenance	76.3%	< 40.0% of Total # of Work Orders	40.0%
Access and Capacity	# of unplanned closures due to asset failure	0	0	No change
Condition and Reliability	Average asset condition	Fair	Fair	No change
	Assets with “Poor” to “Very Poor” condition as a percentage of total replacement cost	43.48%	< 10.0%	No change
Financial Sustainability	Reinvestment ratio %: minimum annual investment as a percentage of total replacement cost	8.0%	> = 2.2%	No change

FIGURE 13. MIDDLESEX CENTRE'S CURRENT & PROPOSED LEVELS OF SERVICE: A 10-YEAR OUTLOOK

PARKS & OPEN SPACES				
TYPE	**PERFORMANCE METRICS**	**CURRENT PERFORMANCE**	**TARGET**	**PROPOSED LEVEL OF SERVICE**
Customer Service	% of proactive maintenance	0.0%	> 60.0% Total # of Work Orders	60.0%
	% of reactive maintenance	100.0%	< 40.0% of Total # of Work Orders	40.0%
Access and Capacity	# of unplanned closures due to asset failure	0	0	No change
Condition and Reliability	Average asset condition	Good	Good	No change
	Assets with “Poor” to “Very Poor” condition as a percentage of total replacement cost	22.5%	< 10.0%	No change
Financial Sustainability	Reinvestment ratio %: minimum annual investment as a percentage of total replacement cost	4.3%	> = 3.1%	No change

5.5 SERVICE LEVEL RISKS AND THEIR IMPACTS

Both external and internal risks can significantly impact the Middlesex Centre's ability to maintain its desired levels of service. These risks include climate change, population and economic growth, regulatory changes, technological advancements, and states of emergency. The following sections provide a detailed overview of each risk category, along with suggested mitigation strategies to support resilient and sustainable service delivery.

1. Climate Change

- *Infrastructure Vulnerability:* Roads, bridges, and stormwater systems are increasingly exposed to flooding, freeze-thaw cycles, and heat stress, accelerating deterioration.
- *Service Disruptions:* Extreme weather events (e.g., ice storms, heatwaves) can interrupt power, water, and transportation services.
- *Increased Maintenance Costs:* More frequent repairs and upgrades are needed to adapt infrastructure to changing climate conditions.
- *Planning Uncertainty:* Long-term climate projections introduce uncertainty into infrastructure design and investment planning.

Mitigation Strategies

- *Adaptation planning:* Incorporate climate resilience into infrastructure design (e.g., flood-resistant roads, green stormwater systems).
- *Emergency preparedness:* Develop and regularly update climate-related emergency response plans.
- *Monitoring and modeling:* Use climate data and predictive models to anticipate and plan for long-term impacts.

2. Population and Economic Growth

- *Capacity Strain:* Rapid growth can overwhelm existing infrastructure such as water supply, wastewater treatment, and transportation networks.

- *Service Expansion Needs:* New developments require extensions of services, increasing capital and operational costs.
- *Land Use Pressure:* Urban sprawl can lead to inefficient service delivery and higher per capita infrastructure costs.
- *Economic Shifts:* Changes in local industry or employment can affect revenue streams and service demand patterns.

Mitigation Strategies

- *Growth forecasting:* Use demographic and economic data to anticipate future service demands.
- *Scalable infrastructure:* Design assets with flexibility to expand or adapt as needs grow.
- *Development charges:* Implement or adjust fees to ensure new growth contributes to infrastructure funding.

3. Regulatory Changes

- *Compliance Costs:* New environmental, safety, or accessibility regulations may require costly upgrades or operational changes.
- *Policy Uncertainty:* Sudden or unclear regulatory shifts can disrupt long-term planning and budgeting.
- *Reporting and Documentation:* Increased administrative burden to meet new reporting standards (e.g., asset management regulations like Ontario Regulation 588/17).
- *Service Mandates:* New regulations may require municipalities to provide services they previously did not, without corresponding funding.

Mitigation Strategies

- *Policy tracking:* Monitor legislative developments at provincial and federal levels.
- *Staff training:* Ensure staff are trained to adapt to new compliance requirements.
- *Flexible planning:* Build adaptability into asset management and financial plans to accommodate regulatory shifts.

4. Technological Advancements

- *Obsolescence Risk:* Existing systems may become outdated, requiring replacement or integration with newer technologies.
- *Cybersecurity Threats:* Increased reliance on digital infrastructure introduces risks of data breaches or service disruptions.
- *Training and Adaptation:* Staff may need new skills to operate and maintain advanced systems.
- Public Expectations: As technology improves, residents may expect faster, more efficient, or more transparent services.

Mitigation Strategies

- *Technology roadmaps:* Stay informed about emerging technologies relevant to municipal services.
- *Pilot programs:* Test new technologies on a small scale before full implementation.
- *Digital infrastructure:* Invest in systems that support data collection, automation, and smart asset management.

5. States of Emergency

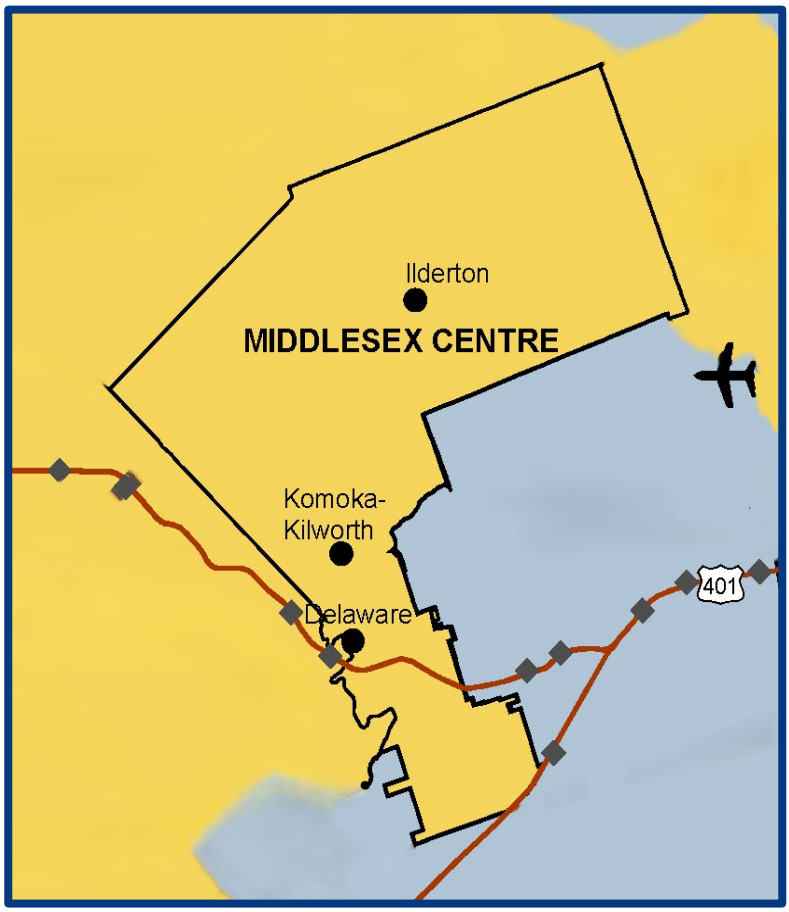
- *Service Disruption:* Events like pandemics, flooding, or major system failures can halt or reduce service delivery.
- *Resource Reallocation:* Emergency response may divert resources from regular maintenance or capital projects.
- *Infrastructure Damage:* Natural disasters can cause sudden, extensive damage to critical assets.
- *Recovery Costs:* Post-emergency recovery often requires significant unplanned expenditures and long-term rebuilding efforts.

Mitigation Strategies

- *Continuity planning:* Develop business continuity and disaster recovery plans for critical services.
- *Redundancy:* Build redundancy into essential systems (e.g., backup power, alternate routes).
- *Community partnerships:* Collaborate with regional agencies and emergency services for coordinated response.

6 OVERVIEW OF MIDDLESEX CENTRE ASSET PORTFOLIO

6.1 WHAT INFRASTRUCTURES ARE OWNED AND MANAGED BY MIDDLESEX CENTRE?



The Municipality of Middlesex Centre manages a comprehensive portfolio of infrastructure assets valued at over **$1.5 billion** (2024 dollars), which are essential to delivering core municipal services and supporting community well-being. These assets fall into seven major categories, each with distinct funding sources and condition profiles. The potable water network, valued at $141.8 million, is in fair condition and funded through water rates. The wastewater network, at $306.5 million, is in good condition and supported by wastewater rates. Similarly, the stormwater network, valued at $163.0 million, is also in good condition and funded through stormwater rates. The road network, the largest single asset class with a replacement value of $529.5 million, and bridges and culverts, valued at $194.9 million, are both in good condition and funded through tax revenues. The fleet assets and facilities and parks, valued at $32.1 million and $139.5 million respectively, are in fair condition and also tax-funded. Collectively, these assets form the backbone of municipal operations and require ongoing reinvestment to maintain service levels, manage risk, and support future growth.

6.2 WHAT IS THE ESTIMATED COST TO REPLACE EXISTING INFRASTRUCTURE?

The Municipality's portfolio of owned infrastructure has an estimated replacement value of **$1.5 billion** (2024 dollars, excluding land).

Total Asset Replacement Value

$1,507,321,332

2024 Dollars

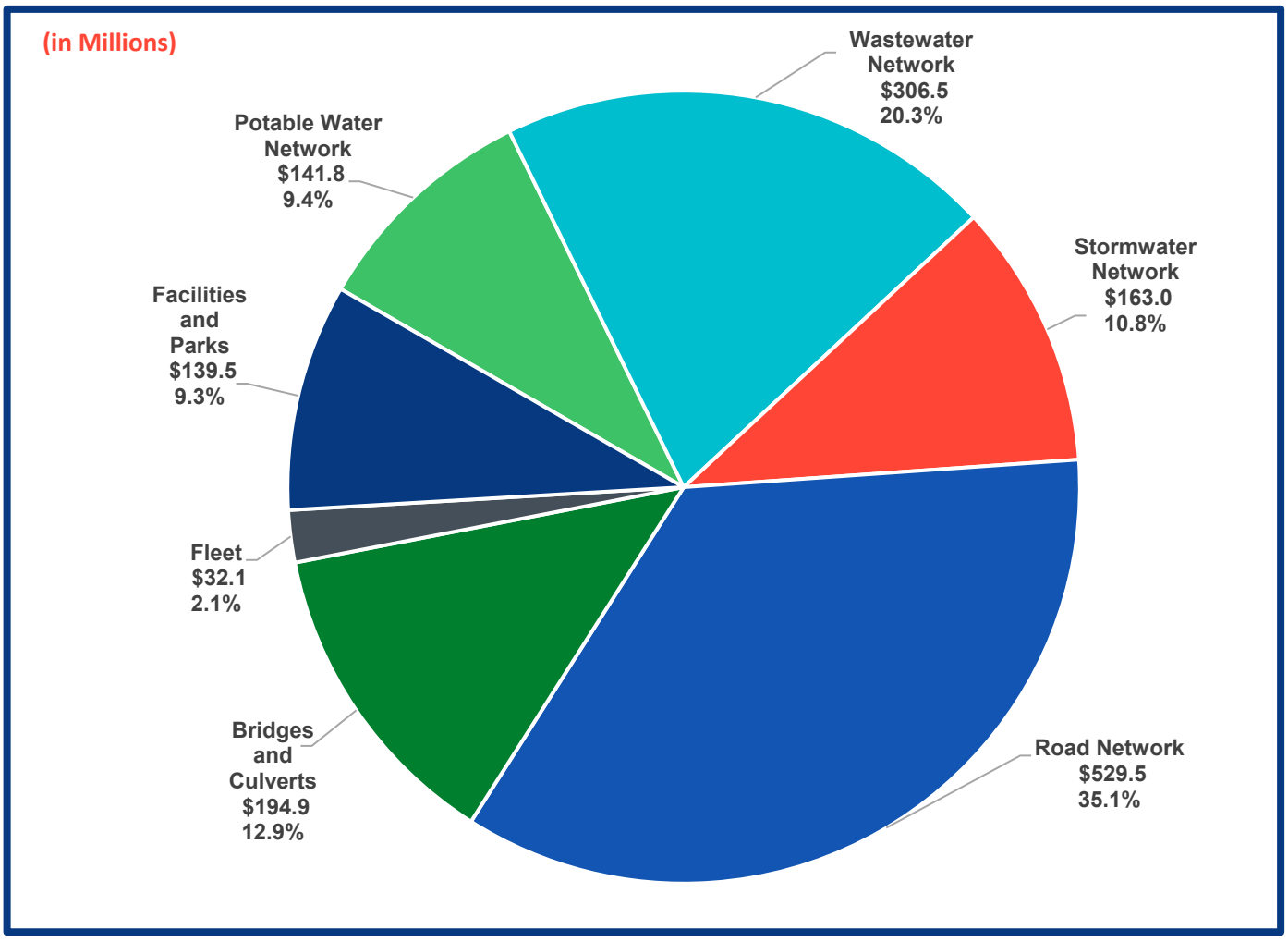


FIGURE 14. SUMMARY OF MIDDLESEX CENTRE'S INFRASTRUCTURE

ASSET CATEGORY	CONDITION (AVERAGE)	FUNDING SOURCE	REPLACEMENT COST (2024 $)
Potable Water Network	Fair	Water Rate	$ 141,832,073
Wastewater Network	Good	Wastewater Rate	$ 306,466,011
Stormwater Network	Good	Stormwater Rate	$ 163,041,500
Road Network	Good	Tax Funded	$ 529,509,060
Bridges and Culverts	Good	Tax Funded	$ 194,863,274
Fleet	Fair	Tax Funded	$ 32,085,637
Facilities and Parks	Fair	Tax Funded	$ 139,523,777
TOTAL	**GOOD**		**$ 1,507,321,332**

Rate Funded Asset Replacement Value

$ 611.3 M

2024 Dollars

Tax Funded Asset Replacement Value

$ 896.0 M

2024 Dollars

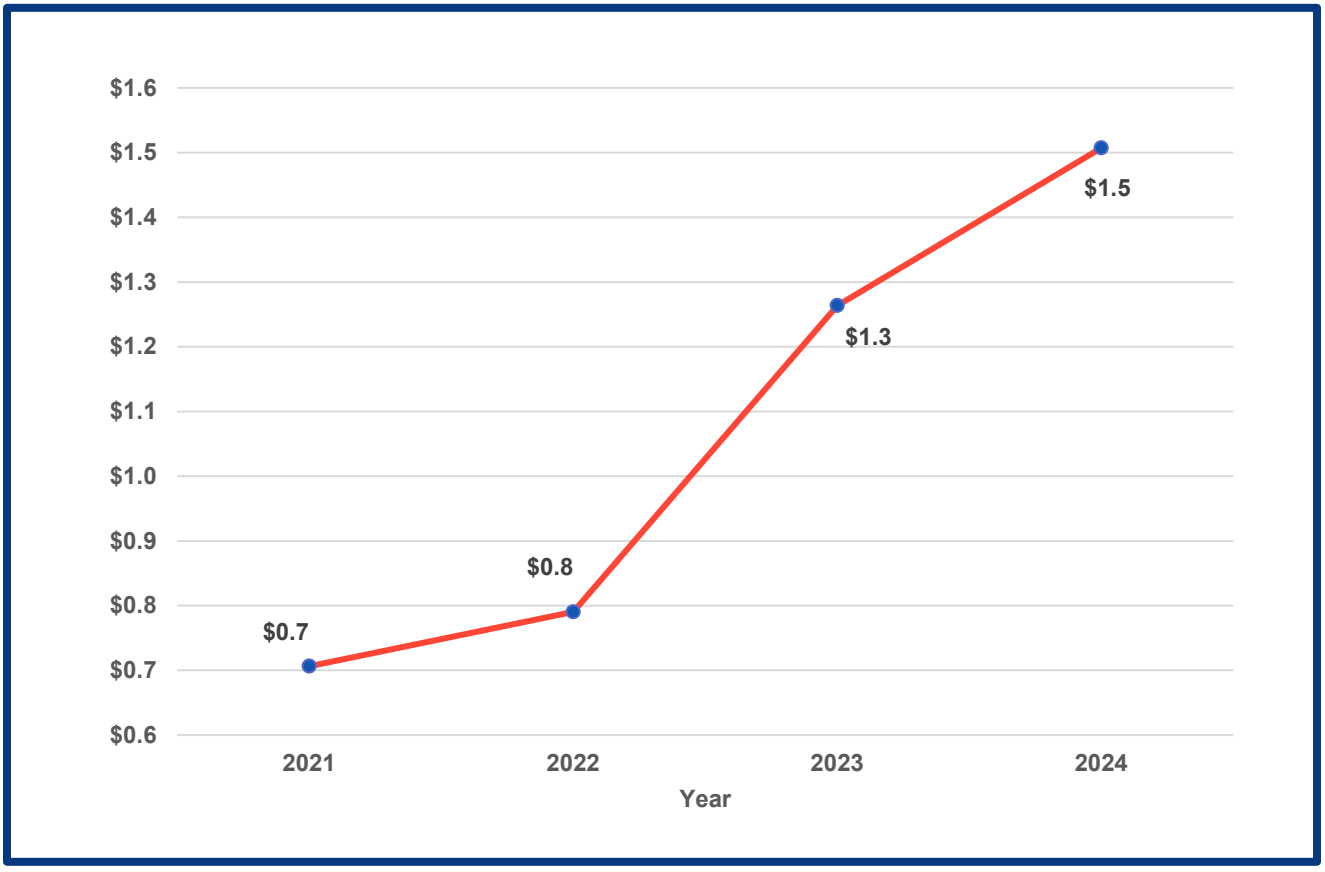
Figure 15 shows a notable upward trend in Middlesex Centre's total asset portfolio replacement costs, which increased from approximately **$706.0 million in 2021** to over **$1.5 billion in 2024**. While this rise may appear dramatic, it is not solely due to asset growth or inflation. Instead, it reflects the Municipality's focused efforts to enhance data governance, asset tracking, and valuation practices.

Through improved inventory management, more accurate condition assessments, and the adoption of modern asset management systems, Middlesex Centre has gained a clearer and more precise understanding of the full scope and value of its infrastructure.

The current Asset Management Plan covers the majority of the Municipality's infrastructure assets, as outlined in its broader asset framework. In keeping with Middlesex Centre's commitment to continuous improvement, the plan is being progressively expanded as more detailed and reliable data becomes available. For example, culverts under three metres in length, which are currently excluded, are scheduled for inclusion in the 2026 reporting period. Likewise, developments that have been constructed but not yet assumed by the Municipality, particularly those outside the scope of the Development Charges (DC) Study, will be incorporated once the necessary data is obtained.

These ongoing enhancements in data quality and asset tracking have enabled the Municipality to more accurately reflect the true value of its infrastructure. As such, the rising replacement cost figures are not just financial indicators, they represent a more complete, transparent, and forward-looking understanding of Middlesex Centre's long-term infrastructure responsibilities.

FIGURE 15. MIDDLESEX CENTRE TOTAL ASSET PORTFOLIO REPLACEMENT COSTS (IN BILLION)



6.3 WHAT IS THE OVERALL CONDITION OF MIDDLESEX CENTRE'S INFRASTRUCTURE ASSETS?

The primary goal of Middlesex Centre, in terms of infrastructure condition, is to ensure assets are maintained at a suitable and cost-effective level of service over their lifecycle. This involves regularly assessing the physical condition of infrastructure to identify maintenance needs, prioritize investments, and plan for timely rehabilitation or replacement. By proactively managing asset conditions, Middlesex Centre can extend the useful life of infrastructure, reduce the risk of unexpected failures, and make informed decisions that balance performance, risk, and cost. Ultimately, the aim is to provide reliable services to the community while optimizing the use of public funds.

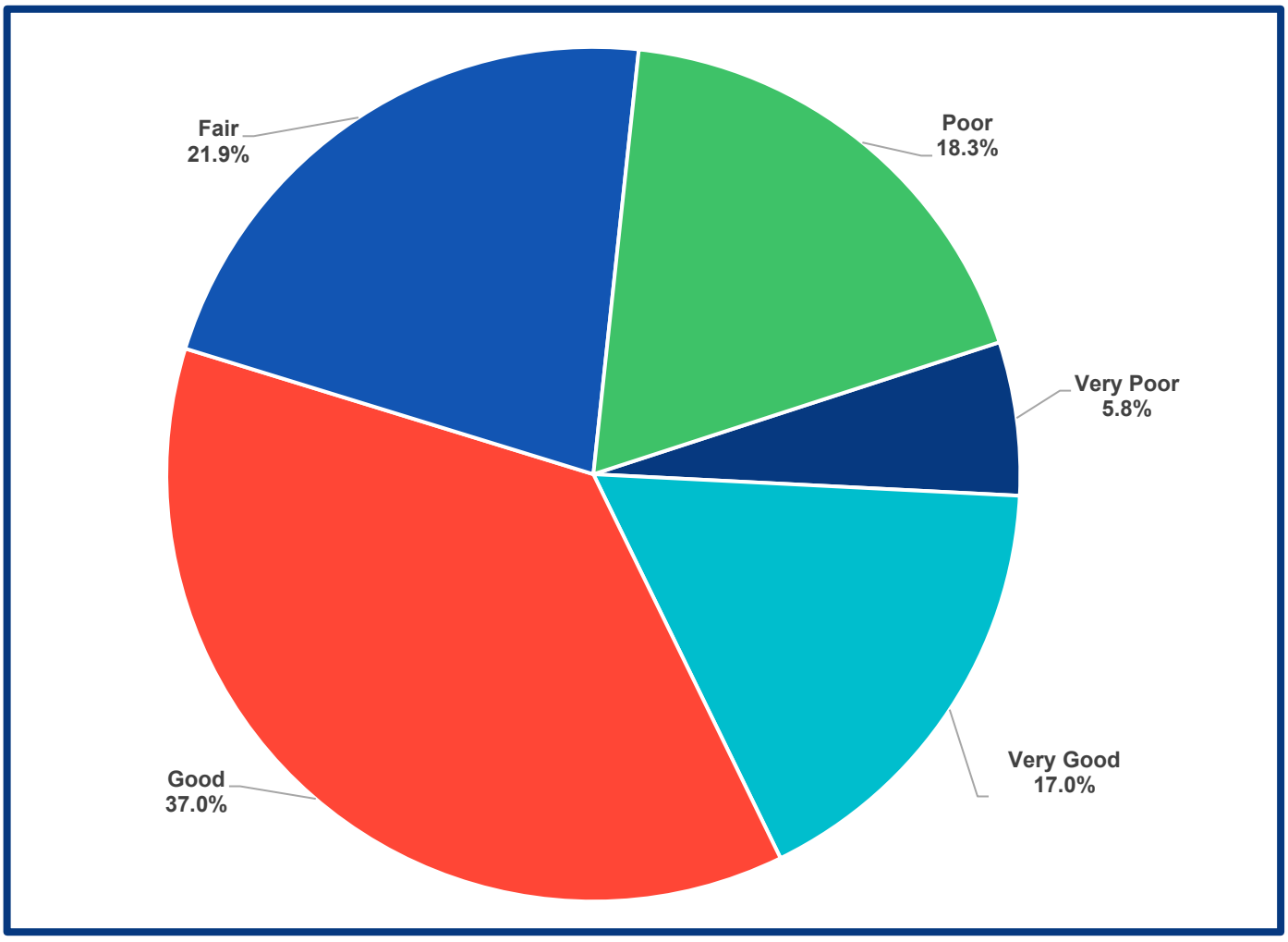
In Middlesex Centre, infrastructure condition ratings are assessed using a standardized grading system aligned with the **Canada Infrastructure Report Card Condition Grading System**. This approach evaluates municipal assets based on their age, expected service life, and available condition assessment data. The resulting condition is expressed as the percentage of service life remaining and categorized into five condition levels. Assets rated as **Very Good** (80.0–100% of service life remaining) are typically new or recently rehabilitated and require only routine maintenance. **Good** assets (60.0–79.9%) are in acceptable condition and generally mid-life. **Fair** condition (40.0–59.9%) indicates early signs of deterioration, though no immediate action is needed beyond regular upkeep. **Poor** assets (20.0–39.9%) are nearing the end of their service life and may require more detailed inspections. **Very Poor** assets (less than 20.0%) are often beyond their useful life, show widespread deterioration, and may be unfit for continued service, requiring immediate attention. This grading system helps Middlesex Centre prioritize infrastructure investments, plan maintenance activities, and ensure long-term sustainability of its asset portfolio.

For more details, see Appendix B: Interpreting Condition Ratings.

Current Condition:

54.0% RATED *GOOD* OR *BETTER*

WHAT IS THE BREAKDOWN OF THE CONDITION RATINGS?



6.4 LIFECYCLE MANAGEMENT STRATEGIES

A lifecycle management strategy is a coordinated set of activities designed to balance cost, risk, and performance in the delivery of municipal services. Its primary goal is to ensure that service levels are consistently met throughout the life of each asset. As illustrated in **Figure 16**, Middlesex Centre organizes these activities into seven key categories:

FIGURE 16. CATEGORIES OF LIFECYCLE MANAGEMENT STRATEGIES

ACTIVITY	DESCRIPTION
Reduce reliance on major infrastructure	This approach emphasizes innovative, cost-effective strategies for delivering services and meeting community needs without defaulting to large-scale infrastructure expansion. By focusing on smarter planning, demand management, and operational improvements, Middlesex Centre can extend the life of existing assets and reduce the need for new construction.
Operate, inspect and maintain	Adopting proactive, long-term approach to managing assets in a way that maximizes their performance, safety, and lifespan, while minimizing costs and disruptions over time.
Rehabilitate	Restore an asset to a good or functional condition without fully replacing it. Rehabilitation is more substantial than routine maintenance but less extensive than complete reconstruction. It is a cost-effective way to extend the useful life of infrastructure or equipment.
Expand	Increase the capacity, functionality, or reach of an existing asset or system in response to growing demand or changing community needs. Unlike maintenance or rehabilitation, which focus on preserving or restoring current performance, expansion adds new capabilities or space to accommodate future use.
Upgrade	Enhance or modernize an existing asset to improve its performance, efficiency, safety, or compliance with current standards, without fully replacing it. Upgrades are typically driven by technological advancements, regulatory changes, or evolving user needs.
Replace	Fully remove and rebuild or install a new asset when the existing one has reached the end of its useful life, is no longer safe or efficient, or cannot be cost-effectively repaired or upgraded.
Retire	Permanently remove an asset from service when it is no longer needed, cost-effective, safe, or relevant. Unlike replacement, retirement does not involve building a new version of the asset, it simply marks the end of its lifecycle.

For the Municipality of Middlesex Centre, this strategy supports informed, forward-thinking decisions that ensure long-term value and sustainability. The process is guided by key questions that help determine the most appropriate course of action:

1. **Can the need for new assets be reduced or avoided?**

   Consider whether demand can be managed through operational efficiencies, shared services, or alternative delivery models before committing to new infrastructure.

2. **How can lifecycle costs be minimized?**

   Evaluate opportunities to reduce total costs, not just initial capital, by optimizing operations, maintenance, energy use, and end-of-life disposal.

3. **Is it possible to safely defer renewal?**

   Assess whether targeted maintenance or rehabilitation can extend the asset's useful life and delay major capital investments.

4. **Should the asset be rehabilitated or replaced?**

   Analyze the asset's condition, performance, and long-term value to determine whether restoring it or replacing it entirely is the more cost-effective and sustainable option.

When evaluating all available options, the goal of an optimal lifecycle strategy is **to deliver a defined level of service at the lowest total cost and with manageable risk** over the entire lifespan of an asset.

Cost considerations are especially important, as lifecycle strategies are **key drivers of Middlesex Centre's annual operating budget and 10-year capital plan**. Strategic decisions made today directly influence long-term financial sustainability and service reliability.

Detailed lifecycle strategies for each asset category are outlined in the corresponding sections of this plan.

6.5 CONTINUOUS IMPROVEMENT PLAN

Asset management is a dynamic and evolving discipline, requiring ongoing efforts to refine and enhance practices over time. As infrastructure ages, technologies advance, and community expectations shift, Middlesex Centre must continuously adapt to ensure assets are managed effectively and sustainably. Continuous improvement plays a vital role in this process by helping to enhance service delivery, reduce long-term costs, manage risks proactively, and align asset management practices with broader organizational goals.

Recognizing this need, Middlesex Centre is committed to advancing its asset management maturity through a structured and forward-looking approach. **Figure 17** outlines specific actions planned for the next 5 years, aimed at strengthening asset management capabilities across the organization. These initiatives are designed to build internal capacity, improve data quality, adopt best practices, and ensure that asset management remains a responsive and value-driven process. These efforts will enable Middlesex Centre to continuously refine its asset management practices, addressing current needs while proactively preparing for future challenges.

FIGURE 17. MIDDLESEX CENTRE: 5-YEAR CONTINUOUS IMPROVEMENT PRIORITIES

AREA AND ACTION	TARGET COMPLETION YEAR	WORK STARTED
Corporate Asset Management		
Continue with annual corporate asset management progress reporting.	2025	Yes
Develop and implement a comprehensive risk management framework.	2028	No
Continue educate staff and promote asset management throughout the Municipality.	2026	Yes
Improve lifecycle cost and replacement value estimation and forecasting capability.	2026	Yes
Continue advancing the automation of work order tracking to improve efficiency and data accuracy.	2026	Yes

AREA AND ACTION	TARGET COMPLETION YEAR	WORK STARTED
Support succession planning within asset management to ensure continuity of knowledge, skills, and leadership across key roles.	None	Yes
Promote cross-functional collaboration in asset management to improve coordination, data sharing, and strategic decision-making across departments.	None	Yes
Review emergency preparedness measures to enhance responsiveness to extreme weather events and climate-related disruptions.	2028	No
Revise design standards to incorporate sustainability principles, promoting environmentally responsible and resilient infrastructure development.	2028	No
Integrate green infrastructure assets into the Citywide asset management system.	2026	No
Potable Water Network		
Collaborate with the County GIS team to enhance and update data analytic capabilities.	2027	Yes
Integrate third-party condition assessments into the asset management process.	2026	No
Wastewater Network		
Collaborate with the County GIS team to enhance and update data analytic capabilities.	2027	Yes
Continue field-based physical inventories to fully incorporate wastewater facility asset components into Citywide[4].	2027	Yes
Integrate third-party condition assessment into the asset management process.	2026	No

[4] **Citywide** is a system developed by PSD Citywide, a comprehensive Enterprise Asset Management **(EAM)** and Computerized Maintenance Management Software **(CMMS)** platform tailored specifically for municipalities and public sector organization.

AREA AND ACTION	TARGET COMPLETION YEAR	WORK STARTED
Stormwater Network		
Collaborate with the County GIS team to enhance and update data analytic capabilities.	2027	Yes
Integrate third-party condition assessment into the asset management process.	2028	No
Incorporate OGS inventory into Citywide for comprehensive inventory tracking.	2025	No
Road Network		
Collaborate with the County GIS team to enhance and update data analytic capabilities.	2027	Yes
Develop a standardized procedure to integrate patrol program data into the work order management system.	2026	No
Encourage staff to use the Citywide platform for recording and managing routine maintenance activities, including pothole repairs and other roadside operations.	2026	No
Bridges and Culverts		
Collaborate with the County GIS team to enhance and update data analytic capabilities.	2027	Yes
Develop a standardized procedure to integrate patrol program data into the work order management system.	2026	No
Encourage staff to use the Citywide platform for recording and managing routine maintenance activities.	2026	No
Incorporate non-structural culverts into Citywide for comprehensive inventory tracking.	2025	No

AREA AND ACTION	TARGET COMPLETION YEAR	WORK STARTED
Fleet		
Implement the Fleet Replacement Guidelines to ensure consistent and strategic decision-making across the Municipality.	2026	Yes
Facilities and Parks		
Continue field-based physical inventories to fully incorporate facilities and parks into the asset database	2026	Yes
Integrate third-party condition assessment into the asset management process.	2028	No
Encourage staff to use the Citywide platform for recording and managing routine maintenance activities.	2026	Yes

6.6 A STRATEGIC NEXT STEP: ESTABLISHING A STRUCTURED CONDITION ASSESSMENT PROGRAM

As Middlesex Centre continues to mature in its asset management practices, the next critical step is to establish a structured, third-party condition assessment program. This initiative will ensure that asset decisions are based on accurate, objective, and current data, moving beyond reliance on age-based or assessments which can misrepresent actual asset conditions.

A formal condition assessment program will:

1. Improve the Accuracy of Asset Condition Ratings

Age based assessments assumes that older assets are in worse condition, which can lead to overestimating deterioration or missing early signs of failure. A structured condition assessment program:

- Uses objective, field-based inspections (e.g., visual, mechanical, or technological methods like CCTV or thermography)
- Captures actual wear, damage, or performance issues
- Enables more granular and defensible condition ratings, which are essential for prioritizing investments and extending asset life

This is especially important for buried infrastructure and complex facility systems, where visual cues are limited and misleading.

2. Support Risk-Based Capital Planning and Lifecycle Optimization

By providing accurate, field-verified data on the actual condition of assets, the Municipality can move beyond reactive or age-based assumptions and instead make proactive, evidence-based decisions. This enables Middlesex Centre to identify which assets are most at risk of failure and prioritize them for maintenance, rehabilitation, or replacement. It also allows for better interventions, ensuring that assets are neither replaced too early (wasting resources) nor too late (increasing risk and cost). Ultimately, this approach helps extend asset life, reduce long-term costs, and ensure that capital investments are aligned with service level expectations, risk tolerance, and community needs.

3. Reduce the Likelihood of Unexpected Failure and Service Disruptions

Unexpected asset failure can have serious consequences for municipal operations, public safety and community trust. When asset fails without warning, whether it's a burst watermain, or a malfunctioning HVAC system, it often results in emergency repairs that are significantly more expensive than planned interventions. These failures can also lead to service outages, traffic disruptions, environmental damage, and even liability risks.

A structured condition assessment program helps mitigate these risks by identifying early signs of deterioration or failure that may not be visible through routine inspections or age-based assumptions. For example, a CCTV inspection or a storm sewer may reveal cracks or root intrusions long before a collapse occurs. Similarly, a third-party structural review of a community centre may uncover roof or foundation issues that can be addressed proactively.

By detecting problems early, the Municipality can schedule repairs during optimal weather and budget cycles, avoid emergency procurement, and maintain uninterrupted service delivery. This proactive approach not only protects residents and businesses from inconvenience and hazard but also preserves the Municipality's reputation for reliability and stewardship.

4. Strengthening Environmental Stewardship

Condition assessments are not only a tool for infrastructure management, but they are also a key enabler of environmental sustainability. By accurately identifying which assets require intervention and when, Middlesex Centre can avoid unnecessary replacements and reduce the environmental footprint of its capital works.

For example, in municipal facilities, targeted upgraded to aging HVAC systems, lighting, or building envelopes, identified through energy audits or mechanical inspections, can significantly improve energy efficiency and reduce greenhouse gas emissions. Rather than replacing entire systems prematurely, condition assessments allow the Municipality to focus on components that deliver the greatest environmental and operational benefits.

Similarly, for buried infrastructure such as water and wastewater pipes, technologies like CCTV and acoustic testing can detect localized issues such as cracks, leaks, or root intrusion. This enables trenchless rehabilitation methods (e.g., cured-in-place pipe lining) that extend asset life with minimal excavation, reducing construction waste, fuel use, and disruption to natural and built environments.

Condition assessments also support climate adaptation by identifying infrastructure vulnerable to extreme weather events, such as undersized storm sewers or deteriorating facility roofs, allowing the Municipality to prioritize upgrades that enhance resilience to flooding, heatwaves, and freeze-thaw cycles.

By incorporating an environmental lens into condition assessments, Middlesex Centre ensures that asset management decisions align with its broader goals of sustainability and responsible resource use, ultimately contributing to a healthier, more resilient community.

7 POPULATION GROWTH AND ECONOMIC ACTIVITY

7.1 PROJECTIONS AND ASSUMPTIONS

Between 2025 and 2034, the Municipality of Middlesex Centre anticipates significant growth in both population and economic activity. The **population is projected to increase** from approximately 20,477 in mid-2024 to 27,250 by mid-2034, representing a net gain of **6,770 residents**[5]. This growth is expected to be supported by the construction of 2,527 new housing units, with an average occupancy rate of 2.976 persons per unit. The housing mix is projected to consist predominantly of single and semi-detached homes (84.0%), followed by multiples such as townhouses (9.0%), and apartments (7.0%). Institutional population is also expected to grow by 328 individuals during this period. However, a decline in population within existing housing units, estimated at 1,076 people, is anticipated due to demographic shifts such as aging and changing household sizes.

On the economic front, **non-residential development is forecasted to expand by 148,800 square metres of gross floor area (GFA)** over the same ten-year period. This growth is distributed across various sectors, with 24.0% attributed to primary industries (e.g., agriculture), 55.0% to industrial uses, 10.0% to commercial or population-related services, and 11.0% to institutional developments. These projections are based on employee density assumptions of 325 square metres per employee for primary industries, 121 for industrial, 47 for commercial, and 65 for institutional sectors. The majority of this non-residential growth is expected to occur in Delaware, which will account for 66.0% of the total GFA increase, followed by other areas (26.0%), Kilworth and Komoka (4.0%), Ilderton (3.0%), and Arva (1.0%). These assumptions form the foundation for planning infrastructure and calculating development charges to accommodate the anticipated growth.

[5] Watson & Associates Economists Ltd. Development Charges Background Study: Municipality of Middlesex Centre. 2024. Municipality of Middlesex Centre, https://middlesexcentre.ca.

7.2 ASSET MANAGEMENT IMPLICATIONS

The anticipated growth in population and economic activity in Middlesex Centre from 2025 to 2034 presents both opportunities and challenges for municipal asset management. To sustain current levels of service, the Municipality must proactively plan and implement lifecycle strategies that ensure infrastructure remains safe, reliable, and cost-effective over time.

1. Increased Demand in Infrastructure

- *Roads and Transportation:* With more residents and businesses, there will be greater use of roads, requiring upgrades, expansions, and maintenance. The Development Charges (DC) study includes significant investments in road reconstructions, widenings, and new facilities.
- *Water and Wastewater Services:* The forecasted residential and non-residential growth will increase demand for water supply and wastewater treatment. The study outlines major capital projects, including treatment plant expansions and new pumping stations.

2. Pressure on Community Services

- *Parks and Recreation:* A growing population, especially families, will require more recreational spaces. The study includes plans for new parks, trails, and recreation facilities like the Ilderton Recreation Facility.
- *Fire Protection:* More housing and commercial buildings necessitate expanded fire services. The plan includes new fire vehicles and additional facility space.

3. Need for Strategic Planning and Capital Investment

- The Municipality must ensure that capital investments align with growth patterns. This includes not only building new infrastructure but also upgrading existing assets to meet higher service levels.

4. Geographic Distribution of Growth

- Areas like Kilworth, Komoka, and Delaware are expected to see the most growth, which means services in these areas will need to be prioritized.
- Non-residential growth is heavily concentrated in Delaware, influencing where industrial and commercial infrastructure investments are needed.

7.3 LIFECYCLE ACTIVITY OPTIONS

In light of the projected population and economic growth in Middlesex Centre between 2025 and 2034, it is essential to proactively manage municipal assets to sustain current service levels. The following lifecycle activity options, either newly implemented or continued, can help ensure that infrastructure and services remain reliable, efficient, and responsive to community needs across key sectors.

1. Road & Transportation

- *Routine Maintenance:* Regular pothole repairs, line painting, and shoulder grading.
- *Preventive Treatments:* Surface sealing and crack filling to extend pavement life
- *Rehabilitation:* Milling and resurfacing of aging roads before full reconstruction is needed.
- *Bridge and Culvert Inspections:* Scheduled assessments to prioritize repairs or replacements.
- *Tree Management:* Pruning, planting, and disease control to sustain urban canopy.

2. Water & Wastewater

- *Pipe Flushing and Cleaning:* Maintain flow efficiency and prevent blockages
- *Valve and Hydrant Servicing:* Ensure operational readiness for emergencies.
- *SCADA Systems Upgrades:* Improve monitoring and control of water/wastewater systems.
- *Condition Assessments:* Use CCTV and acoustic tools to evaluate underground infrastructure.

3. Parks & Recreation

- *Playground Equipment Renewal:* Replace aging structures to meet safety standards.
- *Trail Resurfacing:* Maintain accessibility and reduce trip hazards.
- *Facility Upgrades:* HVAC, lighting, and accessibility improvements in community centres.

4. Fire Protection

- *Vehicle Lifecycle Replacement:* Replace apparatus based on age, mileage, and condition.
- *Facility Maintenance:* Roof, HVAC, and structural repairs to fire halls.
- *Equipment Testing & Replacement:* Regular testing of hoses, SCBA units, and turnout gear.

5. Asset & Financial Management

- *Lifecycle Costing Models:* Forecast long-term costs and optimize investment timing.
- *Asset Condition Ratings:* Use data to prioritize rehabilitation over replacement.
- *Reserve Fund Contributions:* Allocate funds annually for future lifecycle needs.
- *Integrated Capital Planning:* Align lifecycle activities with growth-related capital projects.

8 FINANCIAL PLANNING

8.1 FISCAL STRATEGY AND BACKGROUND REPORT

The Municipality of Middlesex Centre has adopted a comprehensive fiscal strategy to guide its financial planning and decision-making over the next decade. This strategy is based on two key documents prepared by BMA Management Consulting Inc.: the Tax Long-Range Financial Plan (2025–2034) and the Water, Wastewater, and Stormwater Long-Range Financial Plan (2025–2034). Both plans were formally received and approved by Council on June 4, 2025. Together, they provide a strategic framework for managing the Municipality's financial resources, ensuring long-term sustainability, and supporting infrastructure renewal and service delivery.

The primary objectives of the fiscal strategy are to ensure financial sustainability and flexibility, address infrastructure funding gaps through phased investment, maintain affordability for both taxpayers and ratepayers, align financial planning with asset management and growth, and enhance transparency and accountability in financial reporting. These goals are pursued through a series of coordinated strategies across both tax-supported and rate-supported services.

For **tax-supported services**, the LRFP strategy includes an annual tax levy increase of 8.4% (reduced to 7.4% after accounting for 1.0% projected assessment growth)**. Only a portion of that increase (4.2%) is allocated to capital investments**. The full 8.4% increase applies across the entire tax-supported organization. A key element is the realignment of reserve funds into three categories: the AMP Capital Reserve Fund for asset replacement, the Growth-Related Capital Reserve Fund for projects not covered by development changes, and the Efficiencies/Improvements Reserve Fund for discretionary initiatives. Debt will be used strategically, primarily for growth-related projects, while keeping debt levels below 17.0% of own-source revenues, well under the 25.0% provincial cap. The strategy aligns with the 2025 Asset Management Plan and the 2024 Development Charges Background Study.

For **water, wastewater, and stormwater services**, the strategy emphasizes full cost recovery while maintaining affordability.

Annual rate increases are set as follows:

- Water: 6.1% (including 2.1% projected from growth)
- Wastewater: 8.7% (including 2.1% projected from growth)
- Stormwater: 10.0% (including 3.5% projected from growth)

These increases support long-term financial sustainability. While they contribute to funding capital needs, **only a portion of the revenue is allocated specifically to asset management**.

The Municipality aims to maintain reserve funds between 5.0% and 10.0% of asset replacement costs, in accordance with the Reserve and Reserve Fund Policy (CPS-02-2024). Debt will be used strategically to fund the benefit-to-existing portion of growth-related projects, while ensuring debt levels remain below 17.0% of own-source revenues, as outlined in the Issuance of Debt Policy (CPD-15-2017).

One of the key focuses of the debt strategy for growth-related assets is recognizing that debt is a common and widely accepted method for financing growth-related capital projects. Strategic use of debt in this manner helps spread the cost of new infrastructure across both current and future users, thereby promoting intergenerational equity.

8.2 IMPLICATION OF LONG-RANGE FINANCIAL PLANS ON ASSET MANAGEMENT

The two Long-Range Financial Plans adopted by the Municipality of Middlesex Centre play a pivotal role in advancing the Municipality's asset management strategy. Designed to close the infrastructure funding gap and promote long-term financial sustainability, these plans significantly increase annual contributions to capital reserve funds, critical for the timely replacement and rehabilitation of municipal assets.

Under the Tax Long-Range Financial Plan, the required annual tax levy increase of 8.4% includes an average allocation of **$1.5 million per year** dedicated to asset management. This funding supports the AMP Capital Reserve Fund, which finances the renewal of tax-supported infrastructure like roads, buildings, and municipal vehicles. These contributions are essential for addressing the Municipality's projected $14.8 million annual infrastructure gap and for advancing long-term asset management objectives.

The Water, Wastewater, and Stormwater Long-Range Financial Plan outlines rate increases that enhance asset management funding across utility services. A 6.1% increase in water rates generates an average of **$148,520** annually for the Water Capital Reserve Fund. Similarly, wastewater and stormwater rate increases of 8.7% and 10.0% generate average annual contribution of **$171,632** and **$145,221,** respectively, to their corresponding capital reserve funds. These increases play a vital role in strengthening long-term infrastructure sustainability.

Figure 18 presents a consolidated view of how the Middlesex Centre's approved rate and levy increases directly support its asset management objectives.

FIGURE 18. SUMMARY OF IMPACTS OF THE PROPOSED INCREASES ON ASSET MANAGEMENT

FUNDING SOURCE	RATE/LEVY INCREASE	AVERAGE ANNUAL AM RESERVE INCREASE	PURPOSE
Tax Levy	8.4%	$ 1,487,214	Roads, bridges, buildings, parks, vehicles and equipment
Water Rates	6.1%	$ 148,520	Waster infrastructure
Wastewater Rates	8.7%	$ 171,632	Wastewater infrastructure
Stormwater Rates	10.0%	$ 145,221	Stormwater infrastructure

8.3 LIFECYCLE INVESTMENT

This section presents the projected lifecycle funding requirements for the Municipality of Middlesex Centre over the ten-year period from 2025 to 2034 using BMA's Long-Range Financial Plans.

In accordance with the Municipality's established budgeting framework, lifecycle funding is categorized into capital and operating requirements. Capital expenditures are further delineated into:

- Renewal needs, which address the replacement or rehabilitation of existing assets; and
- Growth-related needs, which support infrastructure expansion to accommodate future development.

The total estimated funding required to meet these **lifecycle needs over the ten-year** forecast period is as follows:

- Tax-supported assets: $314.8 million
- Water rate-supported assets: $45.4 million
- Wastewater rate-supported assets: $65.6 million
- Stormwater rate-supported assets: $26.3 million

The comparison between projected lifecycle funding requirements and available funding over the ten-year period from 2025 to 2034 highlights **a significant funding gap** across all service areas.

The **total projected funding** available during this period is as follows:

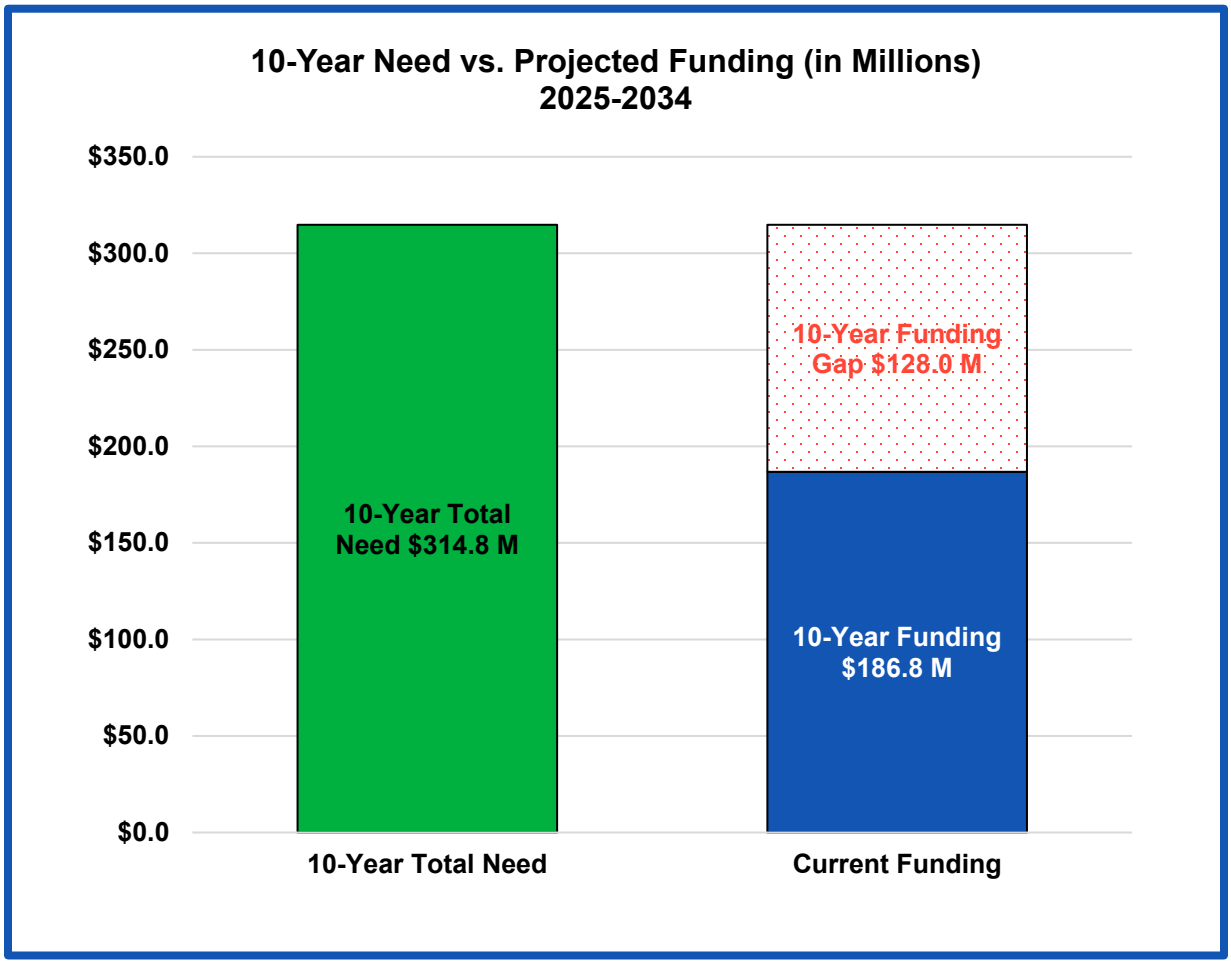
- Tax-supported assets: $186.8 million
- Water rate-supported assets: $35.2 million
- Wastewater rate-supported assets: $34.8 million
- Stormwater rate-supported assets: $12.0 million

When compared to the corresponding lifecycle funding requirements, it is evident that **proposed funding levels remain insufficient** to fully meet the Municipality's long-term asset management needs. The total projected funding is based on the assumption that the proposed annual rate increases are implemented consistently over time. **Each time these increases are not achieved, the funding gap widens**, further delaying necessary investments and compounding long-term financial pressures

This funding shortfall underscores the importance of strategic financial planning, prioritization of critical infrastructure investments, and exploration of alternative funding sources to ensure the continued delivery of reliable and sustainable municipal services.

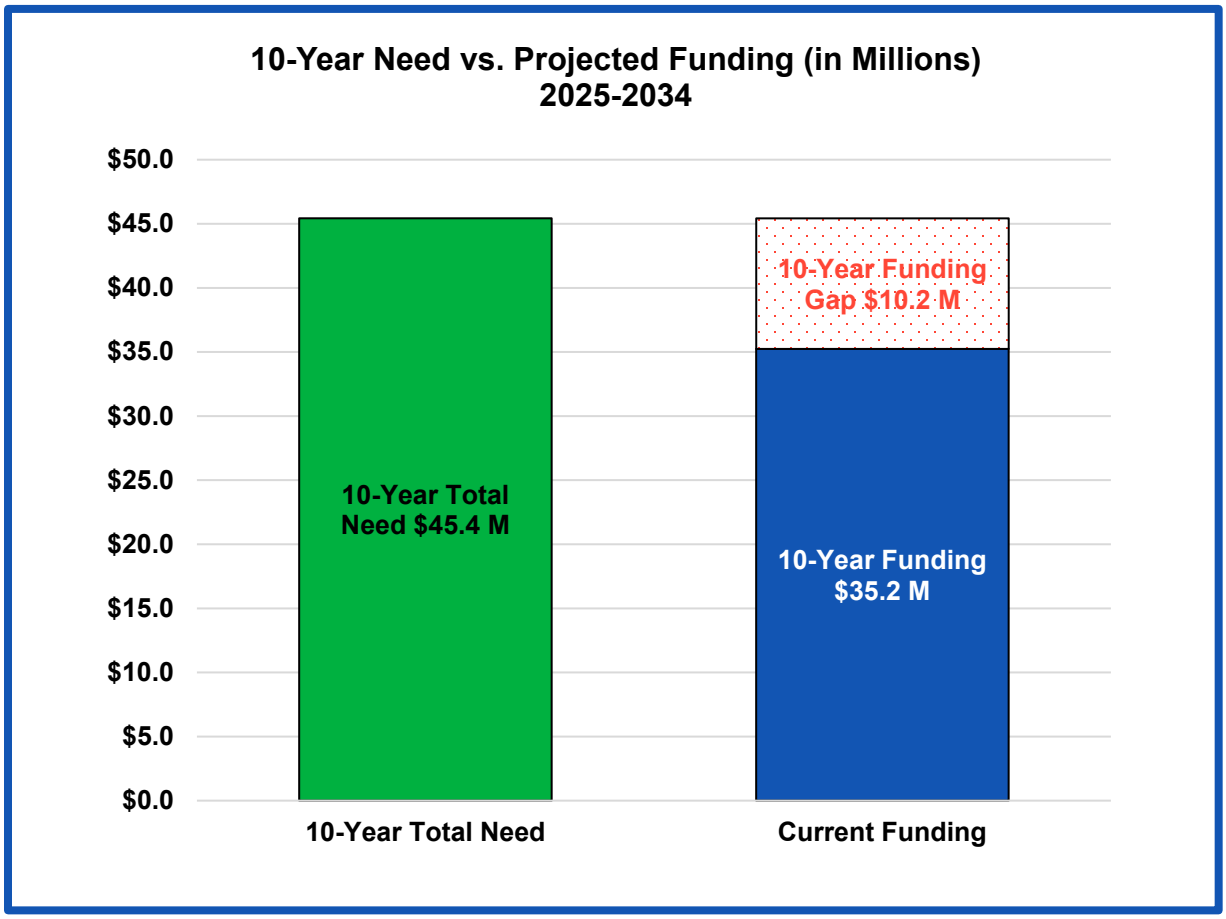
TAX SUPPORTED

INCLUDED WITHIN THE 8.4% TAX LEVY INCREASE IS AN ANNUAL AVERAGE ALLOCATION OF $1.5 MILLION DEDICATED TO ASSET MANAGEMENT



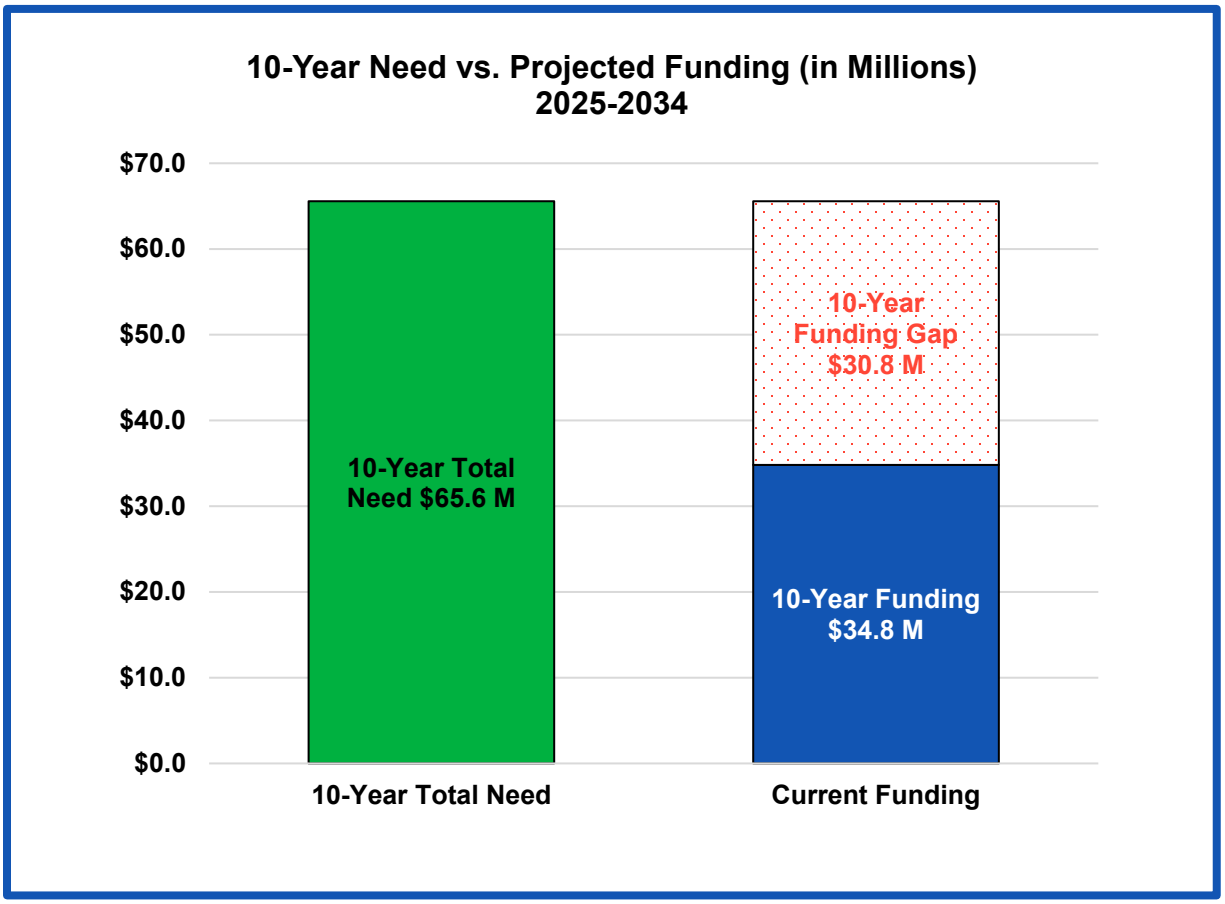
WATER RATE SUPPORTED

INCLUDED WITHIN THE 6.1% RATE INCREASE IS AN ANNUAL AVERAGE ALLOCATION OF $148,520 DEDICATED TO ASSET MANAGEMENT



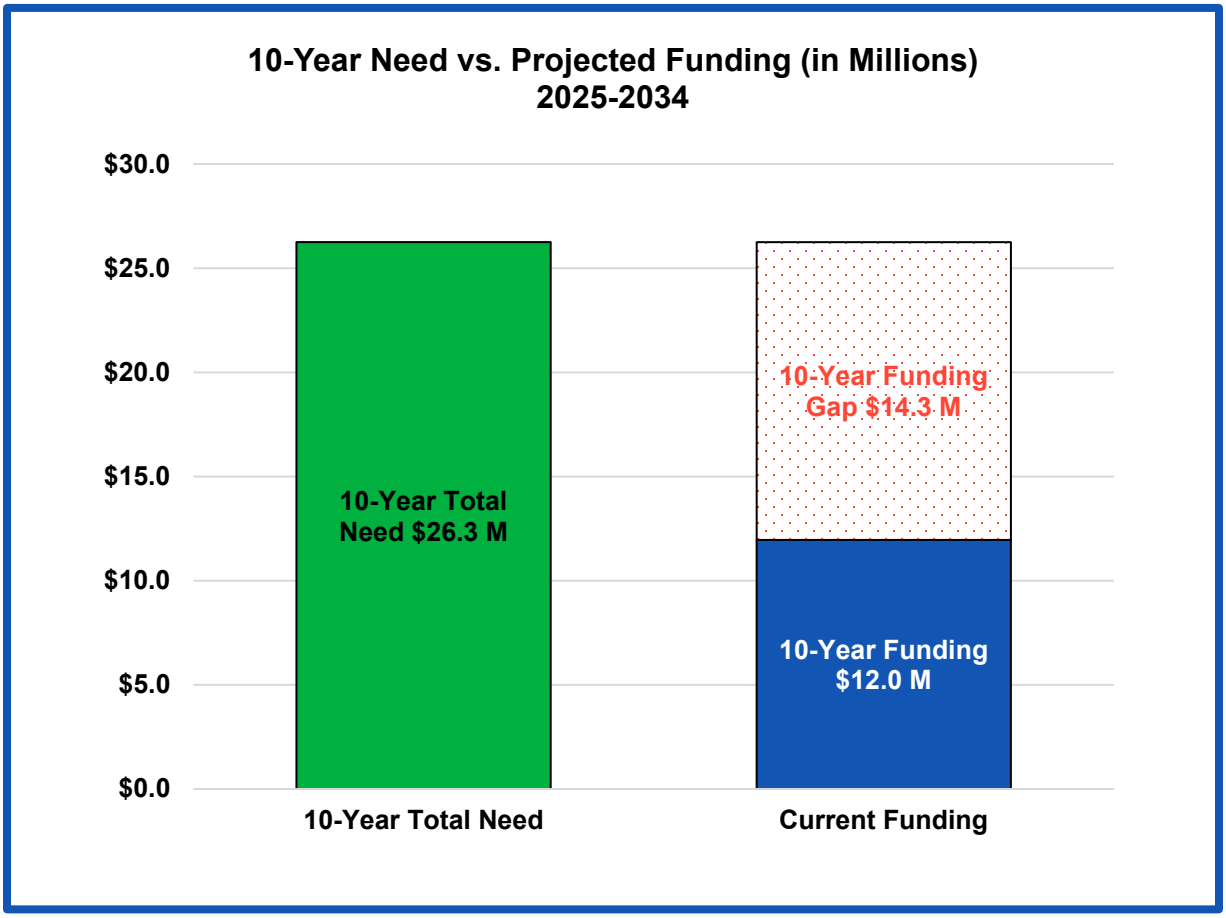
WASTEWATER RATE SUPPORTED

INCLUDED WITHIN THE 8.7% RATE INCREASE IS AN ANNUAL AVERAGE ALLOCATION OF $171,632 DEDICATED TO ASSET MANAGEMENT



STORMWATER RATE SUPPORTED

INCLUDED WITHIN THE 10.0% RATE INCREASE IS AN ANNUAL AVERAGE ALLOCATION OF $145,221 DEDICATED TO ASSET MANAGEMENT



8.4 INFRASTRUCTURE DEFICIT AND ITS LONG-TERM IMPLICATIONS

An **infrastructure deficit** represents the cumulative shortfall between the funding required to maintain, renew, and expand municipal assets and the actual financial resources allocated for these purposes. This gap arises when annual investments are consistently below the levels needed to sustain infrastructure at its intended level of service.

Over time, this underinvestment leads to the **deterioration of assets**, increased maintenance costs, and a higher risk of service disruptions or failures. It also elevates health and safety risks for both the public and municipal staff, as aging infrastructure becomes more prone to critical failures and non-compliance with regulatory standards. The longer the deficit persists, the more costly and complex it becomes to restore infrastructure to acceptable standards.

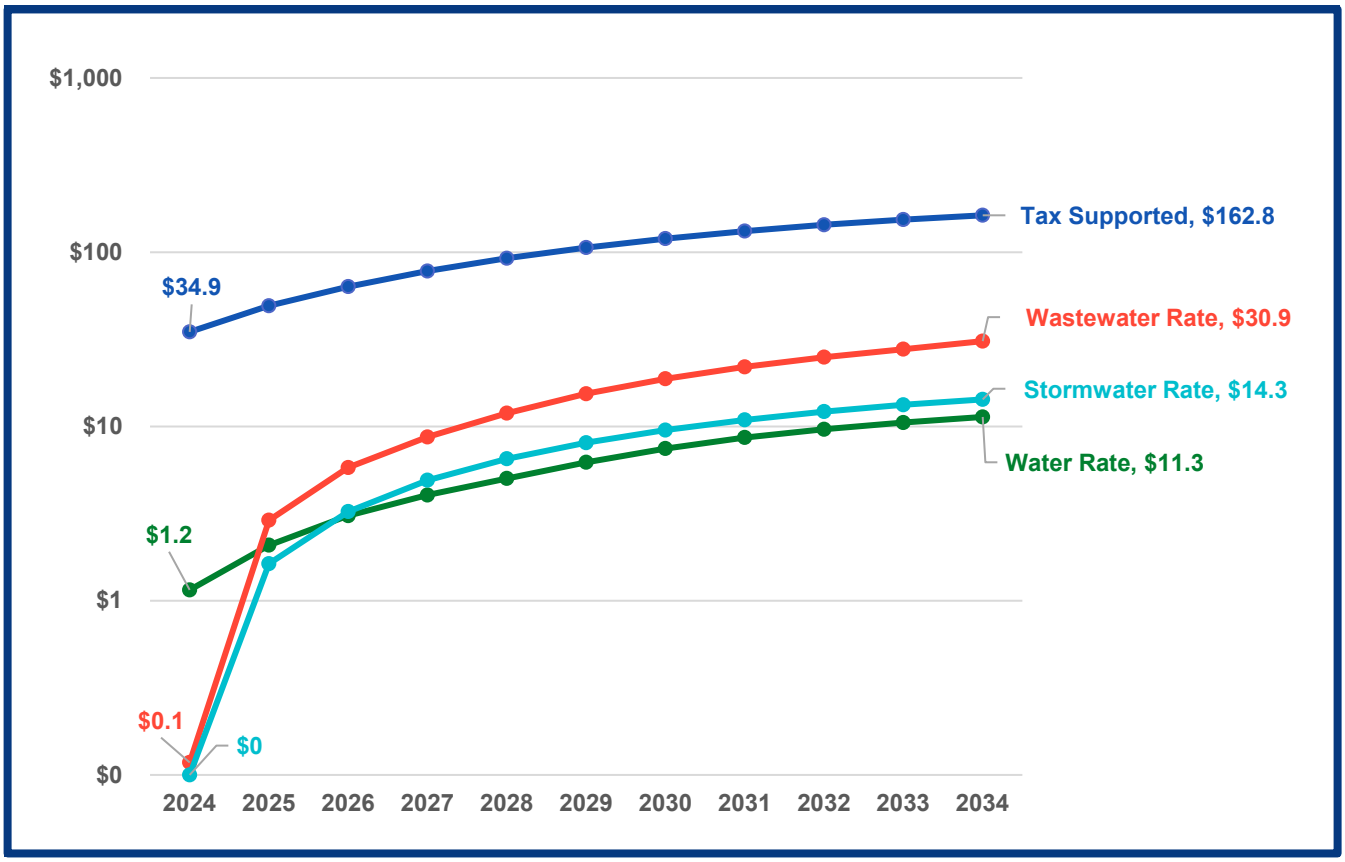
In Middlesex Centre, the infrastructure deficit is **projected to grow significantly** across all service areas over the next decade:

- Tax-supported assets: from $34.9 million in 2025 to $**162.8 million by 2034**
- Water rate-supported assets: from $1.2 million in 2025 to **$11.3 million by 2034**
- Wastewater rate-supported assets: from $117,868 in 2025 to $**30.9 million by 2034**
- Stormwater rate-supported assets: from no deficit in 2025 to **$14.3 million by 2034**

These records underscore the urgent need for sustainable funding strategies and proactive asset management planning. Without corrective action, the growing deficit will place increasing pressure on municipal budgets, reduce service reliability, and ultimately result in higher long-term costs for residents and businesses.

Figure 19 illustrates the projected escalation of Middlesex Centre's infrastructure deficit over the 2025-2034 period, highlighting anticipated funding shortfalls in millions of dollars.

FIGURE 19. ESCALATING INFRASTRUCTURE DEFICIT
PROJECTED OVER THE 2025–2034 PERIOD (IN MILLIONS)



8.5 FISCAL STRATEGY CONSIDERATIONS

Middlesex Centre manages its asset lifecycle needs primarily through its annual budget process, which serves as a foundational tool for aligning service delivery with available resources. However, due to the size and complexity of the Municipality's asset portfolio – and the evolving requirements set by senior government directives – additional funding sources are often necessary to close the gap between infrastructure needs and available financial capacity.

To help bridge this funding gap, the Municipality actively explores external funding opportunities, including grants, user fees, subsidies, and developer contributions. These sources play a critical role in supplementing municipal revenues and supporting long-term infrastructure sustainability.

Figure 20 presents a range of fiscal strategies currently used or under consideration by Middlesex Centre to manage asset management lifecycle costs. These strategies aim to promote sustainable investment, reduce the infrastructure deficit, and ensure reliable service delivery over time.

FIGURE 20. FISCAL STRATEGIES FOR MANAGING ASSET MANAGEMENT LIFECYCLE COSTS

FISCAL STRATEGIES	DESCRIPTION
Contribution to asset management reserve	Allocating additional reserve funds annually to dedicated asset management reserve funds ensures that resources are available for future capital renewal and replacement needs. This proactive approach helps smooth out large, infrequent expenditures and reduces reliance on debt or emergency funding.
Development Charges	Development charges are collected from new developments in accordance with the *Development Charges Act, 1997*. These charges are primarily used to fund the capital costs of growth-related infrastructure, ensuring that new development pays its fair share of the infrastructure required to support it. In certain cases, development charges may also be applied to rehabilitation or renewal work that is directly attributable to the increased demands of new development, even if the work is not directly part of new construction. For example, when a new development places additional strain on existing infrastructure – such as roads, watermains, or sewer systems – upgrades to those systems may be required to support the increased load. In such cases, the cost of these upgrades can be partially funded through development charges levied on the new development, ensuring that growth-related impacts are appropriately addressed.
Operating Costs	Through its operating forecast models, the Municipality incorporates anticipated future operating costs into its long-term financial planning. To support the delivery of proposed levels of service that are not yet fully funded, the Municipality should consider phasing in additional operating budget capacity. This proactive approach will help ensure that service expectations can be met sustainably as new infrastructure is added or existing services are expanded.

FISCAL STRATEGIES	DESCRIPTION
Engage with Provincial and Federal Governments to Secure Infrastructure Funding Support	Like many municipalities, Middlesex Centre is experiencing increasing fiscal pressure due to the ongoing introduction of provincial policy measures, including the *More Homes Built Faster Act, 2022*. These legislative changes can significantly impact municipal planning and infrastructure funding capacity. In response, Middlesex Centre can continue to advocate for increased grants and subsidies from both provincial and federal governments to help finance critical infrastructure projects. These funding partnerships are particularly vital for large-scale or growth-related investments that exceed the Municipality's local financial capacity.
Advocate for Expanded Municipal Revenue-Generating Authorities from Senior Governments	Middlesex Centre can strengthen its financial sustainability by advocating for expanded revenue-generating authorities through engagement with provincial and federal governments. Enhancing these authorities would provide greater financial flexibility and reduce the Municipality's reliance on property taxes as the primary source of funding for infrastructure and services. Potential Revenue Tools for Consideration: • A dedicated share of Harmonized Sales Tax (HST) revenue (e.g., 1.0%) • Surcharges on speed camera violations • Capital investment surcharges Tools Currently Restricted Under the *Municipal Act*: Some revenue mechanisms available to the City of Toronto under the *City of Toronto Act* are currently not permitted for other municipalities under the *Municipal Act*. Expanding access to these tools for other municipalities would require legislative changes and approval from the provincial government. • Land Transfer Tax • Vehicle Registration Tax • Alcoholic Beverage Tax • Tobacco Tax • Advertising Tax • Amusement Tax

FISCAL STRATEGIES	DESCRIPTION
Improve Data Quality, Including Structured Condition Assessments	Ongoing investment in high-quality asset data and structured condition assessments is a cornerstone of effective asset management. By maintaining accurate, current information on asset inventory, condition, performance, and lifecycle costs, Middlesex Centre will be better equipped to make informed, evidence-based decisions. This enables the Municipality to strategically allocate limited resources, prioritize critical infrastructure needs, and plan proactively for long-term sustainability.
Adjust Levels of Service	As part of the budget process, Middlesex Centre may consider modifying service levels to align with available resources. This could include extending asset replacement cycles, reducing service frequency, or narrowing service coverage. While this may impact user experience, they can be a necessary to ensure long-term financial sustainability and responsible stewardship of municipal assets.

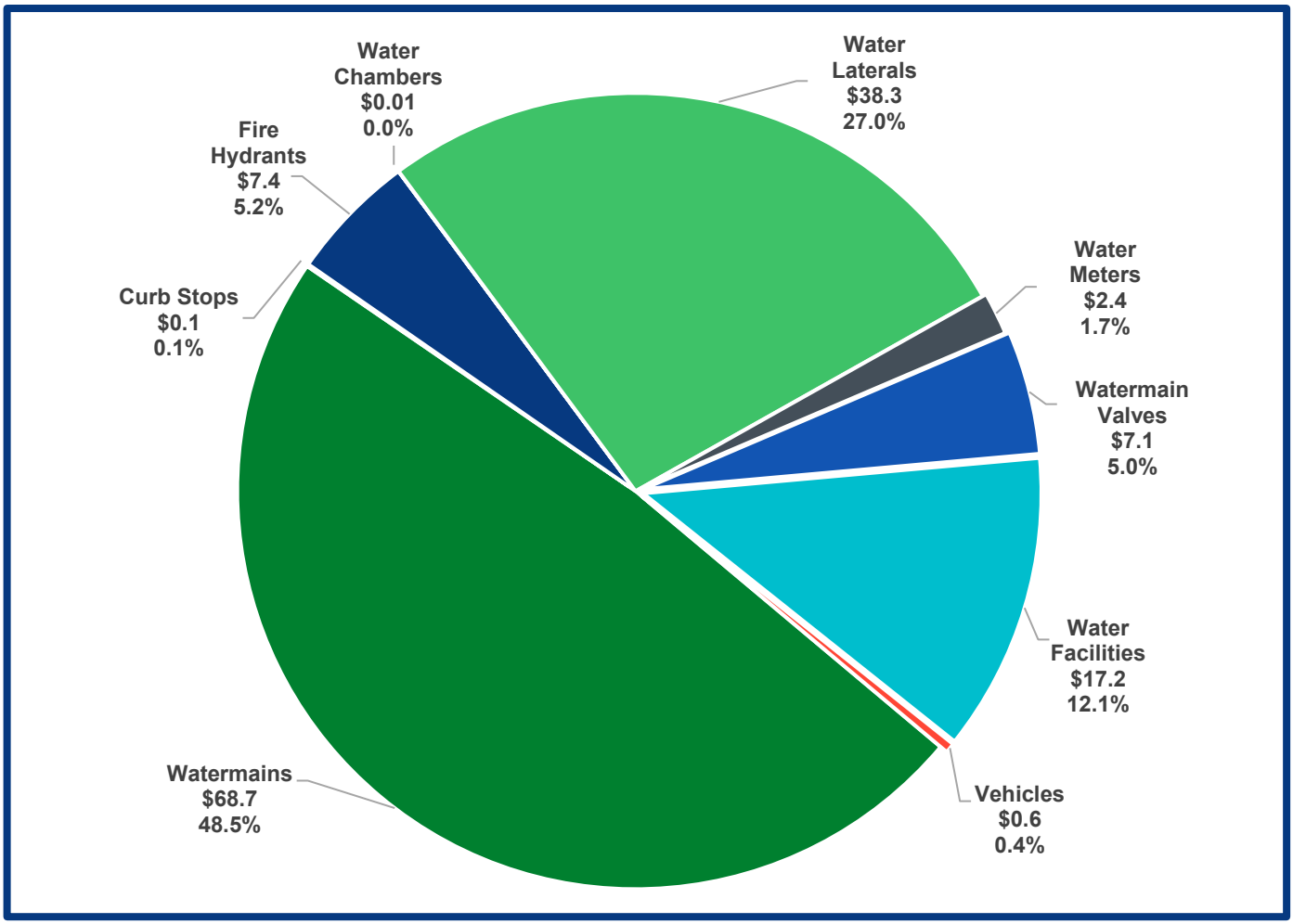
OVERVIEW OF INFRASTRUCTURE ASSET CATEGORIES

9 POTABLE WATER NETWORK

92.1 km of Watermains
234 Curb Stops
442 Fire Hydrants
12 Water Chambers
3,044 Water Laterals
4,596 Water Meters
942 Watermain Valves
9 Water Facilities
8 Vehicles

Total Asset Replacement Value
$ 141.8 M
2024 Dollars

FIGURE 21. ASSET ALLOCATION BY REPLACEMENT VALUE (IN MILLIONS)



9.1 WATER INFRASTRUCTURE

The Municipality of Middlesex Centre owns and operates three distinct drinking water systems: the Class II Middlesex Centre Distribution System and two small municipal residential systems, the Birr and Melrose Drinking Water Systems. The Class II system is subdivided into six subsystems and sources its water either directly from the Lake Huron Primary Water Supply System or through the City of London Distribution System, ensuring a stable and high-quality water supply. In contrast, the Birr and Melrose systems rely on groundwater wells as their primary source. Across all systems, Middlesex Centre maintains a robust and well-distributed water network that spans 92.1 kilometres of watermains, supported by 234 curb stops, 3,044 water laterals, and 942 watermain valves for efficient distribution and control. The network also includes 442 fire hydrants for emergency response, 12 water chambers, and 4,596 water meters to monitor usage and promote conservation. This infrastructure is anchored by 9 water facilities, which play a vital role in water treatment, storage, and delivery, ensuring safe and reliable access to clean water for all residents and businesses.

The following figures provide a detailed overview of the potable water infrastructure in Middlesex Centre. **Figure 22** illustrates the system by asset type, offering a clear breakdown of the various components that make up the water distribution network. **Figure 23** focuses on the Municipality's water facilities, showcasing the locations and functions of key infrastructure such as pumping stations, reservoirs, and treatment facilities. **Figure 24** presents the distribution of water assets by condition rating, helping to assess the current state of the infrastructure and identify areas that may require maintenance or reinvestment. Together, these figures support effective planning and management of the municipality's potable water system.

FIGURE 22. WATER INFRASTRUCTURE BY ASSET TYPE

ASSET TYPE	QTY	UNIT OF MEASURE	CONDITION[6] (AVERAGE) [7]	REPLACEMENT COST (2024 $)
Water Mains	92.1	Kilometre	Good	$ 68,720,358
Curb Stops	234	Number	Poor	$ 127,792
Fire Hydrants	442	Number	Poor	$ 7,372,710
Water Chambers	12	Number	Fair	$ 12,000
Water Laterals	3,044	Number	Poor	$ 38,278,413
Water Meters	4,596	Number	Good	$ 2,442,080
Watermain Valves	942	Number	Fair	$ 7,105,544
Water Facilities	9	Number	Fair	$ 17,202,676
Vehicles	8	Number	Poor	$ 570,500
TOTAL			**FAIR**	**$ 141,832,073**

[6] For detailed information on assessing conditions, please refer to Appendix B: Interpreting Condition Ratings.

[7] Condition is age-based and may overstate deterioration without a third-party assessment.

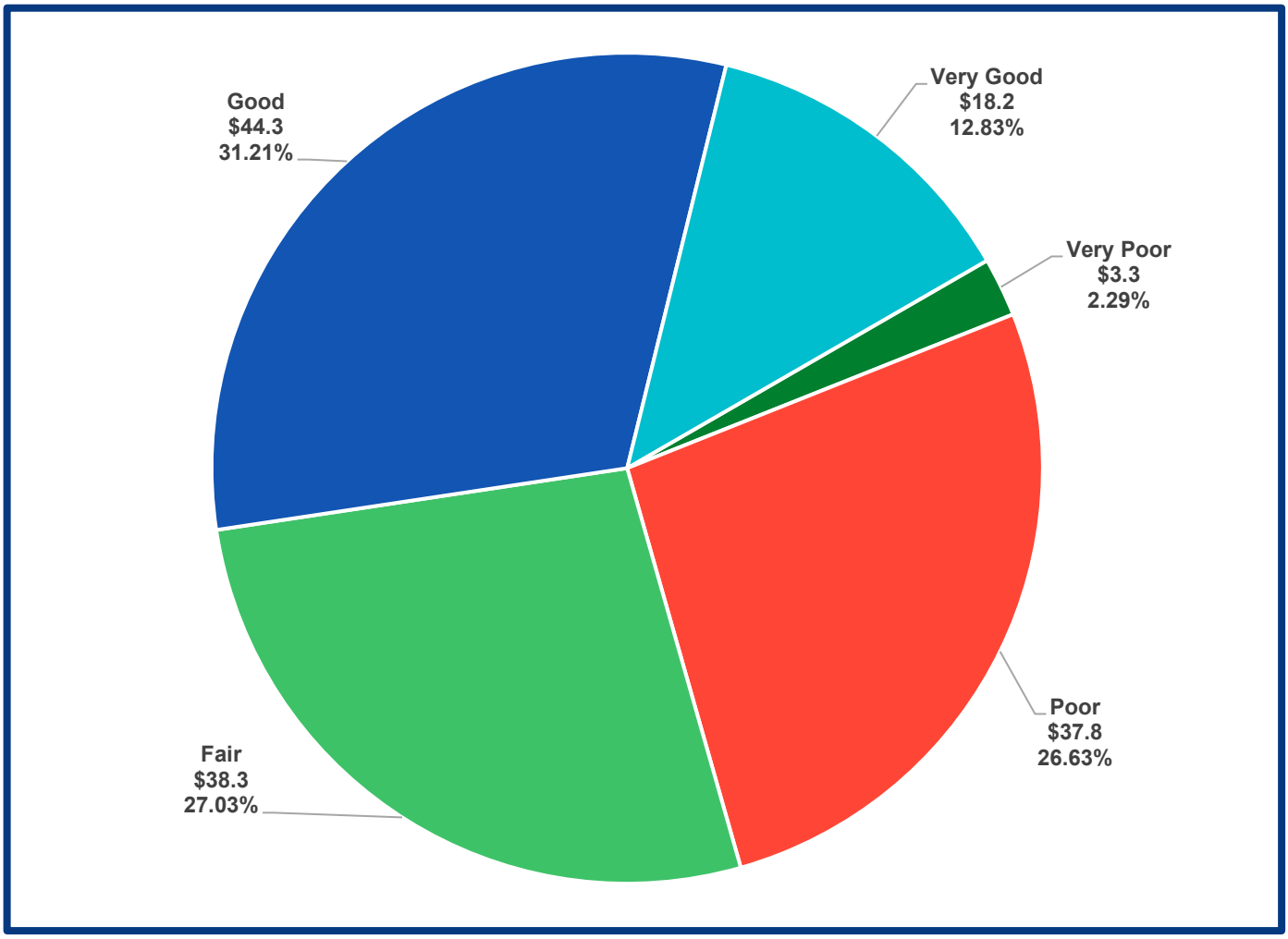
FIGURE 23. MIDDLESEX CENTRE WATER FACILITIES

WATER FACILITY NAME	FACILITY TYPE	CONDITION[8] [9]	REPLACEMENT COST (2024 $)
Arva Booster Pumping Station	Pump Station	Fair	$ 657,418
Ballymote Water Panel	Water Storage Facility	Fair	$ 359,215
Birr Water Treatment Plant	Water Treatment Facility	Fair	$ 602,137
Delaware Bypass Pumping Station and Standpipe	Pump Station	Very Good	$ 1,309,781
	Water Storage Facility	Good	$ 1,417,758
Denfield Booster Pumping Station & Rechlorination	Pump Station	Good	$ 513,485
Ilderton Booster Pumping Station, Reservoir and Elevated Storage	Water Storage Facility	Good	$ 1,454,500
	Pump Station	Good	
	Water Storage Facility	Good	$ 1,283,264
Komoka-Kilworth Booster Pumping Station & Rechlorination	Water Storage Facility	Good	$ 2,158,796
	Pump Station	Fair	$ 3,621,363
	Water Storage Facility	Good	$ 1,326,972
Komoka-Kilworth Intermediate Booster Pump Station	Pump Station	Fair	$ 685,284
Melrose Water Treatment Plant	Water Treatment Facility	Poor	$ 1,812,704
TOTAL		**GOOD**	**$ 17,202,676**

[8] For detailed information on assessing conditions, please refer to Appendix B: Interpreting Condition Ratings.

[9] Condition is age-based and may overstate deterioration without a third-party assessment.

FIGURE 24. CONDITION RATING[10] BY INDIVIDUAL WATER ASSET (IN MILLIONS)



[10] For detailed information on assessing conditions, please refer to Appendix B: Interpreting Condition Ratings.

9.2 LEVELS OF SERVICE

Levels of service for potable water systems in Ontario are governed by a comprehensive and rigorous regulatory framework designed to ensure the consistent delivery of safe, high-quality drinking water. At the core of this framework are the Safe Drinking Water Act, 2002 (SDWA) and the Drinking Water Quality Management Standard (DWQMS), which together establish the legal and operational requirements for municipal drinking water systems.

Our residents should expect…

- *Potable water that meets or exceeds all regulatory requirements.*
- *Aesthetically pleasing water quality.*
- *Efficient and reliable water treatment.*
- *Consistent and reliable water pressure and flow.*
- *Efficient delivery of water services.*
- *Structurally sound facilities in good repair.*
- *Water facilities that fully meet program service requirements.*
- *Water facilities that provide a safe and healthy environment for staff and the public.*

Under the SDWA, municipalities such as Middlesex Centre are required to obtain a Municipal Drinking Water License, which mandates compliance with several key components: a Drinking Water Works Permit, a Permit to Take Water, an accredited operational plan, and a financial plan. These elements ensure that water systems are not only technically sound but also financially sustainable.

The DWQMS, developed in collaboration with Ontario's water sector, requires municipalities to implement a Quality Management System (QMS) tailored to their specific water systems. This includes:

- Regular testing and monitoring for microbiological, chemical, and physical contaminants
- Risk assessments using a hazard analysis and critical control points (HACCP) approach
- Clearly defined roles and responsibilities for system operators and management
- Documented procedures for operations, maintenance, and emergency response
- Continuous improvement practices, including internal audits and management reviews

Additionally, the DWQMS mandates that all water system operators be properly trained and licensed, ensuring that the treatment and distribution of drinking water are managed by qualified professionals. Systems must also maintain adequate water pressure and supply to meet the needs of residents, businesses, and emergency services.

Through strict adherence to these standards, Middlesex Centre ensures that its potable water system remains robust, reliable, and protective of public health, while also meeting the expectations of regulatory authorities and the community it serves.

Figure 25 summarizes Middlesex Centre's performance against established LOS targets for potable water network from 2020 to 2024. These metrics are used to monitor customer service, asset condition and reliability, safety, and financial sustainability.

FIGURE 25. CURRENT LEVELS OF SERVICE: POTABLE WATER NETWORK[11]

TYPE	METRICS	TARGET	LOS PERFORMANCE (ACTUAL)				
			2020	2021	2022	2023	2024
Customer Service	% of Proactive Maintenance	Greater than 60.0% of Total Number of Work Orders	-	-	-	-	76.0%
	% of Reactive Maintenance	Less than 40.0% of Total Number of Work Orders	-	-	-	-	24.0%
Condition and Reliability	Average Asset Condition	Good	Good	Good	Fair	Fair	Fair
	Assets with "Poor" to "Very Poor" Condition as a percentage of Total Replacement Cost	Less than 10.0%	-	-	-	30.0%	28.9%

[11] Appendix C.1: Levels of Service – Ontario Regulation 588/17 presents the Levels of Service related to O.Reg. 588/17.

TYPE	METRICS	TARGET	LOS PERFORMANCE (ACTUAL)				
			2020	2021	2022	2023	2024
Safety	# of water boil advisories	0	0	1	0	1	0
Financial Sustainability	Reinvestment Ratio %[12]	At least 1.7%	5.6%	4.1%	1.1%	0.4%	0.4%

9.3 RISK AND RISK MITIGATION

Middlesex Centre faces a variety of risks that can compromise the reliability, safety, and long-term sustainability of its potable water systems, ultimately impacting the levels of service provided to the community. These risks arise from factors such as aging infrastructure, environmental and climate-related pressures, operational and staffing challenges, and evolving regulatory requirements. Proactively identifying and addressing these risks is essential to maintaining resilient and high-performing water systems.

The following table (**Figure 26**) outlines the key risks associated with potable water service delivery and the corresponding mitigation strategies that may be implemented to manage these risks effectively. By proactively identifying and addressing these challenges, Middlesex Centre can ensure the continued delivery of safe, reliable, and resilient drinking water services.

FIGURE 26. RISKS AND TREATMENT OPTIONS

RISKS	DESCRIPTION	MITIGATION STRATEGIES
Missing Condition Assessments on Buried Infrastructure	Reduced ability to forecast failures and prioritize investments	Implement a structured condition assessment program using CCTV inspections, modeling, and asset data integration

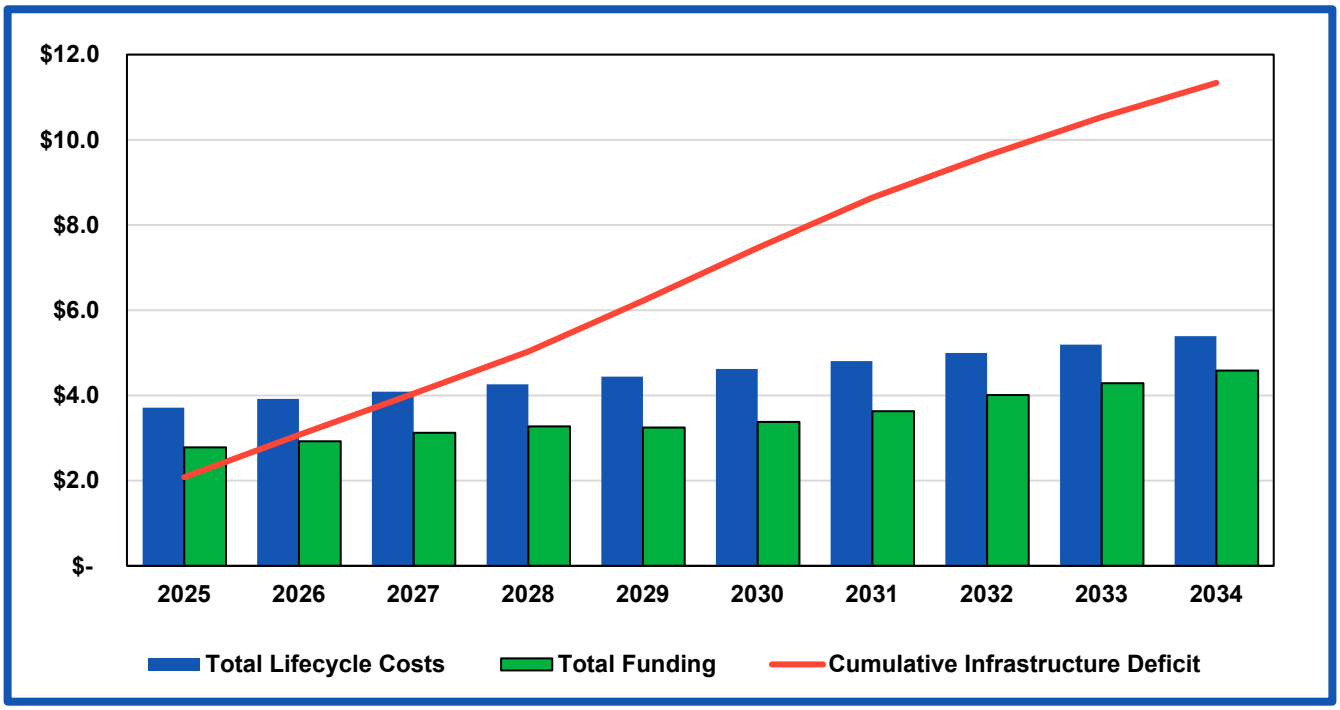
[12] The **reinvestment ratio**—defined as minimum annual investment as a percentage of total replacement cost—declined from 2020 to 2024 due to an increase in recorded assets, not a decrease in actual investment levels.

RISKS	DESCRIPTION	MITIGATION STRATEGIES
Water Quality Contamination	Contaminants entering the system form source water, treatment failure, or breaches.	• Regular water quality testing • Source water protection • Emergency response protocols
Infrastructure Deterioration	Aging infrastructure leading to leaks, breaks, or service interruptions	• Asset condition assessments • Preventative maintenance • Capital renewal planning
Insufficient Supply or Pressure	Inability to meet demand during peak user or emergencies	• Hydraulic modeling • Storage capacity planning • Pressure monitoring and backup systems
Operator Error or Staffing Shortages	Inadequate training or staffing affecting operations	• Operator certification and training • Succession planning • Standard operating procedures
Regulatory Non-Compliance	Failure to meet provincial standards and legal requirements	• Regular audits • Compliance tracking • Engagement with regulatory bodies.
Climate Change and Extreme Weather	Weather events impacting water quality and availability	• Climate-resilient infrastructure • Diversified water sources • Emergency preparedness planning
Cybersecurity and System Failures	Vulnerabilities in digital control systems (e.g., SCADA)	• Cybersecurity protocols • Redundant systems • Staff training on digital risk management

9.4 FINANCIAL FORECAST: POTABLE WATER NETWORK

10-Year Reinvestment	Forecasted Need	Projected Funding
In 2024 $	$ 45.4 M	$ 35.2 M

FIGURE 27. 2025–2034 CAPITAL PLANNING: FUNDING SHORTFALLS AND INFRASTRUCTURE NEEDS (IN MILLIONS)



Over the next decade, the potable water network will require a reinvestment of **$45.4 million**, while only **$35.2 million** is currently allocated for capital funding, resulting in a projected **shortfall of $10.2 million**. Consequently, the **infrastructure deficit** is expected to grow **to $11.3 million** over the same period. This funding gap highlights the urgent need to prioritize critical infrastructure upgrades and pursue alternative funding sources to ensure system reliability and regulatory compliance. The reinvestment strategy will be guided by a **risk-based asset management approach**, focusing on the most vulnerable components to minimize service disruptions and extend the lifespan of key assets.

The primary risk to this plan is the significant funding gap, which could lead to deferred maintenance and delayed upgrades, increasing the likelihood of infrastructure failures, water quality issues, and costly emergency repairs. Inflation and rising construction costs may further erode the proposed budget, compounding financial pressures. Additional risks include potential regulatory changes requiring unplanned investments, and environmental stressors such as extreme weather or droughts that could overwhelm system capacity. While the O&M[13] budget is currently sustainable, unexpected failures or labor shortages could drive up costs and reduce operational effectiveness.

To mitigate these risks, the plan includes prioritizing investments through risk-based asset management to address the most critical needs first. Securing alternative funding, such as federal or provincial grants, low-interest loans, or public-private partnerships, can help close the funding gap. Cost escalation can be managed through inflation-adjusted budgeting and phased project implementation. Enhancing operational efficiency along with workforce training will help control O&M expenses. Finally, regular reviews and updates based on performance data and regulatory changes will ensure the plan remains adaptive and resilient.

9.5 LIFECYCLE ACTIVITY PLAN

To ensure consistent service levels, Middlesex Centre must adopt a structured and proactive approach to managing its infrastructure throughout its lifecycle. The following Lifecycle Activity Plan (**Figure 28**) outlines the key phases and activities required to sustain current levels of service in a potable water network. It integrates planning, maintenance, monitoring, and renewal strategies to optimize asset performance, minimize service disruptions, and comply with regulatory standards.

It is important to note that this list is not exhaustive. Many other operational measures, such as routine inspections, daily monitoring, and minor maintenance tasks, are carried out regularly as part of standard operations. These ongoing activities play a crucial role in maintaining system integrity and ensuring uninterrupted service delivery.

Furthermore, most of the activities listed in this plan are already in effect, forming part of the system's current operational and maintenance framework. This plan serves to reinforce and formalize those efforts while identifying areas for continuous improvement.

[13] **Operations and Maintenance (O&M)** – refers to the ongoing activities required to ensure that assets continue to perform as intended throughout their useful life.

The following table provides a structured overview of the major lifecycle activities, categorized by phase, with specific tasks and their corresponding details.

FIGURE 28. LIFECYCLE MANAGEMENT – POTABLE WATER NETWORK

LIFECYCLE PHASE	ACTIVITY	SPECIFIC TASKS	PURPOSE
Planning and Asset Management	Asset Inventory	Maintain GIS-based registry of pipes, valves, hydrants, pumps, reservoirs	Establish a comprehensive asset database to support planning, maintenance, and investment decisions
	Condition Assessment	Use CCTV and acoustic sensors	Evaluate asset condition to prioritize repairs and replacements
	Risk Assessment	Identify critical asset-based failure likelihood and impact	Focus resources on high-risk assets to reduce service disruptions
	Service Level Targets	Define KPIs: pressure, flow rate, water quality, downtime	Set measurable performance standards to guide operations and planning
Preventative Maintenance	Pipe Flushing	Regular unidirectional flushing to remove sediment	Maintain flow capacity and prevent blockages
	Valve Exercising	Operate valves periodically to prevent seizing	Prevent seizing and ensure operational readiness
	Hydrant Maintenance	Annual inspection and testing	Ensure hydrants function properly for flushing and fire protection
	Tank Cleaning	Scheduled cleaning or storage tanks and reservoirs	Maintain water quality and reduce contamination risk

LIFECYCLE PHASE	ACTIVITY	SPECIFIC TASKS	PURPOSE
Predictive Maintenance	Leak Detection	Acoustic monitoring, pressure transient analysis satellite imaging	Detect leaks early to reduce water loss and prevent infrastructure damage
	Smart Monitoring	SCADA systems, IoT[14] sensors for real-time data	Enable real-time system monitoring and rapid response
	Trend Analysis	Analyze flow and pressure data to predict failures	Predict failures and optimize maintenance scheduling
Corrective Maintenance	Emergency Repairs	Rapid response to pipe bursts or contamination	Restore service quickly and protect public health
	Customer Complaints	Investigate low pressure, discoloration, etc.	Address service issues and maintain customer satisfaction
	Root Cause Analysis	Post-failure reviews to prevent recurrence	Prevent recurrence of failures through continuous improvement
Capital Renewal and Replacement	Pipe Replacement	Prioritize based on age, material, failure history	Replace aging infrastructure to maintain reliability
	Technology Upgrades	Replace outdated pump meters, control system	Improve efficiency, accuracy, and system performance
	Network Expansion	Plan for population growth and new development	Ensure infrastructure keeps pace with community needs

[14] **Internet of Things (IoT)** – a network of physical objects that are embedded with sensors, software and other technologies to connect and exchange data with other devises and systems over internet (e.g. smart homes – thermostats, lights and security system)

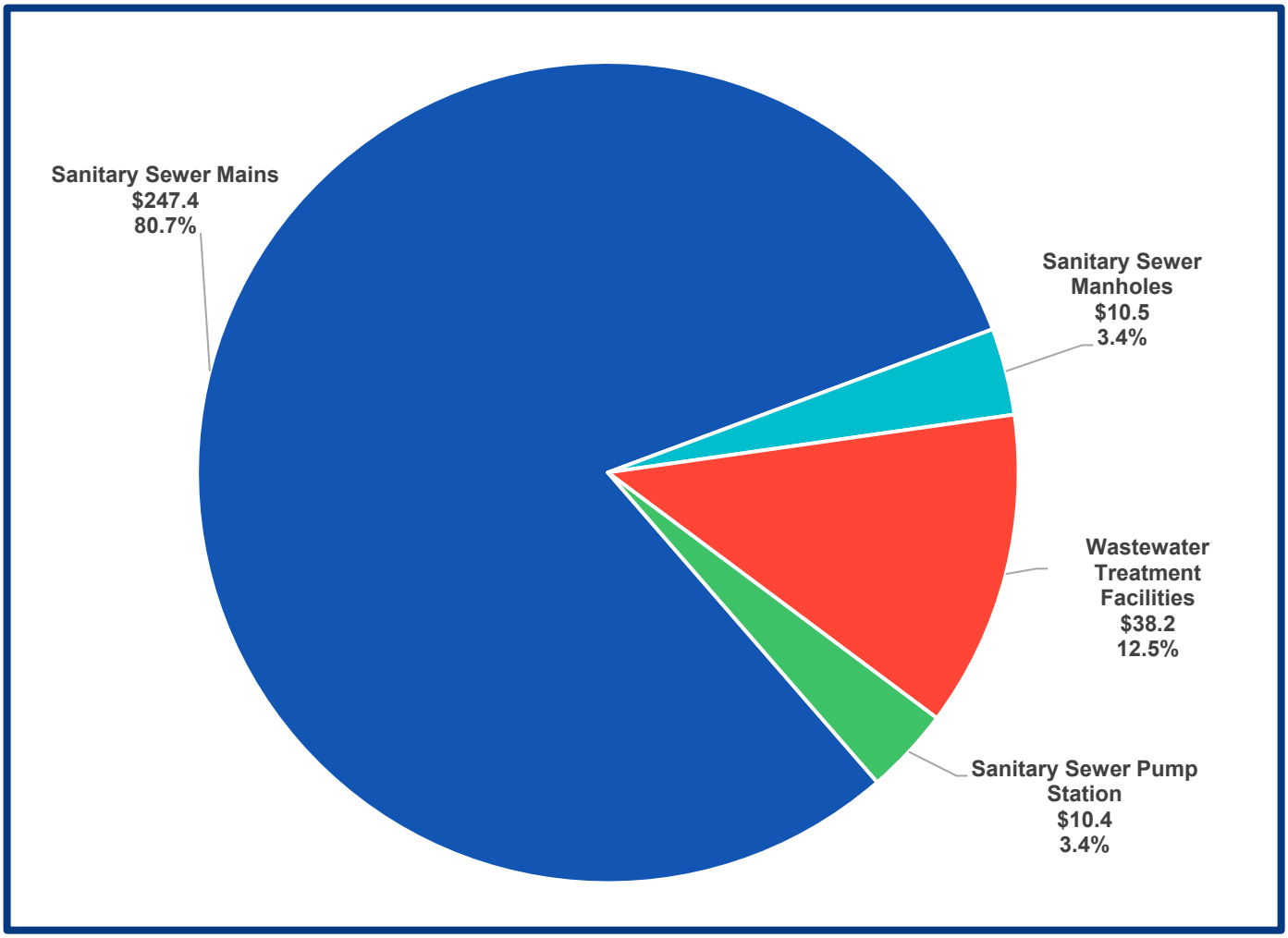
LIFECYCLE PHASE	ACTIVITY	SPECIFIC TASKS	PURPOSE
Water Quality Management	Sampling & Testing	Regular checks for chlorine residuals, turbidity, pathogens	Ensure treated water meets health and safety standards
	Backflow Prevention	Inspect and maintain backflow devices	Prevent contamination from reverse flows
	Cross-Connection Control	Enforce regulations to prevent contamination	Protect water quality by eliminating potential contamination sources
Regulatory Compliance & Reporting	Annual Reports	Submit water quality and performance reports	Demonstrate compliance and transparency
	Audit Readiness	Maintain documentation for inspections	Ensure preparedness for inspections and audits
	Public Communication	Notify residents about water quality and service changes	Keep the public informed and engaged
Training and Capacity Building	Staff Training	Ongoing training in asset management, safety, and emergency response	Build staff expertise and ensure safe, effective operations
	Knowledge Transfer	Document procedures and lessons learned	Preserve institutional knowledge and support succession planning
Budgeting and Funding	Lifecycle Costing	Estimate total cost of ownership	Support long-term financial planning and sustainability
	Funding Strategy	Secure grants, tariffs, or public-private partnerships	Ensure adequate resources for capital and operational needs

10 WASTEWATER NETWORK

59.8 km of Sanitary Sewer Mains
753 Sanitary Sewer Manholes
2 Wastewater Treatment Facilities
8 Sanitary Sewer Pump Stations

Total Asset Replacement Value
$ 306.5 M
2024 Dollars

FIGURE 29. ASSET ALLOCATION BY REPLACEMENT VALUE (IN MILLIONS)



10.1 WASTEWATER INFRASTRUCTURE

The Municipality of Middlesex Centre operates a robust and sustainable wastewater network that efficiently serves the sanitation needs of the communities of Arva, Ilderton, Kilworth, and Komoka. The system includes 59.8 kilometres of sanitary sewer mains, which form the backbone of the network, transporting wastewater from homes and businesses to treatment facilities. Supporting this infrastructure are 753 sanitary sewer manholes, which provide access for maintenance and inspection. The Municipality also manages two wastewater treatment facilities, ensuring that collected wastewater is properly treated before being safely released or reused. Additionally, eight sanitary sewer pump stations are strategically located throughout the area to help move wastewater through the system, especially in regions where gravity flow is insufficient. This robust network plays a vital role in protecting public health and the environment.

The following figures provide a comprehensive overview of the Municipality of Middlesex Centre's wastewater infrastructure. **Figure 30** presents a breakdown of the wastewater system by asset type, offering insight into the composition and scale of the network's key components. **Figure 31** highlights the wastewater facilities across the municipality, detailing the locations and functions of treatment plants and other critical infrastructure. **Figure 32** evaluates the condition of wastewater assets, categorizing them by condition rating to help assess the overall health of the system and prioritize reinvestment needs. Together, these figures support informed decision-making and long-term planning for sustainable wastewater management.

FIGURE 30. WASTEWATER INFRASTRUCTURE BY ASSET TYPE

ASSET	QTY	UNIT OF MEASURE	CONDITION[15] (AVERAGE)[16]	REPLACEMENT COST (2024 $)
Sanitary Sewer Mains	59.8	Kilometre	Good	$ 247,356,383
Sanitary Sewer Manholes	753	Number	Fair	$ 10,482,927
Wastewater Treatment Facilities	2	Number	Good	$ 38,197,456
Sanitary Sewer Pump Stations	8	Number	Fair	$ 10,429,245
TOTAL			**GOOD**	**$ 306,466,011**

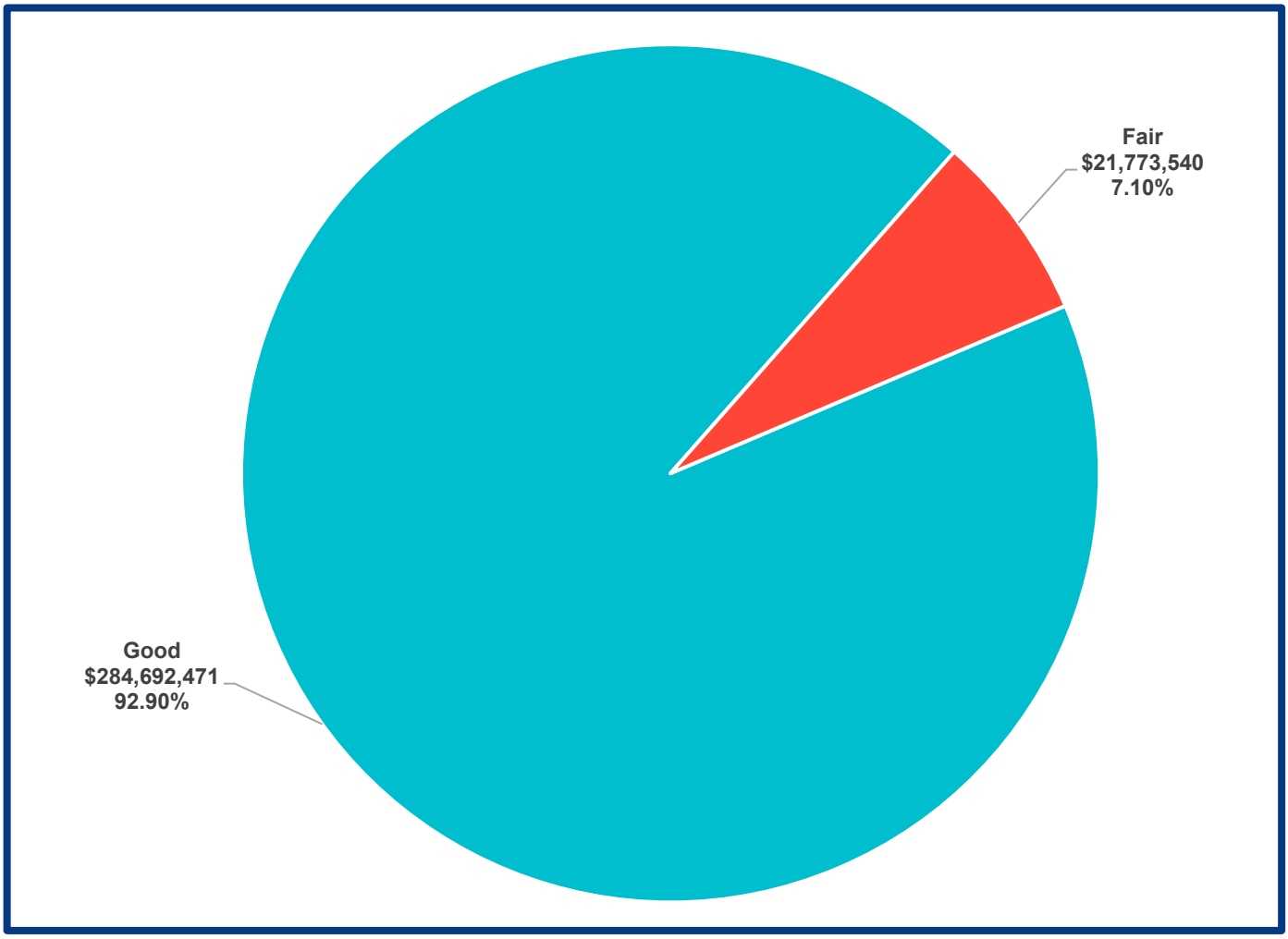
FIGURE 31. MIDDLESEX CENTRE WASTEWATER FACILITIES

WASTEWATER FACILITY NAME	FACILITY TYPE	CONDITION	REPLACEMENT COST (2024 $)
Arva Wastewater Pumping Station	Pump Station	Good	$ 1,647,000
Ilderton Sewage Pump Station #1	Pump Station	Good	$ 2,686,986
Ilderton Sewage Pump Station #3	Pump Station	Fair	$ 708,500
Ilderton Sewage Pump Station #4	Pump Station	Good	$ 1,008,386
Ilderton Sewage Pump Station #5	Pump Station	Fair	$ 661,750
Ilderton Wastewater Treatment Facility	Wastewater Treatment Facility	Fair	$ 8,324,640
Kilworth Sewage Pump Station #1	Pump Station	Fair	$ 741,000
Kilworth Sewage Pump Station #2 and Forcemain	Pump Station	Good	$ 2,120,900
Komoka Sewage Pump Station	Pump Station	Fair	$ 854,723
Komoka Wastewater Treatment	Wastewater Treatment Facility	Good	$ 29,872,816
TOTAL		**FAIR**	**$ 48,626,701**

[15] For detailed information on assessing conditions, please refer to Appendix B: Interpreting Condition Ratings.

[16] Condition is age-based and may overstate deterioration without a third-party assessment.

FIGURE 32. WASTEWATER ASSET BY CONDITION RATING[17]



[17] For detailed information on assessing conditions, please refer to Appendix B: Interpreting Condition Ratings.

10.2 LEVELS OF SERVICE

The Municipality of Middlesex Centre is committed to delivering high-quality wastewater services through a reliable and efficient network that supports the health and well-being of its communities. Serving areas such as Arva, Ilderton, Komoka, and Kilworth, the Municipality operates a well-maintained system of sanitary sewers and treatment facilities designed to manage both average and peak wastewater flows. This infrastructure is supported by a proactive maintenance program and strategic capital investments, ensuring consistent performance and long-term sustainability.

Daily operations are managed by trained municipal staff who monitor system performance and provide 24/7 emergency response to minimize service disruptions. This operational readiness is a key component of the Municipality's Level of Service (LOS), helping ensure that residents and businesses experience minimal interruptions and that wastewater is treated effectively and safely.

Our residents should expect…

- *A wastewater system that efficiently removes and treats waste in a way that safeguards the environment and prevents ecological harm.*
- *A resilient and high-efficiency municipal wastewater collection and treatment system that ensures consistent service delivery, optimizes operational performance, and meets or exceeds environmental regulatory standards to protect public health.*
- *The facilities are structurally sound and maintained in a state of good repair, ensuring continued operational integrity and compliance with applicable building and safety standards.*

Environmental protection is central to Middlesex Centre's approach. The Municipality consistently meets or exceeds regulatory standards for treated effluent, helping to safeguard local waterways and ecosystems. Energy-efficient practices are integrated into operations, reflecting a broader commitment to sustainability, cost-effectiveness, and climate resilience.

Community satisfaction remains a guiding principle, with the Municipality striving to maintain transparency, responsiveness, and accountability in service delivery. Through ongoing investment, skilled management, and a strong focus on environmental stewardship, Middlesex Centre continues to uphold a high level of service in its wastewater network, ensuring it remains resilient, compliant, and responsive to the needs of its growing population.

The following table (**Figure 33**) summarizes the Municipality's performance against established LOS targets across its wastewater network from 2020 to 2024. These metrics are used to monitor customer service, asset condition and reliability, and financial sustainability.

FIGURE 33. CURRENT LEVELS OF SERVICE: WASTEWATER NETWORK[18]

TYPE	METRICS	TARGET	LOS PERFORMANCE (ACTUAL)				
			2020	2021	2022	2023	2024
Customer Service	% of Proactive Maintenance	Greater than 60.0% of Total Number of Work Orders	-	-	-	-	88.0%
	% of Reactive Maintenance	Less than 40.0% of Total Number of Work Orders	-	-	-	-	12.0%
Condition and Reliability	Average Asset Condition	Good	Good	Good	Good	Good	Good
	% of Assets with "Poor" to "Very Poor" Condition	Less than 10.0% of the Total Replacement Cost	-	-	-	4.5%	4.8%
Financial Sustainability	Reinvestment Ratio %[19]	At least 1.4%	0.7%	2.4%	0.7%	0.5%	0.7%

[18] Appendix C.2: Levels of Service – Ontario Regulation 588/17 presents the Levels of Service related to O.Reg. 588/17.

[19] **The reinvestment ratio**—defined as minimum annual investment as a percentage of total replacement cost—declined from 2020 to 2024 due to an increase in recorded assets, not a decrease in actual investment levels

10.3 RISK AND RISK MITIGATION

To ensure the continued delivery of reliable and compliant wastewater services, it is essential for Middlesex Centre to proactively identify and manage the risks that could impact its levels of service. These risks range may stem from infrastructure limitation, financial constraints, environmental factors, or evolving regulatory requirements.

The following table (**Figure 34**) outlines the key risks to the wastewater network, their potential impacts on service delivery, and the mitigation strategies currently in place. This proactive risk management approach supports long-term system resilience, promotes environmental protection, and reinforce community satisfaction.

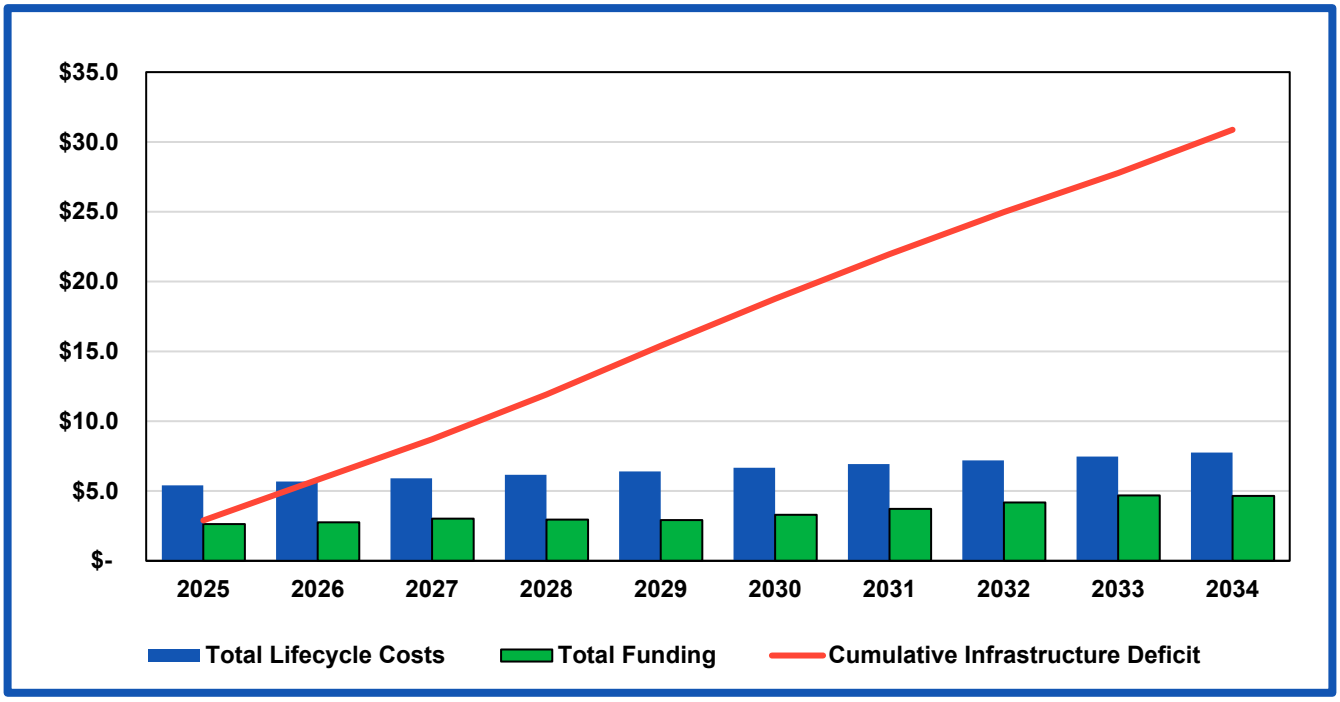
FIGURE 34. RISKS AND TREATMENT OPTIONS

RISKS	DESCRIPTION	MITIGATION STRATEGIES
Missing Condition Assessments on Buried Infrastructure	Reduce ability to forecast failures and prioritize investments	Implement a structure condition assessment program using CCTV inspections, modeling and asset data integration
Aging Infrastructure	Increased failures, overflow, and service interruptions	Prioritize critical asset through phased, risk-based asset management
Funding Shortfalls	Delayed upgrades, emergency repairs, and reduced reliability	Pursue alternative funding (e.g., grants, low-interest loans)
Inflation & Rising Construction Costs	Reduced project scope and effectiveness of budget	Use inflation-adjusted budgeting and phased project delivery
Regulatory Changes	Unplanned investments needed to maintain compliance	Monitor regulations and maintain flexible, adaptive planning
Climate Change & Extreme Weather	Overloaded systems, asset damage, and service disruptions	Incorporate climate resilience into infrastructure design
Inflow and Infiltration (I&I)	Reduced treatment efficiency and increased risk of overflows	Implement I&I reduction programs, inspections, and public education
Operational Challenges	Inefficient service delivery and delayed response to issues	Invest in automation, staff training, and preventive maintenance

10.4 FINANCIAL FORECAST: WASTEWATER NETWORK

10-Year Reinvestment	Forecasted Need	Projected Funding
in 2024 $	$ 65.6 M	$ 34.8 M

FIGURE 35. 2025–2034 CAPITAL PLANNING: FUNDING SHORTFALL AND INFRASTRUCTURE NEEDS



Over the next decade, the wastewater network will require a reinvestment of **$65.6 million**, while only **$34.8 million** is currently allocated for capital funding. This results in a **significant funding gap of $30.6 million**, which is expected to increase the **infrastructure deficit to $30.9 million by 2034**. This shortfall presents a major challenge to maintaining and upgrading aging infrastructure, which is essential for protecting public health, preserving environmental quality, and ensuring compliance with regulatory standards.

To address this, the reinvestment strategy will follow a phased, risk-based approach that prioritizes the most critical assets to minimize service disruptions and environmental impacts while extending asset life. However, the plan faces several risks, including the large funding gap that could lead to deferred maintenance and emergency repairs, inflation and rising construction costs that may reduce the effectiveness of the proposed budget, and potential regulatory changes that could require unplanned investments. Environmental risks, such as extreme weather events and increased inflow and infiltration, may also strain system capacity. To mitigate these risks, the plan includes pursuing alternative funding sources such as grants and low-interest loans, implementing cost controls through phased project delivery and inflation-adjusted budgeting, and enhancing operational efficiency. Regular performance reviews and updates to the reinvestment strategy will help ensure the plan remains adaptive and resilient in the face of evolving challenges.

10.5 LIFECYCLE ACTIVITY PLAN

The Municipality of Middlesex Centre applies a comprehensive lifecycle approach to managing its wastewater infrastructure, ensuring reliable service-delivery, environmental protection, and long-term asset sustainability.

The following table (**Figure 36**) provides a structured overview of the major lifecycle activities, organized by phase, with specific tasks and their corresponding details. This framework supports informed decision-making across planning, operations, maintenance, and renewal activities.

While not exhaustive, the plan reflects industry best practices and incorporates many activities already implemented within the Municipality's asset management program. It also highlights critical functions such as asset inventory and condition assessment, which are essential for maintaining an accurate understanding of system performance and guiding future investments.

FIGURE 36. LIFECYCLE MANAGEMENT – WASTEWATER NETWORK

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Asset Planning	Asset Inventory	Catalog all wastewater assets (e.g., pipes, pumps, treatment units)	Establish a complete and accurate asset register to support planning and decision-making
	Condition Assessment	CCTV inspections, flow monitoring, structural evaluations	Assess asset health, identify deterioration, and prioritize maintenance or replacement
	Capacity Planning	Flow analysis, growth projections, system modeling	Ensure infrastructure can meet current and future demand
Design & Construction	Capital Project Design	Engineering design, environmental assessments, permitting	Prepare for new infrastructure or major upgrades
	Construction & Commissioning	Build and test new assets, integrate into system	Expand or upgrade system capacity and performance
Operations	Daily Operations	Flow control, process monitoring, compliance testing	Maintain continuous, compliant service
	Emergency Response	Rapid response to overflows, equipment failures, or blockages	Minimize service disruptions and protect public health
Maintenance	Preventive Maintenance	Cleaning, lubrication, minor repairs, SCADA checks	Prevent failures and extend asset life
	Corrective Maintenance	Reactive repairs to restore service	Address unexpected failures or performance issues
Renewal	Rehabilitation	Sewer relining, pump retrofits, component upgrades	Restore asset function and delay full replacement
	Replacement	Full asset replacement (e.g., pipes, pumps, structures)	Address end-of-life assets and ensure long-term reliability

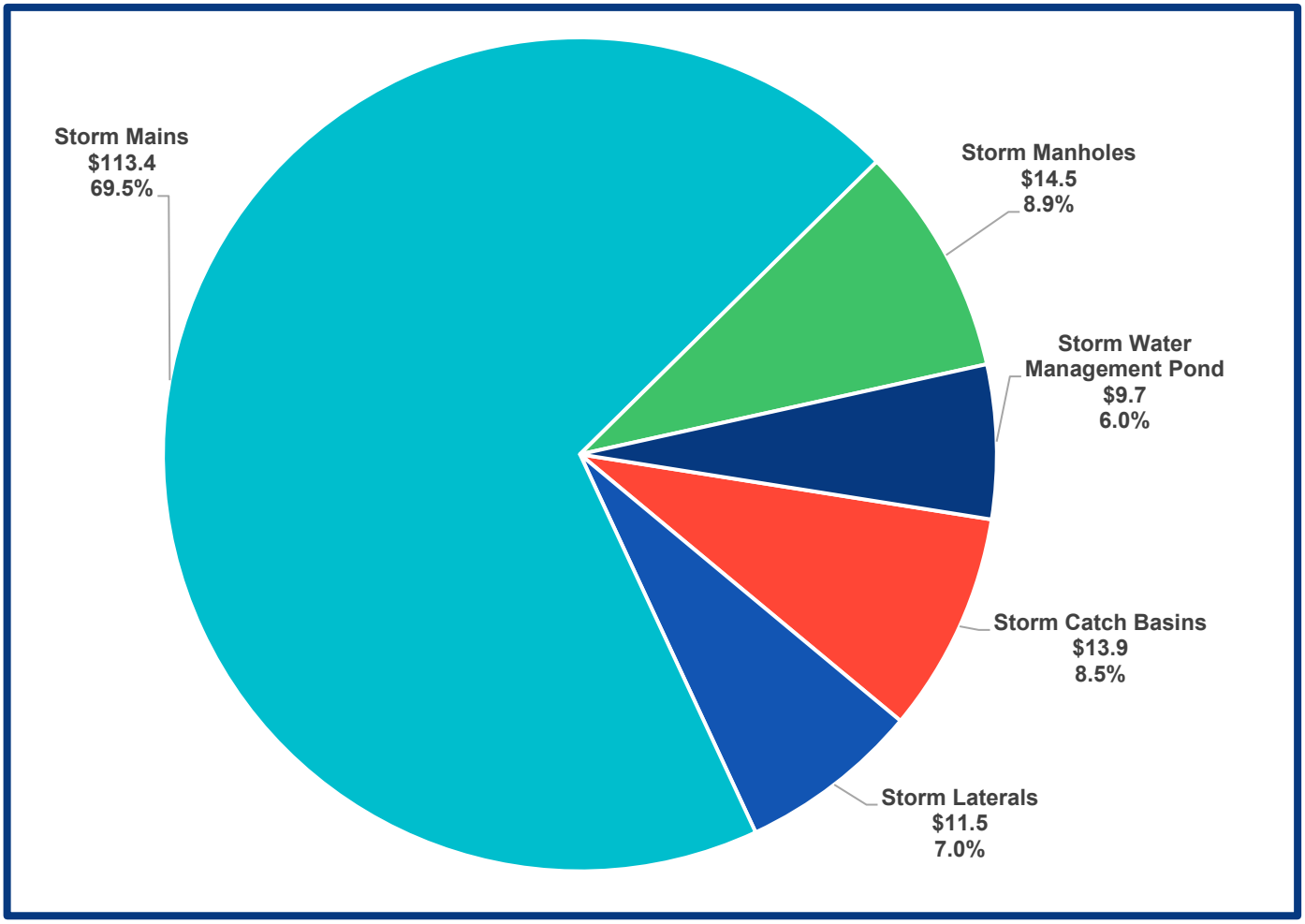
LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Decommissioning	Asset Disposal	Safe removal or abandonment of obsolete infrastructure	Eliminate redundant assets and reduce maintenance burden
Monitoring & Review	Performance Monitoring	Track KPIs, regulatory compliance, service levels	Ensure system performance aligns with goals and standards
	Strategy Review & Update	Update asset management plans, reinvestment strategies	Adapt to changing conditions, funding, and regulations

11 STORMWATER NETWORK

1,505 Storm Catch Basins
19.5 km of Storm Laterals
80 km of Storm Mains
1,046 of Storm Manholes
26,182 m² of Storm Water Management Ponds

Total Asset Replacement Value
$ 163.0 M
2024 Dollars

FIGURE 37. ASSET ALLOCATION BY REPLACEMENT VALUE (IN MILLIONS)



11.1 STORMWATER INFRASTRUCTURE

The Municipality of Middlesex Centre maintains a robust and extensive stormwater infrastructure system designed to effectively manage surface water runoff and protect the community from flooding and erosion. The network includes 1,505 storm catch basins, which serve as critical entry points for stormwater collection. Supporting this system are 19.5 kilometres of storm laterals and 80 kilometres of storm mains, which transport water through the Municipality's underground drainage network. Additionally, the system features 1,046 storm manholes, providing essential access for inspection and maintenance.

To manage and treat runoff before it reenters the natural environment, the Municipality also operates 26,182 square metres of stormwater management ponds, which help control flow rates and improve water quality. This infrastructure plays a vital role in safeguarding public and environmental health while supporting sustainable urban development.

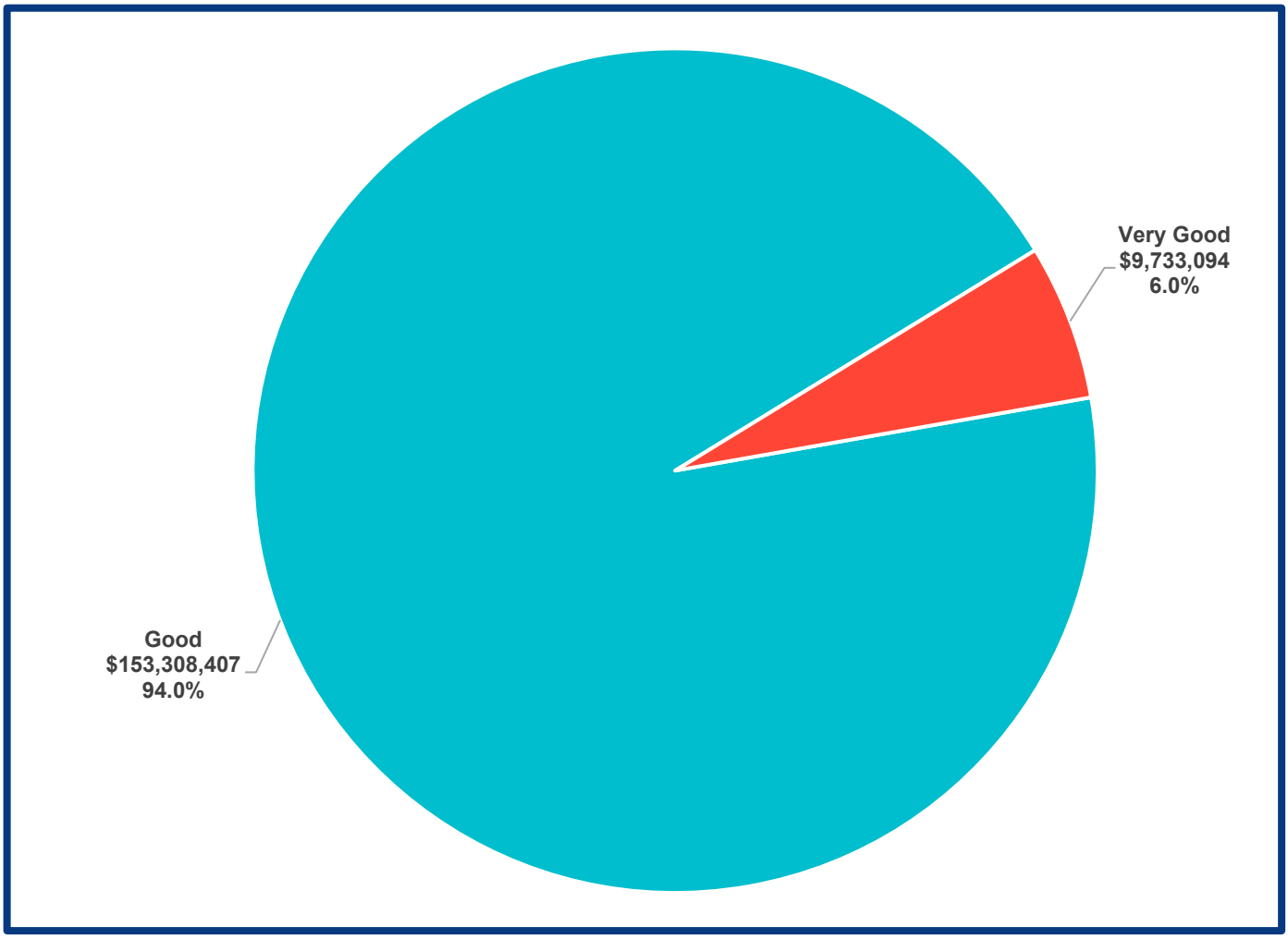
The following figures provide key insights into Middlesex Centre's stormwater infrastructure. **Figure 38** presents the stormwater system organized by asset type, offering a clear view of its components – such as catch basins, storm mains, and management ponds. Complementing this, the stormwater assets by condition rating (**Figure 39**), evaluates the current state of the infrastructure, categorizing assets based on their physical condition. Together, these visuals support data-driven planning and help prioritize maintenance and reinvestment efforts ensuring the continued effectiveness and resilience of the stormwater system.

FIGURE 38. STORMWATER INFRASTRUCTURE BY ASSET TYPE

ASSET	QTY	UNIT OF MEASURE	CONDITION[20] (AVERAGE)	REPLACEMENT COST (2024 $)
Storm Catch Basins	1,505	Number	Good	$ 13,922,770
Storm Laterals	19,452	Length (m)	Good	$ 11,472,927
Storm Mains	80,100	Length (m)	Good	$ 113,368,134
Storm Manholes	1,046	Number	Good	$ 14,544,575
Storm Water Management Pond	26,182	Area (m^2)	Very Good	$ 9,733,094
TOTAL			**GOOD**	**$ 163,041,500**

[20] For detailed information on assessing conditions, please refer to **Appendix B: Interpreting Condition Ratings**.

FIGURE 39. STORMWATER ASSET BY CONDITION RATING[21]



[21] For detailed information on assessing conditions, please refer to Appendix B: Interpreting Condition Ratings.

11.2 LEVELS OF SERVICE

The Municipality of Middlesex Centre is committed to delivering effective and sustainable stormwater management services that protect public safety, property, and the natural environment. The stormwater network is designed to manage runoff from rainfall and snowmelt events across both urban and rural areas of the Municipality.

The level of service for the stormwater system is defined by its ability to:

- Safely convey and manage stormwater during typical and extreme weather events
- Minimize the risk of flooding and erosion, and
- Maintain water quality in receiving water bodies.

The system is engineered to accommodate both current and projected flows, with infrastructure designed to meet provincial standards and best practices in stormwater management.

To ensure optimal performance and reduce the risk of blockages or failures, the Municipality conduct routine inspections, maintenance and cleaning of stormwater assets. Stormwater management ponds are regularly monitored and maintained to regulate flow rates and enhance water quality through sedimentation and natural filtration processes.

Our residents should expect…

- *Minimize flooding on streets, sidewalks, and private properties during periods of heavy rainfall or snowmelt.*
- *Reduce safety hazards such as standing water, winter ice patches, and erosion that can damage roads and pedestrian pathways.*
- *Protect local waterways by improving the quality of stormwater runoff before it enters natural ecosystems.*
- *Maintain a reliable system by proactively repairing or replacing aging infrastructure before failures occur.*

Stormwater services are supported by trained municipal staff who oversees daily operations, respond to service requests, and implement capital improvements. Through proactive planning, regular maintenance, and a strong commitment to environmental stewardship, Middlesex Centre continues to uphold a high level of service in its stormwater network – ensuring it remains reliable, adaptive, and aligned with the needs of both the community and the environment.

Figure 40 presents key performance metrics used to evaluate the Municipality's wastewater network. These metrics reflect service delivery outcomes across areas such a customer service, asset condition and reliability, and financial sustainability. By tracking these indicators over time, Middlesex Centre can assess progress, identify areas for improvement, and support informed decision-making in infrastructure planning and service delivery. .

FIGURE 40. CURRENT LEVELS OF SERVICE: WASTEWATER NETWORK[22]

TYPE	METRICS	TARGET	LOS PERFORMANCE (ACTUAL)				
			2020	2021	2022	2023	2024
Customer Service	% of Proactive Maintenance	Greater than 60.0% of Total Number of Work Orders	-	-	-	-	100.0%
	% of Reactive Maintenance	Less than 40.0% of Total Number of Work Orders	-	-	-	-	0.0%
Condition and Reliability	Average Asset Condition	Good	Good	Good	Good	Good	Good
	% of Assets with "Poor" to "Very Poor" Condition	Less than 10.0% of the Total Replacement Cost	-	-	-	6.6%	6.8%
Financial Sustainability	Reinvestment Ratio %[23]	At least 1.3%	0.1%	1.5%	0.2%	0.1%	0.2%

[22] Appendix C.3: Levels of Service – Ontario Regulation 588/17 presents the Levels of Service related to O.Reg. 588/17.

[23] The **reinvestment ratio**—defined as minimum annual investment as a percentage of total replacement cost—declined from 2020 to 2024 due to an increase in recorded assets, not a decrease in actual investment levels

11.3 RISK AND RISK MITIGATION

To maintain a high level of service in its stormwater network, the Municipality of Middlesex Centre must proactively identify and manage a range of risks that could affect system performance, public safety, and environmental protection. These risks arise from aging infrastructure, climate variability, urban growth, and financial constraints.

Effective risk management is essential to ensure the stormwater system remains resilient, efficient, and responsive to the needs of the community. The Municipality addresses these challenges through a combination of preventative maintenance, capital planning, regulatory compliance, and adaptive design strategies.

Figure 41 – Risks and Treatment Options provide a summary of key risks facing the stormwater network, their potential impacts to levels of service, and the mitigation strategies currently in place or planned for implementation. While not exhaustive, this overview reflects the Municipality's current understanding of system vulnerabilities and its ongoing efforts to safeguard infrastructure performance and environmental outcomes.

FIGURE 41. RISKS AND TREATMENT OPTIONS

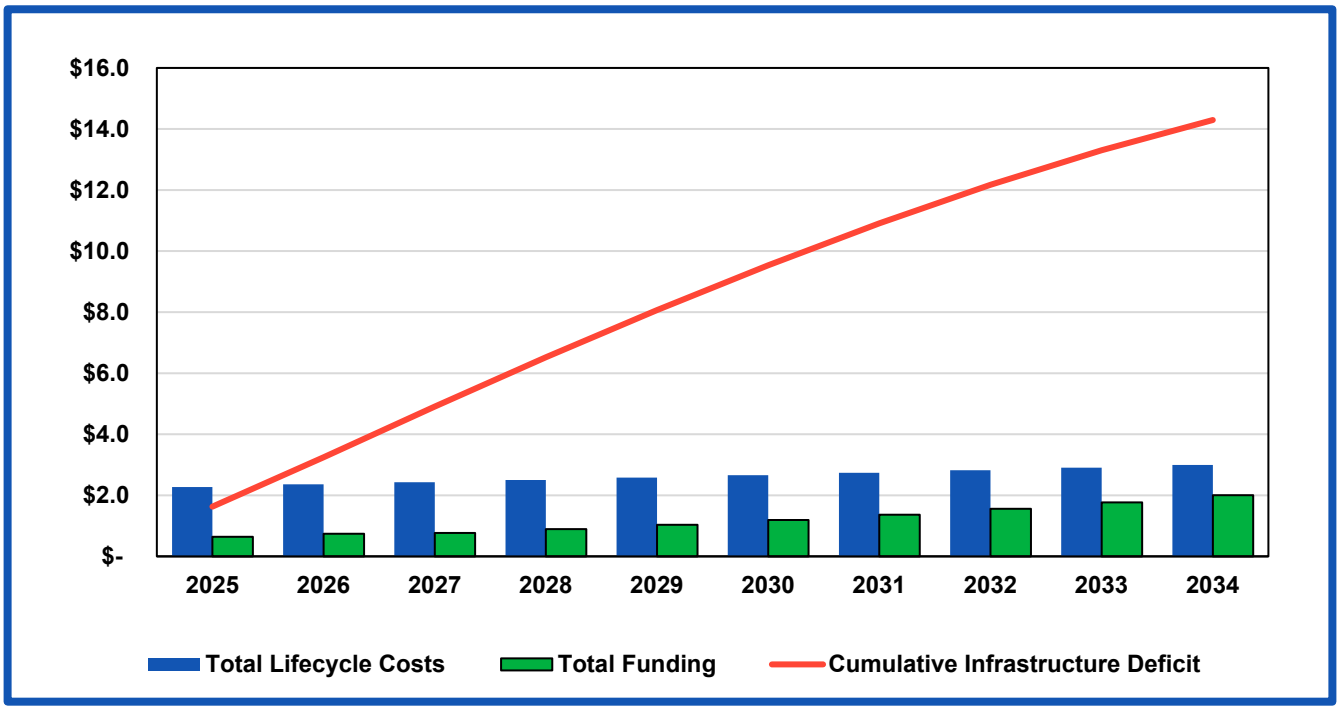
RISK	IMPACTS ON LEVEL OF SERVICE	MITIGATION STRATEGY
Missing Condition Assessments on Buried Infrastructure	Reduced ability to forecast failures and prioritize investments	Implement a structured condition assessment program using CCTV inspections, modeling, and asset data integration
Aging Infrastructure	Increased risk of blockages, collapses, and reduced drainage capacity	Conduct regular inspections and prioritize rehabilitation or replacement of assets
Inadequate Capacity	Localized flooding during heavy rainfall or snowmelt events	Upgrade undersized infrastructure and implement stormwater management ponds
Extreme Weather Events	Overwhelmed systems, erosion, and infrastructure damage	Incorporate climate-resilient designs and enhance emergency response planning
Sediment and Debris Accumulation	Reduced flow efficiency and increased risk of blockages	Implement routine maintenance such as catch basin cleaning and ditch clearing

RISK	IMPACTS ON LEVEL OF SERVICE	MITIGATION STRATEGY
Urbanization and Land Use Changes	Increased runoff volume and pollutant loads	Apply low-impact development (LID) practices and update design standards
Environmental Degradation	Decline in water quality and ecosystem health in receiving water bodies	Monitor water quality and enforce erosion and sediment control measures
Funding Constraints	Delayed maintenance and capital upgrades, leading to service degradation	Develop long-term funding strategies and pursue grants or partnerships
Data Gaps and Limited Monitoring	Inability to detect system issues early or plan effectively	Expand GIS mapping, install flow sensors, and enhance data collection and analysis
Regulatory Changes	Need for unplanned upgrades or operational changes	Maintain flexibility in planning and stay informed of evolving regulations

11.4 FINANCIAL FORECAST: STORMWATER NETWORK

10-Year Reinvestment	Forecasted Need	Projected Funding
In 2024 $	$ 26.3 M	$ 12.0 M

FIGURE 42. 2025–2034 CAPITAL PLANNING: FUNDING SHORTFALLS AND INFRASTRUCTURE NEEDS (IN MILLIONS)



Over the next decade, the stormwater network requires a reinvestment of **$26.3 million**, yet only **$12.0 million** is proposed for capital funding, resulting in an **infrastructure deficit of $14.3 million by 2034**. This significant shortfall poses challenges to maintaining and upgrading critical stormwater infrastructure, which is essential for managing runoff, preventing flooding, and protecting water quality. The reinvestment strategy will focus on a risk-based prioritization of projects, targeting areas with the highest vulnerability to flooding and environmental impact.

Key risks to the plan include the large funding gap, which could delay essential upgrades and increase the likelihood of localized flooding and infrastructure failure. Climate change and more frequent extreme weather events further exacerbate these risks. To mitigate them, the plan includes pursuing external funding sources such as climate resilience grants, implementing cost-effective green infrastructure, and phasing projects to align with available resources. Enhancing system monitoring and maintenance practices, along with regularly updating the reinvestment strategy based on performance data and environmental trends, will help ensure the stormwater network remains resilient and effective.

11.5 LIFECYCLE ACTIVITY PLAN

The Municipality of Middlesex Centre takes a proactive and structured approach to managing its stormwater infrastructure to ensure long-term system performance, environmental protection, and public safety. The following table outlines the key lifecycle phases and associated activities that guide the planning, operation, maintenance, and renewal of the stormwater network. Each activity is supported by specific tasks and a clear purpose, helping to align day-to-day operations with strategic asset management goals. While the list is not exhaustive, it reflects current best practices in municipal stormwater management. Many of these tasks are already being implemented by Middlesex Centre as part of its ongoing commitment to sustainable service delivery, risk mitigation, and regulatory compliance.

FIGURE 43. LIFECYCLE MANAGEMENT – STORMWATER NETWORK

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Planning and Asset Management	Asset Inventory	Maintain GIS-based registry of storm sewers, catch basins, ponds	Establish a comprehensive asset database to support planning, maintenance, and investment decisions
	Condition Assessment	Conduct visual inspections, CCTV, drone surveys	Evaluate asset condition to prioritize repairs and replacements
	Risk Assessment	Identify flood-prone areas and critical infrastructure	Focus resources on high-risk areas to reduce flooding and service disruptions
	Service Level Targets	Define KPIs: drainage time, pond capacity, flood frequency	Set measurable performance standards to guide operations and planning
Preventative Maintenance	Ditch and Swale Maintenance	Vegetation control, grading, debris removal	Ensure proper drainage and prevent erosion
	Pond Maintenance	Sediment removal, vegetation management	Maintain storage capacity and water quality
Predictive Maintenance	Flow Monitoring	Install sensors in key locations	Track performance and detect anomalies
	Sediment Level Tracking	Monitor accumulation in ponds and basins	Schedule cleanouts before capacity is compromised
	GIS & Data Analysis	Analyze spatial data for trends and risk mapping	Support proactive planning and investment decisions

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Corrective Maintenance	Emergency Flood Response	Deploy pumps, barriers, and crews during storm events	Minimize property damage and restore service quickly
	Blockage Removal	Clear debris from inlets, pipes, and outlets	Restore flow and prevent backups
	Infrastructure Repair	Repair damaged pipes, culverts, or pond structures	Restore system integrity and function
Capital Renewal & Replacement	Pipe Replacement	Prioritize based on age, material, and failure history	Replace aging infrastructure to maintain reliability
	Pond Rehabilitation	Reconstruct or retrofit aging stormwater ponds	Improve performance and extend asset life
	System Expansion	Add infrastructure to support new development	Ensure capacity keeps pace with grow
Water Quality Management	Stormwater Sampling	Monitor for pollutants, turbidity, and sediment	Ensure compliance with environmental standards
	Erosion and Sediment Control	Implement BMPs during construction	Protect watercourses and reduce sedimentation
	LID Implementation	Install bioswales, rain gardens, permeable surfaces	Enhance infiltration and improve runoff quality

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Regulatory Compliance & Reporting	Annual Reporting	Submit reports on system performance and water quality	Demonstrate compliance and transparency
	Inspection Readiness	Maintain records and documentation	Ensure preparedness for audits and regulatory reviews
	Public Communication	Inform residents about stormwater initiatives and flood risks	Promote awareness and community engagement
Training & Capacity Building	Staff Training	Training in stormwater management, emergency response, and environmental practices	Build staff expertise and ensure safe, effective operations
	Knowledge Transfer	Document procedures and lessons learned	Preserve institutional knowledge and support succession planning
Budgeting & Funding	Lifecycle Costing	Estimate total cost of ownership	Support long-term financial planning and sustainability
	Funding Strategy	Secure grants, development charges, or partnerships	Ensure adequate resources for capital and operational needs

12 ROAD NETWORK

603 CL km of road surface

37.1 km of sidewalks

1,324 Streetlights

2,736 Traffic signs

15.2 km of guide rails

1 Traffic signal

1 PXO

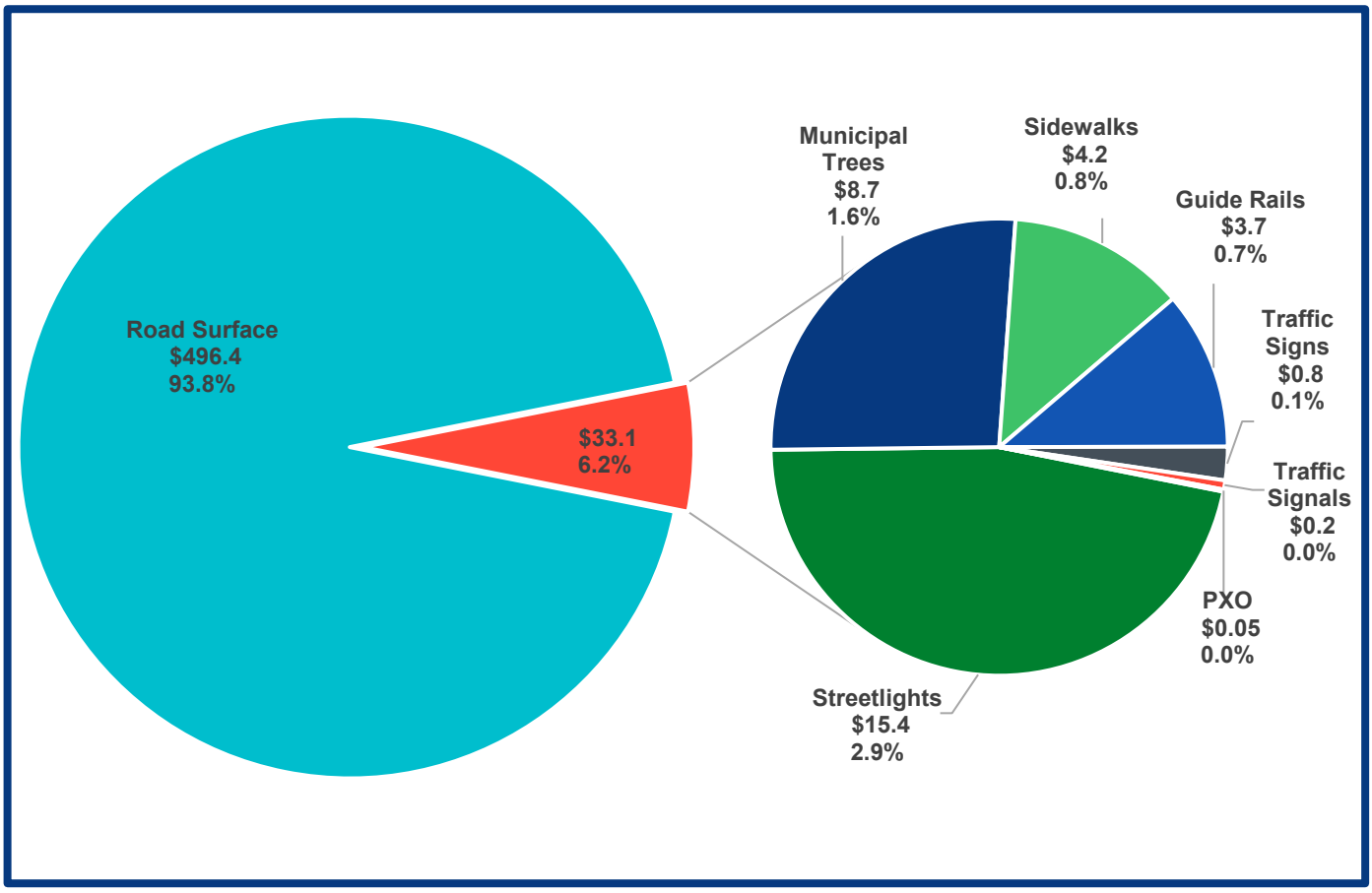
15,291 Municipal trees

Total Asset Replacement Value

$ 529.5 M

2024 Dollars

FIGURE 44. ASSET ALLOCATION BY REPLACEMENT VALUE (IN MILLIONS)



12.1 ROAD SURFACE

The Municipality of Middlesex Centre currently owns and manages approximately 603 centre line kilometres of roadway, with a total replacement cost estimated at $496.4 million. The road network is predominantly rural, spanning over 580 square kilometres, and is composed of a mix of surface types. Gravel roads make up 45.0% of the network, followed by Low Class Bituminous (LCB) at 36.0%, and High Class Bituminous (HCB) at 19.0%. The average age of the road surface is 36.8 years, reflecting the maturity of the infrastructure. Road conditions are assessed using the Pavement Condition Index (PCI), based on data from the biennial Roads Needs Study conducted by Stantec Consulting Ltd. As of the latest assessment, the average PCI is 72.1 out of 100.0, exceeding the municipality's target benchmark of 70.0, indicating a generally good state of repair across the network.

To support effective asset management and long-term infrastructure planning, Figures 41 through 45 provide a comprehensive overview of the road system's physical characteristics, financial implications, and performance metrics. **Figure 45** details the replacement cost by surface type, highlighting the capital investment required for each road category. **Figure 46** examines the distribution of roadside environments in relation to surface types, offering insights into how land use and surrounding conditions influence road design and maintenance. **Figure 47** presents the overall distribution of roads by surface type, helping to visualize the composition of the network. To assess road condition, **Figure 48** introduces the Pavement Condition Index (PCI), with examples to help interpret the scoring system. Finally, **Figure 49** illustrates the current condition of Middlesex Centre's roads by surface type, providing a snapshot of infrastructure health and identifying areas where reinvestment may be most needed. Together, these figures support data-driven decision-making and reinforce the municipality's commitment to maintaining a safe, efficient, and sustainable transportation network.

FIGURE 45. REPLACEMENT COST BY SURFACE TYPE

SURFACE TYPE	TOTAL KM	REPLACEMENT COST (2024 $)
High Class Bituminous (HCB)	116.0	$ 216,472,479
Low Class Bituminous (LCB)	214.7	$ 146,143,380
Gravel (G/S)	272.1	$ 133,814,315
TOTAL	**602.9**	**$ 496,430,173**

FIGURE 46. ROADSIDE ENVIRONMENT AND SURFACE TYPE DISTRIBUTION

SURFACE TYPE	ROADSIDE ENVIRONMENT			TOTAL KM	% KM
	RURAL	SEMI-URBAN	URBAN		
High Class Bituminous (HCB)	45.9	19.9	50.2	116.0	19.2%
Low Class Bituminous (LCB)	211.3	3.1	0.3	214.7	35.6%
Gravel (G/S)	272.0	0.1	0.0	272.1	45.2%
TOTAL	**529.2**	**23.2**	**50.5**	**602.9**	**100.0%**

FIGURE 47. ROADS BY SURFACE TYPE

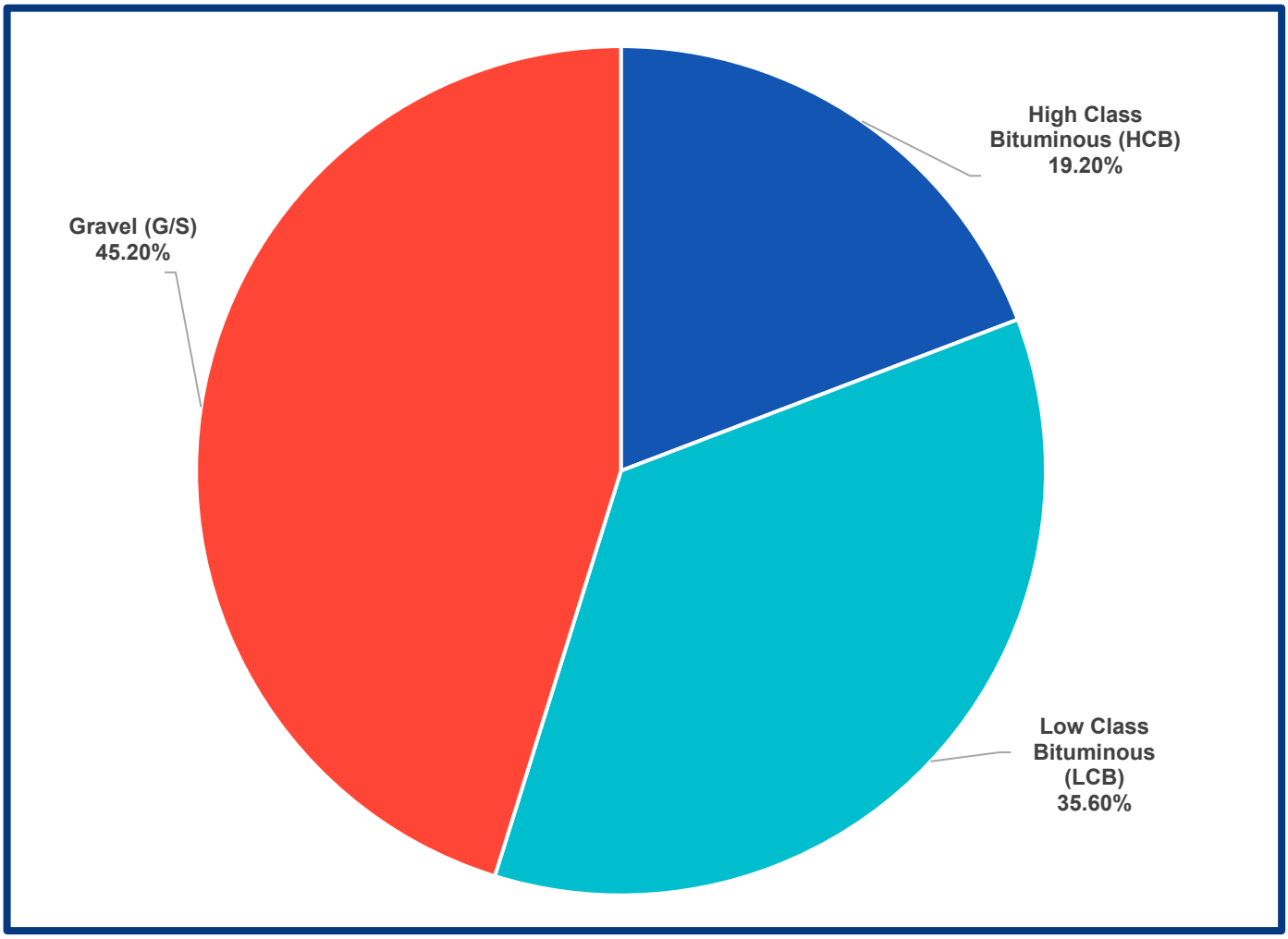


FIGURE 48. CONDITION BY PAVEMENT CONDITION INDEX (PCI)

PAVEMENT CONDITION INDEX (PCI)	CONDITION	EXAMPLE
80 – 100	Very Good	
60 – 79.9	Good	
40 – 59.9	Fair	
20 – 39.9	Poor	
< 20	Very Poor	

FIGURE 49. MIDDLESEX CENTRE ROAD CONDITION BY SURFACE TYPE

SURFACE TYPE	TOTAL KM	PCI (AVERAGE)	CONDTION (AVERAGE)
High Class Bituminous (HCB)	116.0	77.2	Good
Low Class Bituminous (LCB)	214.7	69.9	Good
Gravel (G/S)	272.1	-	Good
TOTAL	**602.9**	**72.1**	**GOOD**

12.2 OTHER ROADSIDE INFRASTRUCTURE

In addition to its road surfaces, the Municipality of Middlesex Centre is responsible for a range of supporting roadside infrastructure assets, including sidewalks, streetlights, signage, and other related components that contribute to the safety, accessibility, and functionality of the transportation network. These assets play a vital role in enhancing pedestrian mobility, improving nighttime visibility, and supporting overall traffic management. The total replacement cost of these roadside infrastructure elements is estimated at **$33.1 million**, reflecting their significant value within the broader asset portfolio. Based on recent assessments, the average condition of these assets is rated as **Good**, indicating that they are generally well-maintained and capable of delivering reliable service.

To provide a clear overview of these assets and their associated value, **Figure 46** summarizes the Municipality's inventory of roadside infrastructure beyond the road surface itself. This information supports ongoing asset management efforts by helping to prioritize maintenance, guide reinvestment decisions, and ensure that all components of the transportation system continue to meet community needs and safety standards.

FIGURE 50. MIDDLESEX CENTRE OTHER ROADSIDE ASSETS

ASSET	QTY	UNIT OF MEASURE	CONDITION[24] (AVERAGE)	REPLACEMENT COST (2024 $)
Sidewalks	37.1	Kilometre	Good	$ 4,169,843
Streetlights	1,324	Number	Fair	$ 15,445,390
Traffic Signs	2,736	Number	Fair	$ 782,860
Guide Rails	15.2	Kilometre	Fair	$ 3,711,259
Traffic Signals	1	Number	Good	$ 212,600
PXO	1	Number	Fair	$ 47,835
Municipal Trees	15,291	Number	Good	$ 8,709,100
TOTAL			**GOOD**	**$ 33,078,887**

[24] For detailed information on assessing conditions, please refer to **Appendix B: Interpreting Condition Ratings**.

12.3 LEVELS OF SERVICE

Levels of service in road assets are **essential for evaluating the performance, quality, and sustainability** of the road network. They provide a structured framework to assess how effectively road infrastructure serves users, focusing on operational efficiency, service provision, and long-term planning. Operational considerations include the physical condition of roads, such as cleanliness, surface integrity, and timely maintenance, to ensure infrastructure remains free of defects like potholes. Service provision evaluates whether the road network can accommodate current and projected traffic volumes, including the adequacy of lane capacity and overall network connectivity.

Our residents should expect…

- *Roads are maintained to ensure safety and accessibility throughout the year, regardless of weather conditions.*
- *Roads and roadside facilities are structurally sound.*
- *Traffic signals are synchronized to optimize traffic flow and ensure the highest feasible level of progression.*
- *Streetlights are maintained to ensure reliable operation, providing illumination and enhancing safety for pedestrians during nighttime hours.*
- *Safe and accessible sidewalks leading to key areas of the community.*

By understanding and applying levels of service, the Municipality of Middlesex Centre can optimize its road network to better serve the public. This involves not only maintaining existing infrastructure but also planning for future needs to ensure a sustainable and efficient transportation system. Effective road asset management based on levels of service can lead to **improved traffic flow, reduced congestion, and enhanced safety for all users**. Whether through routine maintenance, strategic expansions, or innovative traffic management solutions, levels of service provides a foundation for continuous improvement.

FIGURE 51. CURRENT LEVELS OF SERVICE: ROADS NETWORK[25]

TYPE	METRICS	TARGET	LOS PERFORMANCE (ACTUAL)				
			2020	2021	2022	2023	2024
Customer Service	% of Proactive Maintenance	Greater than 25.0% of Total Number of Work Orders	-	-	5.0%	13.3%	12.5%
	% of Reactive Maintenance	Less than 75.0% of Total Number of Work Orders	-	-	95.0%	86.7%	87.5%
Access and Capacity	% of local roads with sidewalks	TBD – Awaiting results of Active Transportation Master Plan	53.1%	53.1%	54.0%	54.0%	50.4%
	Lane kilometres of Road with year-round load restriction	0.0 km	-	-	-	42.6	42.6
Condition and Reliability	Average Asset Condition	Good	Good	Good	Good	Good	Good
	% of Assets with "Poor" to "Very Poor" Condition	Less than 10.0% of the Total Replacement Cost	-	-	-	8.5%	7.5%

[25] Appendix C.4: Levels of Service – Ontario Regulation 588/17 presents the Levels of Service related to O.Reg. 588/17.

TYPE	METRICS	TARGET	LOS PERFORMANCE (ACTUAL)				
			2020	2021	2022	2023	2024
Safety	Centreline-kilometres of Roads with Deficiencies (Geometric, drainage, structural, surface width, surface type)	Minimize	-	-	-	-	117.3
Financial Sustainability	Reinvestment Ratio %[26]	At least 2.5%	3.3%	3.2%	3.3%	1.1%	1.0%

12.4 RISK AND RISK MITIGATION

Maintaining a high level of service (LOS) in road networks is essential for ensuring safe, efficient, and reliable transportation. However, a variety of risks, ranging from environmental factors to infrastructure limitations, can compromise these service levels. Understanding these risks and their potential impacts is critical to develop effective mitigation strategies.

The following table outlines key risks that can affect road network performance, the specific impacts these risks may have on levels of service, and recommended strategies to mitigate or manage these challenges. This structured approach supports proactive planning and helps ensure that road networks remain resilient and responsive to both current and future demands.

FIGURE 52. RISKS AND TREATMENT OPTIONS

RISK	IMPACTS ON LEVELS OF SERVICE	MITIGATION STRATEGY
Extreme Weather Events	Flooding, snow, or ice can reduce road capacity and safety, causing delays and closures.	Implement resilient infrastructure, improve drainage, and enhance weather monitoring.

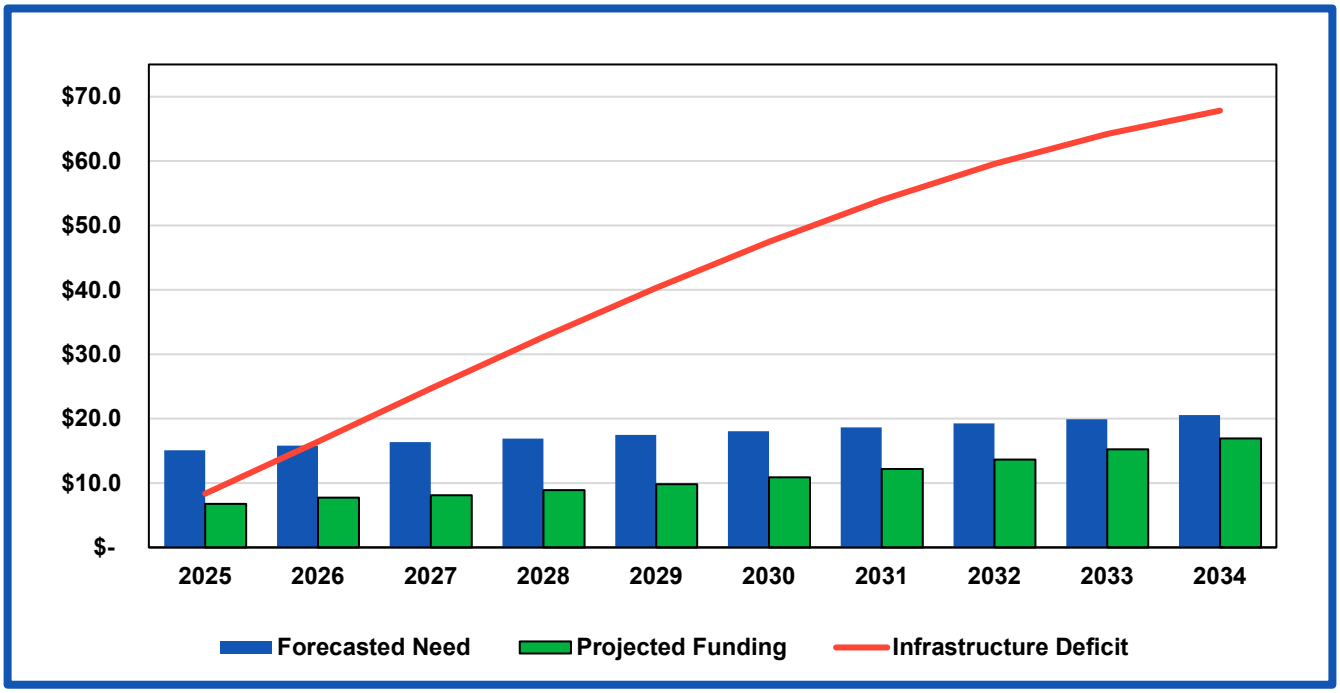
[26] The **reinvestment ratio**—defined as minimum annual investment as a percentage of total replacement cost—declined from 2020 to 2024 due to an increase in recorded assets, not a decrease in actual investment levels

RISK	IMPACTS ON LEVELS OF SERVICE	MITIGATION STRATEGY
Aging Infrastructure	Deterioration leads to potholes, cracks, and reduced road quality, lowering service levels.	Regular maintenance, asset management systems, and timely rehabilitation.
Traffic Congestion	Reduced travel speeds and increased delays, especially during peak hours.	Intelligent traffic systems, public transport promotion, and congestion pricing.
Accidents and Incidents	Sudden disruptions and delays, reducing reliability and safety.	Rapid incident response systems, better signage, and driver education.
Funding Shortfalls	Inability to maintain or upgrade infrastructure, leading to service degradation.	Diversify funding sources, prioritize critical projects, and improve cost-efficiency.
Urban Growth and Land Use	Increased demand on road networks, leading to congestion and wear.	Integrate land use and transport planning, expand capacity, and promote modal shift.
Technological Failures	Malfunctioning traffic signals or ITS can disrupt flow and safety.	Regular system checks, redundancy in systems, and staff training.
Environmental Regulations	Restrictions may delay projects or limit materials, affecting service delivery.	Early compliance planning, use of sustainable materials, and stakeholder engagement.
Cybersecurity Threats	Hacking of traffic systems can cause chaos and safety risks.	Implement robust cybersecurity protocols and regular audits.

12.5 FINANCIAL FORECAST: ROAD NETWORK

10-Year Reinvestment	Forecasted Need	Projected Funding
In 2024 $	$ 178.0 M	$ 110.2 M

FIGURE 53. 2025–2034 CAPITAL PLANNING: FUNDING SHORTFALLS AND INFRASTRUCTURE NEEDS (IN MILLIONS)



Over the next ten years, Middlesex Centre's road network will require a reinvestment of approximately **$178.0 million**, while only **$110.2 million** is currently allocated for capital funding. This results in a **funding gap of over $67.0 million**, which is projected to increase the **infrastructure deficit** to more than **$67.8 million by 2034**. This substantial shortfall presents a significant challenge to maintaining road quality, safety, and connectivity across the Municipality.

To address this, the reinvestment strategy will adopt a data-driven, risk-based approach, prioritizing high-traffic corridors, roads in poor condition, and areas with known safety concerns. Strategic phasing of projects and the use of cost-effective rehabilitation techniques will be essential to maximize the impact of available funding while addressing the most critical needs.

Key risks to the plan include the widening funding gap, which could lead to deteriorating road conditions, increased vehicle damage, and reduced public satisfaction. Additional risks include rising construction costs due to inflation, extreme weather events that accelerate pavement degradation, and potential regulatory changes affecting design standards. To mitigate these risks, the plan includes pursuing additional funding through government grants and infrastructure programs, optimizing maintenance schedules, and incorporating climate-resilient materials and designs. Regular performance monitoring and updates to the strategy will help ensure the road network remains safe, functional, and aligned with the evolving needs of the community.

12.6 LIFECYCLE ACTIVITY PLAN

Effective management of road infrastructure requires a structured approach that spans the entire lifecycle of assets, from planning and design to operation, rehabilitation, and eventual decommissioning. The lifecycle activity plan serves as a strategic framework to guide the delivery of safe, reliable, and sustainable road services across Middlesex Centre.

Figure 54 outlines key lifecycle phases, associated activities, specific tasks, and their intended purposes. These activities support informed decision-making, optimize resource allocation, and ensure that the road network continues to meet the needs of the community.

It is important to note that this list is not exhaustive. Many of the activities described are already in place within Middlesex Centre's asset management and public works programs. The table is intended to provide a high-level overview and can be adapted or expanded as infrastructure needs evolve and best practices advance.

FIGURE 54. LIFECYCLE MANAGEMENT – ROAD NETWORK

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Planning and Asset Management	Asset Inventory	Maintain GIS-based registry of storm sewers, catch basins, ponds	Establish a comprehensive asset database to support planning, maintenance, and investment decisions
	Needs Assessment	Traffic analysis, condition surveys, stakeholder engagement	Identify current and future infrastructure needs and prioritize investments
	Budgeting & Programming	Cost estimation, funding allocation, project scheduling	Ensure financial feasibility and timely delivery of road projects
Design	Preliminary & Detailed Design	Geometric design, drainage planning, material selection	Develop safe, efficient, and durable road designs
	Environmental Assessment	Impact studies, mitigation planning	Minimize environmental impacts and comply with regulations
Construction	Road Construction	Earthworks, paving, signage, and markings	Build new or upgraded road infrastructure to design specifications
	Quality Control	Material testing, inspections, documentation	Ensure construction meets quality and safety standards
Operation	Routine Maintenance	Pothole patching, crack sealing, line repainting	Preserve road condition and safety between major interventions
	Traffic Management	Signal optimization, signage updates, speed monitoring	Maintain efficient and safe traffic flow

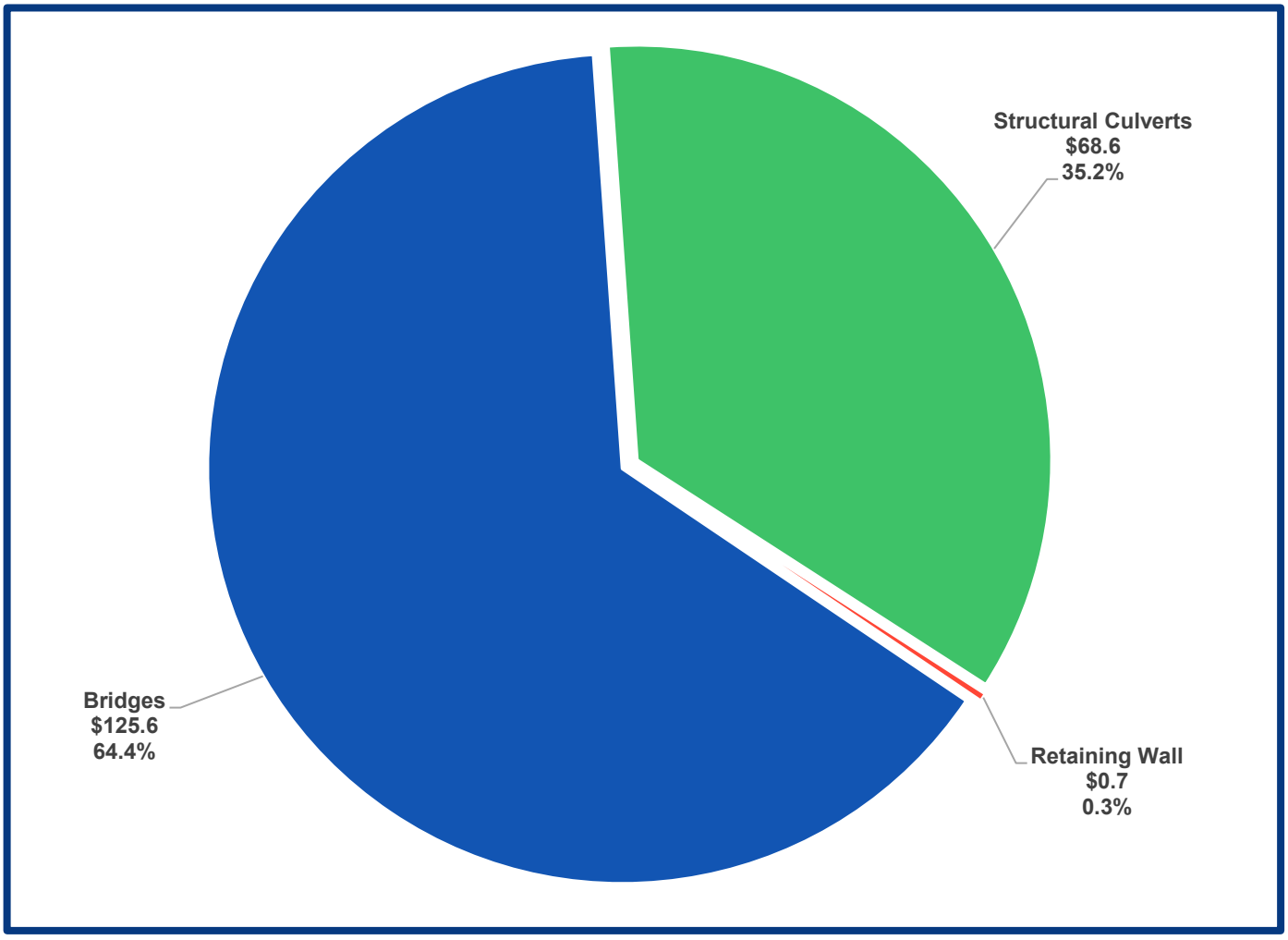
LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Rehabilitation	Major Repairs	Resurfacing, drainage upgrades, structural strengthening	Extend road life and restore service levels
	Asset Renewal	Replace deteriorated components (e.g., culverts, guardrails)	Maintain long-term functionality and safety
Decommissioning	Road Retirement Planning	Usage analysis, stakeholder consultation, environmental review	Plan for safe and responsible removal or repurposing of underused roads
	Site Restoration	Demolition, land rehabilitation, documentation	Restore land and ensure environmental compliance

13 BRIDGES AND CULVERTS

51 Bridges
71 Structural Culverts (with span > 3m)
28 Culverts (with span < 3m)
2 Retaining Walls

Total Asset Replacement Value
$ 194.9 M
2024 Dollars

FIGURE 55. ASSET ALLOCATION BY REPLACEMENT VALUE (IN MILLIONS)



13.1 STRUCTURES

The Municipality of Middlesex Centre owns and manages a total of 152 structures that support its transportation network. This inventory includes 51 bridges, 99 structural culverts, and 2 retaining walls, all of which are critical to ensuring safe and efficient travel across the municipality. Among the 99 structural culverts, 27 have a total span between 2.0 and 3.0 metres, 1 has a span less than 2.0 metres, and the remaining culverts feature spans greater than 3.0 metres, reflecting a diverse range of structural types and capacities. These assets are regularly inspected and maintained to meet safety standards and support long-term infrastructure resilience. For a detailed breakdown of the structure inventory, refer to Appendix H.2.

To support strategic asset management and financial planning, **Figure 56** presents the replacement cost of structures by structural type. This figure provides a clear overview of the capital investment required to maintain and eventually replace these critical assets, helping the Municipality prioritize reinvestment and ensure the continued reliability of its bridge and culvert infrastructure.

FIGURE 56. REPLACEMENT COST BY STRUCTURAL TYPE

TYPE	QUANTITY	AVERAGE AGE	REPLACEMENT COST (2024 $)
Bridges	51	52.5 Years	$ 125,578,811
Structural Culverts	71	45.9 Years	$ 68,626,157
Culverts <3.0m span	28		
Retaining Walls	2	34.0 Years	$ 658,305
TOTAL	**152**	**48.1 YEARS**	**$ 194,863,273**

As recommended by the Ontario Structural Inspection Manual (OSIM), the Municipality of Middlesex Centre conducts biennial inspections of its bridges and culverts to ensure safety and structural integrity. These inspections are carried out by BM Ross Engineering, and the most recent 2023 report highlights a growing concern over the aging infrastructure across the municipality. Many structures are approaching or have reached the end of their expected service life, underscoring the need for timely reinvestment and rehabilitation. The Bridge Condition Index (BCI), a standardized metric used to assess structural health, reveals a wide range of conditions—while some structures remain in good shape, others require significant repairs or full replacement. Common issues identified include structural deficiencies, erosion, and the need for routine maintenance such as waterproofing, deck resurfacing, and guiderail upgrades.

To provide a clearer picture of the structural portfolio and its condition, **Figure 57** illustrates the number of structures built by decade, offering insight into the age distribution and highlighting periods of significant infrastructure development. **Figure 58** introduces the Bridge Condition Index (BCI), explaining how it is used to evaluate structural health, with examples to help interpret the scoring system. This context is essential for understanding how condition ratings are applied and prioritized. **Figure 59** presents the average BCI and corresponding condition ratings by structure type, helping to identify trends and performance differences across bridges, culverts, and retaining walls. Finally, **Figure 60** shows the number of structures categorized by BCI range and condition rating, providing a snapshot of the overall health of the Municipality's structural assets.

Together, these figures support data-driven decision-making and reinforce the importance of proactive asset management. The 2023 inspection report emphasizes the need to prioritize repairs and replacements over the next 20 years, focusing on safety, cost-effectiveness, and extending the service life of these critical components of the transportation network.

FIGURE 57. NUMBER OF STRUCTURES BUILT BY DECADES

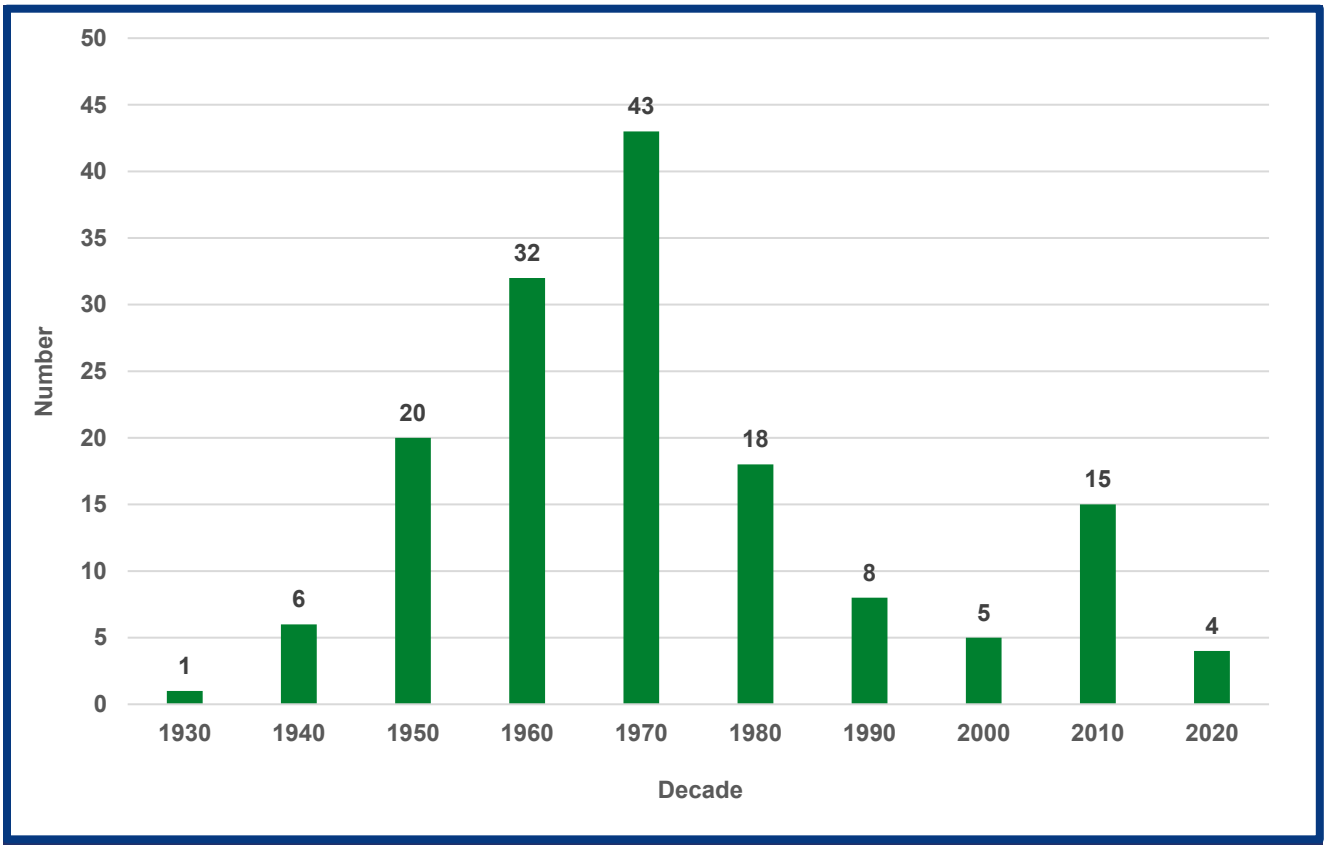


FIGURE 58. CONDITION BY BRIDGE CONDITION INDEX (BCI)

BRIDGE CONDITION INDEX (BCI)	CONDITION	EXAMPLE
80 – 100	Very Good	
60 – 79.9	Good	
40 – 59.9	Fair	

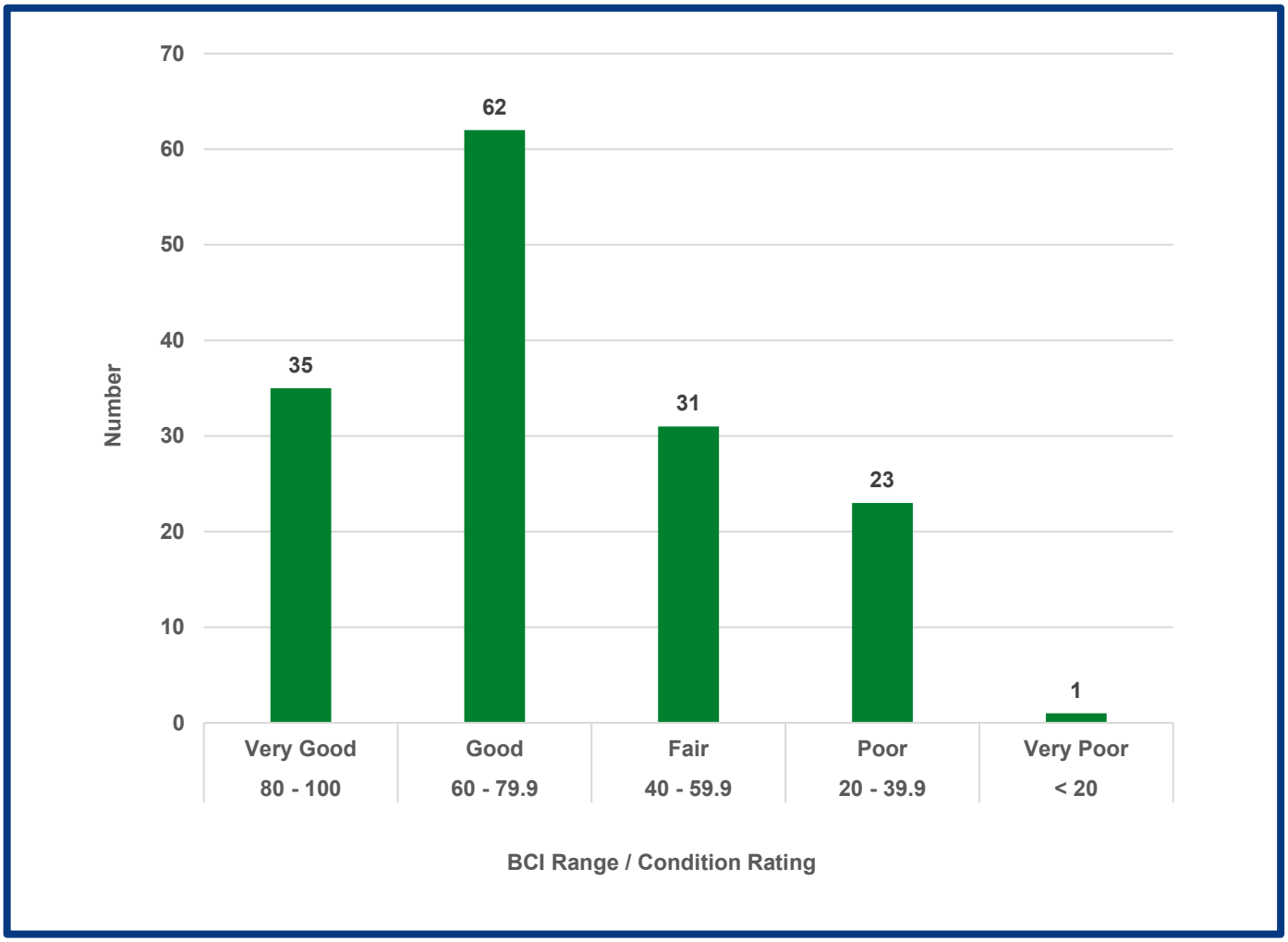
BRIDGE CONDITION INDEX (BCI)	CONDITION	EXAMPLE
20 – 39.9	Poor	
< 20	Very Poor	

FIGURE 59. STRUCTURE BY AVERAGE BCI AND AVERAGE CONDITION

TYPE	QUANTITY	AVERAGE BCI	AVERAGE CONDITION[27]
Bridges	51	67.5	Good
Structural Culverts	71	64.4	Good
Culverts < 3.0m span	28	50.3	Fair
Retaining Walls	2	67.5	Good
TOTAL	**152**	**62.9**	**GOOD**

[27] For detailed information on assessing conditions, please refer to Appendix B: Interpreting Condition Ratings.

FIGURE 60. NUMBER OF STRUCTURES BY BCI AND CONDITION RATING[28]



[28] For detailed information on assessing conditions, please refer to **Appendix B: Interpreting Condition Ratings.**

13.2 LEVELS OF SERVICE

The Municipality of Middlesex Centre is committed to maintaining a safe, reliable, and efficient network of bridges and culverts that support transportation connectivity and public safety across the community. These structures are critical components of the municipal road network, enabling the movement of people, goods, and emergency services while also facilitating proper drainage and minimizing flood risks.

The level of service for bridges and culverts is defined by their structural integrity, load-carrying capacity, and ability to function safely under normal and extreme conditions. Middlesex Centre follows a proactive asset management approach, guided by regular inspections in accordance with provincial regulations, including the Ontario Structure Inspection Manual (OSIM). These inspections help assess the condition of each structure, identify maintenance needs, and prioritize rehabilitation or replacement projects based on risk and criticality.

Our residents should expect…

- *Durable bridges and culverts that ensure efficient and congestion-free access to essential destination.*
- *Bridges and culverts are maintained and repaired promptly to ensure their longevity and safety.*

The Municipality aims to ensure that all bridges and culverts remain open, safe, and accessible, with minimal restrictions or closures. Preventative maintenance activities, such as debris removal, erosion control, and joint sealing, are carried out to extend asset life and reduce the likelihood of costly emergency repairs. Capital investments are strategically planned to address aging infrastructure, improve resilience to climate impacts, and accommodate future growth.

Through ongoing monitoring, timely interventions, and a commitment to best practices, Middlesex Centre continues to uphold a high level of service for its bridges and culverts, ensuring they remain safe, functional, and aligned with the needs of the community.

FIGURE 61. CURRENT LEVELS OF SERVICE: BRIDGES AND CULVERTS[29]

TYPE	METRICS	TARGET	LOS PERFORMANCE (ACTUAL)				
			2020	2021	2022	2023	2024
Customer Service	% of Proactive Maintenance	Greater than 60.0% of Total Number of Work Orders	-	-	-	100.0%	100.0%
	% of Reactive Maintenance	Less than 40.0% of Total Number of Work Orders	-	-	-	0.0%	0.0%
Condition and Reliability	Average BCI - Retaining Walls	70.0	-	-	-	67.5	67.5
	Average Asset Condition	Good	Good	Good	Good	Good	Good
	% of Assets with "Poor" to "Very Poor" Condition	Less than 10.0% of the Total Replacement Cost	-	-	-	-	6.8%
Safety	Number of Incidence of Failure	0	0	0	0	1	0
Financial Sustainability	Reinvestment Ratio %[30]	At least 1.3%	-	1.1%	1.0%	0.6%	2.6%

[29] Appendix C.5: Levels of Service – Ontario Regulation 588/17 presents the Levels of Service related to O.Reg. 588/17.

[30] The **reinvestment ratio**—defined as minimum annual investment as a percentage of total replacement cost—declined from 2020 to 2024 due to an increase in recorded assets, not a decrease in actual investment levels

13.3 RISK AND RISK MITIGATION

Bridges and culverts are critical components of transportation infrastructure, ensuring connectivity, mobility, and resilience across road networks. However, these structures are exposed to a range of risks that can compromise their functionality, safety, and longevity. Maintaining a high level of service (LoS) for bridges and culverts requires a proactive understanding of these risks and the implementation of effective mitigation strategies.

The following table identifies key risks that affect the performance and service levels of bridges and culverts. It outlines the potential impacts of each risk on infrastructure serviceability and provides targeted mitigation strategies to address or reduce these impacts. This structured approach supports informed decision-making, enhances infrastructure resilience, and promotes long-term asset sustainability.

FIGURE 62. RISKS AND TREATMENT OPTIONS

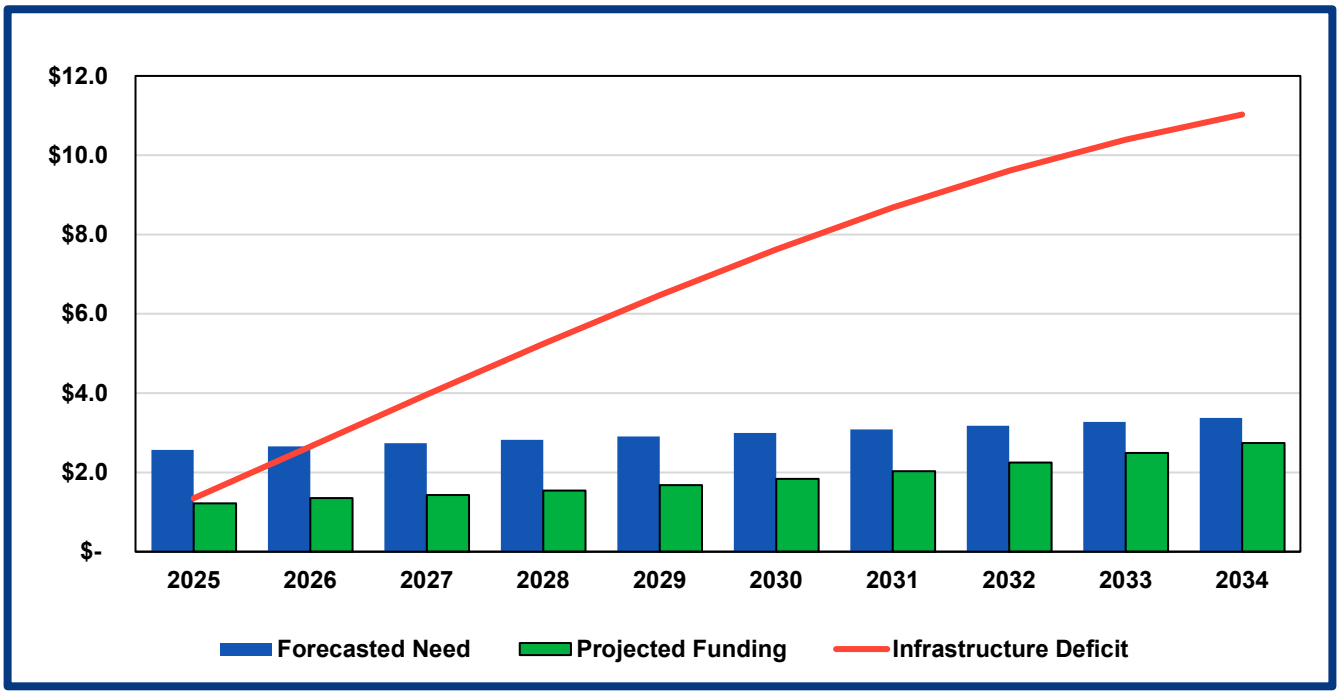
RISK	IMPACTS ON LEVELS OF SERVICE	MITIGATION STRATEGY
Flooding and Scour	Undermines foundations, leading to structural instability or failure.	Design for hydraulic capacity, install scour protection, and conduct regular inspections.
Corrosion and Material Degradation	Reduces structural integrity, leading to load restrictions or closures.	Use corrosion-resistant materials, apply protective coatings, and schedule maintenance.
Overloading	Accelerates wear and may cause structural damage or collapse.	Enforce weight limits, install monitoring systems, and conduct load rating assessments.
Freeze-Thaw Cycles	Causes cracking and spalling, reducing durability and safety.	Use durable materials, seal cracks, and ensure proper drainage.

RISK	IMPACTS ON LEVELS OF SERVICE	MITIGATION STRATEGY
Debris Accumulation	Blocks water flow, increasing flood risk and structural stress.	Regular cleaning and debris removal, install debris deflectors.
Aging Infrastructure	Increased maintenance needs and risk of failure, reducing reliability.	Implement asset management systems, prioritize rehabilitation, and secure funding.
Inadequate Design Standards	May not meet current traffic or environmental demands, reducing safety and capacity.	Update design standards, conduct periodic reviews, and upgrade outdated structures.
Vandalism or Accidental Damage	Can compromise safety and require emergency repairs.	Install surveillance, improve lighting, and conduct rapid response repairs.
Climate Change Impacts	Increased frequency of extreme weather events affecting structural performance.	Incorporate climate resilience into design and planning and monitor environmental trends.

13.5 FINANCIAL FORECAST: BRIDGES AND CULVERTS

10-Year Reinvestment	Forecasted Need	Projected Funding
in 2024 $	$ 29.6 M	$ 18.6M

FIGURE 63. 2025–2034 CAPITAL PLANNING: FUNDING SHORTFALLS AND INFRASTRUCTURE NEEDS (IN MILLIONS)



Over the next ten years, Middlesex Centre's bridges and culverts will require an estimated reinvestment of **$29.6 million**. However, only **$18.6 million** is currently allocated for capital funding, resulting in a projected **infrastructure deficit of $11.0 million by 2034**. This shortfall poses a significant challenge to maintaining the structural integrity and safety of these essential transportation assets.

To address this, the reinvestment strategy will focus on prioritizing structures that are at the highest risk of failure or that support critical transportation routes. Decisions will be guided by condition assessments and lifecycle analysis to ensure resources are directed where they are needed most. A strong emphasis will be placed on preventative maintenance and targeted rehabilitation, which are key to extending asset life and minimizing long-term costs.

Several risks could impact the success of this plan, including:

- Structural failures due to deferred maintenance,
- Rising repair costs driven by inflation, and
- Increasingly severe weather events such as flooding and freeze-thaw cycles.

To mitigate these risks, the plan includes direction to continuing to pursue additional funding through infrastructure grants and partnerships, implementing a robust asset management system to monitor asset condition and performance, and incorporating resilient design standards. Regular inspections, data-driven prioritization, and adaptive planning will be essential to maintaining the safety, reliability, and longevity of the bridge and culvert network.

13.6 LIFECYCLE ACTIVITY PLAN

Bridges and culverts are vital components of Middlesex Centre's transportation infrastructure, supporting safe and efficient movement across the Municipality. To ensure their long-term performance, safety, and resilience, a structured lifecycle approach is essential. This approach spans from initial planning and design through to operation, rehabilitation, and eventual decommissioning.

The table below outlines key lifecycle phases, associated activities, specific tasks, and their intended purposes. These activities are designed to guide asset management practices, support informed decision-making, and optimize the use of available resources.

It is important to note that this list is not exhaustive. Many of the activities outlined are already being utilized as part of Middlesex Centre's ongoing infrastructure management efforts. The table serves as a high-level framework that can be adapted and expanded as new technologies, funding opportunities, and best practices emerge.

FIGURE 64. LIFECYCLE MANAGEMENT – BRIDGES AND CULVERTS

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Planning and Asset Management	Asset Inventory	Identify and document all bridges and culverts, including location, type, size, and condition	Establish a baseline for asset management and future planning
	Risk and Needs Assessment	Evaluate structural risk, traffic importance, and environmental exposure	Prioritize assets based on criticality and vulnerability
	Budgeting & Programming	Estimate costs, allocate funding, and schedule projects	Ensure financial readiness and strategic investment
Design	Preliminary & Detailed Design	Structural analysis, hydraulic modeling, material selection	Ensure safe, efficient, and resilient infrastructure design
	Environmental Review	Assess environmental impacts and obtain necessary approvals	Comply with regulations and minimize ecological disruption
Construction	New Construction & Replacement	Site preparation, foundation work, superstructure installation	Build or replace structures to meet current and future demands
	Quality Assurance	Material testing, inspections, and documentation	Ensure construction meets design and safety standards
Operation	Routine Maintenance	Cleaning, debris removal, joint sealing, minor repairs	Preserve structural integrity and functionality
	Monitoring & Inspection	Regular visual inspections, load testing, and condition rating	Detect early signs of deterioration and ensure safety
Rehabilitation	Major Repairs & Upgrades	Deck resurfacing, bearing replacement, structural strengthening	Extend service life and restore performance
	Component Renewal	Replace deteriorated elements (e.g., culvert liners, guardrails)	Maintain safety and reduce risk of failure

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Decommissioning	Retirement Planning	Assess usage, structural condition, and alternatives	Plan for safe removal or repurposing of obsolete structures
	Site Restoration	Demolition, environmental remediation, and documentation	Restore site conditions and ensure compliance

14 FLEET ASSETS

81 Vehicles

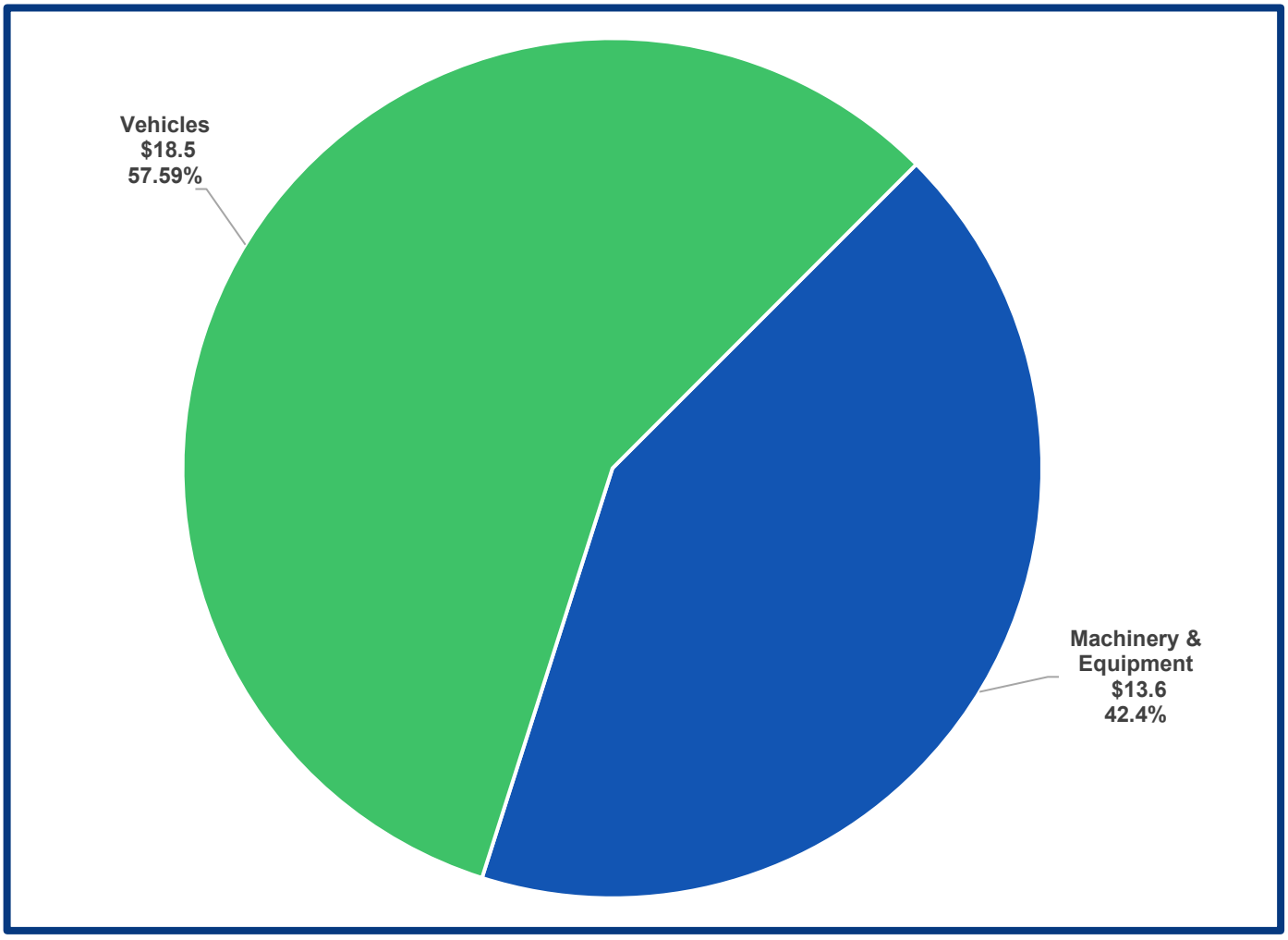
174 Machinery & equipment

Total Asset Replacement Value

$ 32.1 M

2024 Dollars

FIGURE 65. ASSET ALLOCATION BY REPLACEMENT VALUE(IN MILLIONS)



14.1 FLEET ASSETS

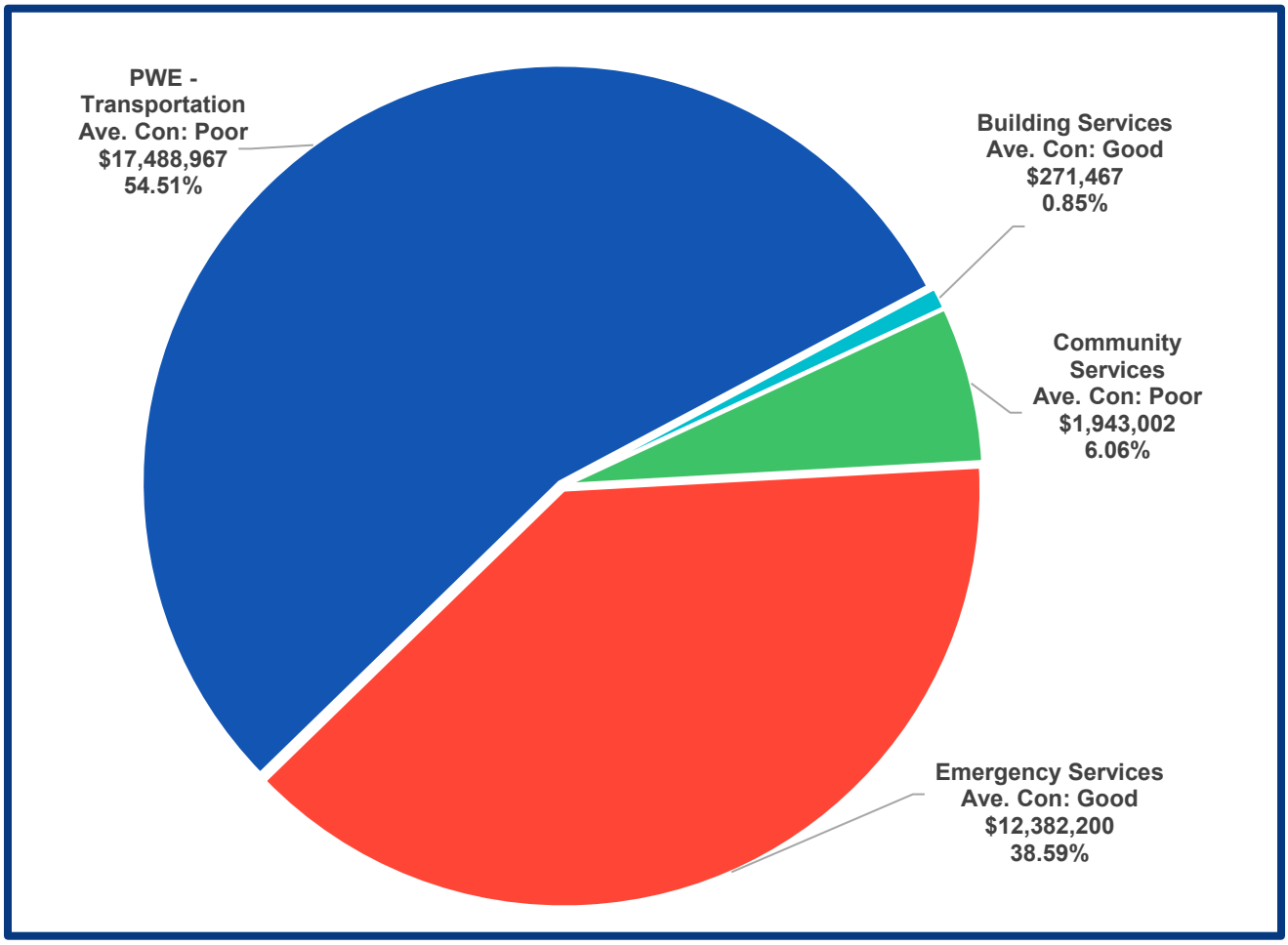
Middlesex Centre manages a diverse and strategically equipped fleet to support its municipal operations and community services. The fleet includes 81 vehicles with a total replacement value of $18.5 million in 2024 dollars. These vehicles are categorized into heavy-duty, medium-duty, and light-duty classes, along with a range of trailers, enabling the Municipality to effectively handle transportation, utility, and service delivery needs. Complementing the vehicle fleet are 174 pieces of major machinery and equipment, valued at $13.6 million. This equipment includes earthmoving machinery for construction and infrastructure projects, fire and rescue equipment to support emergency response and public safety, and maintenance equipment essential for roads, parks, and facility upkeep. Together, these assets reflect Middlesex Centre's commitment to maintaining a high standard of service, operational readiness, and long-term asset sustainability.

Figures 58 through 61 provide a detailed overview of Middlesex Centre's fleet assets, offering insights into their condition, departmental distribution, and replacement value. **Figure 66** summarizes the overall fleet inventory by average condition and replacement cost, giving a snapshot of asset health and financial exposure. **Figure 67** breaks down the fleet inventory by department, highlighting how resources are allocated across municipal operations. **Figure 68** focuses specifically on vehicles—categorized into heavy-duty, medium-duty, light-duty, and trailers—analyzing their condition and replacement value. **Figure 69** presents a similar analysis for machinery and equipment, including earthmoving, fire and rescue, and maintenance assets. Together, these figures support strategic asset management and long-term capital planning.

FIGURE 66. FLEET INVENTORY BY CONDITION AND REPLACEMENT VALUE

ASSET	QTY	UNIT OF MEASURE	CONDITION[31] (AVERAGE)[32]	REPLACEMENT COST (2024 $)
Vehicles	81	Number	Poor	$ 18,478,343
Major Machinery & Equipment	174	Number	Fair	$ 13,607,294
TOTAL			**FAIR**	**$ 32,085,637**

FIGURE 67. FLEET ASSET BY DEPARTMENT AND REPLACEMENT VALUE



[31] For detailed information on assessing conditions, please refer to Appendix B: Interpreting Condition Ratings.

[32] Condition is currently assessed based on asset age, which may overstate deterioration. In July 16, 2025, new guidelines were presented to Council to improve the accuracy of condition assessments for fleet assets.

FIGURE 68. VEHICLE INVENTORY SUMMARY BY CONDITION AND REPLACEMENT VALUE

VECHICLE TYPE	QTY	UNIT OF MEASURE	CONDITION (AVERAGE)	REPLACEMENT COST (2024 $)
Light Duty (GVW Class 1-2)	34	Number	Fair	$ 1,904,234
Medium Duty (GVW Class 3-6)	5	Number	Poor	$ 1,448,752
Heavy Duty (GVW Class 7-8)	19	Number	Poor	$ 14,380,865
Trailer	23	Number	Poor	$ 744,492
TOTAL	**81**	**NUMBER**	**POOR**	**$ 18,478,343**

FIGURE 69. MACHINERY & EQUIPMENT INVENTORY SUMMARY BY CONDITION AND REPLACEMENT VALUE

M & E TYPE	QTY	UNIT OF MEASURE	CONDITION (AVERAGE)	REPLACEMENT COST (2024 $)
Earthmoving Equipment	49	Number	Fair	$ 6,677,192
Fire Equipment - Apparatus	25	Number	Good	$ 3,062,200
Fire Equipment - Bunker Gear	1	Number	Good	$ 975,000
Maintenance Equipment	88	Number	Poor	$ 2,839,898
Other Equipment	11	Number	Poor	$ 53,004
TOTAL	**174**	**NUMBER**	**FAIR**	**$ 13,607,294**

14.2 LEVELS OF SERVICE

Middlesex Centre is a growing Municipality committed to delivering high-quality services that meet the evolving needs and expectations of its residents. Central to achieving these service levels is a well-maintained and strategically managed fleet of vehicles, machinery, and equipment. These fleet assets support a wide range of municipal functions, including road maintenance, emergency response, parks and facility upkeep, and infrastructure development. To ensure operational efficiency and sustainability, the Municipality has adopted the **Fleet Replacement Guidelines (Report No. PWE 39-2025)**[33]**,** which provide a standardized and transparent framework for evaluating and replacing fleet assets. By aligning fleet management with service delivery objectives and applying consistent criteria, such as age, usage, condition, reliability, and operational criticality, Middlesex Centre ensures timely renewal, minimizes downtime, and upholds its commitment to community safety and service excellence.

Our residents should expect…

- *Fleet assets support timely and consistent delivery of essential Municipal service such as road maintenance, snow clearing, and emergency response.*
- *Regular maintenance ensures vehicles and machinery operate safely and efficiently, minimizing service disruptions.*
- *Fleet is equipped to handle seasonal demands, including winter snow removal and summer roadwork, ensuring year-round service continuity.*
- *Fire and rescue vehicles and equipment are maintained to high standards to ensure rapid and effective emergency response.*
- *Fleet assets are distributed across departments to meet operational needs and maintain service levels across all areas of the Municipality.*

Fleet management in Middlesex Centre is shaped by the Municipality's geographic size, diverse service demands, and financial constraints. A key challenge is managing an aging and varied fleet that includes light-duty vehicles, trailers, and specialized machinery. As assets approach or exceed the thresholds outlined in the replacement guidelines - for example, 250,000 km or 8 years for light-duty vehicles, and 7,500 hours for heavy-duty machinery – they become more prone to breakdowns and require

[33] Report No. PWE 39-2025 was adopted by Council on July 16, 2025. https://middlesexcentre.ca

more frequent maintenance, which can disrupt service delivery and increase operational costs. Maintaining asset reliability while balancing limited maintenance resources is a continuous concern.

Budgetary pressure is another significant challenge. With a growing population and expanding service expectation, the Municipality must carefully prioritize capital investments in fleet renewal. The Fleet Replacement Guidelines provide a scoring system (ranging from 0 to 25) to assess condition and determine appropriate actions, from continued maintenance to immediate replacement. Delaying replacements beyond the recommended scoring threshold (e.g., 21-25 for very poor condition) can result in higher long-term costs and reduced reliability. Strategic lifecycle planning, guided by these scoring criteria, helps optimize asset performance and minimize total cost of ownership.

Seasonal and operational further complicates fleet management. Middlesex Centre's fleet must be equipped to handle a wide range of tasks, from snow removal and road maintenance to emergency response and parks upkeep, often requiring specialized equipment with limited seasonal use. The guidelines account for asset criticality in scoring, ensuring that high-impact equipment such as snowplows and emergency vehicles are prioritized for replacement. Additionally, evolving regulatory requirements related to environmental standards and safety necessitate ongoing fleet modernization. The adoption of the Fleet Replacement Guidelines ensures that the Municipality remans proactive, compliant, and responsive to both operational and legislative changes.

Although not required under Ontario Regulation 588/17, Middlesex Centre has proactively developed its own set of metrics to more effectively monitor and evaluate levels of service for its fleet asset category. These metrics are as follows:

FIGURE 70. CURRENT LEVELS OF SERVICE: FLEET ASSETS

TYPE	METRICS	TARGET	LOS PERFORMANCE (ACTUAL)				
			2020	2021	2022	2023	2024
Customer Service	% of Proactive Maintenance	Greater than 60.0% of Total Number of Work Orders	-	-	38.9%	41.2%	57.1%
	% of Reactive Maintenance	Less than 40.0% of Total Number of Work Orders	-	-	61.1%	58.8%	42.9%
Condition and Reliability	Average Asset Condition	Fair	Fair	Fair	Fair	Poor	Poor
	% of Assets with "Poor" to "Very Poor" Condition	Less than 10.0% of the Total Replacement Cost	-	-	-	49.7%	52.6%
Safety	# of vehicle failed annual safety inspection	0	0	0	0	0	0
Financial Sustainability	Reinvestment Ratio %[34]	At least 7.2%	9.2%	5.6%	7.4%	5.1%	9.6%

[34] The **reinvestment ratio**—defined as minimum annual investment as a percentage of total replacement cost—declined from 2020 to 2024 due to an increase in recorded assets, not a decrease in actual investment levels

14.3 RISK AND RISK MITIGATION

Fleet assets play a vital role in supporting municipal operations across Middlesex Centre, from road maintenance and snow removal to emergency response and public works. Ensuring the reliability, safety, and cost-effectiveness of the fleet requires proactive risk management and strategic planning.

The table below outlines key risks that can impact the performance and service levels of fleet assets, along with their potential consequences and corresponding mitigation strategies. These risks range from operational and financial challenges to environmental and regulatory pressures.

While this list is not exhaustive, it highlights the most common and relevant risks facing Middlesex Centre. Many of the mitigation strategies identified are already being implemented as part of Municipality's ongoing fleet management practices. This framework supports continuous improvement and helps ensure that fleet operations remain resilient, efficient, and aligned with service delivery goals.

FIGURE 71. RISKS AND TREATMENT OPTIONS

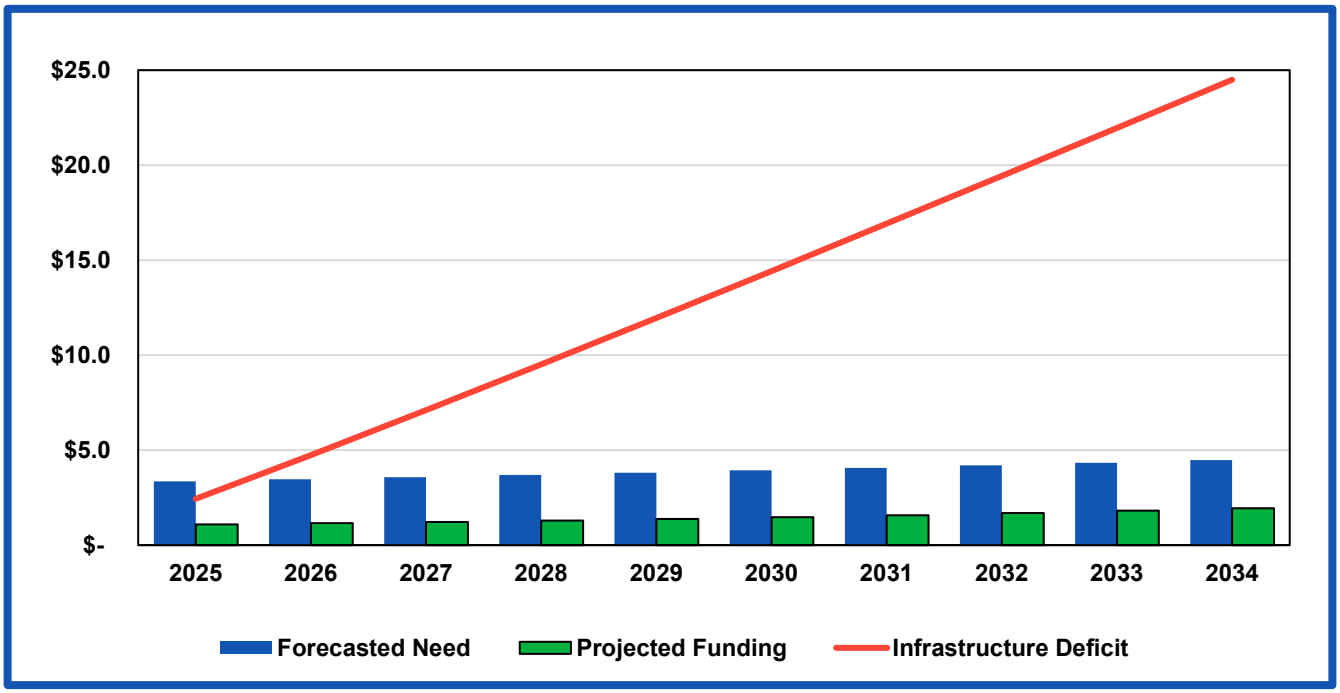
RISK	IMPACTS ON LEVELS OF SERVICE	MITIGATION STRATEGY
Aging Fleet	Increased breakdowns, reduced reliability, higher maintenance costs	Implement a fleet replacement schedule and lifecycle costing analysis
Insufficient Preventative Maintenance	Unexpected failures, safety risks, and service disruptions	Establish and follow a preventative maintenance program with regular inspections
Fuel Price Volatility	Increased operating costs, budget overruns	Use fuel-efficient or alternative fuel vehicles, and monitor fuel usage closely
Lack of Spare Parts or Delays	Extended vehicle downtime, reduced service availability	Maintain critical spare parts inventory and establish supplier agreements
Operator Error or Negligence	Accidents, premature wear, and safety incidents	Provide regular training, enforce safety protocols, and monitor driver behavior
Technological Obsolescence	Incompatibility with new systems, reduced efficiency	Upgrade onboard systems and integrate fleet management technologies

RISK	IMPACTS ON LEVELS OF SERVICE	MITIGATION STRATEGY
Environmental Regulations	Non-compliance penalties, restricted vehicle use	Transition to low-emission or electric vehicles and ensure compliance with standards
Extreme Weather Events	Damage to vehicles, limited mobility, and increased maintenance needs	Store vehicles in protected facilities and equip for seasonal conditions
Budget Constraints	Delayed replacements or maintenance, reduced fleet performance	Prioritize critical assets, explore grants, and optimize fleet utilization

14.4 FINANCIAL FORECAST: FLEET ASSETS

10-Year Reinvestment	Forecasted Need	Projected Funding
In 2024 $	$ 38.9 M	$ 14.6 M

FIGURE 72. 2025–2034 CAPITAL PLANNING: FUNDING SHORTFALLS AND INFRASTRUCTURE NEEDS (IN MILLIONS)



Over the next ten years, Middlesex Centre's fleet asset portfolio will require an estimated reinvestment of over **$38.9 million** to maintain service levels and operational reliability. However, with only **$14.6 million** currently proposed for capital funding, the Municipality faces a projected **infrastructure deficit of $24.3 million by 2034**. This shortfall poses a significant challenge to sustaining a dependable and efficient fleet. The Fleet Replacement Guides, adopted by Council on July 16, 2025, provide a structured framework to assess and prioritize fleet renewal needs based on asset age, usage, condition, reliability, and criticality to operations.

To address this funding gap, the Municipality's reinvestment strategy will focus on replacing high-priority and high-usage assets identified through the scoring system outlined in the guidelines. Asset scoring between 16-20 (poor condition) or 21-25 (very poor condition) will be scheduled for replacement to avoid service disruptions and escalating maintenance costs. The strategy also includes optimizing fleet size and extending asset life through proactive maintenance and lifecycle planning, ensuring that limited resources are used effectively while maintaining service continuity.

Despite these measures, several risks remain. Aging vehicles are more susceptible to breakdowns and require increased maintenance, which can strain operational budgets. Rising fuel and parts costs, coupled with evolving environmental regulations, may further impact financial planning. Additionally, the transition to low-emission or electric vehicles – while aligned with sustainability goals – may necessitate unplanned capital investments in infrastructure and training.

To mitigate these risks, the Municipality will explore alternative funding sources such as green infrastructure grants, improve operational efficiency through data-driven fleet management, and phase in electric or hybrid vehicles where feasible. The Fleet Replacement Guidelines support this adaptive approach by enabling regular performance reviews and prioritization based on standardized scoring. This ensures that fleet decision remains transparent, cost-effective, and aligned with Middlesex Centre's long-term service delivery objectives.

14.5 LIFECYLE ACTIVITY PLAN

Fleet assets are essential to the daily operations of Middlesex Centre, supporting a wide range of municipal services including road maintenance, snow removal, waste management, and emergency response. To ensure these services are delivered efficiently and reliably, the Municipality has adopted a structured lifecycle approach to fleet management, guided by the Fleet Replacement Guidelines (Report No. PWE 39-2025). These guidelines establish standardized criteria to evaluate and prioritize asset replacement.

The table below outlines the key phases in the lifecycle of fleet assets, along with associated activities, tasks, and their intended purposes. This framework supports strategic planning, optimizes asset performance, and extends the useful life of vehicles through proactive maintenance and timely replacement. Asset are assessed using a scoring system ranging from 0 to 25, with higher scores indicating greater urgency for replacement.

It is important to note that this lifecycle framework is adaptable and not exhaustive. Many of the activities described are already embedded in Middlesex Centre's current fleet management practices. The table serves as a high-level reference that can evolve alongside technological advancements, changing service demands, and emerging best practices. By integrating the Fleet Replacement Guidelines into daily operations, the Municipality ensures that its fleet remains reliable, cost-effective, and responsive to the needs of the community.

FIGURE 73. LIFECYCLE MANAGEMENT - FLEET ASSETS

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Planning and Asset Management	Asset Inventory	Record asset type, age, kilometers/hours, condition, reliability, and replacement value	Build a comprehensive database to support scoring, prioritization, and strategic planning
	Needs Assessment	Analyze service demands, vehicle utilization, and operational gaps	Align fleet composition with municipal service delivery and criticality scoring
	Budgeting & Forecasting	Estimate lifecycle costs, apply scoring thresholds, and allocate reserve funds	Ensure financial sustainability and timely reinvestment through the budget process
Procurement	Vehicle Acquisition	Define specifications, tender, and purchase vehicles	Acquire vehicles that meet operational, safety, and environmental standards
	Vendor Evaluation	Assess supplier reliability, warranty coverage, and service support	Ensure long-term value, support, and alignment with lifecycle goals

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Operation	Preventative Maintenance	Schedule oil changes, inspections, tire rotations, and fluid checks	Extend asset life, reduce breakdowns, and maintain condition scores
	Fleet Monitoring	Track kilometers/hours, fuel use, idle time, and driver behavior	Optimize performance and inform scoring for reliability and usage
	Compliance Management	Maintain licensing, insurance, and regulatory compliance	Ensure legal readiness and alignment with evolving standards
Rehabilitation	Mid-Life Refurbishment	Replace major components (e.g., tires, batteries, brakes)	Extend useful life and delay replacement beyond scoring thresholds
	Performance Review	Evaluate cost per km/hr., downtime, and reliability metrics	Identify underperforming assets and inform replacement planning
Replacement	End-of-Life Disposal	Decommission, auction, or recycle vehicles	Recover residual value and remove assets scoring 21–25 (very poor)
	Replacement Planning	Prioritize replacements using scoring criteria (age, usage, condition, criticality)	Maintain service continuity and reduce risk of operational disruption

15 FACILITIES AND PARKS

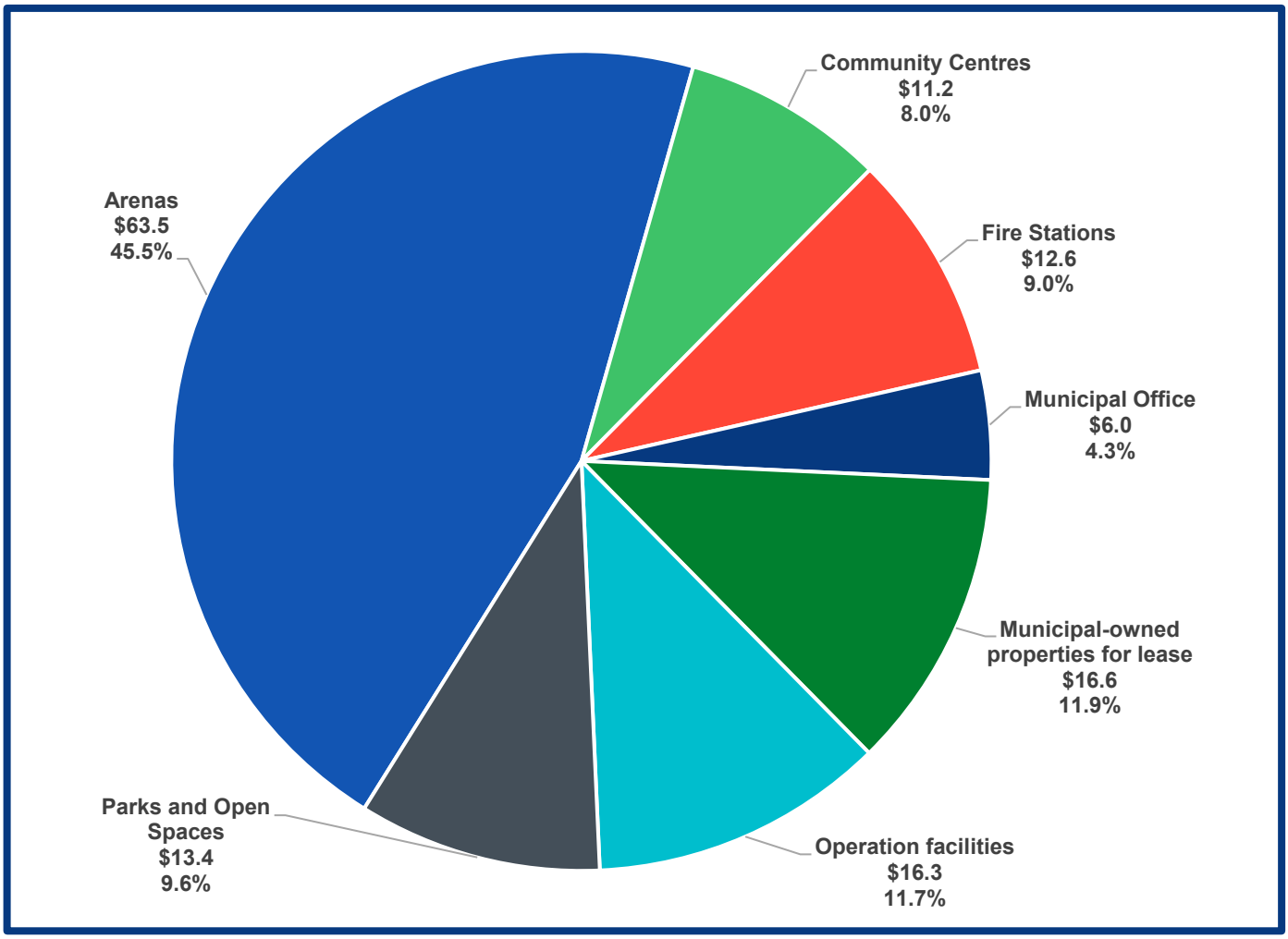
2 Arena and indoor recreation
5 Community centres
5 Fire Stations
1 Municipal office
3 Municipal-owned properties for lease
3 Libraries
3 Road operation facilities
19 Parks and open spaces

Total Asset Replacement Value

$ 139.5 M

2024 Dollars

FIGURE 74. ASSET ALLOCATION BY REPLACEMENT VALUE (IN MILLIONS)



15.1 MUNICIPALLY-OWNED FACILITIES

Middlesex Centre offers a diverse and strategically managed portfolio of public facilities and parks that support the evolving needs of its growing community. The Municipality is home to two arenas, including the heavily utilized Ilderton Arena & Curling Club, which is currently undergoing renovations, an important step in revitalizing key recreational infrastructure. Five community centres serve as vibrant hubs for local events, programs, and gatherings, while five fire stations are strategically located to ensure public safety across the region.

Municipal administration is anchored at a modern, centrally located municipal office, recently constructed and rated in very good condition, reflecting the Municipality's commitment to efficient and forward-looking governance. The Municipality also manages six properties available for lease, contributing to local economic development, though conditions vary significantly, from very good to very poor. Three operation facilities, all in good condition, support essential infrastructure and maintenance services.

Complementing these assets are 19 parks and open spaces, which provide residents and visitors with ample opportunities to enjoy nature, recreation, and community life. While many parks are in good condition, several, such as the Bryanston School Property Park and Ilderton Junction Park, are rated very poor or poor, highlighting the need for targeted reinvestment.

Altogether, these facilities represent a significant investment in public infrastructure, with a total estimated **replacement cost of $139.5 million** in 2024 dollars.

Figures 75 to 77 provide a comprehensive snapshot of the condition and distribution of Middlesex Centre's municipal facilities and parks, supporting strategic asset management and long-term planning:

- **Figure 75:** Facility Type by Condition and Replacement Value illustrates how financial investment aligns with facility condition, helping prioritize asset categories that require urgent attention.
- **Figure 76:** Number of Facilities by Condition highlights the overall state of municipal infrastructure, emphasizing the need for reinvestment in aging or deteriorating assets.
- **Figure 77:** Municipal Facilities and Parks in Middlesex Centre presents a detailed inventory of municipally owned properties, showcasing the breadth and diversity of public assets across the community.

Together, these figures offer valuable insights into the physical and financial health of Middlesex Centre's infrastructure portfolio and underscore the importance of proactive, data-driven asset management.

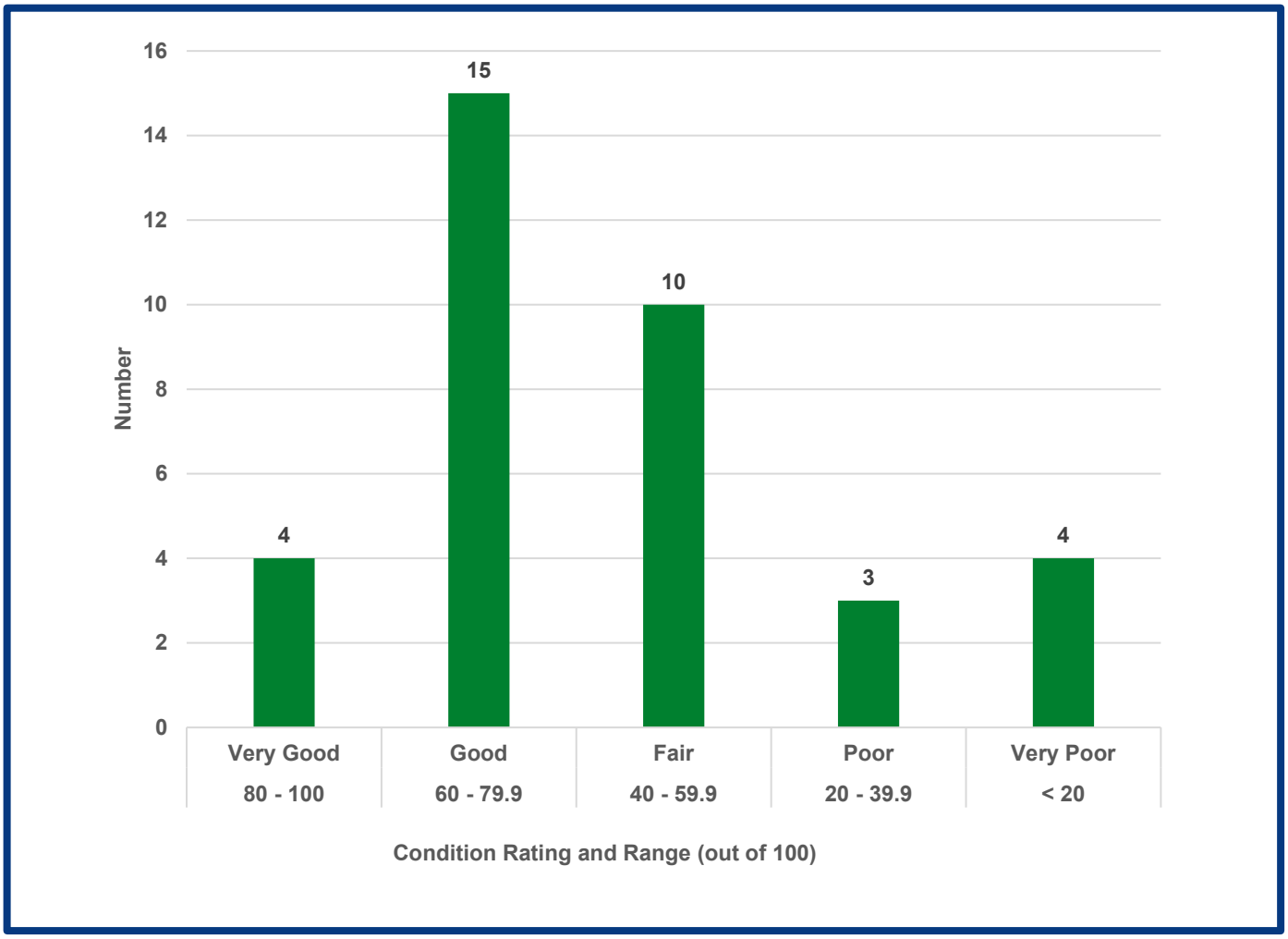
FIGURE 75. FACILITY TYPES BY CONDITION AND REPLACEMENT VALUE

FACILITY TYPE	QTY	UNIT OF MEASURE	CONDITION[35] (AVERAGE)[36]	REPLACEMENT COST (2024 $)
Arenas	2	Number	Good	$ 63,496,913
Community Centres	5	Number	Fair	$ 11,190,040
Fire Stations	5	Number	Good	$ 12,587,247
Municipal Office	1	Number	Very Good	$ 6,000,000
Municipal-owned properties for lease	3	Number	Poor	$ 14,423,955
Operation facilities	3	Number	Good	$ 16,271,983
Libraries	3	Number	Fair	$ 2,155,071
Parks and Open Spaces	19	Number	Good	$ 13,398,568
TOTAL			**GOOD**	**$ 139,523,777**

[35] For detailed information on assessing conditions, please refer to Appendix B: Interpreting Condition Ratings.

[36] Asset condition is currently assessed based on age, which may overstate actual deterioration in the absence of a third-party assessment. Staff believe that the true condition of assets is better than what age-based assessments suggest.

FIGURE 76. NUMBER OF FACILITIES BY CONDITION[37]



[37] Asset condition is currently assessed based on age, which may overstate actual deterioration in the absence of a third-party assessment. Staff believe that the true condition of assets is better than what age-based assessments suggest.

FIGURE 77. MUNICIPAL FACILITIES AND PARKS IN MIDDLESEX CENTRE

FACILITY NAME	FACILITY TYPE	CONDITION[38]	REPLACEMENT COST[39] (2024 $)
Arva Douglas B. Weldon Park	Parks and open spaces	Good	$ 1,687,362
Arva Fire Station	Fire Stations	Good	$ 2,270,000
Bryanston Community Centre	Community Centres	Fair	$ 1,818,787
Bryanston Fire Station	Fire Stations	Fair	$ 1,818,787
Bryanston School Property Building	Municipal-owned properties for lease	Very Poor	$ 5,723,955
Bryanston School Property Park	Parks and open spaces	Very Poor	$ 788,600
CIBC Property[40]	Municipal-owned properties for lease	Very Good	$ 600,000
Coldstream Community Centre	Community Centres	Good	-
Coldstream Fire Station	Fire Stations	Very Good	$ 3,935,314
Coldstream Library	Library	Fair	$ 138,989
Coldstream Salt Shed	Operation facilities	Poor	$ 442,699
Delaware Community Centre	Community Centres	Good	$ 3,422,254

[38] Asset condition is currently assessed based on age, which may overstate actual deterioration in the absence of a third-party assessment. Staff believe that the true condition of assets is better than what age-based assessments suggest.

[39] Replacement values are derived from the insurance underwriter's report as of year-end 2024.

[40] The **CIBC Property** has now been sold, following the negotiations that were underway at the time of drafting this Asset Management Plan.

FACILITY NAME	FACILITY TYPE	CONDITION[38]	REPLACEMENT COST[39] (2024 $)
Delaware Fire Station	Fire Stations	Good	$ 2,281,573
Delaware Library	Library	Poor	$ 457,087
Delaware Lions Park	Parks and open spaces	Good	$ 685,711
Delaware Municipal Park	Parks and open spaces	Good	$ 830,103
Delaware Operation Centre	Road operation facilities	Good	$ 6,737,900
Delaware Pleasant Park	Parks and open spaces	N/A	-
Delaware Tiffany Park	Parks and open spaces	N/A	-
Denfield Operation Centre	Road operation facilities	Good	$ 9,091,384
Denfield Park	Parks and open spaces	Fair	$ 966,186
Ilderton Arena & Curling Club	Arena and indoor recreation	Very Poor[41]	$ 24,773,700
Ilderton Community Centre	Community Centres	Good	$ 2,650,000
Ilderton Deerhaven Optimist Park	Parks and open spaces	Good	$ 642,896
Ilderton Fire Station	Fire Stations	Good	$ 2,281,573
Ilderton Heritage Park	Parks and open spaces	Fair	$ 2,387,665

[41] At the time of this Asset Management Plan's publication, the **Ilderton Arena and Curling Club** is undergoing renovations to modernize the facility and enhance community use.

FACILITY NAME	FACILITY TYPE	CONDITION[38]	REPLACEMENT COST[39] (2024 $)
Ilderton Junction Park	Parks and open spaces	Poor	$ 9,000
Ilderton Library	Library	Fair	$ 1,558,995
Ilderton Meadowcreek Park	Parks and open spaces	Good	$ 464,650
Ilderton Medical Clinic	Municipal-owned properties for lease	Very Poor	$ 8,100,000
Ilderton Rail Trail	Parks and open spaces	N/A	-
Kilworth Optimist Park	Parks and open spaces	Very Good	$ 495,800
Kilworth River Flats Park	Parks and open spaces	N/A	-
Kilworth River's Edge	Parks and open spaces	N/A	-
Komoka Caverhill Park	Parks and open spaces	Good	$ 275,000
Komoka Community Centre	Community Centres	Fair	$ 3,299,000
Komoka Park	Parks and open spaces	Fair	$ 1,122,402
Komoka Wellness Centre	Arena and indoor recreation	Good	$ 38,723,213
Komoka Westbrook Park	Parks and open spaces	Fair	$ 1,057,073
Municipal Office	Municipal office	Very Good	$ 6,000,000
Poplar Hill Park	Parks and open spaces	Fair	$ 1,986,120

15.2 LEVELS OF SERVICE

Middlesex Centre is committed to delivering high-quality, accessible, and sustainable services through its extensive network of municipal facilities and parks. These assets are essential to supporting community well-being, public safety, recreation, and municipal operations. The Municipality's asset management approach is grounded in principles of reliability, equity, and long-term sustainability. However, maintaining consistent levels of service is increasingly challenged by aging infrastructure.

The condition of municipal facilities and parks across Middlesex Centre varies significantly, reflecting differences in age, usage, and maintenance history. Several key assets, such as the recently constructed municipal office, the Coldstream Fire Station, and Kilworth Optimist Park, are rated in very good condition and continue to deliver reliable, high-quality services. Many other facilities, including the Arva Fire Station, Delaware Community Centre, and Ilderton Community Centre, are in good condition and remain functional and dependable.

Our residents should expect…

- *Ongoing access to parks and open spaces.*
- *Phased improvements and renovations including upgrades like those at the Ilderton Arena.*
- *Prioritization of safety, accessibility and essential services in all municipal facilities.*
- *Long-term planning and investment to improve aging infrastructure and enhance community spaces.*
- *Commitment to sustainability and efficiency, ensuring facilities meet future needs while managing costs.*

Nonetheless, a number of assets are showing signs of deterioration and require attention. Facilities such as the Bryanston Community Centre, Komoka Community Centre, and several parks—including Komoka Park and Poplar Hill Park, are rated in fair condition, indicating the need for ongoing maintenance and potential upgrades. More critically, some assets are in poor to very poor condition and may require substantial reinvestment or replacement. These include the Bryanston School Property Park and Building, the Ilderton Medical Clinic, and the Ilderton Arena & Curling Club. While the latter is currently rated in very poor condition, renovations are underway to restore and modernize this heavily used recreational facility.

Aging infrastructure presents a growing risk to the Municipality's ability to maintain consistent service levels. As buildings and systems age, they become more susceptible to failures, require more frequent and costly maintenance, and may no longer meet the evolving needs of the community. Deferred maintenance can lead to service disruptions, safety hazards, and diminished public satisfaction. Without timely reinvestment, the Municipality risks a decline in service quality, increased liability, and higher long-term costs associated with emergency repairs or full asset replacement.

To support a data-driven strategy, the Municipality employs a suite of performance metrics that evaluate the condition, functionality, and sustainability of both built and natural assets. These indicators are presented in **Figure 78** and **Figure 79**. Together, these figures provide a comprehensive overview of how municipal assets are performing and where targeted interventions may be required.

The performance metrics focus on key aspects such as structural condition, maintenance frequency, and service reliability. For example, facilities like the Municipal Office and Coldstream Fire Station, which are rated in very good condition, demonstrate the benefits of recent investments and modern design standards. Conversely, assets such as the Bryanston School Property and Ilderton Medical Clinic, which are in very poor condition, highlight the need for reinvestment and renewal.

By systematically tracking and analyzing these metrics, Middlesex Centre can make informed decisions about capital planning, prioritize high-risk or underperforming assets, and allocate resources efficiently.

FIGURE 78. CURRENT LEVELS OF SERVICE: ALL FACILITIES EXCEPT PARKS

TYPE	METRICS	TARGET	LOS PERFORMANCE (ACTUAL)				
			2020	2021	2022	2023	2024
Customer Service	% of Proactive Maintenance	Greater than 60.0% of Total Number of Work Orders	-	-	8.3%	13.2%	23.8%
	% of Reactive Maintenance	Less than 40.0% of Total Number of Work Orders	-	-	91.7%	86.8%	76.3%
Access and Capacity	# of unplanned closures due to asset failure	0	-	-	-	-	0
Condition and Reliability	Average Asset Condition	Fair	Fair	Fair	Fair	Fair	Fair
Condition and Reliability	% of Assets with "Poor" to "Very Poor" Condition	Less than 10.0% of the Total Replacement Cost	-	-	-	45.4%	43.5%
Financial Sustainability	Reinvestment Ratio %[42]	At least 2.2%	0.4%	1.0%	0.6%	2.8%	8.0%

[42] The **reinvestment ratio**—defined as minimum annual investment as a percentage of total replacement cost—declined from 2020 to 2024 due to an increase in recorded assets, not a decrease in actual investment levels

FIGURE 79. CURRENT LEVELS OF SERVICE: PARKS AND OPEN SPACES

TYPE	METRICS	TARGET	LOS PERFORMANCE (ACTUAL)				
			2020	2021	2022	2023	2024
Customer Service	% of Proactive Maintenance	Greater than 60.0% of Total Number of Work Orders	-	0.0%	0.0%	0.0%	0.0%
	% of Reactive Maintenance	Less than 40.0% of Total Number of Work Orders	-	100.0%	100.0%	100.0%	100.0%
Access and Capacity	# of unplanned closures due to asset failure	0	-	-	-	-	0
Condition and Reliability	Average Asset Condition	Good	Good	Good	Good	Good	Good
	% of Assets with "Poor" to "Very Poor" Condition	Less than 10.0% of the Total Replacement Cost	-	-	-	27.2%	22.5%
Financial Sustainability	Reinvestment Ratio %[43]	At least 3.0%	0.3%	0.1%	4.7%	6.4%	4.3%

15.3 RISK AND RISK MITIGATION

Facilities and parks are essential public assets that support a wide range of municipal services, recreational activities, and community programs in Middlesex Centre. Ensuring these spaces remain safe, accessible, and functional requires proactive risk management and strategic planning.

[43] The **reinvestment ratio**—defined as minimum annual investment as a percentage of total replacement cost—declined from 2020 to 2024 due to an increase in recorded assets, not a decrease in actual investment levels

The table below outlines key risks that may impact the levels of service for municipal facilities and parks, along with their potential consequences and corresponding mitigation strategies. These risks range from aging infrastructure and climate-related impacts to funding limitations and evolving community needs.

While this list is not exhaustive, it highlights the most common and relevant challenges facing these assets. Many of the mitigation strategies identified are already being implemented as part of Middlesex Centre's ongoing asset management practices. This framework (**Figure 80**) supports informed decision-making and helps ensure that facilities and parks continue to meet the needs of residents now and into the future.

FIGURE 80. RISKS AND TREATMENT OPTIONS

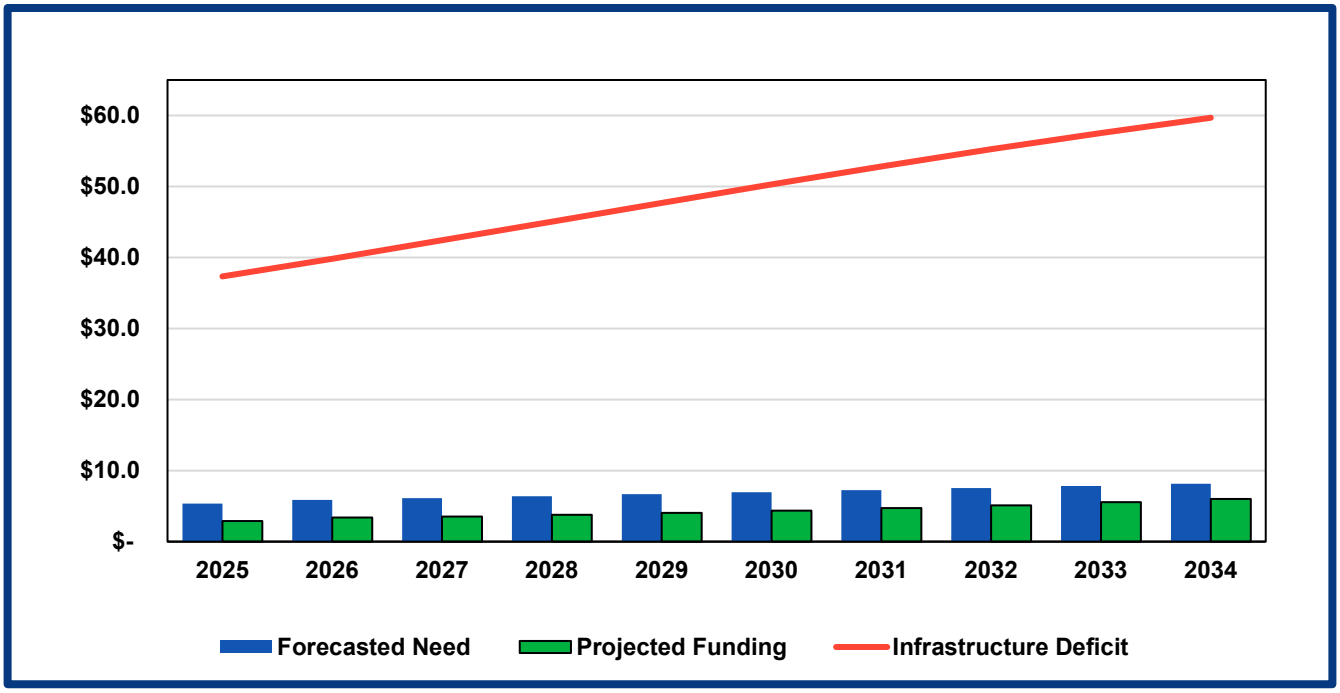
RISK	IMPACTS ON LEVELS OF SERVICE	MITIGATION STRATEGY
Absence of structured third-party condition assessments	Generalized assumptions may not accurately reflect the true condition or performance of individual assets where assets in poor condition are overlooked while others receive unnecessary investment.	Implement a formalized condition assessment program across municipal facilities including engaging qualified third-party professionals to conduct standardized evaluation at regular intervals.
Aging Infrastructure	Increased maintenance needs, reduced safety and functionality, potential closures	Implement lifecycle planning, prioritize reinvestment, and conduct regular condition assessments
Deferred Maintenance	Accelerated deterioration, higher long-term costs, service disruptions	Establish preventative maintenance schedules and secure consistent funding
Climate-Related Events	Flooding, extreme heat, or storms can damage buildings and outdoor amenities	Design for climate resilience, improve drainage, and use weather-resistant materials
Accessibility Non-Compliance	Limited access for users with disabilities, legal and reputational risks	Conduct accessibility audits and implement upgrades to meet AODA and building code standards

RISK	IMPACTS ON LEVELS OF SERVICE	MITIGATION STRATEGY
Vandalism and Misuse	Damage to facilities and park equipment, reduced user satisfaction	Increase surveillance, improve lighting, and engage community in stewardship
Rising Energy Costs	Higher operating expenses, reduced funds for other services	Invest in energy-efficient systems and pursue energy retrofit grants
Changing Community Needs	Facilities or parks may no longer align with user expectations or demographics	Conduct regular community engagement and adapt programming and design accordingly
Limited Capital Funding	Delays in upgrades or replacements, growing infrastructure deficit	Explore grants, partnerships, and phased investment strategies
Regulatory Changes	Unexpected costs to comply with new codes or standards	Monitor regulatory trends and incorporate flexibility into design and planning
Equipment Failure	Disruption of services (e.g., HVAC, lighting, playgrounds)	Implement asset monitoring systems and maintain critical spare parts inventory

15.4 FINANCIAL FORECAST: FACILITIES AND PARKS

10-Year Reinvestment	Forecasted Need	Projected Funding
In 2024 $	$ 68.2 M	$ 43.4 M

FIGURE 81. 2025–2034 CAPITAL PLANNING: FUNDING SHORTFALLS AND INFRASTRUCTURE NEEDS (IN MILLIONS)



Over the next ten years, Middlesex Centre's full portfolio of municipal facilities is projected to require an estimated reinvestment of **$68.2 million**. However, only **$43.4 million** is currently proposed for capital funding, resulting in a funding gap of approximately **$24.8 million**. If left unaddressed, this shortfall is expected to increase the Municipality's infrastructure deficit to **$59.7 million by 2034**.

This funding gap presents a significant challenge to maintaining safe, functional, accessible, and energy-efficient public facilities that support essential services and community well-being. The reinvestment strategy will prioritize facilities based on usage levels, urgency of repair needs, and opportunities for energy savings or service enhancements. Key focus areas will include preventative maintenance, accessibility improvements, and modernization projects that extend asset life and improve operational efficiency.

It is important to note that the forecasted need is based solely on asset age, rather than actual physical condition. The lack of comprehensive condition assessments introduces uncertainty into planning and prioritization efforts. Without accurate data on the current state of facilities, there is a risk of misallocating resources, either overinvesting in assets that are still performing well or underinvesting in those at risk of failure.

To address this gap, **structured third-party condition assessments** are essential. These evaluation provide objective, data-driven insights into asset performance, deterioration rates, and repair needs, enabling for more informed decision-making and efficient use of limited capital funds.

Despite a proactive reinvestment strategy, several risks could impact the long-term performance and reliability of municipal facilities. Aging infrastructure may lead to more frequent repairs, escalating maintenance costs, and potential service interruptions. Deferred maintenance can compromise the safety, accessibility, and functionality of buildings, while changes in building codes and accessibility standards may require unplanned upgrades to remain compliant.

In addition, rising energy costs and the increasing frequency of climate-related events, such as extreme temperatures, heavy precipitation, and severe storms, pose operational and financial challenges. These factors can strain facility systems, increase utility expenses, and accelerate wear on building components.

To mitigate these risks, the plan includes pursuing energy efficiency grants, conducting regular and structured facility condition assessments to guide reinvestment decisions, and adopting smart building technologies to monitor performance and reduce costs. On going reviews and updates to the reinvestment strategy will help ensure that all municipal facilities remain safe, resilient, and aligned with the evolving needs of the community.

15.5 LIFECYCLE ACTIVITY PLAN

Facilities and parks are essential to the quality of life in Middlesex Centre, supporting a wide range of municipal services, recreational opportunities, and community engagement. These assets include administrative buildings, fire halls, libraries, community centres, sports fields, trails, and playgrounds—all of which require thoughtful planning and ongoing investment to remain safe, functional, and welcoming.

The table below outlines the key lifecycle phases for managing facilities and parks assets, along with associated activities, tasks, and their intended purposes. This structured approach helps guide decision-making, optimize asset performance, and ensure long-term value for the community.

It is important to note that this list is not exhaustive. Many of the activities described are already being implemented as part of Middlesex Centre's asset management practices. The table serves as a high-level framework that can be adapted and expanded as community needs evolve, new technologies emerge, and best practices continue to develop.

FIGURE 82. LIFECYCLE MANAGEMENT – FACILITIES AND PARKS

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Planning and Asset Management	Asset Inventory	Document all facilities and park assets, including buildings, playgrounds, lighting, and amenities	Establish a baseline for asset tracking and future planning
	Needs and Condition Assessments	Evaluate usage patterns, community needs, and asset condition through structured third-party assessments	Align investments with service demand, actual asset performance and community priorities
	Budgeting & Forecasting	Estimate lifecycle costs, prioritize projects, and allocate funding based on condition data and service levels	Ensure financial sustainability and timely reinvestment, and optimized resource allocation

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Design	Conceptual & Detailed Design	Develop site plans, architectural drawings, and accessibility features	Ensure safe, inclusive, and functional design for public use
	Environmental & Regulatory Review	Assess environmental impact and ensure code compliance	Minimize ecological disruption and meet legal requirements
Construction	New Builds & Major Upgrades	Construct or renovate buildings, trails, playgrounds, and amenities	Improve service delivery and meet evolving community needs
	Quality Assurance	Conduct inspections, material testing, and contractor oversight	Ensure construction meets safety and performance standards
Operation	Preventative Maintenance	Schedule routine inspections and servicing based on condition assessment data	Extend asset life, reduce unexpected failures, and control maintenance costs
	Condition Monitoring	Conduct regular third-party assessments and integrate findings into asset management systems	Maintain accurate, up-to-date asset data to guide decision-making
	Accessibility & Safety Compliance	Conduct audits and implement upgrades	Ensure facilities and parks are inclusive and meet safety standards
	Component Renewal	Replace roofing, HVAC systems, flooring, playground equipment	Extend asset life and maintain service quality

LIFECYCLE PHASE	ACTIVITY	TASKS	PURPOSE
Operation	Strategy Updates	Revise asset management plan based on assessment data, community feedback, and financial capacity	Ensure alignment with evolving needs and long-term sustainability
Rehabilitation	Energy Efficiency Upgrades	Install LED lighting, insulation, solar panels, or smart controls	Reduce operating costs and environmental impact
	Retirement Planning	Evaluate underused or obsolete assets and plan for repurposing or removal	Optimize asset portfolio and reduce long-term liabilities
Decommissioning	Demolish structures, restore green space, and document changes	Ensure environmental compliance and community safety	Site Restoration

16 APPENDICES

APPENDIX A

ASSET MANAGEMENT POLICY

Category: Corporate Policy Policy No.: CPS-27-2025 Revisions: March 12, 2025	middlesex centre in the centre of it all	Pages: 2 Effective Date: March 12, 2025 Report No.: PWE-16-2025

Asset Management Policy

Purpose

The purpose of this policy is to establish a framework for the effective management of the Municipality's assets to ensure their optimal use, maintenance, and sustainability. This policy will govern the decisions and directions of asset management at the Municipality of Middlesex Centre to ensure that it achieves in a safe and sustainable manner its strategic objectives as stated below:

- **Engaged Community:** Fostering a sense of belonging and participation among residents.
- **Balanced Growth:** Ensuring sustainable development that respects the community's rural roots and natural spaces.
- **Vibrant Local Economy:** Supporting local businesses and attracting new economic opportunities.
- **Sustainable Infrastructure and Services:** Maintaining and improving infrastructure and services in a sustainable manner.
- **Responsive Municipal Government:** Providing efficient and effective governance that meets the needs of the community

Scope

This policy applies to all assets and all aspects of these assets throughout their lifecycles. The policy will apply to all staff, contractors and consultants at the Municipality of Middlesex Centre. Where the Asset Management activities intersect with other municipalities and other levels of government, the Municipality will work collaboratively with them to promote the principles outlined by this policy.

The focus of the Municipality's asset management policy may require assets to be defined differently from the definitions within the Municipality's Tangible Capital Assets Policy No. CPS-17-2024 (e.g., assets that do not meet the minimum capitalization thresholds set out in the Tangible Capital Assets Policy). The determination of which assets will be covered by the Municipality's asset management planning processes will be independent of the Municipality's Tangible Capital Assets Policy.

Policy Statements

To ensure a comprehensive and holistic asset management approach, the Municipality of Middlesex Centre is committed to:

- Maintaining assets at condition levels that are aligned with the expected levels of service and strategic intents.
- Providing services and maintaining assets in financially sustainable manner. Decisions will be made by considering all stages of the asset life cycle.
- Using asset management to inform the annual budget process and long-term financial plans.
- Using the Asset Management Plan (AMP) as a tool to communicate the needs related to assets to deliver municipal services and the approaches required to meet those needs.

The Municipality is committed to ensure its asset management complies with the following:

- *Ontario Regulation 588/17:* Asset Management Planning with Municipal Infrastructure
- *Infrastructure for Jobs and Prosperity Act, 2015*
- *ISO 55000:2014* – Asset Management – Overview, Principles and Terminology
- *ISO 55001:2014* – Asset Management

Policy Review

This policy will be reviewed and updated every four years or as required to reflect changes in the Municipality's strategic objectives, regulatory requirements, or best practices in asset management.

Together, the Asset Management Policy and Strategy meet the requirement for a Strategic Asset Management Policy set forth by O.Reg. 588/17.

APPENDIX B

INTERPRETING THE CONDITION RATINGS

This indicator breaks down the distribution of asset conditions across a standardized grading system ("Very Good" to "Very Poor"). The scores reflect the physical health of the assets and do not take into account currently approved funding.

Asset condition is graded based on a combination of asset age, expected lifespan, and condition assessment data, as appropriate for each type of asset.

CONDITION RATING	% OF SERVICE LIFE REMAINING	DESCRIPTION
Very Good	80.0-100%	Fit for future: Well maintained, new or recently rehabilitated. No action required. Continue routine maintenance.
Good	60.0-79.9%	Adequate for now: Acceptable. Generally approaching mid-stage of expected service life. Continue routine maintenance.
Fair	40.0-59.9%	Requires attention: Signs of deterioration, some elements exhibit deficiencies. Continue routine maintenance. No additional immediate inspections or tests required.
Poor	20.0-39.9%	At risk of affecting level of service: Approaching end of service life, condition below standard, large portion of system exhibits significant deterioration. Need more detailed inspection.
Very Poor	< 20.0%	Unfit for sustained service: Near or beyond expected service life, widespread signs of advanced deterioration, some assets may be unusable. Immediate action required.

APPENDIX C
LEVELS OF SERVICE: ONTARIO REGULATION 588/17

In addition to the performance metrics selected by the Municipality, the following metrics are in accordance with compliance with the Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure.

APPENDIX C.1 LEVEL OF SERVICE METRICS IN ACCORDANCE TO O.REG. 588/17 REQUIREMENTS FOR POTABLE WATER NETWORK

TYPE	METRICS	TARGET	LOS PERFORMANCE MEASUREMENT				
			2020	2021	2022	2023	2024
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal water system.	N/A	Refer to Appendix D1				
	Description, which may include maps of the user groups or areas of the municipality that have fire flow.	N/A	All fire hydrants in Middlesex Centre meet 100.0% fire flow standard. Refer to Appendix D2.				
Access and Capacity	% of properties connected to the municipal water system	56.0%	56.0%	56.0%	56.0%	56.0%	56.0%
	% of properties where fire flow is available	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

APPENDIX C.1 LEVEL OF SERVICE METRICS IN ACCORDANCE TO O.REG. 588/17 REQUIREMENTS FOR POTABLE WATER NETWORK

TYPE	METRICS	TARGET	LOS PERFORMANCE MEASUREMENT				
			2020	2021	2022	2023	2024
Condition and Reliability	The number of connection-days lost per year due to water main breaks compared to the total number of properties connected to the municipal water system.	0.0	0.03	0.01	0.01	0.00	0.01
	The number of connection-days per year where a boil water advisory notice is in place compared to the total number of properties connected to the municipal water system.	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX C.2 LEVEL OF SERVICE METRICS IN ACCORDANCE TO O.REG. 588/17 REQUIREMENTS FOR WASTEWATER NETWORK

TYPE	METRICS	TARGET	LOS PERFORMANCE MEASUREMENT				
			2020	2021	2022	2023	2024
Scope	Description, which may include maps, of the user groups or areas of the municipality that are connected to the municipal wastewater system.	N/A	Refer to Appendix E				
Access and Capacity	% of properties connected to the municipal wastewater system	44.0%	44.0%	44.0%	44.0%	44.0%	44.0%
	# of events per year where combined sewer flow in the municipal wastewater system exceeds system capacity compared to the total number of properties connected to the municipal wastewater system.	N/A	The Municipality of Middlesex Centre does not operate any combined sewer systems.				
	# of connection-days per year with service disruptions due to wastewater backups compared to the total number of properties connected to the municipal wastewater system.	0.0	0.0	0.0	0.0	0.0	0.0
Condition and Reliability	Description of how combined sewers in the municipal wastewater system are designed with overflow structures in place which allow overflow during storm events to prevent backups into homes.	N/A	The Municipality of Middlesex Centre does not operate any combined sewer systems.				

APPENDIX C.2 LEVEL OF SERVICE METRICS IN ACCORDANCE TO O.REG. 588/17 REQUIREMENTS FOR WASTEWATER NETWORK

TYPE	METRICS	TARGET	LOS PERFORMANCE MEASUREMENT				
			2020	2021	2022	2023	2024
Condition and Reliability	Description of the frequency and volume of overflows in combined sewers in the municipal wastewater system that occur in habitable areas or beaches.	N/A	The Municipality of Middlesex Centre does not operate any combined sewer systems.				
	Description of how stormwater can get into sanitary sewers in the municipal wastewater system, causing sewage to overflow into streets or back up into homes.	N/A	Storm water can enter the sanitary system through: 1. Holes and cracks in manholes and sewers often caused by wear and tear and age. 2. Non-conforming connections to the sanitary system such as cross-connected downspouts, catch basins, etc. 3. Floor drains in flooded basement or top of the manholes in a flooded road when the storm water management system is overwhelmed during heavy rain.				
	Description of how sanitary sewers in the municipal wastewater system are designed to be resilient to avoid events described above.	N/A	Stormwater infiltration into the sanitary system is inevitable and cannot be entirely prevented through practical means. Consequently, allowances for stormwater are incorporated into the design of sanitary sewers. Middlesex Centre has implemented multiple programs to ensure that infrastructure remains in optimal condition. These initiatives include the repair of holes and cracks, as well as ensuring that manholes are watertight and properly sealed.				

APPENDIX C.2 LEVEL OF SERVICE METRICS IN ACCORDANCE TO O.REG. 588/17 REQUIREMENTS FOR WASTEWATER NETWORK

TYPE	METRICS	TARGET	LOS PERFORMANCE MEASUREMENT				
			2020	2021	2022	2023	2024
Condition and Reliability	Description of the effluent that is discharged from sewage treatment plants in the municipal wastewater system.	N/A	The effluent discharged from Middlesex Centre's sewage treatment plants consists of treated water containing residual organic matter, nutrients, and microorganisms that have been significantly reduced through primary, secondary, and tertiary treatment stages. The chemical composition of this effluent includes Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total Suspended Solids (TSS), and nutrient concentrations such as nitrogen and phosphorus. Effluent quality is regulated by the Ministry of Environment, Conservation, and Parks (MECP), which mandates specific limits on contaminants and requires regular monitoring and reporting. Properly treated effluent is clear, odorless, and free from harmful pathogens, ensuring it can be safely discharged into the Thames River.				
Safety	# of effluent violations per year due to wastewater discharge compared to the total number of properties connected to the municipal wastewater system.	0	0	3	1	2	0

APPENDIX C.3 LEVEL OF SERVICE METRICS IN ACCORDANCE TO O.REG. 588/17 REQUIREMENTS FOR STORMWATER NETWORK

TYPE	METRICS	TARGET	LOS PERFORMANCE MEASUREMENT				
			2020	2021	2022	2023	2024
Scope	Description, which may include maps, of the user groups or areas of the municipality that are protected from flooding, including the extent of the protection provided by the municipal stormwater management system.	N/A	Refer to Appendix F				
Access and Capacity	% of properties in the Municipality resilient to a 100-year storm.	97.0%	97.0%	97.0%	97.0%	97.0%	97.0%
	% of the municipal stormwater management system resilient to a 5-year storm.	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

APPENDIX C.3 LEVEL OF SERVICE METRICS IN ACCORDANCE TO O.REG. 588/17 REQUIREMENTS FOR ROAD NETWORK

TYPE	METRICS	TARGET	LOS PERFORMANCE MEASUREMENT				
			2020	2021	2022	2023	2024
Scope	Description, which may include maps of the road network in the municipality and its level of connectivity.	N/A	Refer to Appendix G.1 and Appendix G.2				
Quality	Description or images that illustrate the different levels of road class pavement condition.	N/A	Refer to Appendix G.3 and Appendix G.4				
	Lane-kilometres of arterial roads per square kilometre of land	0	0	0	0	0	0
	Lane-kilometres of collector roads per square kilometre of land	N/A	1.640	1.640	0.008	0.008	0.300
	Lane-kilometres of local roads per square kilometre of land	N/A	0.339	0.339	1.010	1.010	1.750
Condition and Reliability	For paved roads in the municipality, the average pavement condition index value.	70.0	67.8	67.8	70.3	70.3	72.3
	For unpaved roads in the municipality, the average surface condition (e.g. excellent, good, fair or poor).	Good	Good	Good	Good	Good	Good

APPENDIX C.4 LEVEL OF SERVICE METRICS IN ACCORDANCE TO O.REG. 588/17 REQUIREMENTS FOR BRIDGES AND CULVERTS

TYPE	METRICS	TARGET	LOS PERFORMANCE MEASUREMENT				
			2020	2021	2022	2023	2024
Scope	Description of the traffic that is supported by municipal bridges (e.g., heavy transport vehicles, motor vehicles, emergency vehicles, pedestrians, cyclists).	N/A	Middlesex Centre bridges are engineered to support a wide spectrum of traffic, ensuring safe, reliable, and efficient passage for all users. These structures are built to accommodate heavy transport vehicles such as trucks and buses, which are vital for commercial logistics and public transit. They also serve everyday motor vehicles—including cars and motorcycles, facilitating daily commuting and regional travel. Emergency response units, including ambulances, fire trucks, and police vehicles, rely on the structural integrity of these bridges to provide timely and effective services. Additionally, the Municipality recognizes the importance of agriculture to the local economy; therefore, its bridges are designed to support farm equipment and agricultural vehicles, enabling the movement of machinery, livestock, and crops across rural areas. By accommodating this diverse range of users, Middlesex Centre's bridges play a critical role in sustaining economic activity, public safety, and community connectivity.				
Quality	Description or images of the condition of bridges and how this would affect use of the bridges.	N/A	Refer to Appendix H.1 to Appendix H.2				
	Description or images of the condition of culverts and how this would affect use of the culverts		Refer to Appendix H.1 to Appendix H.2				

APPENDIX C.4 LEVEL OF SERVICE METRICS IN ACCORDANCE TO O.REG. 588/17 REQUIREMENTS FOR BRIDGES AND CULVERTS

TYPE	METRICS	TARGET	LOS PERFORMANCE MEASUREMENT				
			2020	2021	2022	2023	2024
Access and Capacity	Number of bridges and culverts in the municipality with loading or dimensional restrictions.	0	0	0	0	1	0
Condition and Reliability	For bridges in the municipality, the average bridge condition index value.	70.0	68.8	67.1	67.1	67.5	67.5
	For structural culverts in the municipality, the average bridge condition index value.	70.0	65.3	63.8	63.8	64.4	64.4

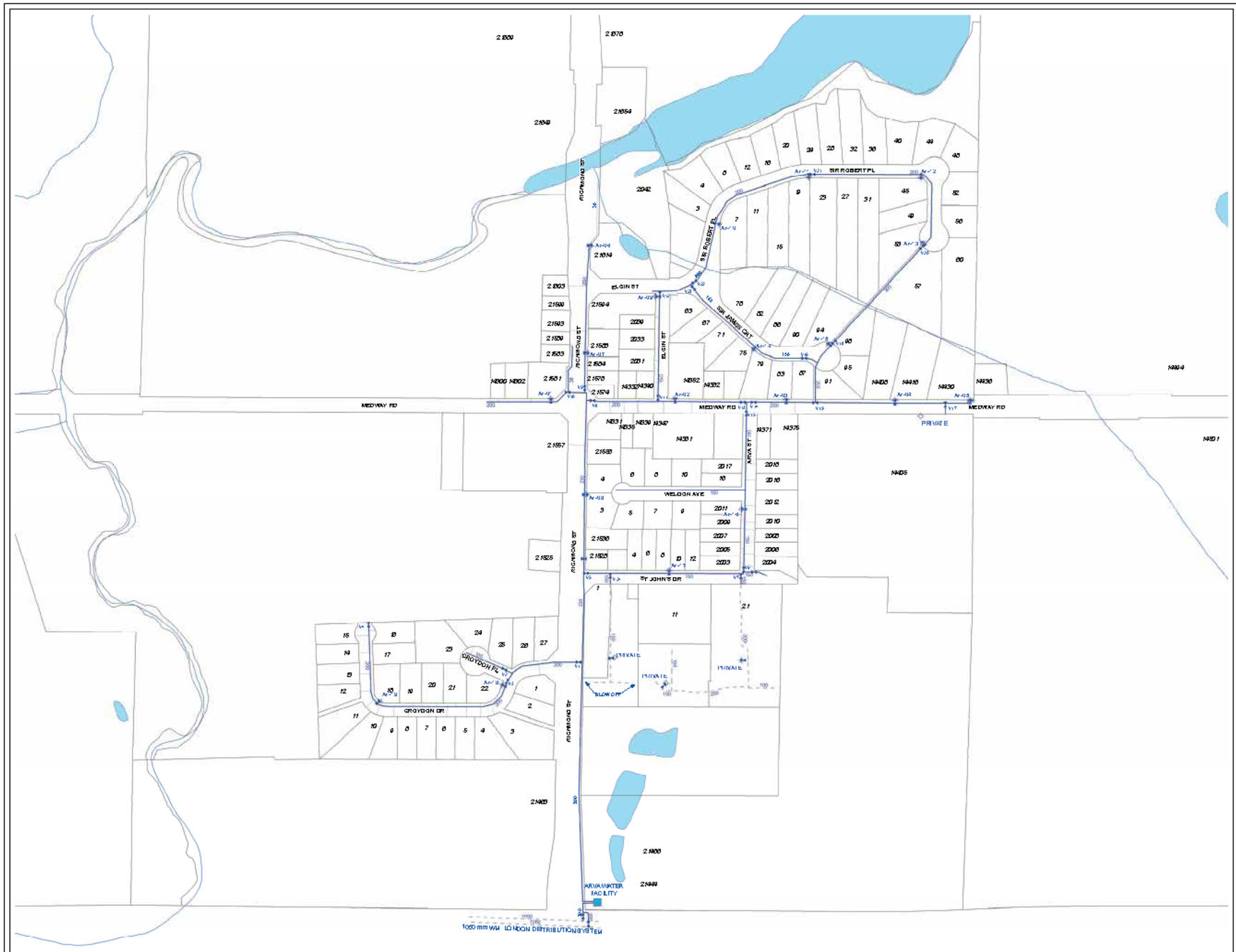
APPENDIX D

LEVELS OF SERVICE

ONTARIO REGULATION 588/17 POTABLE WATER NETWORK

POTABLE WATER NETWORK

APPENDIX D.1 POTABLE WATER DISTRIBUTION SYSTEM – SERVICE MAP - ARVA



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Municipality of Middlesex Centre

Arva

Middlesex Centre Distribution System DWS# 260004202

Legend

- 25 Municipal Address Number
- Ar-14 Fire Hydrant
- V11 Water Valve
- 200 Assumed Watermain
- 200 Unassumed Watermain
- Private Watermain
- Lateral Service Connection
- Arva Water Facility
- Parcel Fabric

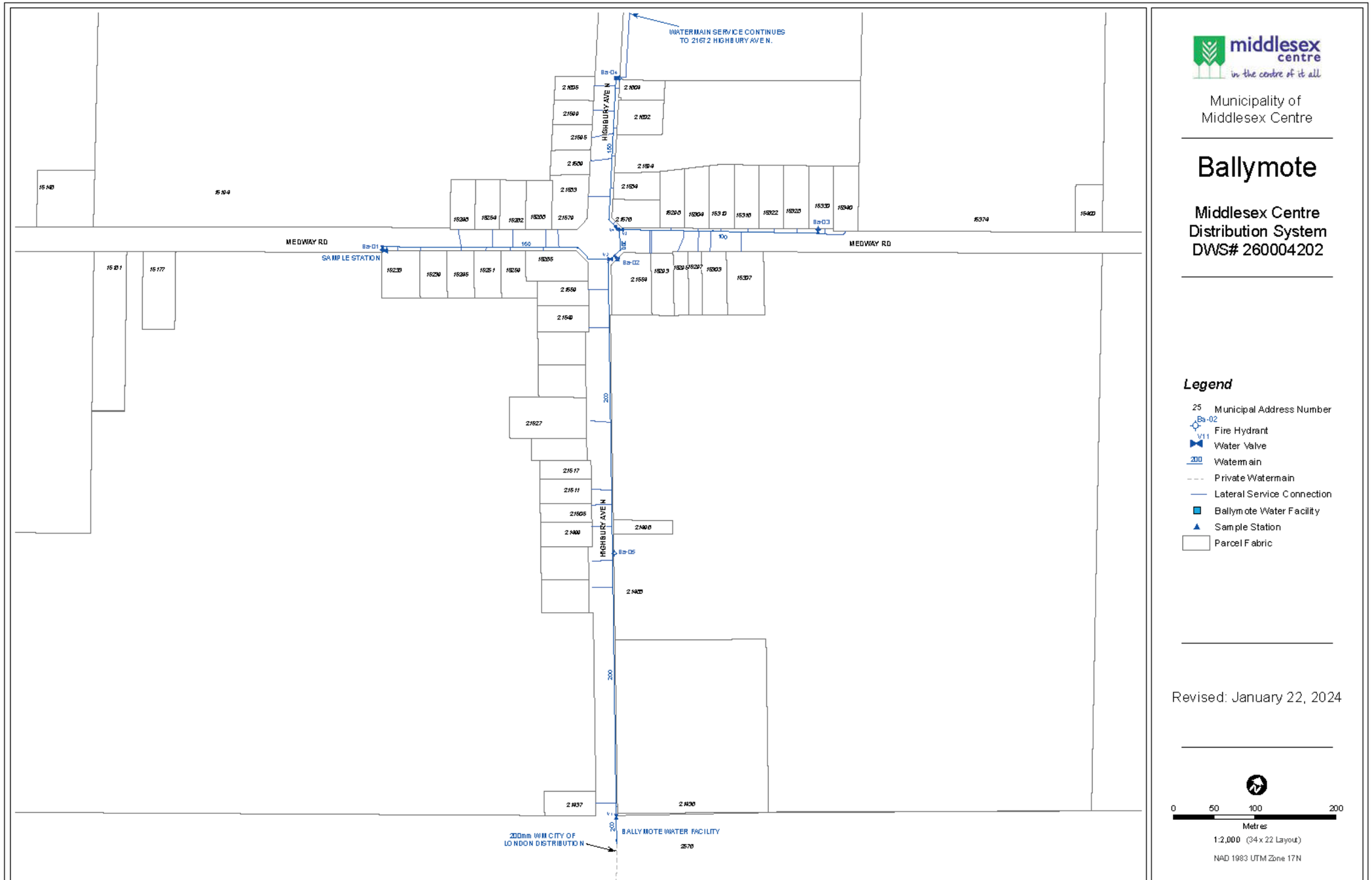
Revised: January 22, 2024

0 50 100 200
Metres

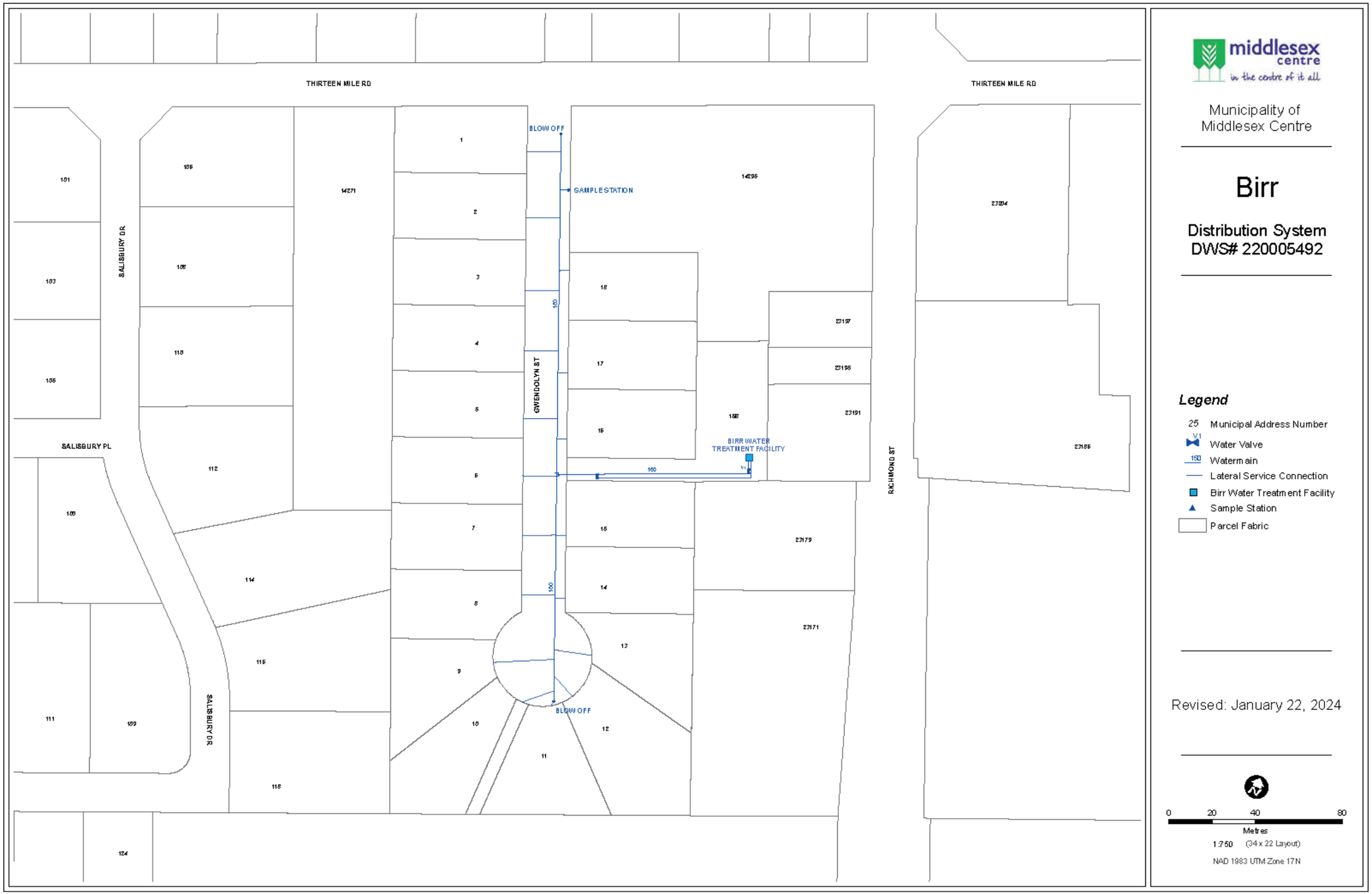
1:2,500 (34 x 22 Layout)

NAD 1983 UTM Zone 17N

APPENDIX D.1 POTABLE WATER DISTRIBUTION SYSTEM – SERVICE MAP - BALLYMOTE



APPENDIX D.1 POTABLE WATER DISTRIBUTION SYSTEM – SERVICE MAP - BIRR



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Municipality of Middlesex Centre

Birr

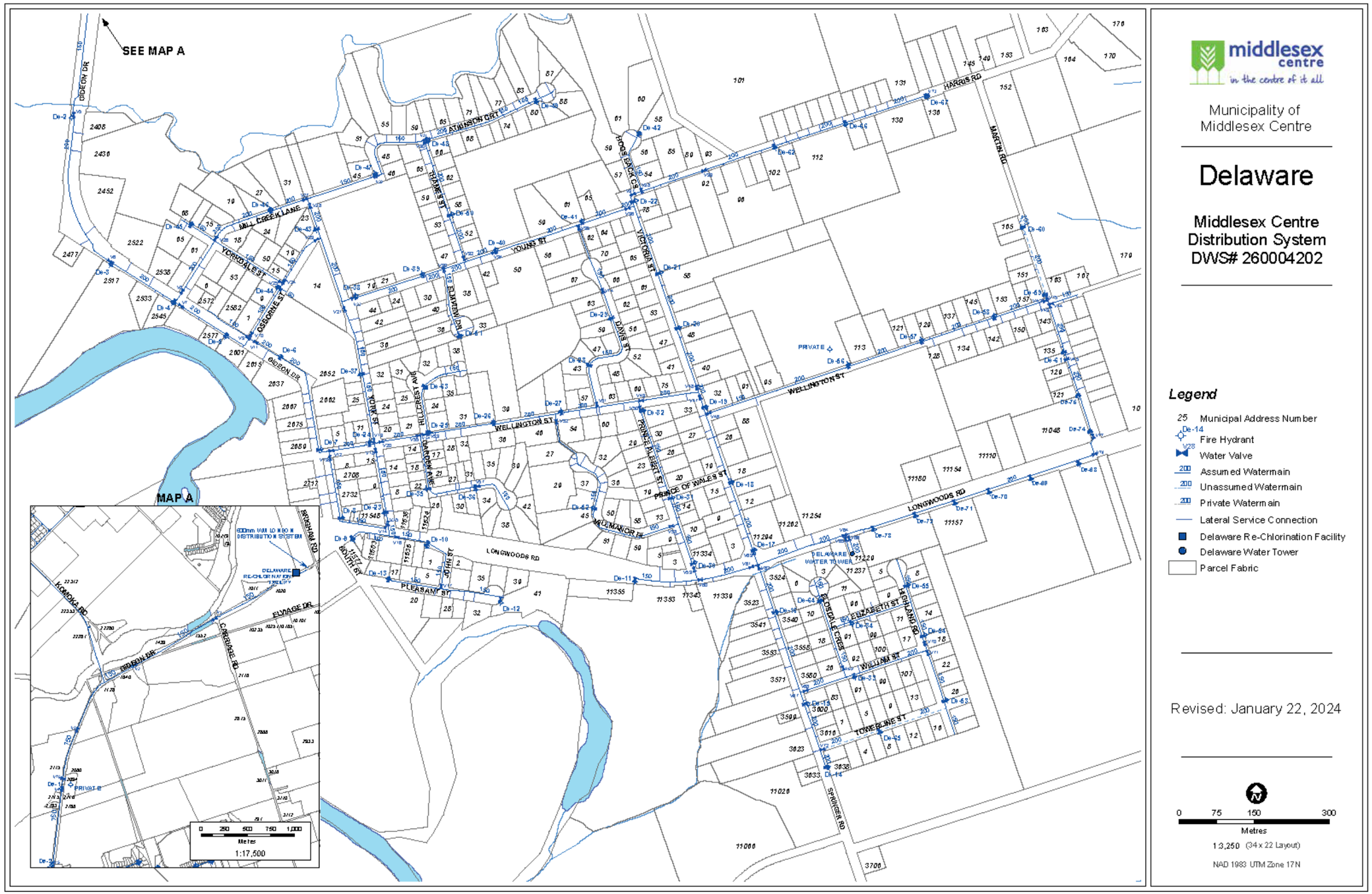
Distribution System
DWS# 220005492

Legend

- 25 Municipal Address Number
- Water Valve
- 150 Watermain
- Lateral Service Connection
- Birr Water Treatment Facility
- Sample Station
- Parcel Fabric

Revised: January 22, 2024

0 20 40 80
Metres
1:750 (34 x 22 Layout)
NAD 1983 UTM Zone 17N



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Municipality of Middlesex Centre

Delaware

Middlesex Centre Distribution System DWS# 260004202

Legend

- 25 Municipal Address Number
- De-14 Fire Hydrant
- V28 Water Valve
- 200 Assumed Watermain
- 200 Unassumed Watermain
- 200 Private Watermain
- Lateral Service Connection
- Delaware Re-Chlorination Facility
- Delaware Water Tower
- Parcel Fabric

Revised: January 22, 2024

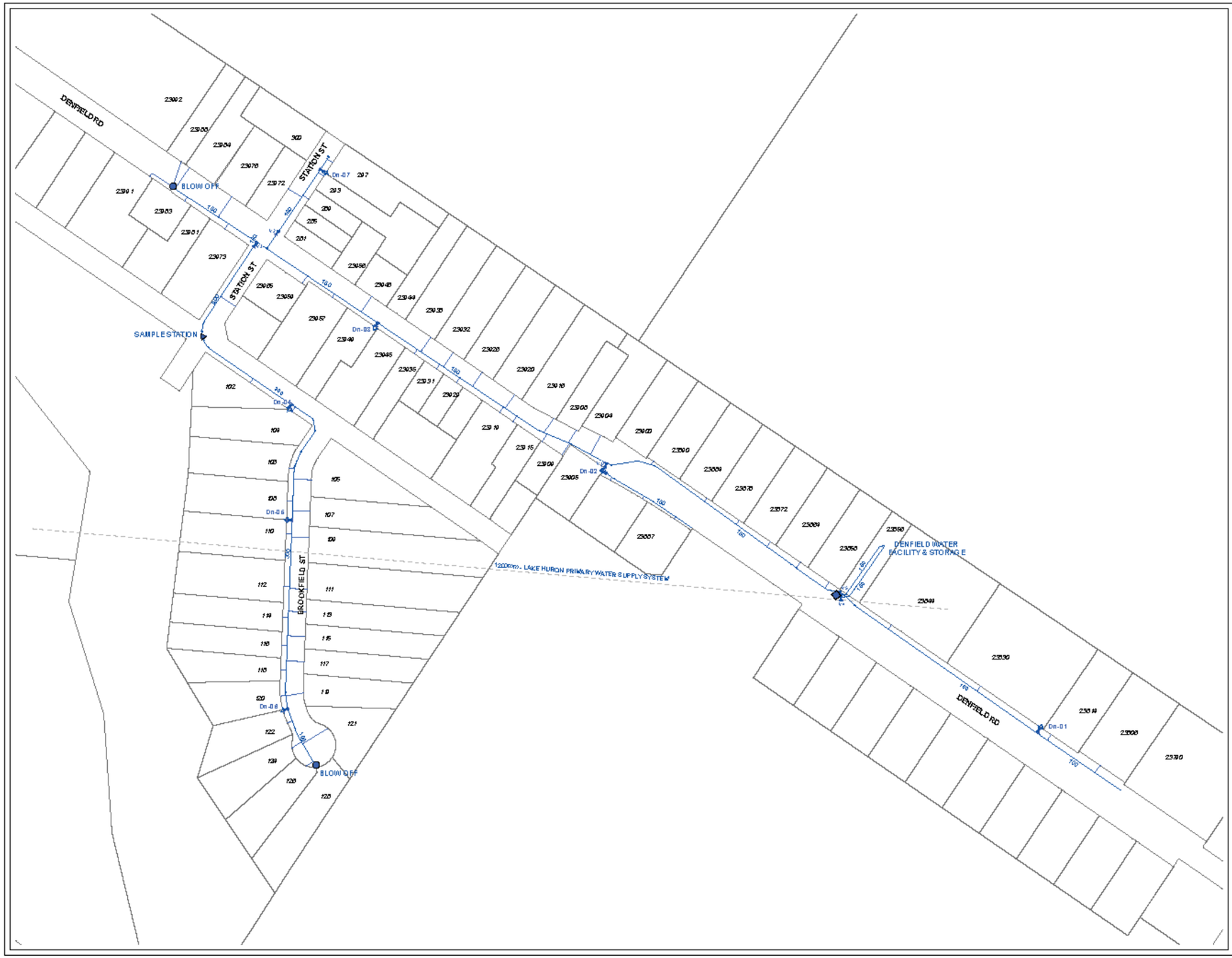
N

0 75 150 300
Metres

1:3,250 (34 x 22 Layout)

NAD 1983 UTM Zone 17N

APPENDIX D.1 POTABLE WATER DISTRIBUTION SYSTEM – SERVICE MAP - DENFIELD



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in the centre of it all

Municipality of Middlesex Centre

Denfield

Middlesex Centre Distribution System DWS# 260004202

Legend

- 25 Municipal Address Number
- Dn-05 Fire Hydrant
- V1 Water Valve
- 150 Assumed Watermain
- 150 Unassumed Watermain
- Private Watermain
- Lateral Service Connection
- Denfield Water Facility & Storage
- Sample Station
- Parcel Fabric

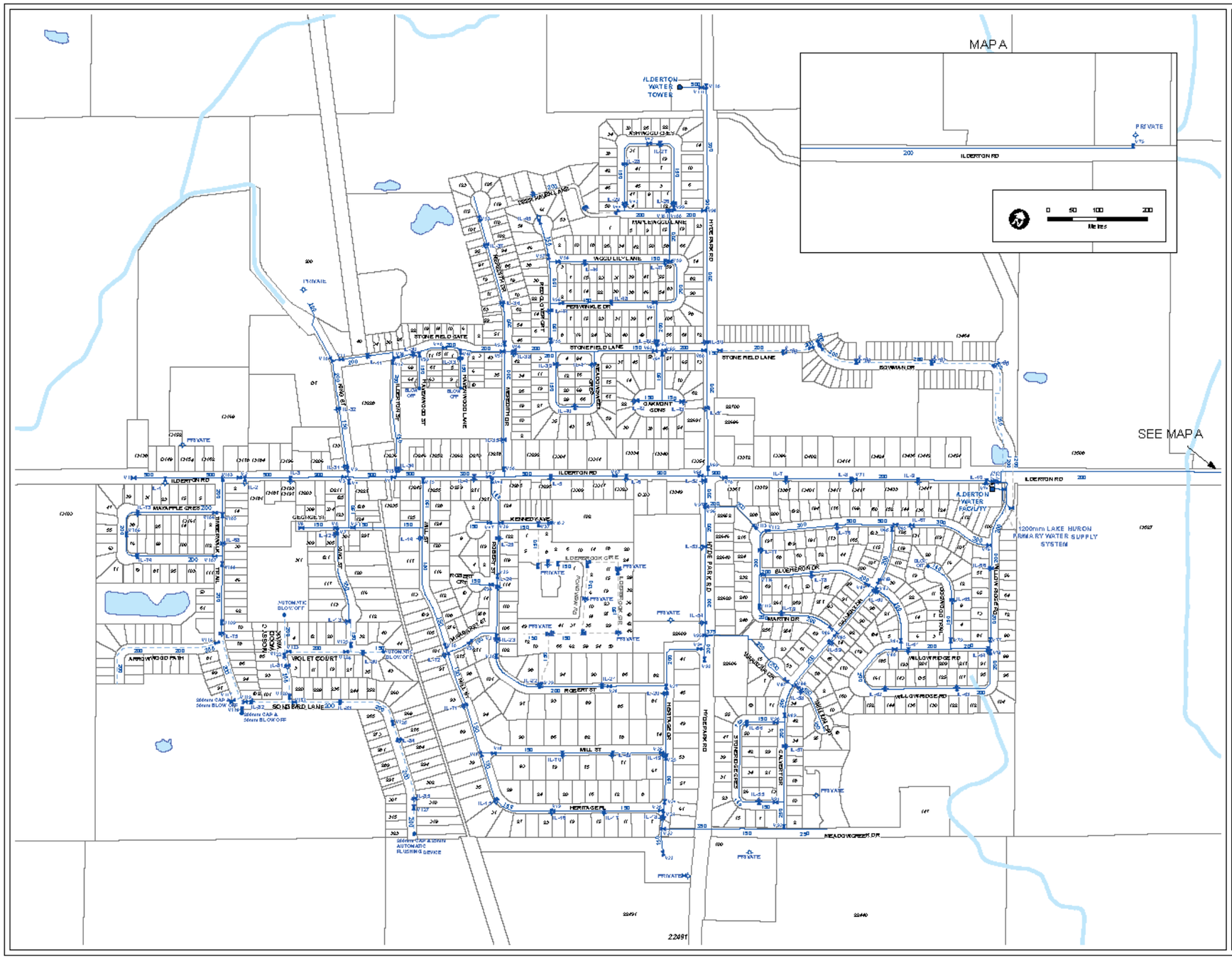
Revised: January 22, 2024

0 25 50 100
Metres

1:1,500 (34 x 22 Layout)

NAD 1983 UTM Zone 17N

APPENDIX D.1 POTABLE WATER DISTRIBUTION SYSTEM – SERVICE MAP - ILDERTON



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Municipality of Middlesex Centre

Ilderton

Middlesex Centre Distribution System DWS# 260004202

Legend

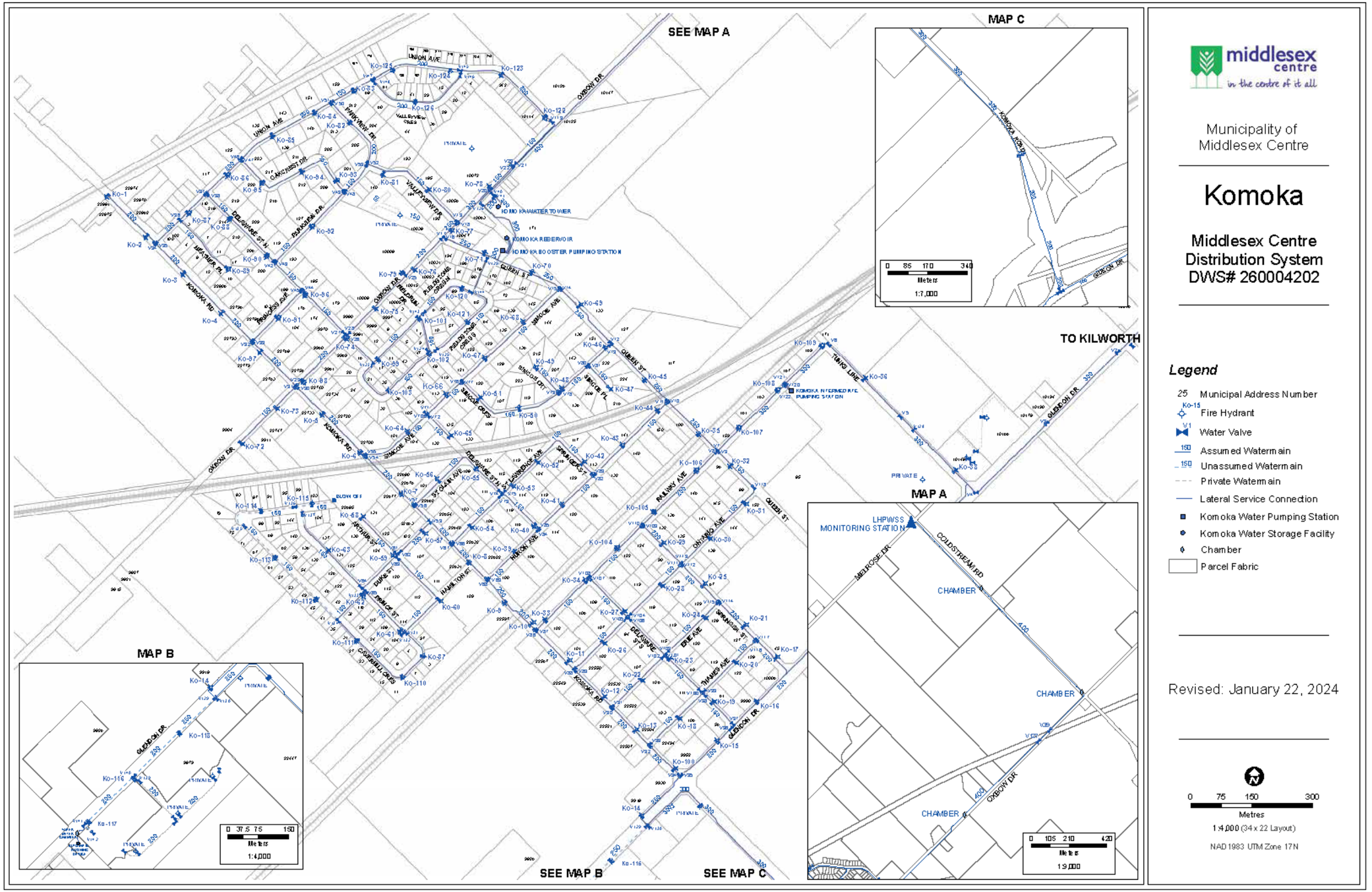
- 25 Municipal Address Number
- IL-34 Fire Hydrant
- V1 Water Valve
- 150 Assumed Watermain
- 150 Unassumed Watermain
- 150 Private Watermain
- Lateral Service Connection
- Ilderton Water Facility
- Ilderton Water Tower
- Parcel Fabric

Revised: January 22, 2024

0 75 150 300
Metres
1:3,500 (34 X 22 Layout)
NAD 1983 UTM Zone 17N


FROM KOMOKA
middlesex centre
in the centre of it all
Municipality of Middlesex Centre
Kilworth
Middlesex Centre Distribution System DWS# 260004202
Legend
25 Municipal Address Number
Fire Hydrant
Water Valve
Assumed Watermain
Unassumed Watermain
Private Watermain
Parcel Fabric
Revised: January 22, 2024
0 55 110 220
Metres
1:3,000 (34 x 22 Layout)
NAD 1983 UTM Zone 17N

APPENDIX D.1 POTABLE WATER DISTRIBUTION SYSTEM – SERVICE MAP - KOMOKA



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Municipality of Middlesex Centre

Komoka

Middlesex Centre Distribution System DWS# 260004202

Legend

- 25 Municipal Address Number
- Ko-15 Fire Hydrant
- V1 Water Valve
- 150 Assumed Watermain
- 150 Unassumed Watermain
- Private Watermain
- Lateral Service Connection
- Komoka Water Pumping Station
- Komoka Water Storage Facility
- Chamber
- Parcel Fabric

Revised: January 22, 2024

0 75 150 300
Metres
1:4,000 (34 x 22 Layout)
NAD 1983 UTM Zone 17N

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Municipality of Middlesex Centre

Melrose

Distribution System
DWS# 260002915

Legend

- 25 Municipal Address Number
- Me-03 Fire Hydrant
- V-1 Water Valve
- 150 Watermain
- Lateral Service Connection
- Melrose Water Treatment Facility
- Sample Station
- Parcel Fabric

Revised: January 22, 2024

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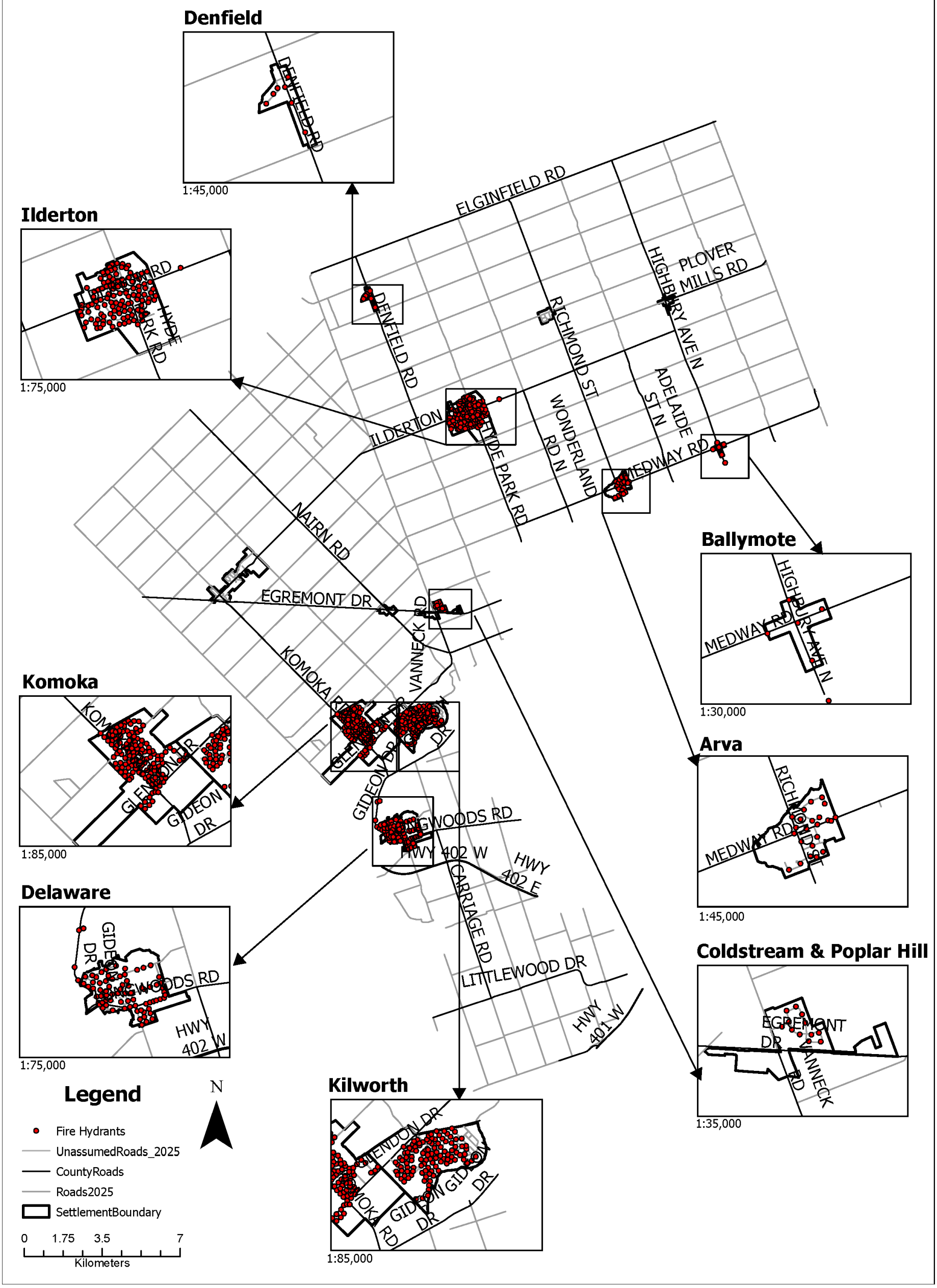
Metres
1:1,000 (34 x 22 Layout)
NAD 1983 UTM Zone 17N

Fire Hydrant Map - Middlesex Centre



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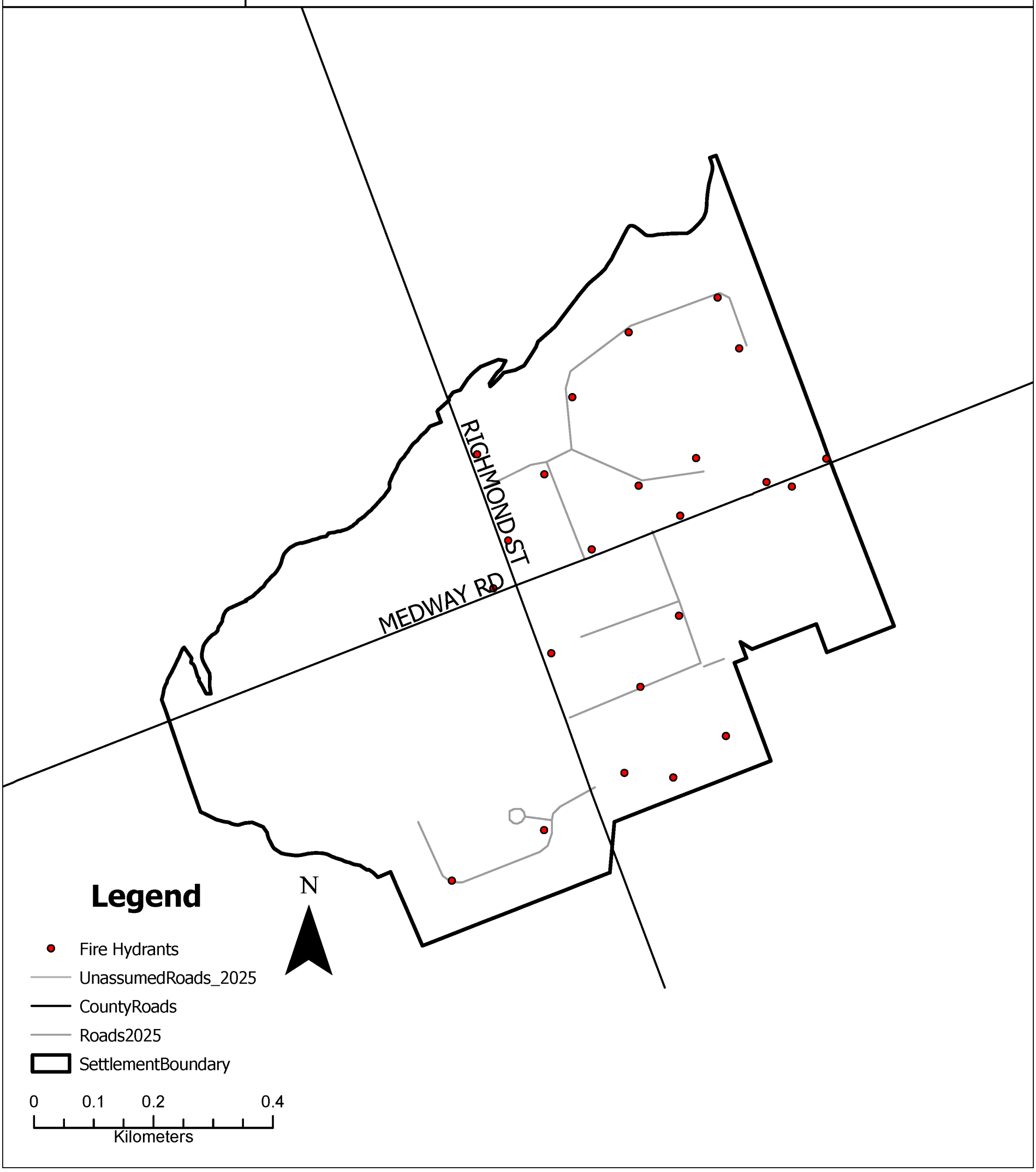
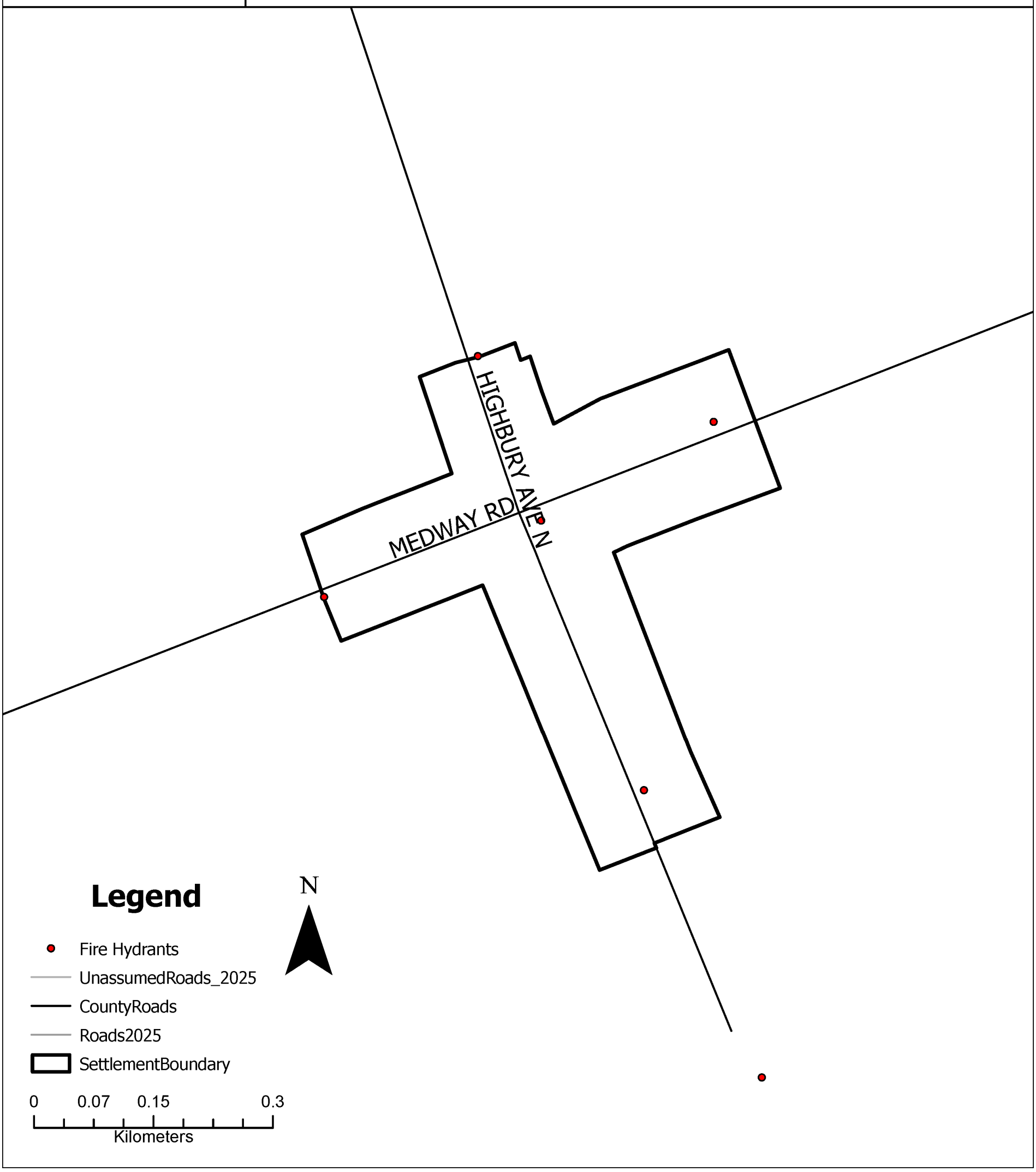
in the centre of it all

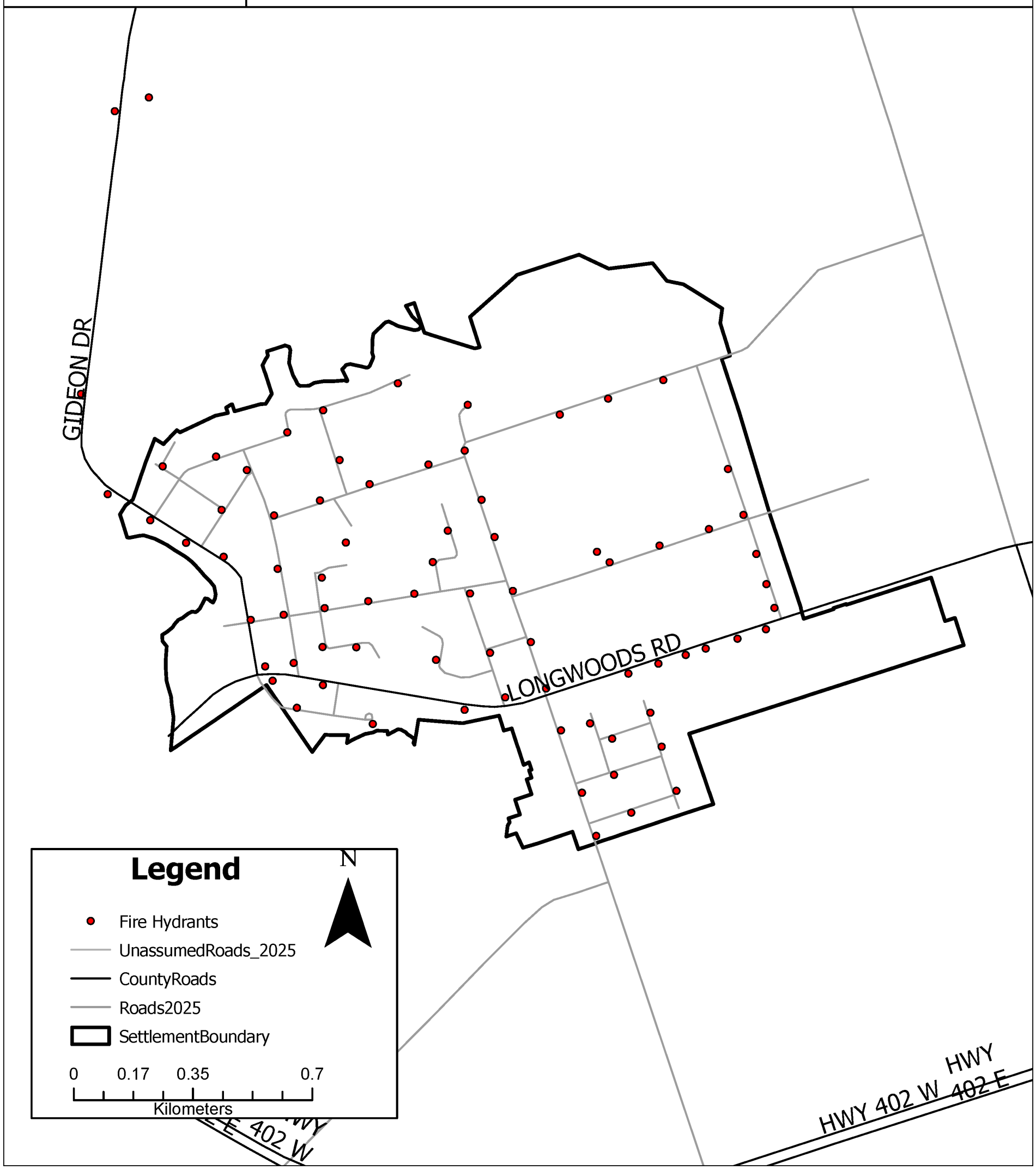
Fire Hydrant Map - Arva



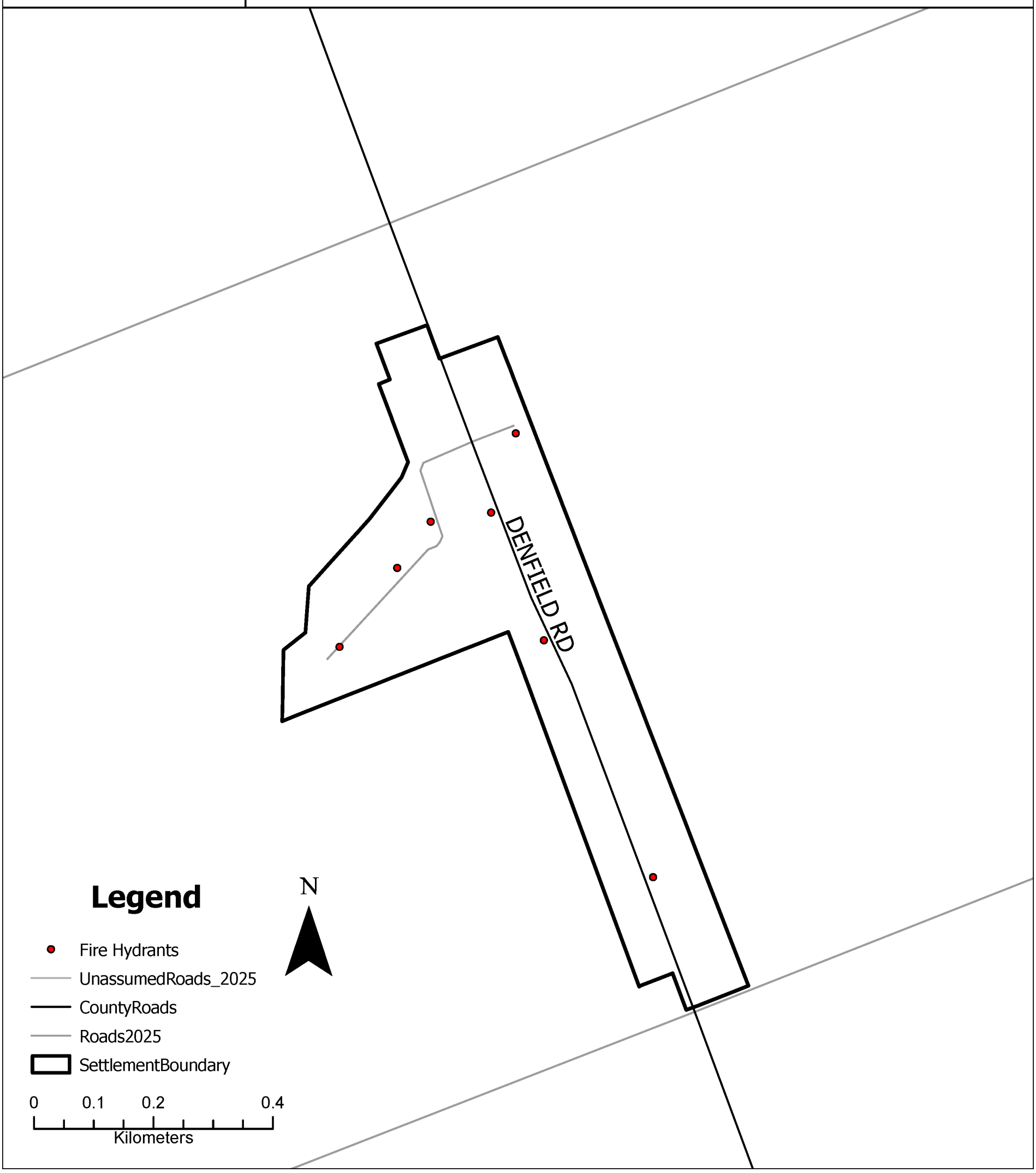
Fire Hydrant Map - Ballymote



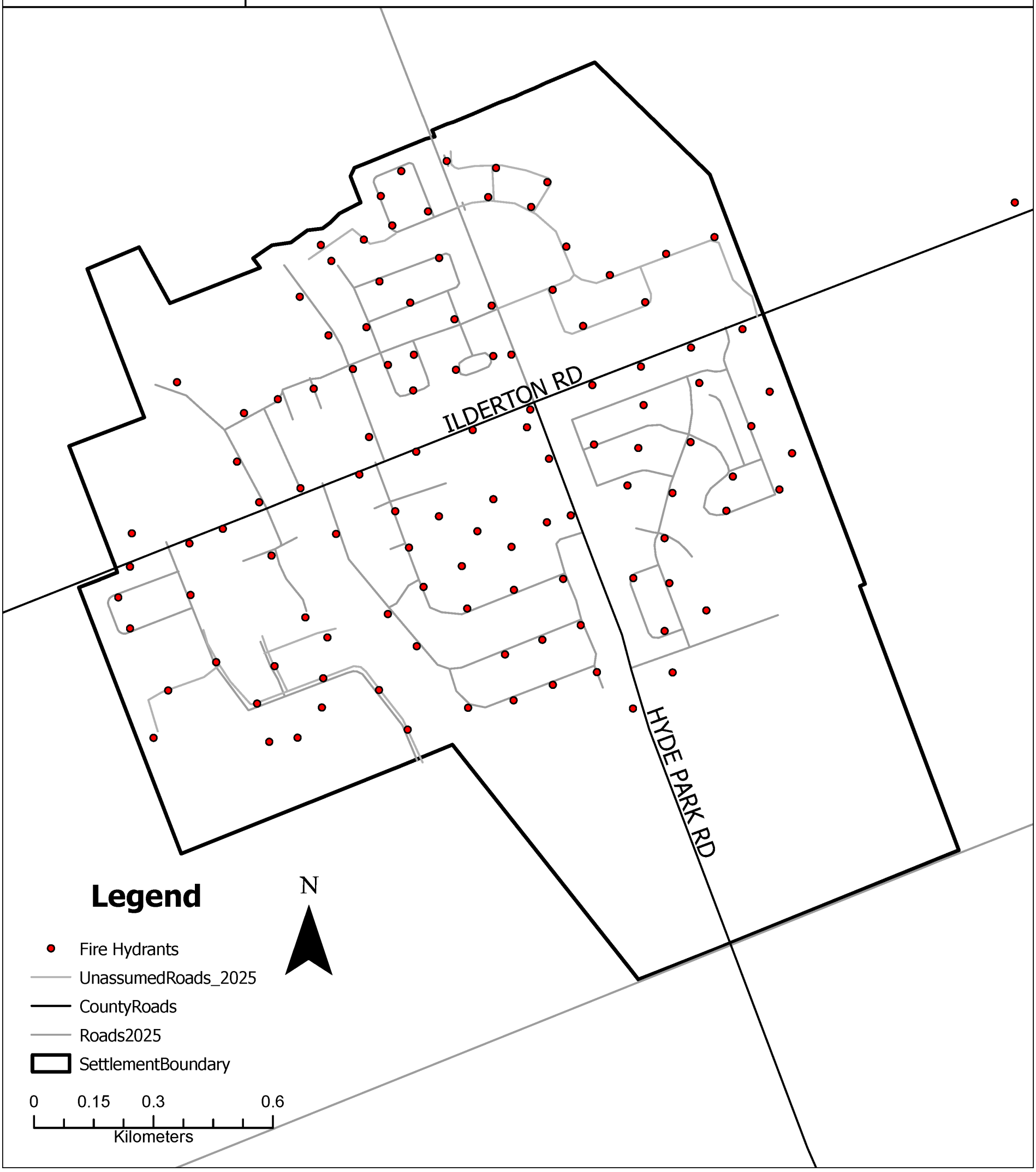
Fire Hydrant Map - Delaware



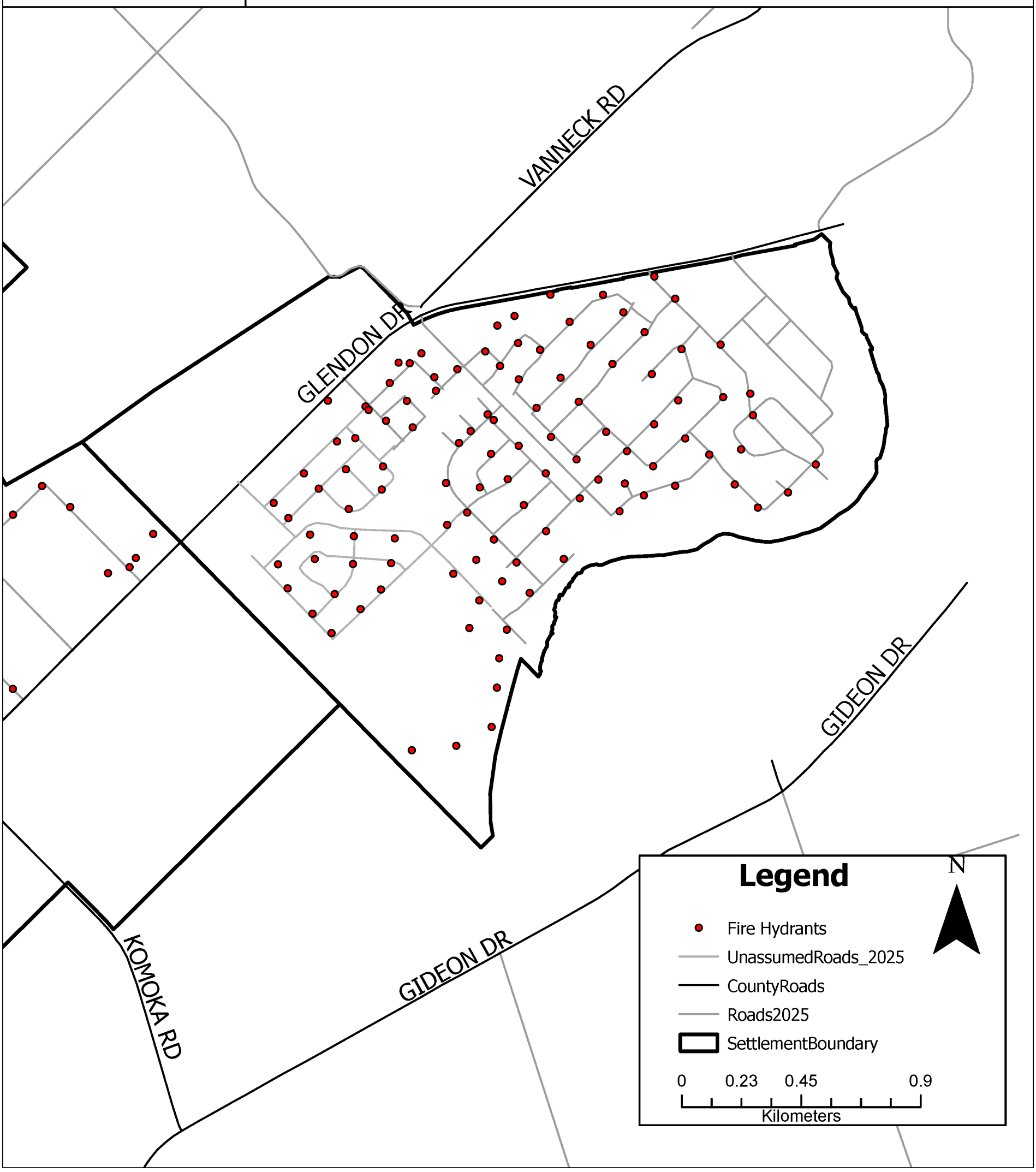
Fire Hydrant Map - Denfield



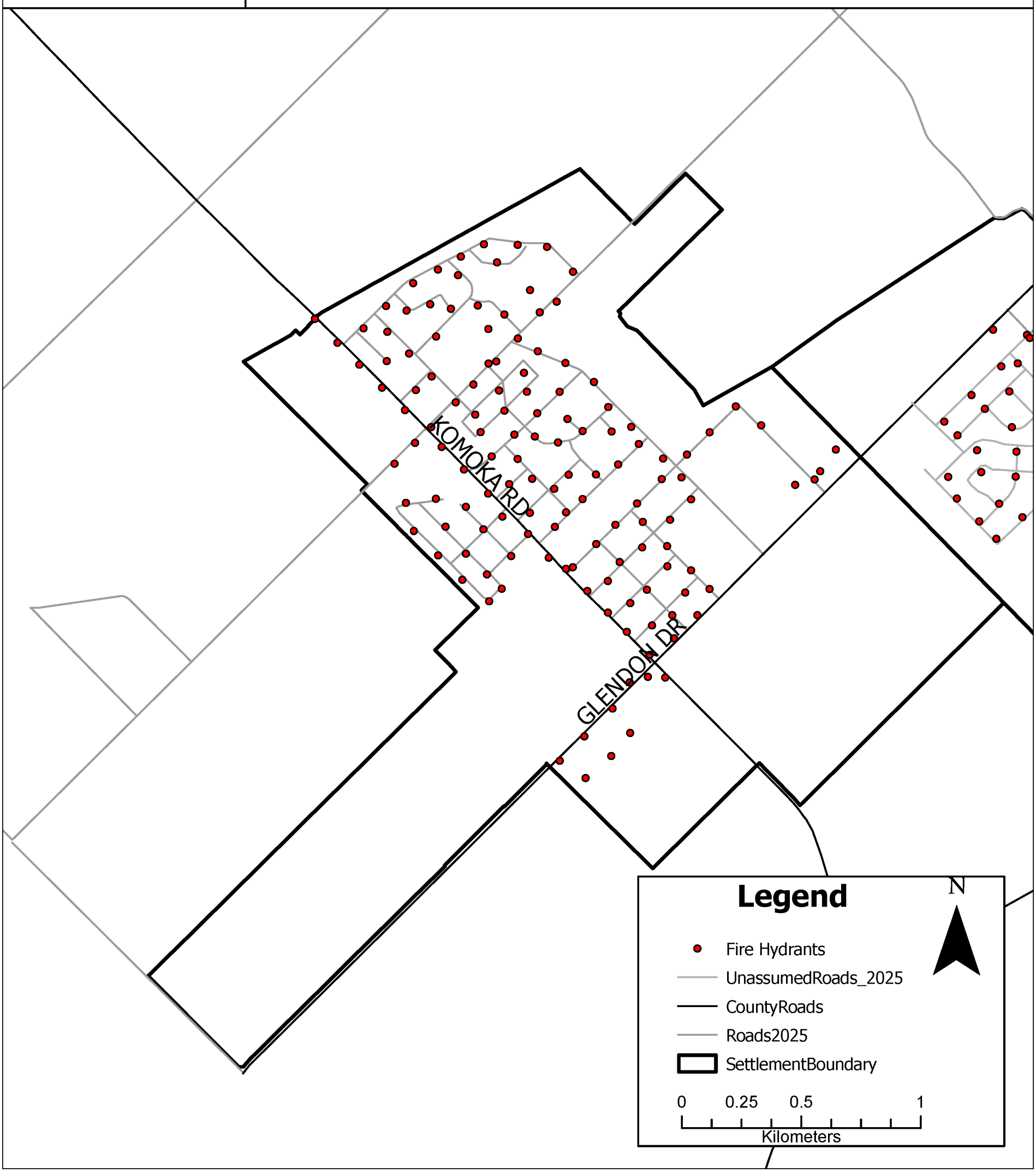
Fire Hydrant Map - Ilderton



Fire Hydrant Map - Kilworth



Fire Hydrant Map - Komoka

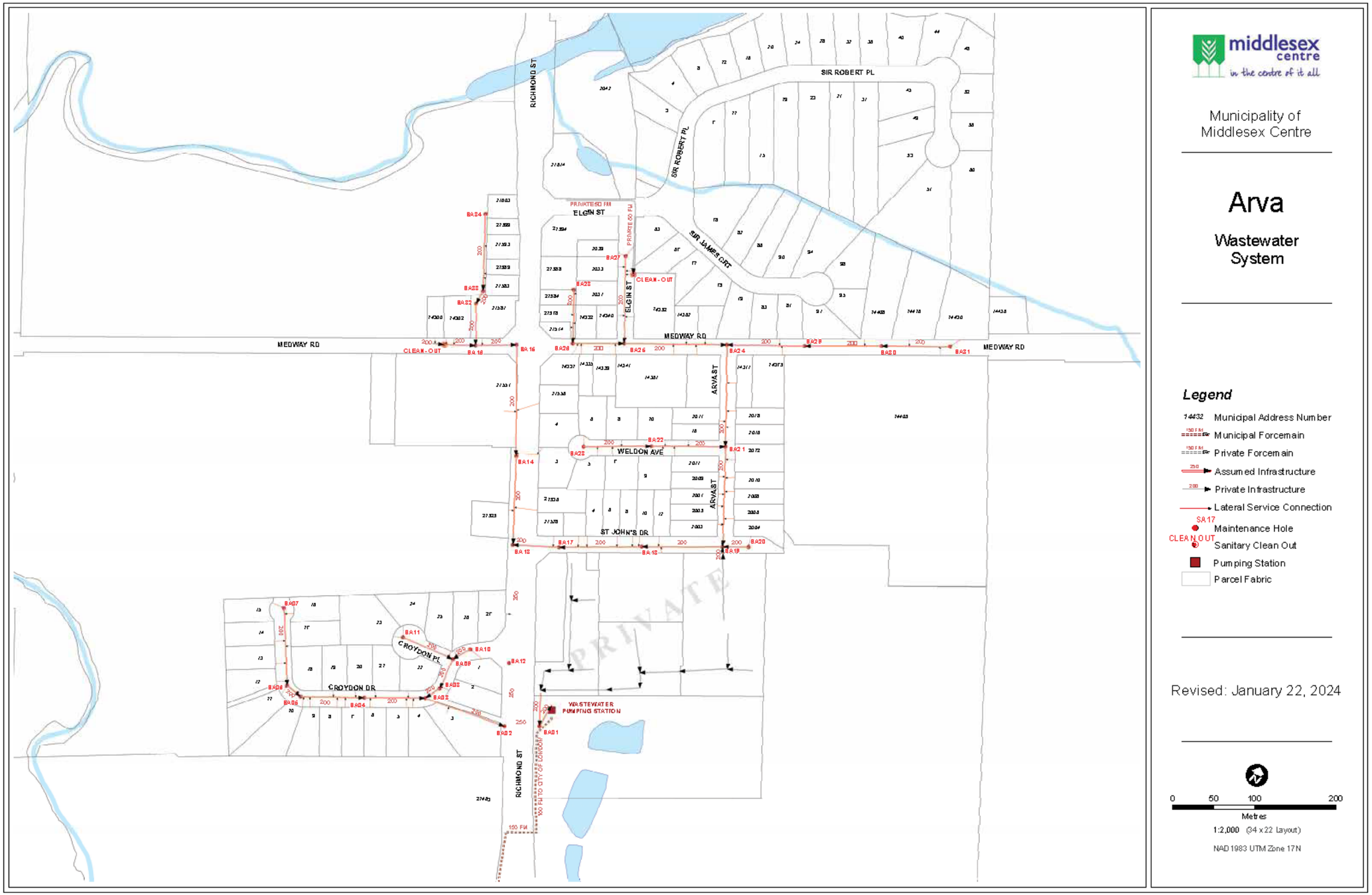


APPENDIX E

LEVELS OF SERVICE: ONTARIO REGULATION 588/17

WASTEWATER NETWORK

APPENDIX E. WASTEWATER SYSTEM - SERVICE MAP - ARVA



middlesex centre
in the centre of it all

Municipality of Middlesex Centre

Arva

Wastewater System

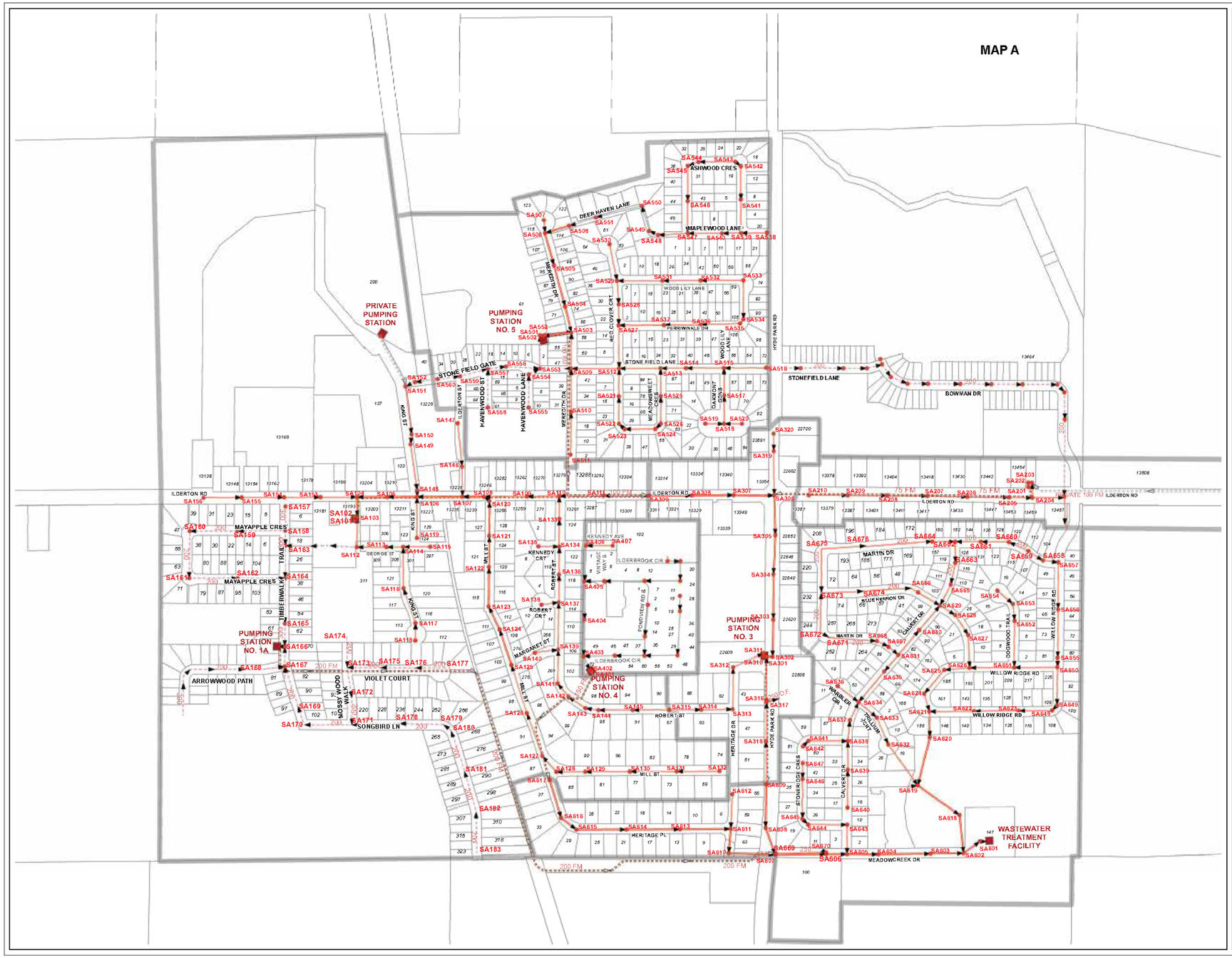
Legend

- 14432 Municipal Address Number
- Municipal Forcemain
- Private Forcemain
- Assumed Infrastructure
- Private Infrastructure
- Lateral Service Connection
- SA17 Maintenance Hole
- CLEAN OUT Sanitary Clean Out
- Pumping Station
- Parcel Fabric

Revised: January 22, 2024

0 50 100 200
Metres
1:2,000 (34 x 22 Layout)
NAD 1983 UTM Zone 17N

APPENDIX E. WASTEWATER SYSTEM - SERVICE MAP - ILDERTON



Municipality of Middlesex Centre

Ilderton

Wastewater System

Legend

- 13456 Municipal Address Number
- 100 FM Assumed Forcemain
- 300 Assumed Infrastructure
- 200 Unassumed Infrastructure
- 100 FM Private Forcemain
- 200 Private Infrastructure
- SA102 Maintenance Hole
- Pumping Station, Wastewater Treatment Facility
- Ilderton Pumping Station Collection Areas
- Parcel Fabric

Revised: January 22, 2024

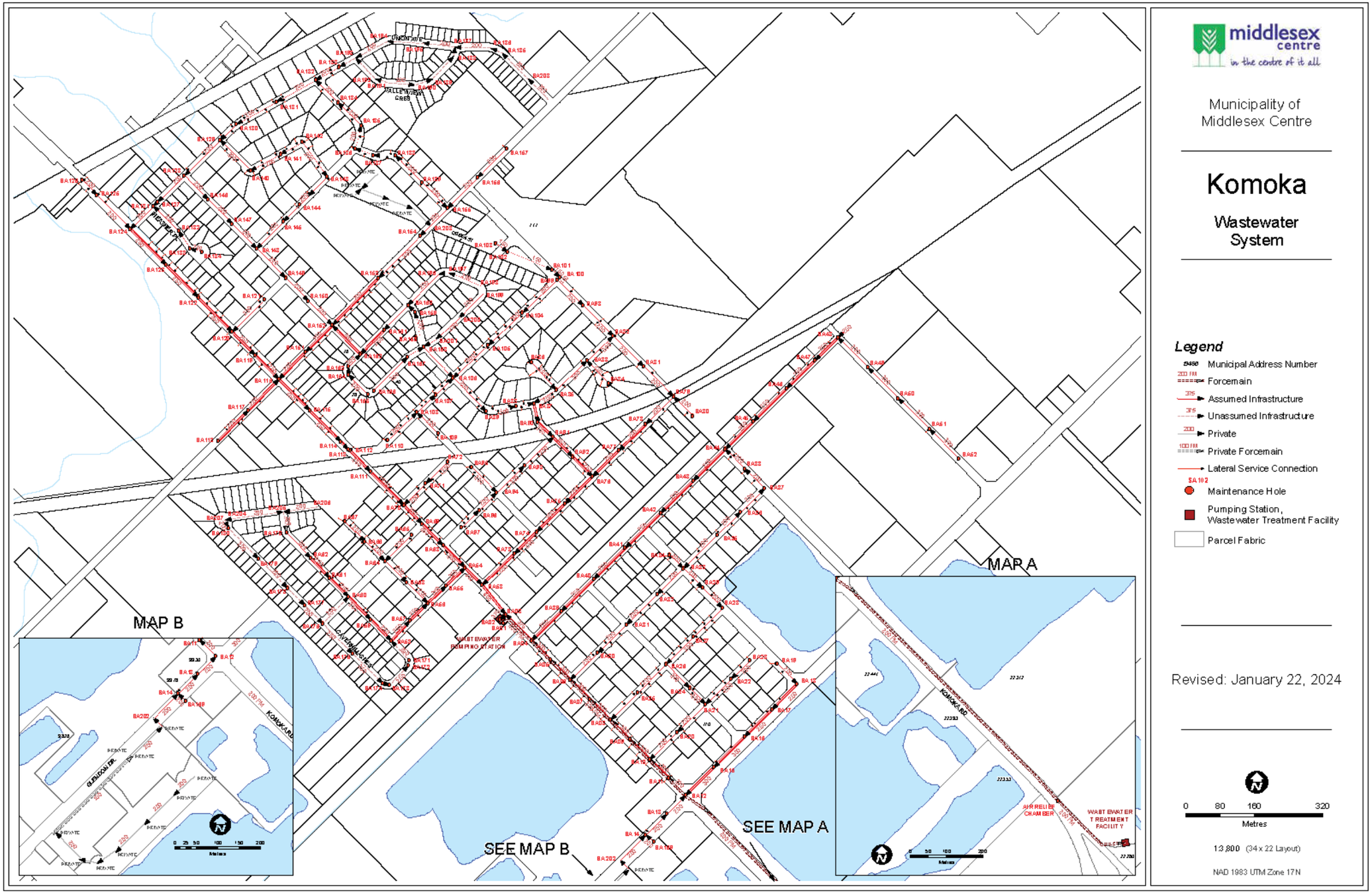
0 87.5 175 350

Metres

1:3,500 (34 x 22 Layout)

NAD 1983 UTM Zone 17N

APPENDIX E. WASTEWATER SYSTEM - SERVICE MAP - KILWORTH



middlesex centre
in the centre of it all

Municipality of Middlesex Centre

Komoka

Wastewater System

Legend

- Municipal Address Number
- Forcemain
- Assumed Infrastructure
- Unassumed Infrastructure
- Private
- Private Forcemain
- Lateral Service Connection
- Maintenance Hole
- Pumping Station, Wastewater Treatment Facility
- Parcel Fabric

Revised: January 22, 2024

0 80 160 320
Metres

1:3,800 (34 x 22 Layout)

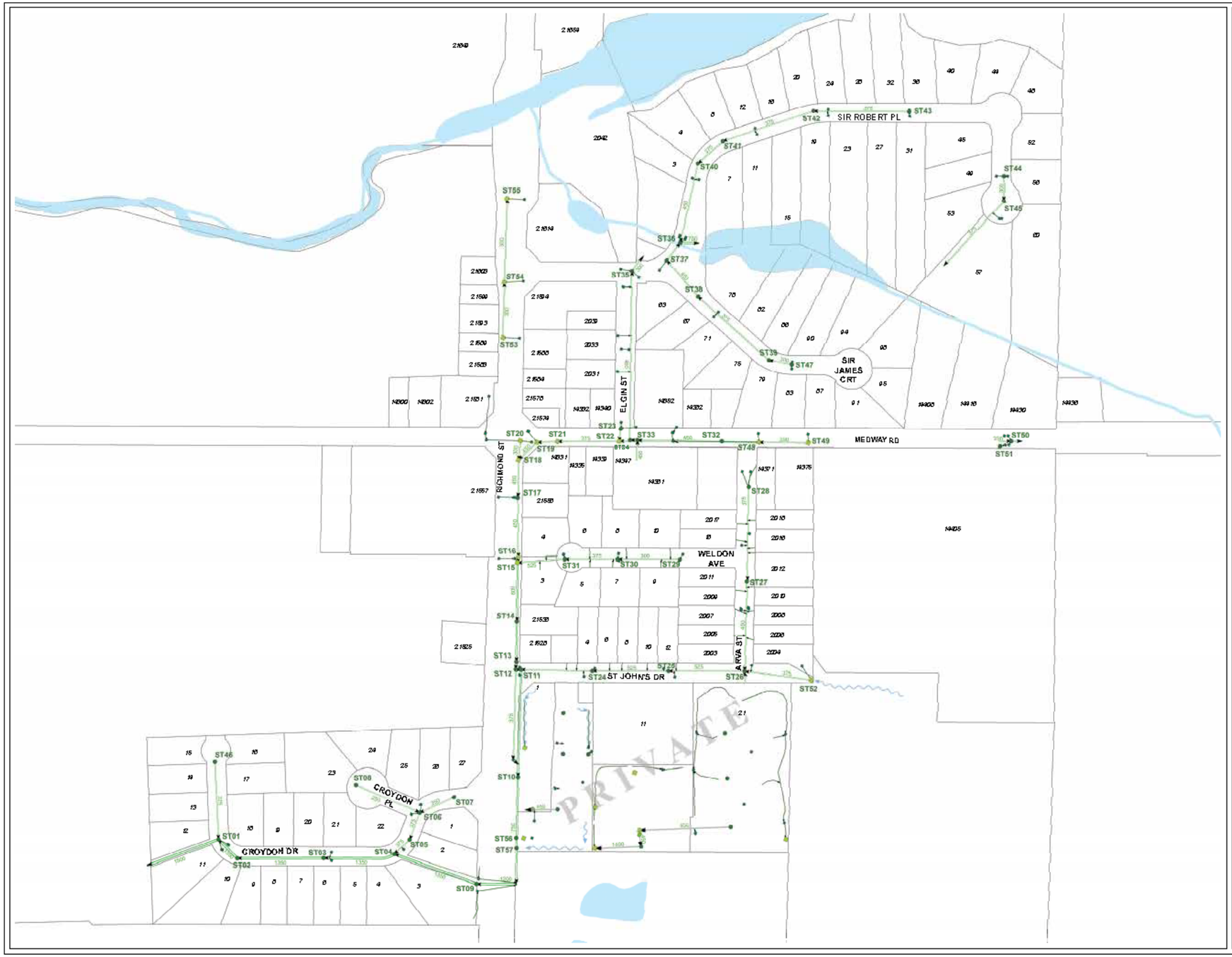
NAD 1983 UTM Zone 17N

APPENDIX F

LEVELS OF SERVICE: ONTARIO REGULATION 588/17

STORMWATER NETWORK

APPENDIX F. STORMWATER SYSTEM - SERVICE MAP - ARVA



middlesex centre
in the centre of it all

Municipality of Middlesex Centre

Arva

Stormwater System

Legend

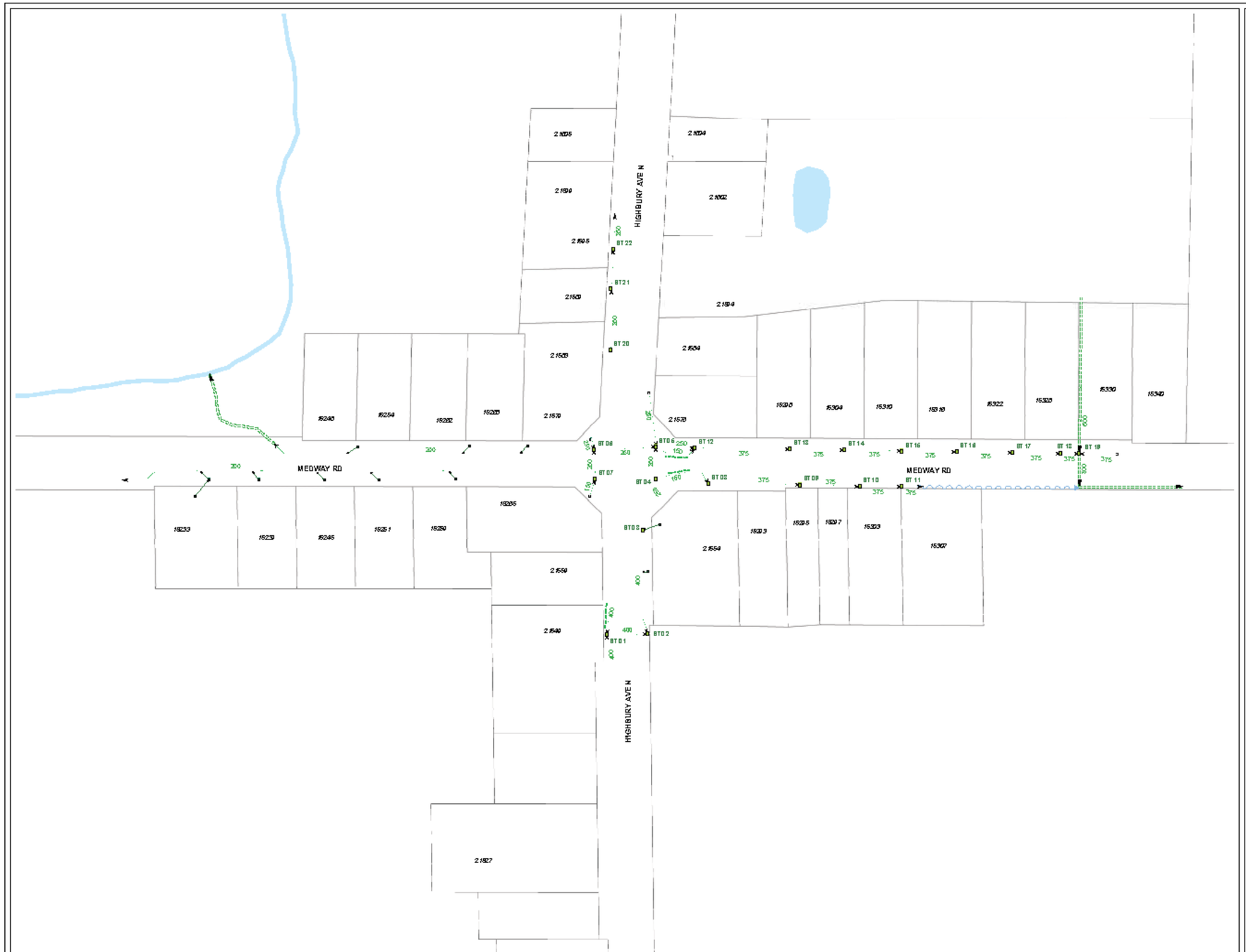
- 15238 Municipal Address Number
- 250 Assumed Infrastructure
- Municipal Drain
- Private
- Lateral Service Connection
- Swale
- ST10 Catchbasin Maintenance Hole
- ST10 Maintenance Hole
- ST10 Stormceptor
- Catch Basin
- Watercourse
- Parcel Fabric

Revised: January 22, 2024

0 45 90 180
Metres

1:1,800 (34 x 22 Layout)

NAD 1983 UTM Zone 17N



middlesex centre
in the centre of it all

Municipality of Middlesex Centre

Ballymote

Stormwater System

Legend

- 15238 Municipal Address Number
- 250 Assumed Infrastructure
- Municipal Drain
- Lateral Service Connection
- Swale
- ST10 Catchbasin Maintenance Hole
- Catch Basin
- Watercourse
- Parcel Fabric

Revised: January 22, 2024

0 25 50 100
Metres

1:1,000 (34 x 22 Layout)

NAD 1983 UTM Zone 17N

middlesex centre
in the centre of it all

Municipality of Middlesex Centre

Birr

Stormwater System

Legend

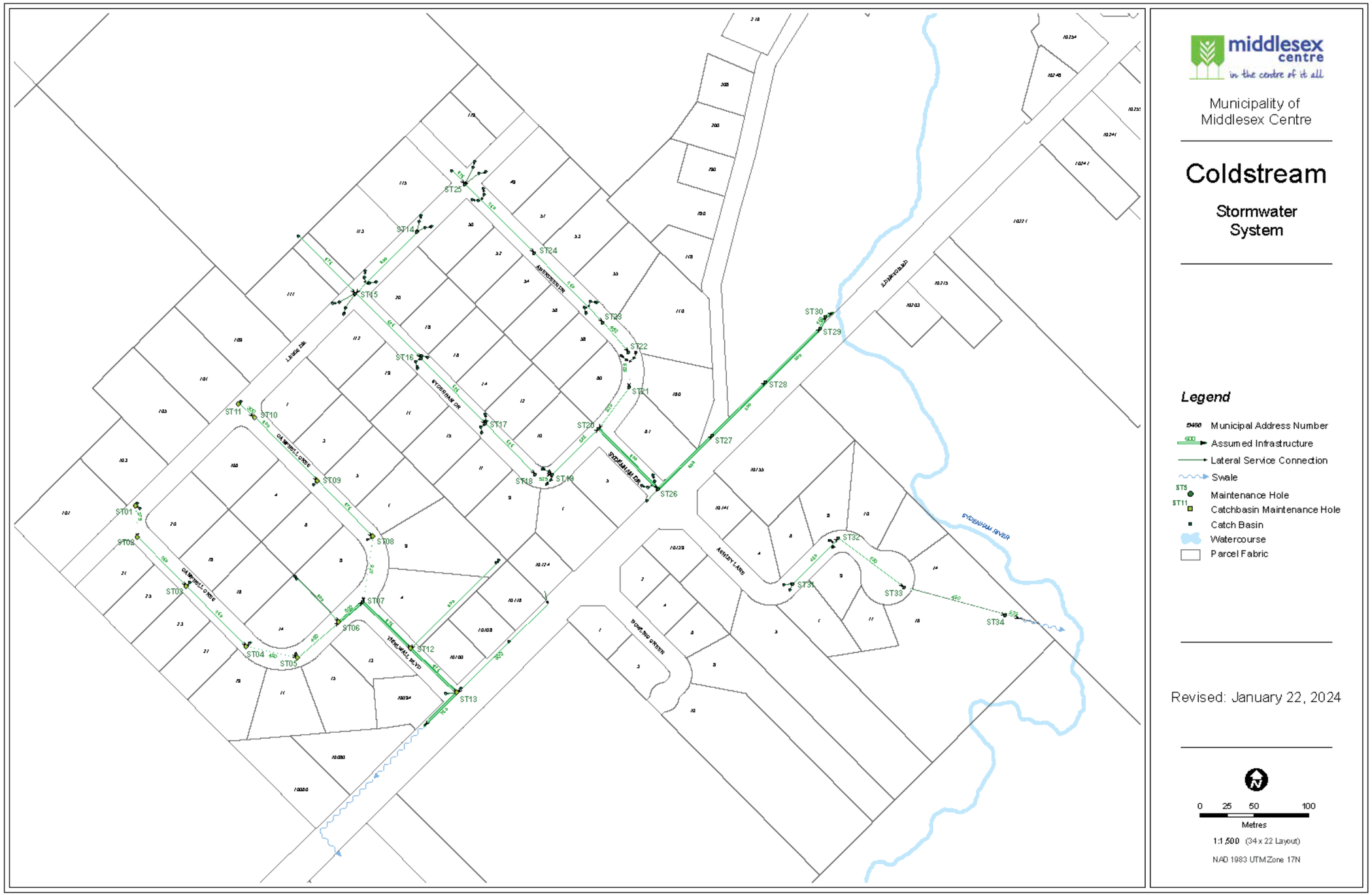
- 15238 Municipal Address Number
- 250 Assumed Infrastructure
- Municipal Drain
- Lateral Service Connection
- Swale
- ST10 Maintenance Hole
- Catch Basin
- Watercourse
- Parcel Fabric

Revised: January 22, 2024

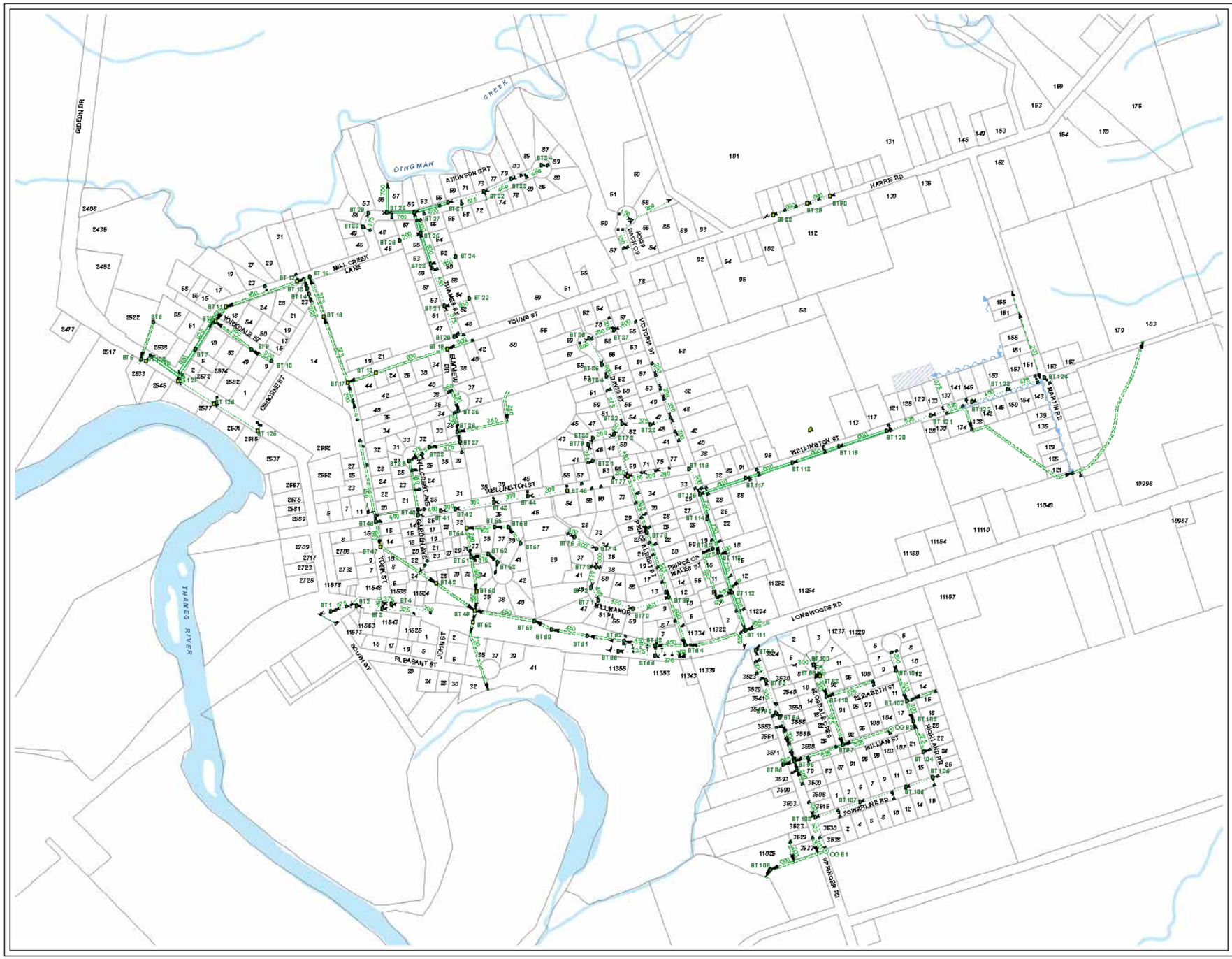
0 30 60 120
Metres

1:1,250 (34 x 22 Layout)

NAD 1983 UTM Zone 17N


ST01
ST02
ST03
ST04
ST05
ST06
ST07
ST08
ST09
ST10
ST11
ST12
ST13
ST14
ST15
ST16
ST17
ST18
ST19
ST20
ST21
ST22
ST23
ST24
ST25
ST26
ST27
ST28
ST29
ST30
ST31
ST32
ST33
ST34
SYDENHAM RIVER
middlesex centre
in the centre of it all
Municipality of Middlesex Centre
Coldstream
Stormwater System
Legend
Municipal Address Number
Assumed Infrastructure
Lateral Service Connection
Swale
Maintenance Hole
Catchbasin Maintenance Hole
Catch Basin
Watercourse
Parcel Fabric
Revised: January 22, 2024
0 25 50 100
Metres
1:1,500 (34 x 22 Layout)
NAD 1983 UTM Zone 17N

APPENDIX F. STORMWATER SYSTEM - SERVICE MAP - DELAWARE



middlesex centre
in the centre of it all

Municipality of Middlesex Centre

Delaware

Stormwater System

Legend

- 14432 Municipal Address Number
- Municipal Drain
- Assumed Infrastructure
- Unassumed Infrastructure
- Swale
- Lateral Service Connection
- ST10 Maintenance Hole
- ST18 Catchbasin Maintenance Hole
- Catch Basin
- OGS1 Oil Grit Separator
- Parcel Fabric
- Stormwater Management Facility

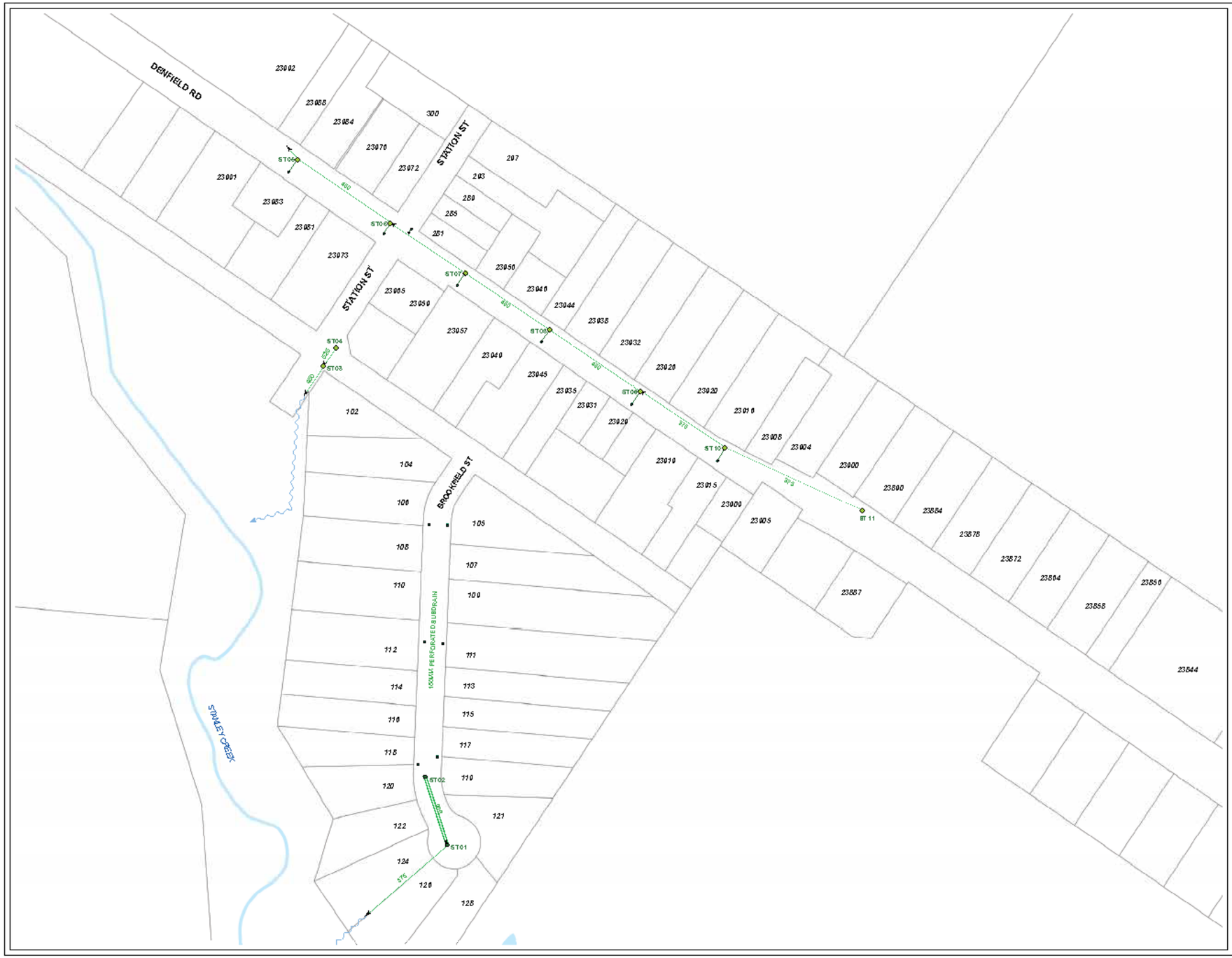
Revised: January 22, 2024

N

0 50 100 200
Metres

1:3,500 (34 x 22 Layout)

NAD 1983 UTM Zone 17N



middlesex centre
in the centre of it all

Municipality of Middlesex Centre

Denfield

Stormwater System

Legend

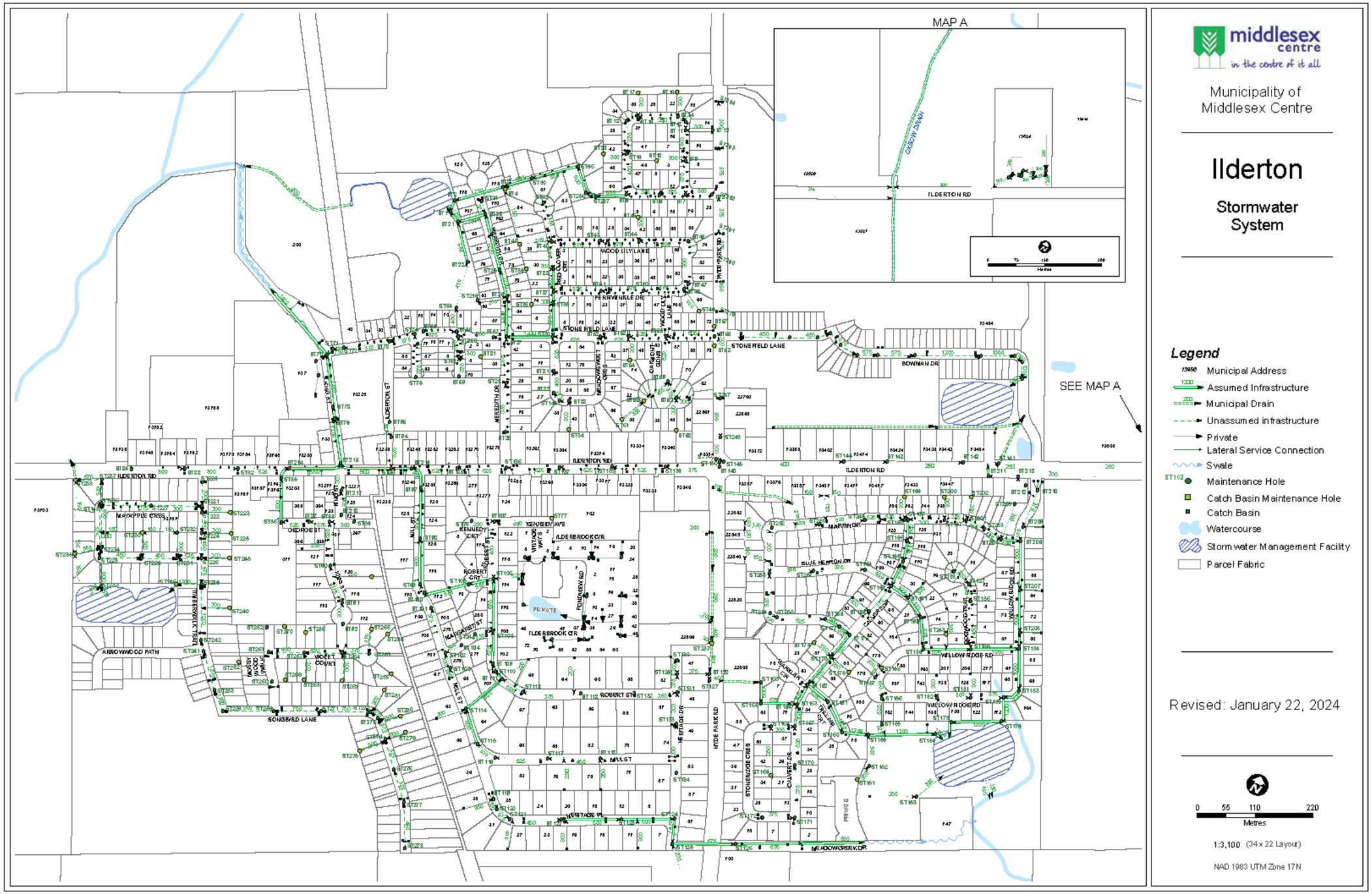
- 25 Municipal Address Number
- Assumed Infrastructure
- Lateral Service Connection
- Swale
- ST02 Maintenance Hole
- ST02 Catchbasin Maintenance Hole
- Catch Basin
- Watercourse
- Parcel Fabric

Revised: January 22, 2024

0 20 40 80
Metres

1:1 250 (34 x 22 Layout)

NAD 1983 UTM Zone 17N



middlesex centre
in the centre of it all

Municipality of Middlesex Centre

Ilderton

Stormwater System

Legend

- Municipal Address
- Assumed Infrastructure
- Municipal Drain
- Unassumed infrastructure
- Private
- Lateral Service Connection
- Swale
- Maintenance Hole
- Catch Basin Maintenance Hole
- Catch Basin
- Watercourse
- Storm water Management Facility
- Parcel Fabric

Revised: January 22, 2024

middlesex centre
in the centre of it all

Municipality of Middlesex Centre

Kilworth

Middlesex Centre Stormwater System

Legend

- 14432 Municipal Address Number
- 1500 Assumed Infrastructure
- Lateral Service Connection
- Unassumed Infrastructure
- Municipal Drain
- Private Infrastructure
- Swale
- Watercourse
- Stormwater Management Pond
- Parcel Fabric
- ST10 Maintenance Hole
- ST18 Catchbasin Maintenance Hole
- Catch Basin
- OGS1 Oil Grit Seperator
- Parcel Fabric

Revised: January 22, 2024

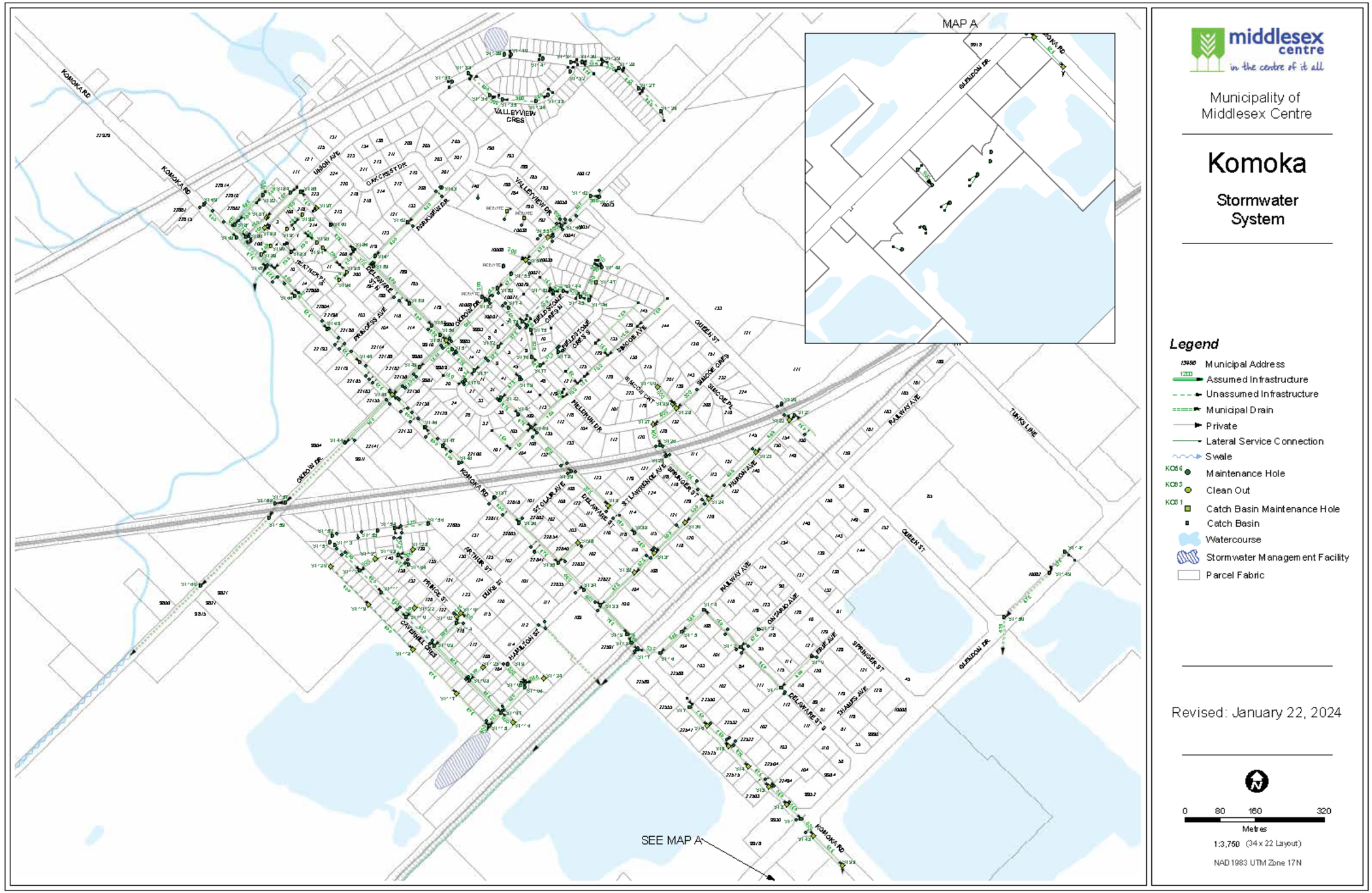
0 65 130 260

Metres

1:3,500 (34 x 22 Layout)

NAD 1983 UTM Zone 17N

APPENDIX F. STORMWATER SYSTEM - SERVICE MAP - KOMOKA



middlesex centre
in the centre of it all

Municipality of Middlesex Centre

Komoka

Stormwater System

Legend

- 13950 Municipal Address
- Assumed Infrastructure
- Unassumed Infrastructure
- Municipal Drain
- Private
- Lateral Service Connection
- Swale
- KOS6 Maintenance Hole
- KOS3 Clean Out
- KOS1 Catch Basin Maintenance Hole
- Catch Basin
- Watercourse
- Stormwater Management Facility
- Parcel Fabric

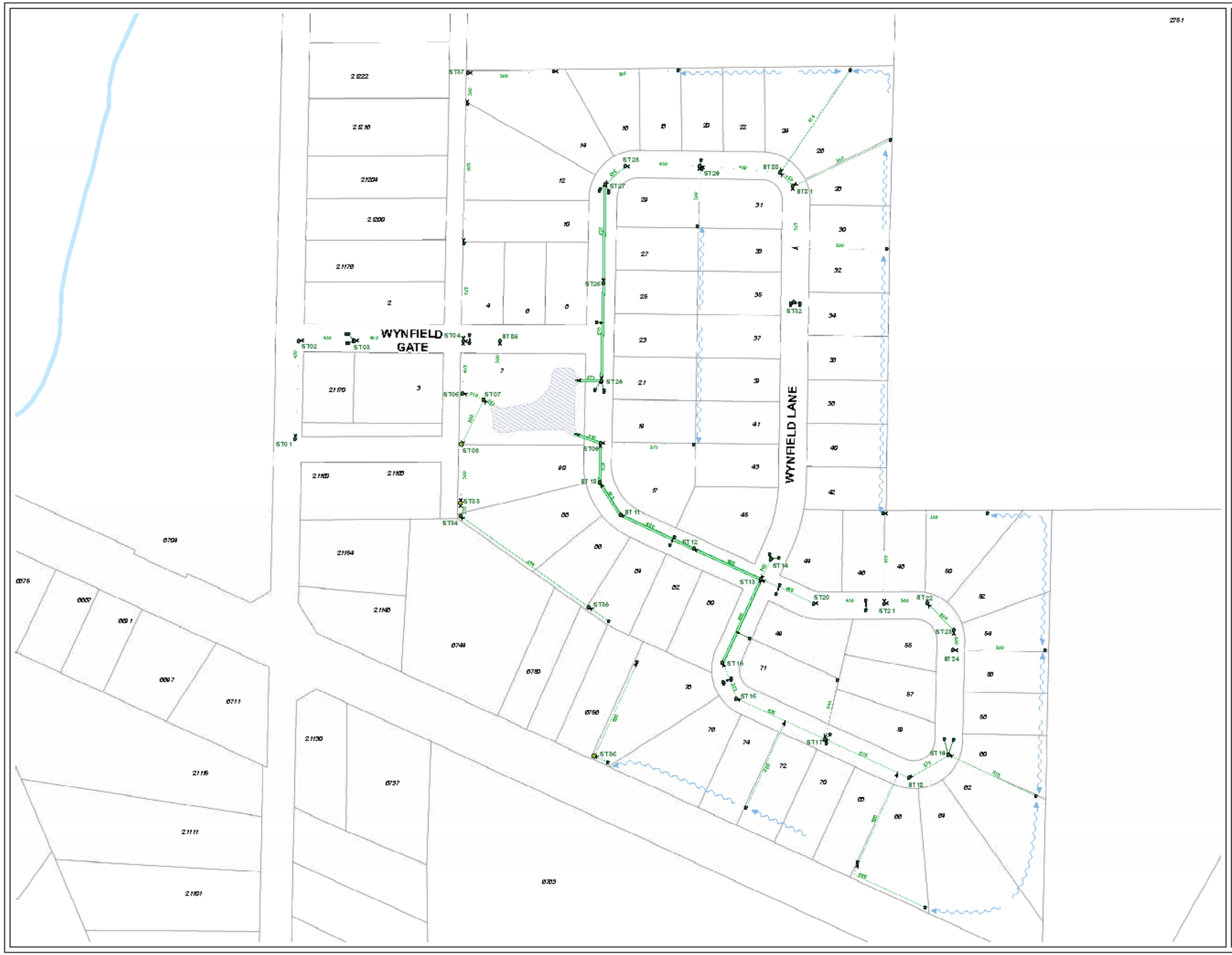
Revised: January 22, 2024

N

0 80 160 320
Metres

1:3,750 (34 x 22 Layout)

NAD 1983 UTM Zone 17N



middlesex centre
in the centre of it all

Municipality of Middlesex Centre

Melrose

Stormwater System

Legend

15238 Municipal Address Number
250 Assumed Infrastructure
Municipal Drain
Lateral Service Connection
Swale
ST10 Catchbasin Maintenance Hole
Catch Basin
Watercourse
Stormwater Management Pond
Parcel Fabric

Revised: January 22, 2024

0 30 60 120
Metres

1:1,250 (34 x 22 Layout)

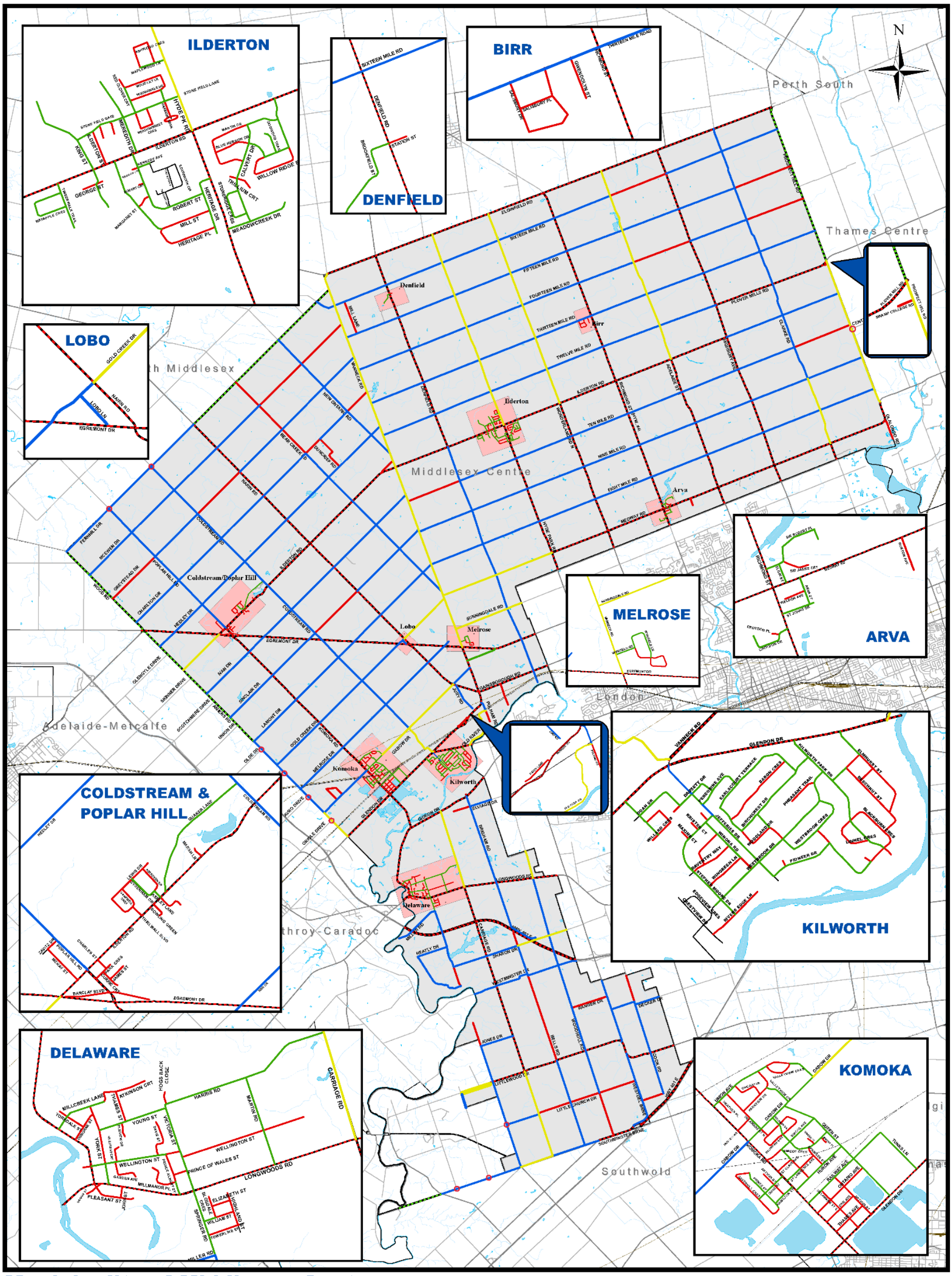
NAD 1983 UTM Zone 17N

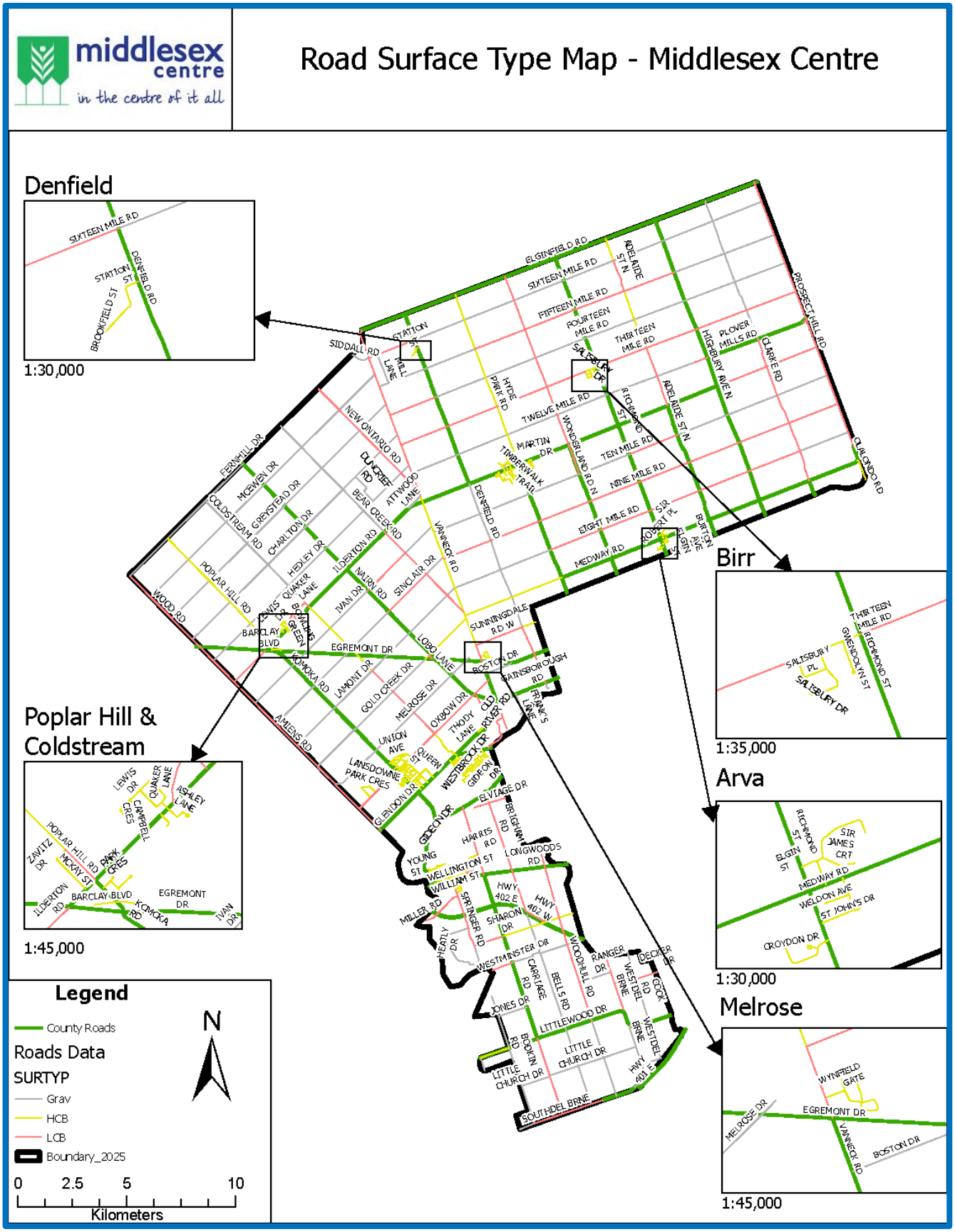
APPENDIX G

LEVELS OF SERVICE

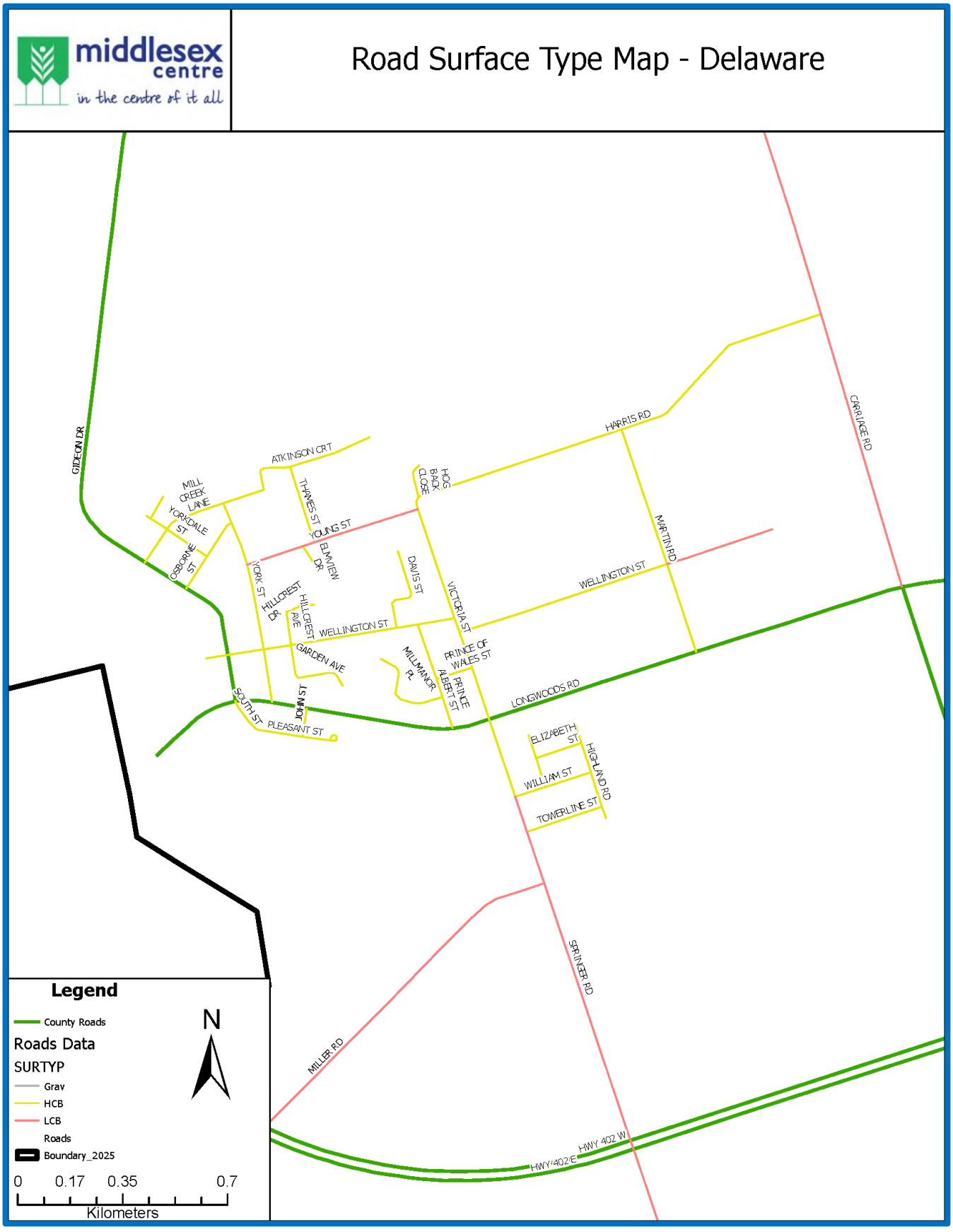
ONTARIO REGULATION 588/17

ROAD NETWORK

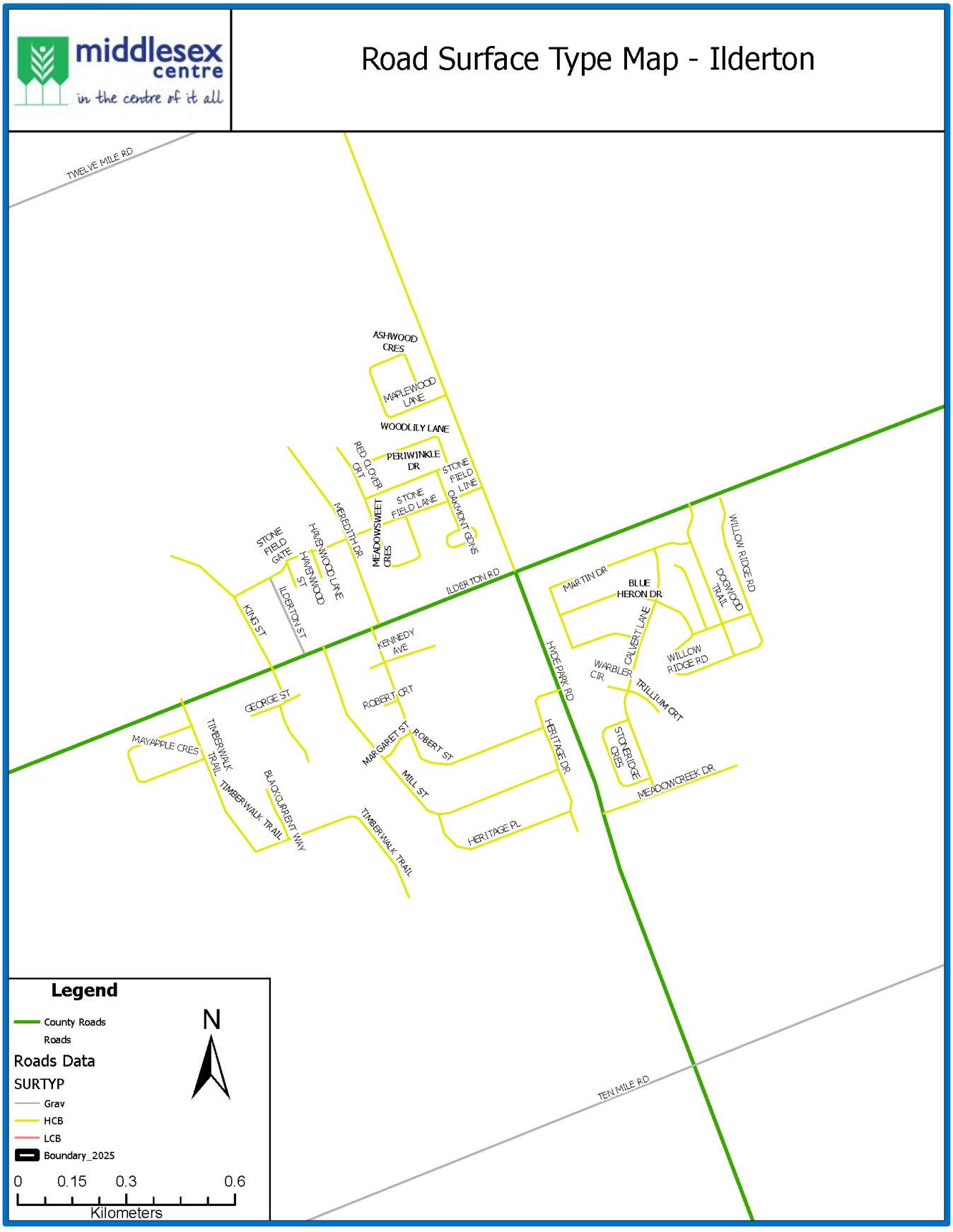

ILDERTON
DENFIELD
BIRR
LOBO
COLDSTREAM & POPLAR HILL
MELROSE
ARVA
KILWORTH
DELAWARE
KOMOKA
Perth South
Thames Centre
Middlesex Centre
Adelaide-Metcalfe
London
Southwold
Denfield
Birr
Ilderton
Arva
Coldstream/Poplar Hill
Lobo
Melrose
Komoka
Kilworth
Delaware
SIXTEEN MILE RD
DENFIELD RD
BROOKFIELD ST
STATION ST
THIRTEEN MILE ROAD
GWENDOLYN ST
SALISBURY PL
SALISBURY DR
ELGINFIELD RD
FIFTEEN MILE RD
FOURTEEN MILE RD
THIRTEEN MILE RD
TWELVE MILE RD
ILDERTON RD
TEN MILE RD
NINE MILE RD
EIGHT MILE RD
MEDWAY RD
HYDE PARK RD
PLOVER MILLS RD
CLARKE RD
PROSPECT HILL RD
MILL LANE
MANNEKA RD
NEW ONTARIO RD
BEAR CREEK RD
DUNCRIEF RD
NAVIN RD
COLDSTREAM RD
FERNHILL DR
MCEWEN DR
GREYSTEAD DR
CHARLTON DR
HEDLEY DR
POPLAR HILL RD
WOOD RD
EGREMONT DR
GLENDYLE DRIVE
SKINNER DRIVE
IVAN DR
SINCLAIR DR
LAMONT DR
SCOTCHMERE DRIVE
ASHES RD
UNION DR
OLDE DR
GOLD CREEK DR
KOMOKA RD
MELROSE DR
AVRO DRIVE
ORVILLE DRIVE
SUNNINGDALE RD
GAINSBOROUGH RD
PELHAM RD
JUNO RD
OLIVER DR
GLENDON DR
GORDON DR
BELLAGIO DR
BRISLIAM RD
LONGWOODS RD
HEATLY DR
SHARON DR
WESTMINSTER CIR
RAWSER DR
DECKER DR
JONES DR
BELLS RD
WOODHILL DR
LITTLEWOOD LA
LITTLE CHURCH DR
WESTLAKE DRIVE
SOUTHMINSTER DRIVE
SOUTH RD
ELGIN RD
ADELAIDE ST
PRESIDENT AVE
RICHMOND ST
WONDERLAND RD N
HYDE PARK RD
MEADOWCREEK DR
HERITAGE DR
HERITAGE PL
MILL ST
ROBERT ST
TRILLIUM CRT
CALVERT DR
WILLOW RIDGE
ALDERTON ST
KING ST
GEORGE ST
MEREDITH DR
STONE FIELD LANE
MAPLEWOOD DR
MEADOWCREST CRES
MARTIN DR
BLUE HERON DR
KOMOKA TRAIL
ROBERT ST
MARGARET ST
KENNEDY AVE
STONEBRIDGE CRES
CLUBHOUSE CR
MAYAPPLE CRES
THREE VALLEY TRAIL
GOLD CREEK DR
NAVIN RD
LOBO LN
EGREMONT DR
BEAR CREEK RD
DUNCRIEF RD
MANNEKA RD
NEW ONTARIO RD
PLOVER MILLS RD
SNAKE COLLEGE RD
PROSPECT HILL RD
CENT
VANNECK RD
GLENDON DR
KILWORTH PARK DR
ELMHURST ST
BIRCHCREST DR
PHEASANT TRAIL
BIRCHCREST ST
BLACKBURN CRES
EARLSCOURT TERRACE
BARON CRES
OAKLETT DR
ROBERTSHIRE AVE
JOAN DR
WILLARD CRES
KRISTEN CT
MAXINE CT
JEFFERIES DR
WINONA RD
WOODLAND DR
WESTBROOK CRES
WESTBROOK DR
PIONEER DR
DAVENTRY WAY
WINGREEN LN
STEPHEN MOORE DR
EDGEVIEW CRES
RIVERS EDGE LN
CHRISTINE CT
ORCHARD DR
ELIZABETH ST
HIGHLAND ST
WILLIAM ST
FLOWERDALE ST
BLOOMDALE CRESCENT
SPRINGER RD
MILLER RD
HARRIS RD
MARTIN RD
CARRIAGE RD
WELLINGTON ST
PRINCE OF WALES ST
LONGWOODS RD
MILLMANOR PL
PLEASANT ST
YORK ST
VICTORIA ST
THAMES ST
YOUNG ST
ATKINSON CRT
HOGS BACK CLOSE
MILLCREEK LANE
YORKDALE STREET
GARDEN AVE
DAVE ST
PRINCE WILLIAM ST
HOWARD GREEN
THIRL WALL BLVD
LEWIS DR
MARSHALL LN
ASHLEY LANE
CHARLES ST
DUNDAS ST
BARCLAY BLVD
EGREMONT DR
ORBIN
ZANITZ DR
BEAVER CRES
BEAVER CRT
DAMES ST
SIR RODERICK CT
SIR JAMES CRT
SIR GEORGE CT
SIR LOOK AVE
ST JOHNS DR
PROVOST PL
CLIFTON DR
BRANTON AVE
BRYDON DR
RICHMOND ST
BYRON
ARVA CT
OXBOW DR
VALLEYVIEW CRES
VALLEYVIEW CT
MAPLEVIEW DR
MAPLEVIEW PL
QUEEN ST
HURON AVE
RAILWAY AVE
ONTARIO AVE
THAMES AVE
TUNIS LN
GLENDON DR
KOMOKA RD
ROBERTSHIRE AVE
HAMILTON ST
ST CLAIR AVE
ST CLAIR PL
ST CLAIR CRES
ST CLAIR CT
ST CLAIR ST
ST CLAIR DR
ST CLAIR AVE
N
Municipality of Middlesex Centre
Road Classification 2025
middlesex centre
Rail
Waterbody
Middlesex Centre Detail Areas
Middlesex Centre Boundary
Legend
Class 3 - (82.9 km)
Class 4 - (371.2 km)
Class 5 - (59.4 km)
Class 6 - (89.6 km)
County Road
Boundary Road
Side street Intersection
Road Class


middlesex centre
in the centre of it all
Road Surface Type Map - Middlesex Centre
Denfield
1:30,000
Poplar Hill & Coldstream
1:45,000
Birr
1:35,000
Arva
1:30,000
Melrose
1:45,000
Legend
County Roads
Roads Data
SURTYP
Grav
HCB
LCB
Boundary_2025
N
0 2.5 5 10
Kilometers

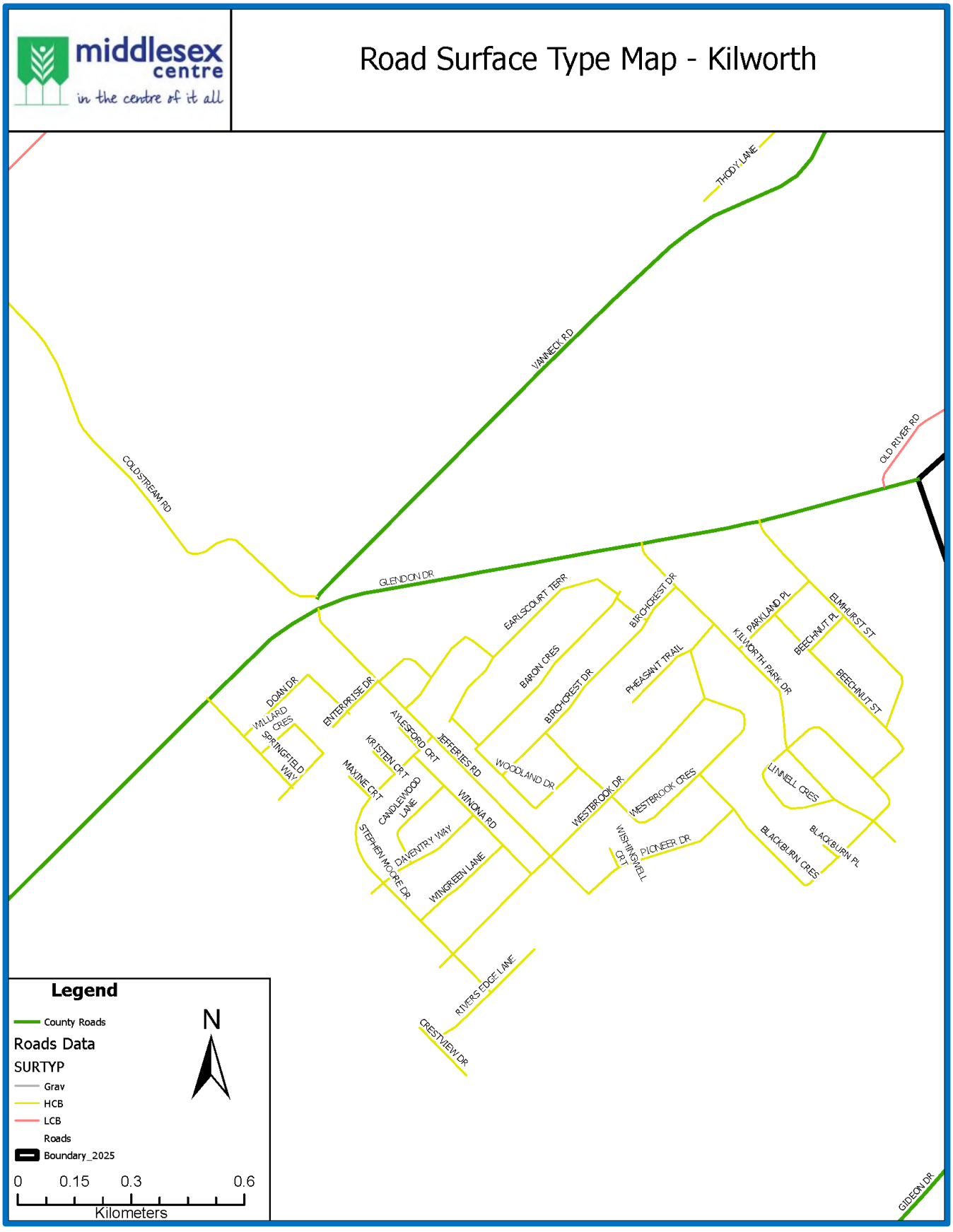
APPENDIX G.2 ROADS BY SURFACE TYPE



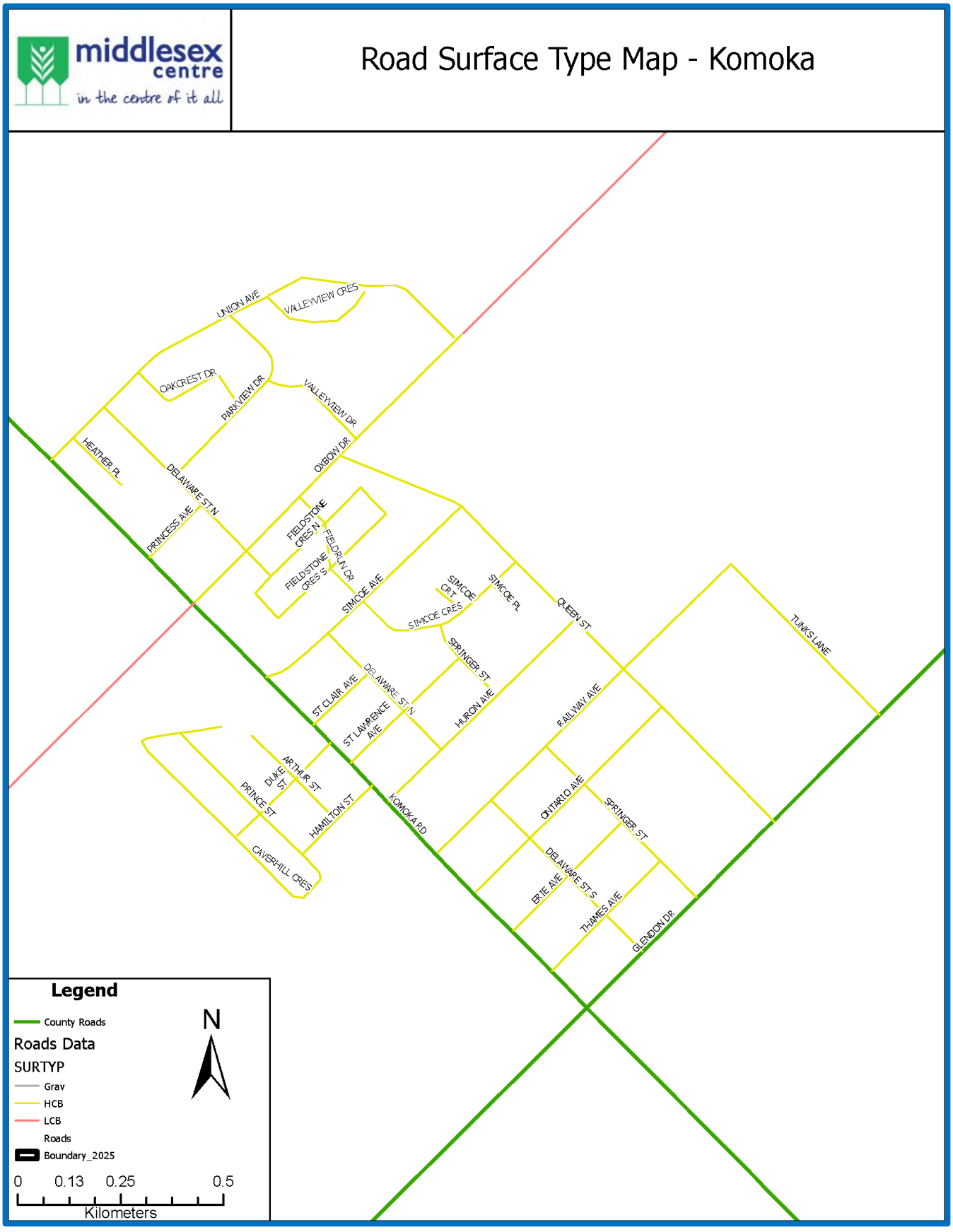
APPENDIX G.2 ROADS BY SURFACE TYPE



APPENDIX G.2 ROADS BY SURFACE TYPE



APPENDIX G.2 ROADS BY SURFACE TYPE



APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
8230	ABERDEEN DR	ASHLEY LANE	LEWIS DR	2	Urban	HCB	Storm Sewer		302	L/R	6	0	8	0	0	0	0	58.9	12	8	8	100
4250	ADELAIDE ST N	TWELVE MILE RD	ILDERTON RD	2	Rural	LCB	Open Ditch	Gravel	1449	600	3	10.9	7	0	0	0	0	86.2	17	8	9	2410
4300	ADELAIDE ST N	ELGINFIELD RD	SIXTEEN MILE RD	2	Rural	HCB	Open Ditch	Gravel	1075	600	3	8.6	7	0	0	0	0	67.9	14	8	8	2152
4260	ADELAIDE ST N	THIRTEEN MILE RD	TWELVE MILE RD	2	Rural	LCB	Open Ditch	Gravel	1384	600	3	10.6	7	0	0	0	0	81.7	16	8	9	2088
4270	ADELAIDE ST N	FOURTEEN MILE RD	THIRTEEN MILE RD	2	Rural	HCB	Open Ditch	Gravel	1423	500	3	11.2	7	0	0	0	0	83.8	17	9	8	2003
4290	ADELAIDE ST N	SIXTEEN MILE RD	FIFTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	1515	500	3	10.3	8	0	0	0	0	81.7	16	8	9	1949
4280	ADELAIDE ST N	FIFTEEN MILE RD	FOURTEEN MILE RD	2	Rural	HCB	Open Ditch	Gravel	1387	500	3	10.8	7	0	0	0	0	83.8	17	9	9	1779
30000	AMIENS RD	OXBOW DRIVE	GLENDON DR	2	Rural	LCB	Open Ditch	Gravel	1364	500	3	9.1	7	0	0	0	0	71.1	14	7	8	1207
30020	AMIENS RD	MELROSE DRIVE	OXBOW DRIVE	2	Rural	LCB	Open Ditch	Gravel	1586	400	4	10	7	0	0	0	0	72.7	14	8	8	986
30040	AMIENS RD	GOLD CREEK DRIVE	MELROSE DR	2	Rural	LCB	Open Ditch	Gravel	1131	400	4	10.3	7	0	0	0	0	77.2	15	8	8	941
50062	AMIENS RD	ILDERTON RD	IVAN DR	2	Rural	LCB	Open Ditch	Gravel	1365	400	4	9	7.1	0	0	0	0	68.2	13	8	7	846
50060	AMIENS RD	SINCLAIR DR	LAMONT DR	2	Rural	LCB	Open Ditch	Gravel	1393	400	4	8.8	7	0	0	0	0	68.2	13	8	6	846
30060	AMIENS RD	LAMONT DR	GOLD CREEK DR	2	Rural	LCB	Open Ditch	Gravel	1359	400	4	9.9	7	0	1	0	0	72.7	14	8	8	846
50064	AMIENS RD	WOOD RD	HEDLEY DR	2	Rural	LCB	Open Ditch	Gravel	1007	400	4	8.8	7	0	0	0	0	75.6	15	7	7	846
50063	AMIENS RD	HEDLEY DR	ILDERTON RD	2	Rural	LCB	Open Ditch	Gravel	1365	400	4	8.8	7	0	0	0	0	75.6	15	7	7	846
50061	AMIENS RD	IVAN DR	SINCLAIR DR	2	Rural	LCB	Open Ditch	Gravel	1356	400	4	9	7.1	0	0	0	0	77.2	15	8	7	846
6440	ARTHUR ST	DUKE ST	HAMILTON ST	2	Semi Urban	HCB	Open Ditch	Gravel	139	L/R	6	7.5	6	0	0	0	0	67.9	14	8	8	80
6450	ARTHUR ST	N END	DUKE ST	2	Semi Urban	HCB	Open Ditch	Earth	146	L/R	6	6.9	6	0	0	0	0	85.9	18	8	8	60
9410	ARVA ST	WELDON AVE	ST JOHN	2	Urban	HCB	Storm Sewer		116	L/R	5	7.9	7.9	0	0	0	0	88.3	18	9	9	417
9420	ARVA ST	MEDWAY RD	WELDON AVE	2	Urban	HCB	Storm Sewer		126	L/R	5	0	8	0	0	0	0	74.8	15	9	8	375
8210	ASHLEY LANE	ILDERTON RD	S END	2	Urban	HCB	Storm Sewer		262	L/R	6	0	8	0	0	0	0	36.4	7	8	7	89
8220	ASHLEY LANE	ABERDEEN DR	ILDERTON RD	2	Urban	HCB	Storm Sewer		91	L/R	6	0	8	0	0	0	0	54.4	11	8	7	89
9640	ASHWOOD CRES	MAPLEWOOD LANE	MAPLEWOOD LANE	2	Urban	HCB	Storm Sewer		400	L/R	6	0	8	0	0	0	0	88.3	18	9	9	185
5270	ATKINSON CRT	THAMES ST	MILL CREEK LANE	2	Urban	HCB	Storm Sewer		176	L/R	5	0	7	1	0	0	0	71.4	15	8	6	246
5280	ATKINSON CRT	E END	THAMES ST	2	Urban	HCB	Storm Sewer		265	L/R	6	0	7	0	0	0	0	84.9	17	8	7	131
3350	ATTWOOD LANE	VANNECK RD	ILDERTON RD	2	Rural	Gravel	Open Ditch	Gravel	768	100	6	0	6	0	0	0	0					28
7060	AYLESFORD CRT	N END	STEPHEN MOORE DR	2	Urban	HCB	Storm Sewer		64	L/R	5	0	9	0	0	0	0	54.4	11	8	8	217
8010	BARCLAY BLVD	E END	POPLAR HILL RD	2	Semi Urban	HCB	Open Ditch	Earth	317	L/R	6	7.6	6	0	0	0	0	64.8	14	7	8	45
8000	BARCLAY BLVD	POPLAR HILL RD	W END	2	Semi Urban	HCB	Open Ditch	Earth	371	L/R	6	7.8	6	0	0	0	0	72.4	15	8	8	45
7680	BARON CR	EARLSCOURT TERRACE	WOODLAND DR	2	Urban	HCB	Storm Sewer		545	L/R	6	0	8	0	0	0	0	83.8	17	9	8	199
3280	BEAR CREEK RD	FERNHILL DR	MCEWEN DR	2	Rural	Gravel	Open Ditch	Gravel	1366	100	6	0	6	0	0	0	0					28
3270	BEAR CREEK RD	MCEWEN DR	GREYSTEAD DR	2	Rural	Gravel	Open Ditch	Gravel	1340	100	6	0	6	0	0	0	0					42
3260	BEAR CREEK RD	GREYSTEAD DR	CHARLTON DR	2	Rural	Gravel	Open Ditch	Gravel	1376	100	6	0	6	0	0	0	0					48
3250	BEAR CREEK RD	CHARLTON DR	HEDLEY DR	2	Rural	Gravel	Open Ditch	Gravel	1359	100	6	0	6	0	0	0	0					50
3240	BEAR CREEK RD	HEDLEY DR	ILDERTON RD	2	Rural	Gravel	Open Ditch	Gravel	1370	200	5	0	6	0	0	0	0					121
3200	BEAR CREEK RD	LAMONT DR	VANNECK RD	2	Rural	LCB	Open Ditch	Gravel	1090	400	5	7.7	6	0	0	0	0	78.8	15	9	8	457
3210	BEAR CREEK RD	SINCLAIR DR	LAMONT DR	2	Rural	LCB	Open Ditch	Gravel	1366	400	5	8.4	7	0	0	0	0	77.2	15	8	8	448
3230	BEAR CREEK RD	ILDERTON RD	IVAN DR	2	Rural	LCB	Open Ditch	Gravel	1363	300	5	8.9	7	0	0	0	0	77.2	15	8	8	359
3220	BEAR CREEK RD	IVAN DR	SINCLAIR DR	2	Rural	LCB	Open Ditch	Gravel	1367	300	5	8.4	7	0	0	0	0	77.2	15	8	8	347
7240	BEECHNUT PL	ELMHURST ST	BEECHNUT ST	2	Semi Urban	HCB	Open Ditch	Gravel	128	L/R	6	6.3	5	0	0	0	0	68.3	15	9	9	22
7300	BEECHNUT ST	PARKLAND PL	BEECHNUT PL	2	Semi Urban	HCB	Open Ditch	Gravel	131	L/R	6	7.5	5	0	0	0	0	72.8	16	8	8	160
7280	BEECHNUT ST	ELMHURST ST	BLACKBURN CRES	2	Semi Urban	HCB	Open Ditch	Gravel	179	L/R	6	7.2	5	0	0	0	0	50.3	10	8	8	82
7290	BEECHNUT ST	BEECHNUT PL	ELMHURST ST	2	Semi Urban	HCB	Open Ditch	Gravel	294	L/R	6	7.3	6	0	0	0	0	68.3	14	8	8	73
50	BELLS RD	N END	SHARON DR	2	Rural	Gravel	Open Ditch	Gravel	624	100	6	0	5	0	0	0	0					33
30	BELLS RD	WESTMINSTER DR	LITTLEWOOD DR	2	Rural	Gravel	Open Ditch	Gravel	3737	100	6	0	6	0	0	0	0					35
20	BELLS RD	LITTLEWOOD DR	LITTLE CHURCH DR	2	Rural	Gravel	Open Ditch	Gravel	1798	200	4	0	6	0	0	0	0					53
40	BELLS RD	SHARON DR	WESTMINSTER DR	2	Rural	Gravel	Open Ditch	Gravel	1225	200	4	0	6	0	0	0	0					71
10	BELLS RD	LITTLE CHURCH DR	SOUTHDEL BRNE	2	Rural	Gravel	Open Ditch	Gravel	1840	200	4	0	6	0	0	0	0					107
7410	BIRCHCREST DR	KILWORTH PARK DR	EARLSCOURT TERRACE	2	Urban	HCB	Storm Sewer		120	L/R	5	0	8	0	0	0	0	51.3	11	7	7	1127
7405	BIRCHCREST DR	EARLSCOURT TERRACE	WESTBROOK CRES	2	Urban	HCB	Storm Sewer		402	C/R	5	0	8	0	0	0	0	60.3	13	7	6	294

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
7400	BIRCHCREST DR	WESTBROOK CRES	WOODLAND DR	2	Urban	HCB	Storm Sewer		160	L/R	5	0	8	0	0	0	0	58.9	12	8	8	281
7520	BLACKBURN CRES	BLACKBURN PL	55 m WEST OF BLACKBURN PL	2	Semi Urban	HCB	Open Ditch	Gravel	110	L/R	5	6.9	6	0	0	0	0	68.3	13	8	7	250
7525	BLACKBURN CRES	55 m WEST of BLACKBURN PL	PIONEER DR	2	Urban	HCB	Storm Sewer		288	L/R	5	6.9	6	0	0	0	0	72.8	15	8	7	250
7530	BLACKBURN CRES	PIONEER DR	WESTBROOK CRES	2	Urban	HCB	Storm Sewer		126	L/R	5	0	8	0	0	0	0	71.4	15	8	6	227
7560	BLACKBURN CRES	KILWORTH PARK DR	BEECHNUT ST	2	Semi Urban	HCB	Open Ditch	Gravel	302	L/R	6	6.5	5	0	0	0	0	59.3	12	8	8	195
7540	BLACKBURN CRES	KILWORTH PARK DR	BLACKBURN PL	2	Semi Urban	HCB	Open Ditch	Gravel	132	L/R	6	8.2	6	0	0	0	0	66.9	13	8	8	176
7550	BLACKBURN CRES	BEECHNUT ST	KILWORTH PARK DR	2	Semi Urban	HCB	Open Ditch	Gravel	146	L/R	6	7	5	0	0	0	0	71.4	15	8	8	170
7580	BLACKBURN PL	N END	BLACKBURN CRES	2	Semi Urban	HCB	Open Ditch	Gravel	49	L/R	6	6.8	6	0	0	0	0	48.9	11	8	6	52
5060	BLOSDALE CRES	N END	ELIZABETH ST	2	Urban	HCB	Storm Sewer		80	L/R	6	0	8	0	0	0	0	67.9	14	8	8	123
5050	BLOSDALE CRES	ELIZABETH ST	WILLIAM ST	2	Urban	HCB	Storm Sewer		102	L/R	6	0	8	0	0	0	0	67.9	14	8	8	82
9050	BLUE HERRON DR	WILLOW RIDGE RD	CALVERT DR	2	Urban	HCB	Storm Sewer		144	L/R	5	0	8	0	0	0	0	80.4	17	8	9	386
9040	BLUE HERRON DR	CALVERT DR	MARTIN DR	2	Urban	HCB	Storm Sewer		2379	L/R	6	0	8	0	0	0	0	79.3	16	9	9	198
390	BODKIN RD	TWP LIMIT	JONES DRIVE	2	Rural	Gravel	Open Ditch	Gravel	1000	100	6	0	5	0	0	0	0					34
30110	BODKIN RD	LITTLE CHURCH DR	SOUTHDEL BRNE	2	Rural	Gravel	Open Ditch	Gravel	1800	300	4	0	9	0	0	0	0					334
30120	BODKIN RD	JONES DR	LITTLEWOOD DR	2	Rural	Gravel	Open Ditch	Gravel	1500	400	4	0	6	0	0	0	0					426
50035	BODKIN RD	LITTLEWOOD DR	LITTLE CHURCH DR	2	Rural	Gravel	Open Ditch	Gravel	1846	400	4	0	6.5	0	0	0	0					626
1100	BOSTON DR	EGREMONT DR	VANNECK RD	2	Rural	Gravel	Open Ditch	Gravel	1257	200	4	0	7	0	0	0	0					168
8200	BOWLING GREEN	ILDERTON RD	S END	2	Semi Urban	HCB	Open Ditch	Earth	162	L/R	6	8.2	7	0	0	0	0	51.3	11	7	8	48
690	BRIGHAM RD	GIDEON DR	ELVIAGE DR	2	Rural	LCB	Open Ditch	Gravel	434	400	4	9.4	7	0	0	0	0	86.2	17	8	8	935
680	BRIGHAM RD	ELVIAGE DR	LONGWOODS RD	2	Rural	LCB	Open Ditch	Gravel	3283	400	4	8.6	7	0	3	0	0	86.2	17	8	9	589
670	BRIGHAM RD	LONGWOODS RD	SHARON DR	2	Rural	LCB	Open Ditch	Gravel	3262	200	4	9.1	7	0	0	2	0	75.6	15	7	8	117
9200	BROOKFIELD ST	STATION ST	S END	2	Urban	HCB	No Drainage		414	L/R	5	0	7	0	0	0	0	54.4	11	8	7	305
4500	BURTON AVE	MEDWAY RD	TWP LIMIT	2	Rural	Gravel	Open Ditch	Gravel	299	100	6	0	5	0	0	0	0					21
8930	CALVERT DR	STONERIDGE CRES	MEADOWCREEK DR	2	Urban	HCB	Storm Sewer		58	C/R	5	0	8	0	0	0	0	71.4	15	8	8	891
8950	CALVERT DR	TRILLIUM CRT	STONERIDGE CRES	2	Urban	HCB	Storm Sewer		83	L/R	5	0	8	0	0	0	0	98.4	19	9	9	876
8960	CALVERT DR	MARTIN DR	TRILLIUM CRT	2	Urban	HCB	Storm Sewer		125	L/R	5	0	8	0	0	0	0	93.9	19	9	9	653
8940	CALVERT DR	STONERIDGE CRES	STONERIDGE CRES	2	Urban	HCB	Storm Sewer		168	L/R	5	0	8	0	0	0	0	66.9	8	8	7	640
8970	CALVERT DR	BLUE HERRON DR	MARTIN DR	2	Urban	HCB	Storm Sewer		129	L/R	5	0	8	0	0	0	0	84.9	17	9	8	575
8980	CALVERT DR	MARTIN DR	BLUE HERRON DR	2	Urban	HCB	Storm Sewer		132	L/R	5	0	8	0	0	0	0	85.9	18	8	8	486
8270	CAMPBELL CRES	LEWIS DR	THIRLWALL BLVD	2	Urban	HCB	Storm Sewer		290	L/R	6	0	8	0	0	0	0	33.3	7	7	6	92
8260	CAMPBELL CRES	THIRLWALL BLVD	LEWIS DR	2	Urban	HCB	Storm Sewer		236	L/R	6	0	8	0	0	0	0	28.8	6	7	7	85
7120	CANDLEWOOD LANE	WINONA RD	DAVENTRY WAY	2	Urban	HCB	Storm Sewer		267	L/R	6	0	8	0	0	0	0	40.9	8	8	7	116
810	CARRIAGE RD	GIDEON DR	HARRIS RD	2	Rural	LCB	Open Ditch	Gravel	2279	600	3	8.8	7	2	0	0	0	41.2	7	8	7	2736
70	CARRIAGE RD	LITTLEWOOD DR	LITTLE CHURCH DR	2	Rural	LCB	Open Ditch	Gravel	1836	500	3	9.5	8	0	0	0	0	59.2	11	8	8	1798
800	CARRIAGE RD	HARRIS RD	LONGWOODS RD	2	Rural	LCB	Open Ditch	Gravel	951	500	3	9.2	8	0	0	0	0	57.6	11	7	7	1614
60	CARRIAGE RD	LITTLE CHURCH DR	SOUTHDEL BRNE	2	Rural	LCB	Open Ditch	Gravel	1807	500	3	9.9	8	0	0	0	0	80.1	16	7	8	1435
6530	CAVERHILL CRES	HAMILTON ST	DUKE ST	2	Urban	HCB	Storm Sewer		355	L/R	6	0	8	0	0	0	0	88.3	18	9	9	111
6534	CAVERHILL CRES	PRINCE ST	DUKE ST	2	Urban	HCB	Storm Sewer		477	L/R	6	0	8.5	0	0	0	0	92.8	19	9	10	111
6536	CAVERHILL CRES	EAST END	PRINCE ST	2	Urban	HCB	Storm Sewer		72	L/R	6	0	8.5	0	0	0	0	97.3	20	9	10	111
8040	CHARLES ST	ILDERTON RD	PARK CRES	2	Semi Urban	HCB	Open Ditch	Earth	119	L/R	6	7.4	6	0	0	0	0	88.3	18	9	8	73
2140	CHARLTON DR	DUNCRIEF RD	BEAR CREEK RD	2	Rural	Gravel	Open Ditch	Gravel	823	100	6	0	6	0	0	0	0					33
2160	CHARLTON DR	VANNECK RD	NEW ONTARIO RD	2	Rural	Gravel	Open Ditch	Gravel	1112	100	6	0	6	0	0	0	0					34
2120	CHARLTON DR	NAIRN RD	COLDSTREAM RD	2	Rural	Gravel	Open Ditch	Gravel	2441	200	4	0	7	0	0	0	0					72
2150	CHARLTON DR	NEW ONTARIO RD	DUNCRIEF RD	2	Rural	Gravel	Open Ditch	Gravel	1610	200	4	0	6	0	0	0	0					73
2110	CHARLTON DR	COLDSTREAM RD	POPLAR HILL RD	2	Rural	Gravel	Open Ditch	Gravel	2445	200	4	0	7	0	0	0	0					94
2130	CHARLTON DR	BEAR CREEK RD	NAIRN RD	2	Rural	Gravel	Open Ditch	Gravel	2444	200	4	0	6	0	0	0	0					99
2100	CHARLTON DR	POPLAR HILL RD	WOOD RD	2	Rural	Gravel	Open Ditch	Gravel	2437	200	4	0	7	0	0	0	0					116
4360	CLARKE RD	EIGHT MILE RD	MEDWAY RD	2	Rural	LCB	Open Ditch	Gravel	1436	500	3	9.4	7	1	0	2	0	57.6	11	7	7	1977
4440	CLARKE RD	SIXTEEN MILE RD	FIFTEEN MILE RD	2	Rural	Gravel	Open Ditch	Gravel	1595	200	4	0	7	0	0	0	0					125
4430	CLARKE RD	FIFTEEN MILE RD	FOURTEEN MILE RD	2	Rural	Gravel	Open Ditch	Gravel	1380	200	4	0	7	0	0	0	0					125

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
4450	CLARKE RD	ELGINFIELD RD	SIXTEEN MILE RD	2	Rural	Gravel	Open Ditch	Gravel	976	200	4	0	7	0	0	0	0					130
4420	CLARKE RD	FOURTEEN MILE RD	THIRTEEN MILE RD	2	Rural	Gravel	Open Ditch	Gravel	1417	200	4	0	7	0	0	0	0					138
4410	CLARKE RD	THIRTEEN MILE RD	PLOVER MILLS RD	2	Rural	Gravel	Open Ditch	Gravel	1428	200	4	0	7	0	0	0	0					146
4370	CLARKE RD	NINE MILE RD	EIGHT MILE RD	2	Rural	LCB	Open Ditch	Gravel	1387	500	3	9.4	7	0	0	1	0	54.7	10	8	7	1144
4380	CLARKE RD	TEN MILE RD	NINE MILE RD	2	Rural	LCB	Open Ditch	Gravel	1391	400	4	9.7	8	0	0	0	0	68.2	13	8	8	601
4390	CLARKE RD	ILDERTON RD	TEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	1399	400	4	0	7	0	0	0	0	83.3	16	9	8	411
4400	CLARKE RD	PLOVER MILLS RD	ILDERTON RD	2	Rural	LCB	Open Ditch	Gravel	1359	300	4	9	7	0	0	0	0	81.7	16	8	8	376
3000	COLDSTREAM RD	VANNECK RD	OXBOW DR	2	Rural	HCB	Open Ditch	Gravel	1485	500	4	9.1	7	2	0	4	0	46.8	10	7	7	1464
3130	COLDSTREAM RD	MCEWEN DR	FERNHILL DR	2	Rural	Gravel	Open Ditch	Gravel	1361	200	4	0	7	0	0	0	0					80
3120	COLDSTREAM RD	GREYSTEAD DR	MCEWEN DR	2	Rural	Gravel	Open Ditch	Gravel	1369	200	4	0	6.5	0	0	0	0					86
3110	COLDSTREAM RD	CHARLTON DR	GREYSTEAD DR	2	Rural	Gravel	Open Ditch	Gravel	1374	200	4	0	6	0	0	0	0					102
3100	COLDSTREAM RD	HEDLEY DR	CHARLTON DR	2	Rural	Gravel	Open Ditch	Gravel	1359	200	4	0	7	0	0	0	0					170
3090	COLDSTREAM RD	270 M N OF QUAKER LANE	HEDLEY DR	2	Rural	Gravel	Open Ditch	Gravel	819	300	4	0	7	0	0	0	0					270
3010	COLDSTREAM RD	OXBOW DR	MELROSE DR	2	Rural	LCB	Open Ditch	Gravel	1357	500	3	10.8	7	0	0	0	0	48.6	9	7	7	1031
3020	COLDSTREAM RD	MELROSE DR	GOLD CREEK DR	2	Rural	LCB	Open Ditch	Gravel	1371	400	4	10.7	7	0	0	0	0	59.2	11	8	8	846
3030	COLDSTREAM RD	GOLD CREEK DR	LAMONT DR	2	Rural	LCB	Open Ditch	Gravel	1356	400	4	10.5	7	0	0	0	0	68.2	13	8	7	759
3040	COLDSTREAM RD	LAMONT DR	EGREMONT DR	2	Rural	HCB	Open Ditch	Gravel	990	400	4	8.9	7	0	0	0	0	63.4	13	8	8	742
3060	COLDSTREAM RD	SINCLAIR DR	IVAN DR	2	Rural	HCB	Open Ditch	Gravel	1356	400	4	9.7	7	0	0	0	0	97.3	20	9	9	634
3050	COLDSTREAM RD	EGREMONT DR	SINCLAIR DR	2	Rural	HCB	Open Ditch	Gravel	400	400	4	9.7	7	0	0	0	0	92.8	19	9	9	629
3070	COLDSTREAM RD	IVAN DR	ILDERTON RD	2	Rural	HCB	Open Ditch	Gravel	1373	400	4	10	7	0	0	0	0	92.8	19	9	9	607
3080	COLDSTREAM RD	ILDERTON RD	QUAKER LANE	2	Rural	LCB	Open Ditch	Gravel	274	200	4	10.9	8	0	0	0	0	91.6	19	8	9	194
340	COOK RD	TWP LIMIT	DECKER DR	2	Rural	Gravel	Open Ditch	Gravel	1148	100	6	0	6	0	0	0	0					43
310	COOK RD	LITTLEWOOD DR	WELDON WAY	2	Rural	Gravel	Open Ditch	Gravel	1737	200	4	0	5	1	0	0	0					58
320	COOK RD	DECKER DR	LITTLEWOOD DR	2	Rural	Gravel	Open Ditch	Gravel	2075	200	4	0	6	0	0	0	0					90
330	COOK RD	DECKER DR	DECKER DR	2	Rural	LCB	Open Ditch	Gravel	116	200	4	0	6	0	0	0	0	78.8	15	9	8	90
6610	CRESTVIEW DR	N END	RIVERS EDGE LANE	2	Urban	HCB	Storm Sewer		40	L/R	5	0	6	0	0	0	0	58.9	12	8	8	221
6600	CRESTVIEW DR	RIVERS EDGE LANE	S END	2	Urban	HCB	Storm Sewer		130	L/R	6	0	8	0	0	0	0	49.9	10	8	7	128
9520	CROYDON DR	RICHMOND ST	CROYDON PL	2	Urban	HCB	Storm Sewer		88	L/R	5	0	8	0	0	0	0	63.4	13	8	7	456
9510	CROYDON DR	CROYDON PL	N END	2	Urban	HCB	Storm Sewer		654	L/R	6	0	8	0	0	0	0	63.4	13	8	7	199
9530	CROYDON PL	CROYDON DR	W END	2	Urban	HCB	Storm Sewer		46	L/R	6	0	8	0	0	0	0	45.4	9	8	6	78
8080	CURRIE CRT	PARK CRES	JAMES ST	2	Semi Urban	HCB	Open Ditch	Earth	108	L/R	6	6.2	5	0	0	0	0	92.8	19	9	10	114
8070	CURRIE CRT	JAMES ST	S END	2	Semi Urban	HCB	Open Ditch	Earth	158	L/R	6	7.7	6	0	0	0	0	92.8	19	9	10	23
9820	DAUSETT DR	PEREGRINE AVE	JEFFRIES RD	2	Urban	HCB	Storm Sewer		175	L/R	5	0	8	0	0	0	0	88.3	18	9	9	274
7110	DAVENTRY WAY	WINONA RD	CANDLEWOOD LANE	2	Urban	HCB	Storm Sewer		214	L/R	5	0	8	0	0	0	0	63.4	13	8	8	218
7090	DAVENTRY WAY	STEPHEN MOORE DR	W END	2	Urban	HCB	Storm Sewer		43	L/R	6	0	8	0	0	0	0	36.4	7	8	7	136
7100	DAVENTRY WAY	CANDLEWOOD LANE	STEPHEN MOORE DR	2	Urban	HCB	Storm Sewer		87	L/R	6	0	8	0	0	0	0	49.9	10	8	7	136
5550	DAVIS ST	N END	WELLINGTON ST	2	Urban	HCB	Storm Sewer		344	L/R	6	0	8	0	0	0	0	63.4	13	8	8	194
470	DECKER DR	COOK RD	WESTDEL BRNE	2	Rural	Gravel	Open Ditch	Gravel	991	200	4	0	6	0	0	0	0					139
480	DECKER DR	E LIMIT	COOK RD	2	Rural	LCB	Open Ditch	Earth	1013	200	4	8.5	7	0	0	0	0	69.8	13	9	8	96
6090	DELAWARE ST N	ST CLAIR AVE	SIMCOE AVE	2	Semi Urban	HCB	Open Ditch	Earth	139	L/R	5	7.6	6	0	0	0	0	67.9	14	8	8	303
6310	DELAWARE ST N	PRINCESS AVE	OXBOW DR	2	Semi Urban	HCB	Open Ditch	Gravel	152	L/R	5	7.3	6	0	0	0	0	92.8	19	9	9	216
6300	DELAWARE ST N	OXBOW DR	FIELDSTONE CRES N	2	Urban	HCB	Storm Sewer		86	L/R	6	0	8	0	0	0	0	88.3	18	9	9	158
6320	DELAWARE ST N	PARKVIEW DR	PRINCESS AVE	2	Semi Urban	HCB	Open Ditch	Gravel	96	L/R	6	7.5	6	0	0	0	0	99	20	10	10	143
6330	DELAWARE ST N	UNION AVE	PARKVIEW DR	2	Urban	HCB	Storm Sewer		241	L/R	6	0	8	0	0	0	0	72.4	15	8	8	118
6080	DELAWARE ST N	ST LAWRENCE AVE	ST CLAIR AVE	2	Semi Urban	HCB	Open Ditch	Earth	125	L/R	6	7.4	7	0	0	0	0	72.4	15	8	8	113
6070	DELAWARE ST N	HURON AVE	ST LAWRENCE AVE	2	Semi Urban	HCB	Ditch Sewer	Gravel	132	L/R	6	7.6	6	0	0	0	0	76.9	16	8	8	71
5700	DELAWARE ST S	THAMES AVE	GLENDON DR	2	Semi Urban	HCB	Open Ditch	Earth	122	L/R	6	7.1	6	0	0	0	0	92.8	19	9	9	98
5720	DELAWARE ST S	ONTARIO AVE	ERIE AVE	2	Semi Urban	HCB	Open Ditch	Earth	130	L/R	6	6.8	6	0	0	0	0	99	20	10	9	94
5710	DELAWARE ST S	ERIE AVE	THAMES AVE	2	Semi Urban	HCB	Open Ditch	Earth	133	L/R	6	6.8	6	0	0	0	0	99	20	10	9	35
5730	DELAWARE ST S	RAILWAY AVE	ONTARIO AVE	2	Semi Urban	HCB	Open Ditch	Earth	131	L/R	6	6.6	6	0	0	0	0	92.8	19	9	9	34

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
3870	DENFIELD RD	GAINESBOROUGH	S END	2	Rural	Gravel	Open Ditch	Gravel	497	200	4	0	5	0	0	0	0					62
3910	DENFIELD RD	EIGHT MILE RD	MEDWAY RD	2	Rural	Gravel	Open Ditch	Gravel	1360	200	4	0	7	0	0	0	0					132
3920	DENFIELD RD	NINE MILE RD	EIGHT MILE RD	2	Rural	Gravel	Open Ditch	Gravel	1427	200	4	0	8	0	0	0	0					186
3900	DENFIELD RD	MEDWAY RD	SUNNINGDALE RD W	2	Rural	Gravel	Open Ditch	Gravel	1462	200	4	0	6	0	0	0	0					199
3940	DENFIELD RD	ILDERTON RD	TEN MILE RD	2	Rural	Gravel	Open Ditch	Gravel	1470	300	4	0	8	0	0	0	0					240
3930	DENFIELD RD	TEN MILE RD	NINE MILE RD	2	Rural	Gravel	Open Ditch	Gravel	1314	300	4	0	7	0	0	0	0					257
3880	DENFIELD RD	EGREMONT DR	GAINESBOROUGH	2	Rural	LCB	Open Ditch	Gravel	1379	400	4	0	7	0	0	0	0	62.1	12	7	8	627
3890	DENFIELD RD	SUNNINGDALE RD W	EGREMONT DR	2	Rural	LCB	Open Ditch	Gravel	1381	300	4	0	7	0	0	0	0	77.2	15	8	8	301
7710	DOAN DR	ENTERPRISE DRIVE	CURVE	2	Urban	HCB	Storm Sewer		140	L/R	5	0	8	0	0	0	0	97.3	20	9	9	462
7715	DOAN DR	CURVE	SPRINGFIELD WAY	2	Urban	HCB	Storm Sewer		232	L/R	5	0	8	0	0	0	0	97.3	20	9	10	462
9060	DOGWOOD TRAIL	N END	WILLOW RIDGE RD	2	Urban	HCB	Storm Sewer		161	L/R	5	0	8	0	0	0	0	63.4	13	8	7	227
6510	DUKE ST	KOMOKA RD	ARTHUR ST	2	Semi Urban	HCB	Open Ditch	Gravel	120	L/R	5	7.5	6	0	0	0	0	54.4	11	8	7	656
6500	DUKE ST	ARTHUR ST	PRINCE ST	2	Semi Urban	HCB	Open Ditch	Gravel	121	L/R	5	7.2	6	0	0	0	0	49.9	10	8	7	570
6520	DUKE ST	PRINCE ST	CAVERHILL CRES	2	Urban	HCB	Storm Sewer		86	L/R	5	0	8	0	0	0	0	92.8	19	9	9	337
3290	DUNCRIEF RD	CHARLTON DR	HEDLEY DR	2	Rural	Gravel	Open Ditch	Gravel	1516	100	6	0	5	2	0	0	0					7
7677	EARLSCOURT TERRACE	BIRCHCREST DR	BARON CRES	2	Urban	HCB	Storm Sewer		103	L/R	5	0	9	0	0	0	0	63.4	13	8	7	684
9810	EARLSCOURT TERRACE	PEREGRINE AVE	WOODLAND DR	2	Urban	HCB	Storm Sewer		206	L/R	5	0	8	0	0	0	0	83.8	17	9	8	465
7675	EARLSCOURT TERRACE	BARON CRES	PEREGRINE AVE	2	Urban	HCB	Storm Sewer		425	L/R	5	0	8	0	0	0	0	81.4	17	8	9	457
1430	EIGHT MILE RD	PROSPECT HILL RD	CLARKE RD	2	Rural	Gravel	Open Ditch	Gravel	2379	200	4	0	6	0	0	0	0					121
1370	EIGHT MILE RD	HYDE PARK RD	DENFIELD RD	2	Rural	Gravel	Open Ditch	Gravel	2476	200	4	0	6	0	0	0	0					131
1360	EIGHT MILE RD	DENFIELD RD	VANNECK RD	2	Rural	Gravel	Open Ditch	Gravel	2256	200	4	0	6	0	0	0	0					151
1420	EIGHT MILE RD	CLARKE RD	HIGHBURY AVE N	2	Rural	LCB	Open Ditch	Gravel	2489	300	4	8.7	7	0	0	0	0	66.6	13	7	8	381
1390	EIGHT MILE RD	RICHMOND ST	WONDERLAND RD N	2	Rural	LCB	Open Ditch	Gravel	2469	300	4	8.3	7	0	0	0	0	66.6	13	7	8	329
1400	EIGHT MILE RD	ADELAIDE ST N	RICHMOND ST	2	Rural	LCB	Open Ditch	Gravel	2451	300	4	9.2	7	0	0	0	0	71.1	14	7	8	327
1410	EIGHT MILE RD	HIGHBURY AVE N	ADELAIDE ST N	2	Rural	LCB	Open Ditch	Gravel	2466	300	4	8.9	7	0	0	0	0	72.7	14	8	8	272
1380	EIGHT MILE RD	WONDERLAND RD N	HYDE PARK RD	2	Rural	LCB	Open Ditch	Gravel	2469	300	4	8.4	7	0	0	0	0	62.1	12	7	8	260
9440	ELGIN ST	ELGIN ST	MEDWAY RD	2	Urban	HCB	Storm Sewer		169	L/R	5	0	8	0	0	0	0	63.4	13	8	8	755
9460	ELGIN ST	ELGIN ST	RICHMOND ST	2	Urban	HCB	Storm Sewer		117	L/R	5	0	8	0	0	0	0	51.3	11	7	7	472
5040	ELIZABETH ST	HIGHLAND RD	BLOSDALE CRES	2	Urban	HCB	Storm Sewer		123	L/R	6	0	8	0	0	0	0	67.9	14	8	8	37
7270	ELMHURST ST	GLENDON DR	PARKLAND PL	2	Semi Urban	HCB	Open Ditch	Gravel	209	L/R	5	7.6	5	0	0	0	0	15.3	3	7	6	271
7260	ELMHURST ST	PARKLAND PL	BEECHNUT PL	2	Semi Urban	HCB	Open Ditch	Gravel	129	L/R	6	8.1	5	0	0	0	0	15.3	3	7	6	165
7250	ELMHURST ST	BEECHNUT PL	BEECHNUT ST	2	Semi Urban	HCB	Open Ditch	Gravel	370	L/R	6	7.4	5	0	0	0	0	71.4	7	8	7	115
5380	ELMVIEW DR	YOUNG ST	S END	2	Urban	HCB	Storm Sewer		119	L/R	6	0	7	0	0	0	0	45.4	9	8	7	55
760	ELVIAGE DR	TWP LIMIT	BRIGHAM RD	2	Rural	LCB	Open Ditch	Gravel	752	400	4	8.7	7	0	3	0	0	38	7	6	7	870
750	ELVIAGE DR	BRIGHAM RD	W END	2	Rural	LCB	Open Ditch	Gravel	697	100	6	0	4	0	0	0	0	63.7	12	8	8	45
7660	ENTERPRISE DR	JEFFERIES RD	DOAN DR	2	Urban	HCB	Storm Sewer		176	L/R	5	0	9	0	0	0	0	74.8	15	9	8	485
7670	ENTERPRISE DR	DOAN DR	W END	2	Urban	LCB	Storm Sewer		232	L/R	6	11	8	0	0	0	0	83.3	16	9	8	83
5880	ERIE AVE	DELAWARE ST S	KOMOKA RD	2	Semi Urban	HCB	Open Ditch	Earth	184	L/R	6	6.9	6	0	0	0	0	58.9	12	8	7	106
5890	ERIE AVE	SPRINGER ST	DELAWARE ST S	2	Semi Urban	HCB	Open Ditch	Earth	186	L/R	6	7.1	5	0	0	0	0	54.4	11	8	7	84
50050	FAIRGROUND RD	LITTLEWOOD DR	620 m SOUTH OF LITTLEWOOD DR	2	Rural	Gravel	Open Ditch	Gravel	620	200	4	0	9.8	0	0	0	0					133
9610	FERNHILL DR	COLDSTREAM RD	POPLAR HILL RD	2	Rural	Gravel	Open Ditch	Gravel	2400	200	4	0	6	0	0	0	0					73
9620	FERNHILL DR	NAIRN RD	COLDSTREAM RD	2	Rural	Gravel	Open Ditch	Gravel	2400	200	4	0	6	0	0	0	0					94
9600	FERNHILL DR	POPLAR HILL RD	WOOD RD	2	Rural	Gravel	Open Ditch	Gravel	2400	200	4	0	6	0	0	0	0					111
6180	FIELDRUN DR	FIELDSTONE CRES S	SIMCOE AVE	2	Urban	HCB	Storm Sewer		112	L/R	5	0	8	0	0	0	0	83.8	17	9	9	444
6200	FIELDRUN DR	OXBOW DR	FIELDSTONE CRES N	2	Urban	HCB	Storm Sewer		79	L/R	5	0	8	0	0	0	0	88.3	18	9	9	438
6190	FIELDRUN DR	FIELDSTONE CRES N	FIELDSTONE CRES S	2	Urban	HCB	Storm Sewer		121	L/R	5	0	8	0	0	0	0	83.8	17	9	9	361
6220	FIELDSTONE CRES N	DELAWARE ST N	FIELDRUN DR	2	Urban	HCB	Storm Sewer		184	L/R	5	0	8	0	0	0	0	88.3	18	9	9	236
6230	FIELDSTONE CRES N	FIELDRUN DR	FIELDRUN DR	2	Urban	HCB	Storm Sewer		139	L/R	5	0	8	0	0	0	0	92.8	19	9	9	213
6210	FIELDSTONE CRES N	FIELDSTONE CRES S	DELAWARE ST N	2	Urban	HCB	Storm Sewer		115	L/R	5	0	8	0	0	0	0	85.9	18	8	9	211

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
6250	FIELDSTONE CRES S	FIELDRUN DR	DELAWARE ST N	2	Urban	HCB	Storm Sewer		179	L/R	5	0	8	0	0	0	0	76.9	16	8	8	236
6260	FIELDSTONE CRES S	FIELDSTONE GATE	FIELDRUN DR	2	Urban	HCB	Storm Sewer		245	L/R	5	0	8	0	0	0	0	81.4	17	8	9	236
2640	FIFTEEN MILE RD	PROSPECT HILL RD	CLARKE RD	2	Rural	Gravel	Open Ditch	Gravel	2462	100	6	0	5	0	0	0	0					47
2580	FIFTEEN MILE RD	HYDE PARK RD	DENFIELD RD	2	Rural	Gravel	Open Ditch	Gravel	2456	200	4	0	6	0	0	0	0					87
2570	FIFTEEN MILE RD	DENFIELD RD	MILL LANE	2	Rural	Gravel	Open Ditch	Gravel	1831	200	4	0	6	0	0	0	0					89
2560	FIFTEEN MILE RD	MILL LANE	VANNECK RD	2	Rural	Gravel	Open Ditch	Gravel	447	200	4	0	6	0	0	0	0					89
2630	FIFTEEN MILE RD	CLARKE RD	HIGHBURY AVE N	2	Rural	Gravel	Open Ditch	Gravel	2461	200	4	0	6	0	0	0	0					164
2620	FIFTEEN MILE RD	HIGHBURY AVE N	ADELAIDE ST N	2	Rural	LCB	Open Ditch	Gravel	2459	300	4	9.1	7	0	0	0	0	71.1	14	7	8	304
2610	FIFTEEN MILE RD	ADELAIDE ST N	RICHMOND ST	2	Rural	LCB	Open Ditch	Gravel	2425	300	4	8.8	7	0	0	0	0	72.7	14	8	8	254
2600	FIFTEEN MILE RD	RICHMOND ST	WONDERLAND RD N	2	Rural	LCB	Open Ditch	Gravel	2460	200	4	9.1	7	0	0	0	0	72.7	14	8	8	172
2590	FIFTEEN MILE RD	WONDERLAND RD N	HYDE PARK RD	2	Rural	LCB	Open Ditch	Gravel	2459	200	4	9.2	7	0	0	0	0	68.2	13	8	8	141
2430	FOURTEEN MILE RD	PROSPECT HILL RD	CLARKE RD	2	Rural	Gravel	Open Ditch	Gravel	2466	100	6	0	5	0	0	0	0					49
2410	FOURTEEN MILE RD	HIGHBURY AVE N	ADELAIDE ST N	2	Rural	Gravel	Open Ditch	Gravel	2466	200	4	0	6	0	0	0	0					60
2420	FOURTEEN MILE RD	CLARKE RD	HIGHBURY AVE N	2	Rural	Gravel	Open Ditch	Gravel	2466	200	4	0	6	0	0	0	0					67
2390	FOURTEEN MILE RD	RICHMOND ST	WONDERLAND RD N	2	Rural	Gravel	Open Ditch	Gravel	2464	200	4	0	6	0	0	0	0					85
2380	FOURTEEN MILE RD	WONDERLAND RD N	HYDE PARK RD	2	Rural	Gravel	Open Ditch	Gravel	2468	200	4	0	6	0	0	0	0					89
2400	FOURTEEN MILE RD	ADELAIDE ST N	RICHMOND ST	2	Rural	Gravel	Open Ditch	Gravel	2402	200	4	0	6	0	0	0	0					113
2370	FOURTEEN MILE RD	HYDE PARK RD	DENFIELD RD	2	Rural	Gravel	Open Ditch	Gravel	2467	200	4	0	7	0	0	0	0					124
2360	FOURTEEN MILE RD	DENFIELD RD	VANNECK RD	2	Rural	LCB	Open Ditch	Gravel	2259	300	4	9.3	6	0	0	0	0	53.1	10	7	7	213
5560	GARDEN AVE	WELLINGTON ST	S END	2	Urban	HCB	Storm Sewer		278	L/R	6	0	7	1	0	0	0	67.9	14	8	8	123
8430	GEORGE ST	KING ST	W END	2	Urban	HCB	Storm Sewer		99	L/R	6	0	8	0	0	0	0	42.3	9	7	7	61
8440	GEORGE ST	E END	KING ST	2	Urban	HCB	Storm Sewer		63	L/R	6	0	8	0	0	0	0	40.9	8	8	7	41
1260	GOLD CREEK DR	VANNECK RD	NAIRN RD	2	Rural	HCB	Open Ditch	Gravel	2307	500	3	8.5	7	0	0	0	0	40.9	8	8	7	1385
1263	GOLD CREEK DR	NAIRN RD	LOBO LANE	2	Rural	HCB	Open Ditch	Earth	95	500	3	8.7	7.3	0	0	0	0	49.9	10	8	7	1234
1240	GOLD CREEK DR	LOBO LANE	EGREMONT DR	2	Rural	HCB	Open Ditch	Gravel	200	500	3	8.7	8	0	0	0	0	49.9	10	8	7	1234
1230	GOLD CREEK DR	EGREMONT DR	COLDSTREAM RD	2	Rural	Gravel	Open Ditch	Gravel	2145	200	4	0	6	0	0	0	0					98
1220	GOLD CREEK DR	COLDSTREAM RD	KOMOKA RD	2	Rural	Gravel	Open Ditch	Gravel	2442	200	4	0	6	0	0	0	0					131
1210	GOLD CREEK DR	KOMOKA RD	AMIENS RD	2	Rural	Gravel	Open Ditch	Gravel	2438	200	4	0	5	0	0	0	0					154
2300	GREYSTEAD DR	POPLAR HILL RD	WOOD RD	2	Rural	Gravel	Open Ditch	Gravel	2440	100	6	0	6	0	0	0	0					41
2320	GREYSTEAD DR	NAIRN RD	COLDSTREAM RD	2	Rural	Gravel	Open Ditch	Gravel	2441	100	6	0	6	0	0	0	0					42
2330	GREYSTEAD DR	BEAR CREEK RD	NAIRN RD	2	Rural	Gravel	Open Ditch	Gravel	2443	200	4	0	6	0	0	0	0					73
2310	GREYSTEAD DR	COLDSTREAM RD	POPLAR HILL RD	2	Rural	Gravel	Open Ditch	Gravel	2444	200	4	0	6	0	0	0	0					73
2350	GREYSTEAD DR	VANNECK RD	NEW ONTARIO RD	2	Rural	Gravel	Open Ditch	Gravel	1718	200	4	0	6	0	0	0	0					99
2340	GREYSTEAD DR	NEW ONTARIO RD	BEAR CREEK RD	2	Rural	Gravel	Open Ditch	Gravel	2435	200	4	0	6	0	0	0	0					105
9300	GWENDOLYN ST	THIRTEEN MILE RD	S END	2	Urban	HCB	Storm Sewer		265	L/R	6	0	9	0	0	0	0	40.9	8	8	7	139
6490	HAMILTON ST	KOMOKA RD	ARTHUR ST	2	Semi Urban	HCB	Open Ditch	Earth	118	L/R	5	7.3	6	0	0	0	0	58.9	12	8	7	952
6480	HAMILTON ST	ARTHUR ST	PRINCE ST	2	Semi Urban	HCB	Open Ditch	Gravel	104	L/R	5	7.8	6	0	0	0	0	49.9	10	8	7	544
5360	HARRIS RD	CARRIAGE RD	MARTIN RD	2	Semi Urban	HCB	Open Ditch	Gravel	794	L/R	5	8.4	7	0	0	0	0	58.9	12	8	7	578
5350	HARRIS RD	HOGS BACK CS	START OF CURBS	2	Semi Urban	HCB	Open Ditch	Gravel	587	L/R	5	6.8	5	0	0	0	0	60.3	13	7	7	371
5355	HARRIS RD	START OF CURBS	MARTIN RD	2	Urban	HCB	Storm Sewer		128	L/R	5	0	8.1	0	0	0	0	76.9	16	8	8	371
5340	HARRIS RD	HOGS BACK CS	VICTORIA ST	2	Semi Urban	HCB	Open Ditch	Gravel	19	L/R	5	8	6.1	0	0	0	0	81.4	17	8	8	371
9660	HAVENWOOD LANE	S END	STONEFIELD GATE	2	Urban	HCB	Storm Sewer		80	L/R	6	0	8	0	0	0	0	85.9	18	8	9	125
9670	HAVENWOOD ST	S END	STONEFIELD GATE	2	Urban	HCB	Storm Sewer		80	L/R	6	0	8	0	0	0	0	92.8	19	9	9	88
6550	HEATHER PLACE	S END	UNION AVE	2	Urban	HCB	Storm Sewer		165	L/R	6	0	7	0	0	0	0	67.9	14	8	8	181
970	HEATLY DR	SPRINGER RD	1.2 KM WEST OFSPRINGER RD	2	Rural	Gravel	Open Ditch	Gravel	1271	200	4	0	7	1	0	0	0					58
980	HEATLY DR	1.2 KM WEST OF N. JTN OF SPRIN	SPRINGER DR, SOUTH JUNCTION	2	Rural	Gravel	Open Ditch	Gravel	2445	200	4	0	5	3	0	1	0					58
2020	HEDLEY DR	VANNECK RD	NEW ONTARIO RD	2	Rural	Gravel	Open Ditch	Gravel	502	200	4	0	6.7	0	0	0	0					51
1990	HEDLEY DR	BEAR CREEK RD	NAIRN RD	2	Rural	Gravel	Open Ditch	Gravel	2446	200	4	0	5	0	0	0	0					52
2000	HEDLEY DR	DUNCRIEF RD	BEAR CREEK RD	2	Rural	Gravel	Open Ditch	Gravel	621	200	4	0	6	0	0	0	0					57
1980	HEDLEY DR	NAIRN RD	COLDSTREAM RD	2	Rural	Gravel	Open Ditch	Gravel	2441	200	4	0	6	0	0	0	0					62

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
1950	HEDLEY DR	EGREMONT DR	AMIENS RD	2	Rural	Gravel	Open Ditch	Gravel	843	200	4	0	6	0	0	0	0					67
2010	HEDLEY DR	NEW ONTARIO RD	DUNCRIEF RD	2	Rural	Gravel	Open Ditch	Gravel	1825	200	4	0	6	0	0	0	0					73
1960	HEDLEY DR	POPLAR HILL RD	EGREMONT DR	2	Rural	Gravel	Open Ditch	Gravel	1589	200	4	0	6	0	0	0	0					82
1970	HEDLEY DR	COLDSTREAM RD	POPLAR HILL RD	2	Rural	Gravel	Open Ditch	Gravel	2444	200	4	0	6	0	0	0	0					109
8630	HERITAGE DR	HYDE PARK RD	ROBERT ST	2	Urban	HCB	Storm Sewer		154	C/R	5	0	8	0	0	0	0	92.8	19	9	9	1746
8620	HERITAGE DR	ROBERT ST	MILL ST	2	Urban	HCB	Storm Sewer		124	L/R	5	0	8	0	0	0	0	94.5	19	10	9	472
8610	HERITAGE DR	MILL ST	HERITAGE PL	2	Urban	HCB	Storm Sewer		118	L/R	5	0	8	0	0	0	0	71.4	8	8	6	270
8600	HERITAGE DR	HERITAGE PL	S END	2	Urban	HCB	Storm Sewer		60	L/R	5	0	8	0	0	0	0	80.4	17	8	6	215
8640	HERITAGE PL	HERITAGE DR	MILL ST	2	Urban	HCB	Storm Sewer		447	L/R	5	0	8	0	0	0	0	68.3	13	8	6	215
5090	HIGHLAND RD	ELIZABETH ST	WILLIAM ST	2	Urban	HCB	Storm Sewer		102	L/R	6	0	8	0	0	0	0	83.8	17	9	8	75
5080	HIGHLAND RD	WILLIAM ST	TOWERLINE RD	2	Urban	HCB	Storm Sewer		92	L/R	6	0	8	0	0	0	0	76.9	16	8	8	70
5070	HIGHLAND RD	TOWERLINE RD	S END	2	Urban	HCB	Storm Sewer		27	L/R	6	0	8	0	0	0	0	88.3	18	9	8	70
5100	HIGHLAND RD	N END	ELIZABETH ST	2	Urban	HCB	Storm Sewer		29	L/R	6	0	8	0	0	0	0	79.3	16	9	8	56
5570	HILLCREST AVE	HILLCREST AVE	WELLINGTON ST	2	Urban	HCB	Storm Sewer		108	L/R	6	0	7	0	0	0	0	51.3	11	7	7	104
5580	HILLCREST AVE	N END	HILLCREST AVE	2	Urban	HCB	Storm Sewer		41	L/R	6	0	8	0	0	0	0	79.3	16	9	8	104
5370	HOGS BACK CS	N END	HARRIS RD	2	Urban	HCB	Storm Sewer		106	L/R	6	0	8	0	0	0	0	58.9	12	8	7	176
5990	HURON AVE	SPRINGER ST	DELAWARE ST N	2	Semi Urban	HCB	Open Ditch	Earth	187	L/R	5	7.3	5	0	0	0	0	92.8	19	9	9	273
6000	HURON AVE	QUEEN ST	SPRINGER ST	2	Semi Urban	HCB	Open Ditch	Earth	262	L/R	5	7.7	6	0	0	0	0	94.5	19	10	9	272
5980	HURON AVE	DELAWARE ST N	KOMOKA RD	2	Semi Urban	HCB	Open Ditch	Earth	178	L/R	5	7.5	6	0	0	0	0	88.3	18	9	9	268
3990	HYDE PARK RD	FIFTEEN MILE RD	FOURTEEN MILE RD	2	Rural	HCB	Open Ditch	Gravel	1392	600	3	9.1	8	0	0	0	0	100	20	10	10	2312
4000	HYDE PARK RD	SIXTEEN MILE RD	FIFTEEN MILE RD	2	Rural	HCB	Open Ditch	Gravel	1425	600	3	9.2	8	0	0	0	0	100	20	10	10	2300
3950	HYDE PARK RD	STONE FIELD LANE	ILDERTON RD	2	Urban	HCB	Storm Sewer		253	ART	5	0	10	0	0	0	0	88.3	18	9	9	2299
3960	HYDE PARK RD	TWELVE MILE RD	N. LIMITS OF ILDERTON	2	Rural	HCB	Open Ditch	Gravel	734	600	3	12.4	8	0	0	0	0	94.5	19	10	9	2299
3953	HYDE PARK RD	N. LIMITS OF ILDERTON	MAPLEWOOD LANE	2	Urban	HCB	Storm Sewer		200	ART	5	0	10	0	0	0	0	92.8	19	9	9	2299
3952	HYDE PARK RD	MAPLEWOOD LANE	STONE FIELDLANE	2	Urban	HCB	Storm Sewer		2693	ART	5	0	10	0	0	0	0	92.8	19	9	9	2299
4010	HYDE PARK RD	ELGINFIELD RD	SIXTEEN MILE RD	2	Rural	HCB	Open Ditch	Gravel	1225	600	3	10.9	8	0	0	0	0	100	20	10	10	2248
3980	HYDE PARK RD	FOURTEEN MILE RD	THIRTEEN MILE RD	2	Rural	HCB	Open Ditch	Gravel	1439	600	3	10	8	0	0	0	0	100	20	10	10	2149
3970	HYDE PARK RD	THIRTEEN MILE RD	TWELVE MILE RD	2	Rural	HCB	Open Ditch	Paved	1373	500	3	11.2	7	0	0	0	0	94.5	19	10	9	1729
1900	ILDERTON RD	EGREMONT DR	AMIENS RD	2	Rural	LCB	Open Ditch	Gravel	2048	500	3	7.9	6	0	2	0	0	84.2	17	9	9	1692
1910	ILDERTON RD	CLARKE RD	HIGHBURY AVE N	2	Rural	LCB	Open Ditch	Gravel	2451	400	4	9.2	7	0	0	0	0	77.2	15	8	8	687
1920	ILDERTON RD	PROSPECT HILL RD	CLARKE RD	2	Rural	LCB	Open Ditch	Gravel	2457	400	4	8.7	7	0	0	0	0	77.2	15	8	8	445
8450	ILDERTON ST	N END	ILDERTON RD	2	Semi Urban	Gravel	Open Ditch	Gravel	116	L/R	6	7	7	0	0	0	0					43
1730	IVAN DR	NAIRN RD	COLDSTREAM RD	2	Rural	Gravel	Open Ditch	Gravel	2441	200	4	0	6	0	0	0	0					62
1700	IVAN DR	KOMOKA RD	AMIENS RD	2	Rural	Gravel	Open Ditch	Gravel	2444	200	4	0	6	0	0	0	0					78
1750	IVAN DR	VANNECK RD	BEAR CREEK RD	2	Rural	Gravel	Open Ditch	Gravel	1715	200	4	0	5	0	0	0	0					90
1720	IVAN DR	COLDSTREAM RD	EGREMONT DR	2	Rural	Gravel	Open Ditch	Gravel	1590	200	4	0	6	0	0	0	0					109
1710	IVAN DR	EGREMONT DR	KOMOKA RD	2	Rural	Gravel	Open Ditch	Gravel	855	200	4	0	6	0	0	0	0					111
1740	IVAN DR	UNION GAS PLANT	NAIRN RD	2	Rural	LCB	Open Ditch	Gravel	823	200	4	9.3	7	0	0	0	0	81.7	16	8	8	112
1745	IVAN DR	BEAR CREEK RD	UNION GAS PLANT	2	Rural	LCB	Open Ditch	Gravel	1610	200	4	9.3	7	0	0	0	0	100	20	10	10	112
8060	JAMES ST	E END	CURRIE CRT	2	Semi Urban	HCB	Open Ditch	Gravel	196	L/R	6	7.5	5.5	0	0	0	0	92.8	19	9	9	94
7630	JEFFERIES RD	STEPHEN MOORE DR	PEREGRINE AVE	2	Urban	HCB	Storm Sewer		102	ART	4	0	8	0	0	0	0	83.8	17	9	8	4299
7640	JEFFERIES RD	ENTERPRISE DR	GLENDON DR	2	Urban	HCB	Storm Sewer		258	ART	4	0	8	0	0	0	0	74.8	15	9	8	3722
7635	JEFFERIES RD	PEREGRINE AVE	ENTERPRISE DR	2	Urban	HCB	Storm Sewer		103	ART	5	0	8	0	0	0	0	88.3	18	9	9	2977
7610	JEFFERIES RD	WESTBROOK DR	STEPHEN MOORE DR	2	Urban	HCB	Storm Sewer		447	C/R	5	0	8	0	0	0	0	63.4	13	8	8	1389
7600	JEFFERIES RD	PIONEER DR	WESTBROOK DR	2	Urban	HCB	Storm Sewer		141	L/R	5	0	8	0	0	0	0	5804.4	11	8	7	343
5140	JOHN ST	LONGWOODS RD	PLEASANT ST	2	Semi Urban	HCB	Ditch Sewer	Earth	95	L/R	6	8.5	6	0	0	0	0	81.4	17	8	8	141
450	JONES DR	CARRIAGE RD	BODKIN RD	2	Rural	Gravel	Open Ditch	Gravel	1371	200	4	0	6	0	0	0	0					193
3140	JURY RD	NAIRN RD	VANNECK RD	2	Rural	LCB	Open Ditch	Gravel	1294	200	4	0	7	0	0	0	0	66.6	13	7	8	117
8760	KENNEDY AVE	VINTAGE WAY S	ROBERT ST	2	Urban	HCB	Storm Sewer		78	L/R	5	0	8	0	0	0	0	89.4	18	9	9	358
8770	KENNEDY AVE	E END	VINTAGE WAY S	2	Semi Urban	HCB	Storm Sewer	Earth	37	L/R	5	0	8	0	0	0	0	100	20	10	9	358

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
8750	KENNEDY CRT	W END	ROBERT ST	2	Urban	HCB	Storm Sewer		42	L/R	6	0	8	0	0	0	0	84.9	17	9	9	74
7360	KILWORTH PARK DR	GLENDON DR	BIRCHCREST DR	2	Urban	HCB	Storm Sewer		153	ART	5	0	8	0	0	0	0	46.8	10	7	7	2627
7350	KILWORTH PARK DR	BIRCHCREST DR	WESTBROOK DR	2	Urban	HCB	Storm Sewer		141	C/R	5	0	8	0	0	0	0	46.8	10	7	7	1959
7340	KILWORTH PARK DR	WESTBROOK DR	PARKLAND PL	2	Urban	HCB	Storm Sewer		91	C/R	5	0	8	0	0	0	0	63.4	13	8	8	810
7330	KILWORTH PARK DR	PARKLAND PL	50M NORTH OF BLACKBURN CRES	2	Urban	HCB	Storm Sewer		243	L/R	5	0	8	0	0	0	0	98.4	19	9	8	358
7310	KILWORTH PARK DR	LINNELL CRES	BLACKBURN CRES	2	Semi Urban	HCB	Open Ditch	Gravel	124	L/R	5	8.3	6	0	0	0	0	100	20	10	8	293
7320	KILWORTH PARK DR	50M NORTH OF BLACKBURN CRES	LINNELL CRES	2	Semi Urban	HCB	Open Ditch	Gravel	246	L/R	5	8.1	6	0	0	0	0	98.4	19	9	8	281
7305	KILWORTH PARK DR	SOUTH TO END	BLACKBURN CRES	2	Semi Urban	HCB	Open Ditch	Gravel	75	L/R	6	8.3	6	0	0	0	0	93.9	19	9	8	80
8410	KING ST	ILDERTON RD	GEORGE ST	2	Urban	LCB	Storm Sewer		110	L/R	5	0	11	0	0	0	0	57.6	11	7	7	680
8420	KING ST	N END	ILDERTON RD	2	Urban	HCB	Storm Sewer		440	L/R	5	0	8	0	0	0	0	49.9	10	8	7	616
9680	KING ST	N END	KING ST	2	Urban	HCB	Storm Sewer		189	L/R	5	0	8	0	0	0	0	54.4	11	8	7	418
8400	KING ST	GEORGE ST	S END	2	Urban	HCB	Storm Sewer		195	L/R	5	0	8	0	0	0	0	51.3	11	7	7	414
7070	KRISTEN CRT	N END	STEPHEN MOORE DR	2	Urban	HCB	Storm Sewer		65	L/R	5	0	8	0	0	0	0	54.4	11	8	7	212
1320	LAMONT DR	EGREMONT DR	COLDSTREAM RD	2	Rural	Gravel	Open Ditch	Gravel	916	200	4	0	6	0	0	0	0					69
1310	LAMONT DR	COLDSTREAM RD	KOMOKA RD	2	Rural	Gravel	Open Ditch	Gravel	2444	200	4	0	6	0	0	0	0					86
1350	LAMONT DR	VANNECK RD	BEAR CREEK RD	2	Rural	Gravel	Open Ditch	Gravel	487	200	4	0	6	0	0	0	0					90
1340	LAMONT DR	BEAR CREEK RD	NAIRN RD	2	Rural	Gravel	Open Ditch	Gravel	2442	200	4	0	6	0	0	0	0					104
1330	LAMONT DR	NAIRN RD	EGREMONT DR	2	Rural	Gravel	Open Ditch	Gravel	1535	200	4	0	5	0	0	0	0					110
1300	LAMONT DR	KOMOKA RD	AMIENS RD	2	Rural	Gravel	Open Ditch	Gravel	2428	200	4	0	6	0	0	0	0					123
4600	LANSDOWNE PARK CRES	OXBOW DR	END OF CURBS	2	Urban	HCB	Storm Sewer		1043	L/R	5	0	8	0	0	0	0	18.4	3	8	6	194
4605	LANSDOWNE PARK CRES	END OF CURBS	OXBOW DR	2	Rural	HCB	Open Ditch	Earth	364	200	5	0	8	0	0	0	0	18.4	3	8	3	194
8290	LEWIS DR	SYDENHAM DR	70M WEST OF CAMPBELL CRES	2	Urban	HCB	Storm Sewer		218	L/R	6	0	8	0	0	0	0	99	20	10	10	46
8305	LEWIS DR	E END	ABERDEEN DR	2	Urban	HCB	Storm Sewer		82	L/R	6	0	8	0	0	0	0	97.3	20	9	10	40
8300	LEWIS DR	ABERDEEN DR	SYDENHAM DR	2	Urban	HCB	Storm Sewer		146	L/R	6	0	8	0	0	0	0	99	20	10	10	40
8280	LEWIS DR	70M WEST OF CAMPBELL CRES	CAMPBELL CRES	2	Urban	HCB	Storm Sewer		75	L/R	6	0	8	0	0	0	0	99	20	10	10	31
7570	LINNELL CRES	KILWORTH PARK DR	KILWORTH PARK DR	2	Semi Urban	HCB	Open Ditch	Gravel	327	L/R	6	6.7	5	0	0	0	0	86.3	17	8	7	23
410	LITTLE CHURCH DR	BELLS RD	CARRIAGE RD	2	Rural	Gravel	Open Ditch	Gravel	1389	100	6	0	5	0	0	0	0					31
430	LITTLE CHURCH DR	WESTDEL BRNE	WOODHULL RD	2	Rural	Gravel	Open Ditch	Gravel	1551	100	6	0	6	0	0	0	0					47
420	LITTLE CHURCH DR	WOODHULL RD	BELLS RD	2	Rural	Gravel	Open Ditch	Gravel	1239	100	6	0	6	0	0	0	0					47
400	LITTLE CHURCH DR	CARRIAGE RD	BODKIN RD	2	Rural	Gravel	Open Ditch	Gravel	1371	200	4	0	7	0	0	0	0					198
50090	LITTLEWOOD DR	BODKINS RD	FAIRGROUNDS RD	2	Rural	HCB	Open Ditch	Gravel	1382	300	4	10.5	8.7	0	0	0	0	97.3	20	9	10	255
7900	LOBO LANE	GOLD CREEK DR	EGREMONT DR	2	Rural	LCB	Open Ditch	Earth	213	200	4	5.9	5	0	0	0	0	68.2	13	8	8	81
9630	MAPLEWOOD LANE	HYDE PARK ROAD	W END	2	Urban	HCB	Storm Sewer		453	L/R	5	0	8	0	0	0	0	88.3	18	9	9	590
8680	MARGARET ST	ROBERT ST	MILL ST	2	Urban	HCB	Storm Sewer		95	L/R	6	0	8	0	0	0	0	100	20	10	9	174
8320	MARSH LANE	N END	ILDERTON RD	2	Semi Urban	LCB	Open Ditch	Gravel	184	L/R	6	5.6	5	0	0	0	0	78.1	16	8	8	57
9014	MARTIN DR	WILLOW RIDGE RD	CALVERT DR	2	Urban	HCB	Storm Sewer		218	L/R	5	0	8	0	0	0	0	88.3	18	9	9	886
9012	MARTIN DR	CALVERT DR	BLUE HERRON DR	2	Urban	HCB	Storm Sewer		353	L/R	5	0	8	0	0	0	0	88.3	18	9	9	219
9010	MARTIN DR	BLUE HERRON DR	CALVERT DR	2	Urban	HCB	Storm Sewer		243	L/R	6	0	8	0	0	0	0	81.4	17	8	9	129
5480	MARTIN RD	WELLINGTON ST	LONGWOODS RD	2	Urban	HCB	Storm Sewer		307	L/R	5	0	8	0	0	0	0	94.5	19	10	8	333
5490	MARTIN RD	HARRIS RD	WELLINGTON ST	2	Urban	HCB	Storm Sewer		472	L/R	5	6.9	5	0	0	0	0	94.5	19	10	10	324
7080	MAXINE CRT	N END	STEPHEN MOORE DR	2	Urban	HCB	Storm Sewer		66	L/R	5	0	8	0	0	0	0	97.3	20	9	9	205
2540	MCEWEN DR	NEW ONTARIO RD	BEAR CREEK RD	2	Rural	Gravel	Open Ditch	Gravel	2443	100	6	0	6	0	0	0	0					29
2550	MCEWEN DR	VANNECK RD	NEW ONTARIO RD	2	Rural	Gravel	Open Ditch	Gravel	2308	100	6	0	6	0	0	0	0					34
2530	MCEWEN DR	BEAR CREEK RD	NAIRN RD	2	Rural	Gravel	Open Ditch	Gravel	2445	100	6	0	6	0	0	0	0					48
2500	MCEWEN DR	POPLAR HILL RD	WOOD RD	2	Rural	Gravel	Open Ditch	Gravel	2443	200	4	0	6	0	0	0	0					63
2520	MCEWEN DR	NAIRN RD	COLDSTREAM RD	2	Rural	Gravel	Open Ditch	Gravel	2439	200	4	0	6	0	0	0	0					85
2510	MCEWEN DR	COLDSTREAM RD	POPLAR HILL RD	2	Rural	Gravel	Open Ditch	Gravel	2443	200	4	0	6	0	0	0	0					138
8090	MCKAY ST	ZAVITZ DR	ILDERTON RD	2	Semi Urban	HCB	Open Ditch	Earth	437	L/R	6	7.7	6	0	0	0	0	85.9	18	8	9	133
8900	MEADOWCREEK DR	CALVERT DR	HYDE PARK RD	2	Urban	HCB	Storm Sewer		162	C/R	5	0	8	0	0	0	0	67.9	14	8	8	1274

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
8910	MEADOWCREEK DR	E END	CALVERT DR	2	Urban	HCB	Storm Sewer		283	L/R	5	0	8	0	0	0	0	98.4	19	9	9	228
8520	MEADOWSWEET CRES	STONE FIELD LANE	STONE FIELD LANE	2	Urban	HCB	Storm Sewer		311	L/R	6	0	8	0	0	0	0	81.8	17	8	7	100
1275	MEDWAY RD	HYDE PARK	DENFIELD RD	2	Rural	HCB	Open Ditch	Paved	2474	600	3	9.2	7	0	0	0	0	88.3	18	9	9	2672
1270	MEDWAY RD	DENFIELD RD	VANNECK RD	2	Rural	HCB	Open Ditch	Paved	2329	600	3	9.3	7	0	2	0	0	88.3	18	9	9	2487
1190	MELROSE DR	VANNECK RD	EGREMONT DR	2	Rural	Gravel	Open Ditch	Gravel	732	200	4	0	6	0	0	0	0					65
1150	MELROSE DR	KOMOKA RD	AMIENS RD	2	Rural	Gravel	Open Ditch	Gravel	2430	200	4	0	6	0	0	0	0					81
1180	MELROSE DR	EGREMONT DR	NAIRN RD	2	Rural	Gravel	Open Ditch	Gravel	246	200	4	0	6	0	0	0	0					84
1170	MELROSE DR	NAIRN RD	COLDSTREAM RD	2	Rural	Gravel	Open Ditch	Gravel	2444	200	4	0	6	0	0	0	0					105
1160	MELROSE DR	COLDSTREAM RD	KOMOKA RD	2	Rural	Gravel	Open Ditch	Gravel	2462	200	4	0	6	0	0	0	0					164
8460	MEREDITH DR	STONE FIELD LANE	ILDERTON RD	2	Urban	HCB	Storm Sewer		252	L/R	5	0	8	0	0	0	0	85.9	18	8	9	953
8470	MEREDITH DR	N END	STONE FIELD LANE	2	Urban	HCB	Storm Sewer		298	L/R	5	0	8	0	0	0	0	88.3	18	9	9	342
5240	MILL CREEK LANE	YORKDALE ST	GIDEON DR	2	Urban	HCB	Storm Sewer		134	L/R	5	0	8	0	0	0	0	88.3	18	9	9	419
5260	MILL CREEK LANE	ATKINSON CRT	88 M EAST OF YORK ST	2	Urban	HCB	Storm Sewer		56	L/R	5	0	7	1	0	0	0	97.3	20	9	10	385
5255	MILL CREEK LANE	88 M EAST OF YORK ST	YORK ST	2	Semi Urban	HCB	Ditch Sewer	Earth	88	L/R	5	0	7	0	0	0	0	97.3	20	9	10	385
5250	MILL CREEK LANE	YORK ST	YORKDALE ST	2	Semi Urban	HCB	Ditch Sewer	Earth	213	L/R	5	7.3	6	0	0	0	0	97.3	20	9	10	385
3820	MILL LANE	SIXTEEN MILE RD	FIFTEEN MILE RD	2	Rural	Gravel	Open Ditch	Gravel	1403	100	6	0	4	0	0	0	0					36
8670	MILL ST	ILDERTON RD	MARGARET ST	2	Urban	HCB	Storm Sewer		357	L/R	5	0	8	0	0	0	0	81.8	17	9	9	393
8660	MILL ST	MARGARET ST	HERITAGE PL	2	Urban	HCB	Storm Sewer		222	L/R	5	0	8	0	0	0	0	68.3	14	9	9	319
8650	MILL ST	HERITAGE PL	HERITAGE DR	2	Urban	HCB	Storm Sewer		354	L/R	6	0	8	0	0	0	0	88.3	18	9	9	190
280	MILLER RD	W END	SPRINGER ROAD	2	Rural	LCB	Open Ditch	Earth	1902	200	5	7.2	6	0	0	0	0	57.6	11	7	6	72
5530	MILLMANOR PL	W END	PRINCE ALBERT ST	2	Urban	HCB	Storm Sewer		308	L/R	6	0	7	0	0	0	0	63.4	13	8	7	154
3370	NEW ONTARIO RD	CHARLTON DR	HEDLEY DR	2	Rural	LCB	Open Ditch	Gravel	1368	400	4	8.5	7	0	0	0	0	82.6	16	9	9	734
3380	NEW ONTARIO RD	GREYSTEAD DR	CHARLTON DR	2	Rural	LCB	Open Ditch	Gravel	1370	400	4	9.1	7	0	0	0	0	52.7	11	9	9	722
3390	NEW ONTARIO RD	MCEWEN DR	GREYSTEAD DR	2	Rural	LCB	Open Ditch	Gravel	1331	400	4	9.3	7	0	0	0	0	91.6	18	9	9	677
3400	NEW ONTARIO RD	FERNHILL DR	MCEWEN DR	2	Rural	LCB	Open Ditch	Gravel	1365	400	4	9.8	7	0	0	0	0	97.7	19	9	9	642
3360	NEW ONTARIO RD	HEDLEY DR	VANNECK RD	2	Rural	LCB	Open Ditch	Gravel	1083	400	4	8.5	7	0	0	0	0	64.6	13	8	8	639
1620	NINE MILE RD	CLARKE RD	HIGHBURY AVE N	2	Rural	LCB	Open Ditch	Gravel	2458	400	4	8.2	7	0	0	0	0	71.1	14	7	8	547
1610	NINE MILE RD	HIGHBURY AVE N	ADELAIDE ST N	2	Rural	LCB	Open Ditch	Gravel	2472	400	4	9.9	7	2	0	1	0	66.6	13	7	7	418
1580	NINE MILE RD	WONDERLAND RD N	HYDE PARK RD	2	Rural	LCB	Open Ditch	Gravel	2482	400	4	8.6	7	0	1	0	0	39.6	7	7	7	415
1590	NINE MILE RD	RICHMOND ST	WONDERLAND RD N	2	Rural	LCB	Open Ditch	Gravel	2447	300	4	9.1	7	0	0	0	0	53.1	10	7	7	406
1600	NINE MILE RD	ADELAIDE ST N	RICHMOND ST	2	Rural	LCB	Open Ditch	Gravel	2452	300	4	9.6	7	0	0	0	0	53.1	10	7	7	389
1560	NINE MILE RD	DENFIELD RD	VANNECK RD	2	Rural	LCB	Open Ditch	Gravel	2322	300	4	7.5	7	0	0	0	0	72.7	14	8	8	386
1630	NINE MILE RD	PROSPECT HILL RD	CLARKE RD	2	Rural	LCB	Open Ditch	Gravel	2399	300	4	8.4	6	0	0	0	0	80.1	16	7	8	326
1570	NINE MILE RD	HYDE PARK RD	DENFIELD RD	2	Rural	LCB	Open Ditch	Gravel	2418	300	4	8.7	7	0	3	0	0	75.6	15	7	8	325
6340	OAKCREST DR	PARKVIEW DR	UNION AVE	2	Semi Urban	HCB	Open Ditch	Earth	330	L/R	6	6.4	6	0	0	0	0	40.9	8	8	6	62
8585	OAKMONT GDNS	OAKMONT GDNS	OAKMONT GDNS	2	Urban	HCB	Storm Sewer		214	L/R	6	0	8	0	0	0	0	67.9	14	8	7	167
8580	OAKMONT GDNS	STONE FIELD LANE	S LOOP	2	Urban	HCB	Storm Sewer		111	L/R	6	0	8	0	0	0	0	74.8	15	9	8	167
30200	OLALONDO RD	MEDWAY RD	S END	2	Rural	HCB	Open Ditch	Gravel	429	100	6	8.8	8	0	0	1	0	63.4	13	8	8	28
3450	OLD RIVER RD	GLENDON DR	PULHAM RD	2	Rural	LCB	Open Ditch	Gravel	1906	500	5	8.4	7	2	0	2	0	20	3	6	6	1053
5920	ONTARIO AVE	QUEEN ST	SPRINGER ST	2	Semi Urban	HCB	Open Ditch	Gravel	264	L/R	6	6.7	6	0	0	0	0	89.4	17	9	7	179
5900	ONTARIO AVE	DELAWARE ST S	KOMOKA RD	2	Semi Urban	HCB	Open Ditch	Earth	187	L/R	6	7.6	7	0	0	0	0	81.4	17	8	8	167
5910	ONTARIO AVE	SPRINGER ST	DELAWARE ST S	2	Semi Urban	HCB	Open Ditch	Gravel	186	L/R	6	6.8	6	0	0	0	0	77.3	9	8	8	119
5200	OSBORNE ST	YORKDALE ST	GIDEON DR	2	Semi Urban	HCB	Open Ditch	Earth	131	L/R	5	8.5	6	0	0	0	0	75.9	18	8	7	370
5210	OSBORNE ST	YORK ST	YORKDALE ST	2	Semi Urban	HCB	Ditch Sewer	Earth	135	L/R	5	8.3	7	0	0	0	0	75.9	18	8	7	342
1030	OXBOW DR	DELAWARE ST N	KOMOKA RD	2	Urban	HCB	Storm Sewer		178	C/R	5	0	8	0	0	0	0	92.8	19	9	9	2482
1060	OXBOW DR	VALLEYVIEW DR	QUEEN ST	2	Urban	HCB	Storm Sewer		61	C/R	5	0	8	0	0	0	0	92.8	19	9	9	2327
1065	OXBOW DR	UNION AVENUE	VALLEYVIEW DRIVE	2	Urban	HCB	Storm Sewer		346	C/R	5	0	8	0	0	0	0	83.8	17	9	8	2327
1050	OXBOW DR	QUEEN ST	FIELDRUN DR	2	Urban	HCB	Storm Sewer		143	C/R	5	0	8	0	0	0	0	92.8	19	9	9	2193
1040	OXBOW DR	FIELDRUN DR	DELAWARE ST N	2	Urban	HCB	Storm Sewer		180	C/R	5	0	8	0	0	0	0	92.8	19	9	9	2062
1070	OXBOW DR	COLDSTREAM RD	UNION AVE	2	Rural	LCB	Open Ditch	Gravel	1536	500	4	9.1	7	0	0	0	0	72.7	14	8	8	1822

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
1080	OXBOW DR	NAIRN RD	COLDSTREAM RD	2	Rural	LCB	Open Ditch	Gravel	2546	500	4	9.2	7	0	0	0	0	50.2	9	8	7	1822
1090	OXBOW DR	VANNECK RD	NAIRN RD	2	Rural	LCB	Open Ditch	Gravel	971	500	4	8.6	7	0	0	0	0	41.2	7	8	6	1256
1010	OXBOW DR	LANSDOWNE PARK CRES	LANSDOWNE PARK CRES	2	Rural	LCB	Open Ditch	Gravel	319	500	4	9.5	7	0	0	0	0	59.2	11	8	7	1087
1020	OXBOW DR	KOMOKA RD	LANSDOWNE PARK CRES	2	Rural	LCB	Open Ditch	Gravel	1390	400	4	9.5	7	0	0	0	0	35.1	6	7	6	908
1000	OXBOW DR	LANSDOWNE PARK CRES	AMIENS RD	2	Rural	LCB	Open Ditch	Gravel	738	400	4	9.2	7	0	0	0	0	50.2	9	8	7	770
8030	PARK CRES	N END	CURRIE CRT	2	Semi Urban	HCB	Open Ditch	Earth	48	L/R	6	9.1	7	0	0	0	0	88.3	18	9	9	149
8020	PARK CRES	CURRIE CRT	POPLAR HILL RD	2	Semi Urban	HCB	Open Ditch	Earth	105	L/R	6	9.2	7	0	0	0	0	88.3	18	9	9	149
7220	PARKLAND PL	BEECHNUT ST	KILWORTH PARK DR	2	Semi Urban	HCB	Open Ditch	Gravel	132	L/R	5	7.1	6	0	0	0	0	88.3	18	9	9	231
7230	PARKLAND PL	ELMHURST ST	BEECHNUT ST	2	Semi Urban	HCB	Open Ditch	Gravel	128	L/R	6	7	5	0	0	0	0	88.3	18	9	9	110
6370	PARKVIEW DR	OAKCREST DR	DELAWARE ST N	2	Semi Urban	HCB	Open Ditch	Gravel	235	L/R	6	6.7	6	0	0	0	0	36.4	7	8	6	161
6390	PARKVIEW DR	UNION AVE	VALLEYVIEW DR	2	Semi Urban	HCB	Open Ditch	Earth	201	L/R	6	7.7	6	0	0	0	0	49.9	10	8	7	153
6380	PARKVIEW DR	VALLEYVIEW DR	OAKCREST DR	2	Semi Urban	HCB	Open Ditch	Earth	93	L/R	6	7.3	6	0	0	0	0	67.9	14	8	7	138
9830	PEREGRINE AVE	JEFFERIES RD	DAUSETT DR	2	Urban	HCB	Storm Sewer		115	L/R	5	0	8	0	0	0	0	92.8	19	9	9	738
9835	PEREGRINE AVE	EARLSCOURT TERRACE	DAUSETT DR	2	Urban	HCB	Storm Sewer		132	L/R	5	0	8	0	0	0	0	88.3	18	9	9	698
8570	PERRIWINKLE DR	WOOD LILY LANE	RED CLOVER CRT	2	Urban	HCB	Storm Sewer		211	L/R	6	0	8	0	0	0	0	72.4	15	8	8	145
7210	PHEASANT TRAIL	WESTBROOK DR	W END	2	Urban	HCB	Storm Sewer		204	L/R	6	0	8	0	0	0	0	42.3	9	7	7	180
7490	PIONEER DR	WISHINGWELL CRT	JEFFERIES RD	2	Urban	HCB	Storm Sewer		107	L/R	5	0	8	0	0	0	0	99	20	10	9	293
7500	PIONEER DR	BLACKBURN CRES	WISHINGWELL CRT	2	Urban	HCB	Storm Sewer		350	L/R	5	0	8	0	0	0	0	94.5	19	10	9	271
5130	PLEASANT ST	E END	JOHN ST	2	Semi Urban	HCB	Ditch Sewer	Earth	160	L/R	6	8.1	7	0	0	0	0	67.9	14	8	8	131
5120	PLEASANT ST	PARK ENTRANCE	JOHN STREET	2	Semi Urban	HCB	Ditch Sewer	Earth	246	L/R	6	7.5	6	0	0	0	0	67.9	14	8	7	68
5125	PLEASANT ST	BRIDGE STREET	LONGWOODS RD	2	Urban	HCB	Storm Sewer		29	L/R	6	0	8.4	0	0	0	0	74.8	15	9	9	68
5110	PLEASANT ST	BRIDGE STREET	PARK ENTRANCE	2	Semi Urban	HCB	Ditch Sewer	Gravel	39	L/R	6	9	7	0	0	0	0	79.3	16	9	8	68
2900	POPLAR HILL RD	ILDERTON RD	ZAVITZ DR	2	Rural	LCB	Open Ditch	Gravel	434	400	4	9.3	7	0	0	0	0	81.7	16	8	8	614
2910	POPLAR HILL RD	ZAVITZ DR	HEDLEY DR	2	Rural	HCB	Open Ditch	Gravel	928	400	4	8.8	7	0	0	0	0	92.8	19	9	9	471
2930	POPLAR HILL RD	CHARLTON DR	GREYSTEAD DR	2	Rural	HCB	Open Ditch	Gravel	1364	300	4	10.1	7	0	0	0	0	92.8	19	9	9	405
2920	POPLAR HILL RD	HEDLEY DR	CHARLTON DR	2	Rural	HCB	Open Ditch	Gravel	1364	300	4	9.1	7	0	0	0	0	88.3	18	9	9	346
2940	POPLAR HILL RD	GREYSTEAD DR	MCEWEN DR	2	Rural	HCB	Open Ditch	Gravel	1372	300	4	9.1	7	0	0	0	0	92.8	19	9	9	326
2950	POPLAR HILL RD	MCEWEN DR	FERNHILL DR	2	Rural	HCB	Open Ditch	Gravel	1365	300	4	9.1	7	0	0	0	0	92.8	19	9	9	228
5500	PRINCE ALBERT ST	MILLMANOR PL	LONGWOODS RD	2	Semi Urban	HCB	No Drainage	Earth	114	L/R	5	7.8	6	0	0	0	0	72.4	15	8	8	250
5520	PRINCE ALBERT ST	WELLINGTON ST	PRINCE OF WALES ST	2	Semi Urban	HCB	No Drainage	Earth	189	L/R	5	7.8	6	0	0	0	0	72.4	15	8	8	204
5510	PRINCE ALBERT ST	PRINCE OF WALES ST	MILLMANOR PL	2	Semi Urban	HCB	No Drainage	Earth	60	L/R	6	7.8	6	0	0	0	0	67.9	14	8	8	129
5540	PRINCE OF WALES ST	VICTORIA ST	PRINCE ALBERT ST	2	Semi Urban	HCB	No Drainage	Earth	120	L/R	6	7.7	6	0	0	0	0	67.9	14	8	7	31
6470	PRINCE ST	N END	DUKE ST	2	Urban	HCB	Storm Sewer		264	L/R	5	0	8	0	0	0	0	83.8	17	9	9	467
6460	PRINCE ST	DUKE ST	HAMILTON ST	2	Urban	HCB	Storm Sewer		142	L/R	5	0	8	0	0	0	0	92.8	19	9	9	296
6455	PRINCE ST	HAMILTON ST	CAVERHILL CRES	2	Urban	HCB	Storm Sewer		67	L/R	5	0	8	0	0	0	0	92.8	19	9	10	296
6360	PRINCESS AVE	DELAWARE ST N	KOMOKA RD	2	Semi Urban	HCB	Open Ditch	Earth	177	L/R	6	7.4	6	0	0	0	0	54.4	11	8	7	88
30230	PROSPECT HILL RD	NINE MILE RD	EIGHT MILE RD	2	Rural	LCB	Open Ditch	Gravel	1379	500	3	10.1	8	0	0	0	0	100	20	10	10	1420
30270	PROSPECT HILL RD	PLOVER MILLS ROAD	ILDERTON RD	2	Rural	LCB	Open Ditch	Gravel	1423	500	3	8	8	0	0	0	0	100	20	10	10	1379
50029	PROSPECT HILL RD	ELGINFIELD RD	SIXTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	950	500	3	10.8	7	1	0	0	0	66.6	13	7	8	1379
50025	PROSPECT HILL RD	FOURTEEN MILE RD	THIRTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	1400	500	3	10.7	7	1	0	0	0	68.2	13	8	8	1379
50028	PROSPECT HILL RD	SIXTEEN MILE RD	FIFTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	1632	500	3	11	7.1	1	0	0	0	71.1	14	7	8	1379
50027	PROSPECT HILL RD	FIFTEEN MILE RD	EBENEZER DR	2	Rural	LCB	Open Ditch	Gravel	868	500	3	10.4	7.1	1	0	0	0	71.1	14	7	8	1379
50026	PROSPECT HILL RD	EBENEZER DR	FOURTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	561	500	3	10.2	7	1	0	0	0	71.1	14	7	8	1379
50024	PROSPECT HILL RD	THIRTEEN MILE RD	PLOVER MILLS RD	2	Rural	LCB	Open Ditch	Gravel	1300	500	3	10.8	7.1	1	0	0	0	72.7	14	8	8	1379
30240	PROSPECT HILL RD	TEN MILE ROAD	NINE MILE RD	2	Rural	LCB	Open Ditch	Gravel	1398	500	3	10.1	8	0	0	0	0	100	20	10	10	1275
30220	PROSPECT HILL RD	EIGHT MILE RD	THORNDALE RD	2	Rural	LCB	Open Ditch	Gravel	592	500	3	10.1	8	0	0	1	0	100	20	10	10	1263
30260	PROSPECT HILL RD	ILDERTON RD	TEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	1388	500	3	10.1	8	0	0	0	0	100	20	10	10	1193
3470	PULHAM RD	VANNECK RD	OLD RIVER RD	2	Rural	LCB	Open Ditch	Gravel	378	400	4	8.9	6	0	0	1	0	71.1	14	7	8	903
3460	PULHAM RD	OLD RIVER RD	S END	2	Rural	LCB	Open Ditch	Gravel	474	100	6	5.9	5	1	0	0	0	38	7	6	6	33
8310	QUAKER LANE	COLDSTREAM RD	ILDERTON RD	2	Semi Urban	LCB	Open Ditch	Earth	1410	L/R	5	6.9	6	0	0	0	0	81.7	16	8	8	335

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
5810	QUEEN ST	HURON AVE	SIMCOE CRES	2	Semi Urban	HCB	Open Ditch	Earth	204	C/R	5	8.4	7	0	0	0	0	83.8	17	9	8	1831
5820	QUEEN ST	SIMCOE CRES	SIMCOE AVE	2	Semi Urban	HCB	Open Ditch	Gravel	185	C/R	5	8.2	7	0	0	0	0	79.3	16	9	8	1744
5800	QUEEN ST	RAILWAY AVE	HURON AVE	2	Semi Urban	HCB	Open Ditch	Earth	169	C/R	5	8.4	7	0	0	0	0	83.8	17	9	9	1694
5830	QUEEN ST	SIMCOE AVE	FIELDSTONE GATE	2	Urban	HCB	Storm Sewer		222	C/R	5	0	8	0	0	0	0	92.8	19	9	9	1375
5840	QUEEN ST	FIELDSTONE GATE	OXBOW DR	2	Urban	HCB	Storm Sewer		102	C/R	5	0	8	0	0	0	0	92.8	19	9	9	1375
5790	QUEEN ST	ONTARIO AVE	RAILWAY AVE	2	Semi Urban	HCB	Open Ditch	Earth	129	L/R	5	9.1	7	0	0	0	0	88.3	18	9	9	1091
5780	QUEEN ST	GLENDON DR	ONTARIO AVE	2	Semi Urban	HCB	Open Ditch	Earth	386	C/R	5	8.6	7	0	0	0	0	74.8	15	9	8	1081
5960	RAILWAY AVE	TUNKS LINE	QUEEN ST	2	Semi Urban	HCB	Open Ditch	Gravel	372	L/R	5	8.1	6	0	0	0	0	45.4	9	8	7	1134
5950	RAILWAY AVE	QUEEN ST	SPRINGER ST	2	Semi Urban	HCB	Open Ditch	Earth	265	L/R	5	8	6	0	0	0	0	67.9	14	8	8	429
5930	RAILWAY AVE	DELAWARE ST S	KOMOKA RD	2	Semi Urban	HCB	Open Ditch	Earth	185	L/R	5	8.2	7	0	0	0	0	67.9	14	8	8	381
5940	RAILWAY AVE	SPRINGER ST	DELAWARE ST S	2	Semi Urban	HCB	Open Ditch	Earth	184	L/R	5	8.4	7	0	0	0	0	63.4	13	8	8	380
460	RANGER DR	WESTDEL BRNE	WOODHULL RD	2	Rural	Gravel	Open Ditch	Gravel	1510	100	6	0	7	0	0	0	0					31
8530	RED CLOVER CRT	PERRIWINKLE DR	STONE FIELD LANE	2	Urban	HCB	Storm Sewer		89	L/R	5	0	8	0	0	0	0	58.9	12	8	7	387
8540	RED CLOVER CRT	WOOD LILY LANE	PERRIWINKLE DR	2	Urban	HCB	Storm Sewer		90	L/R	5	0	8	0	0	0	0	58.9	12	8	7	259
8550	RED CLOVER CRT	N END	WOOD LILY LANE	2	Urban	HCB	Storm Sewer		73	L/R	6	0	8	0	0	0	0	58.9	12	8	7	144
6620	RIVERS EDGE LANE	CRESTVIEW DR	STEPHEN MOORE DR	2	Urban	HCB	Storm Sewer		71	L/R	5	0	8	0	0	0	0	55.8	12	7	8	236
6630	RIVERS EDGE LANE	STEPHEN MOORE DR	E END	2	Urban	HCB	Storm Sewer		103	L/R	6	0	8	0	0	0	0	67.9	14	8	8	74
8740	ROBERT CRT	ROBERT ST	W END	2	Urban	HCB	Storm Sewer		35	L/R	6	0	8	0	0	0	0	89.4	18	9	9	114
8730	ROBERT ST	ILDERTON RD	KENNEDY AVE	2	Urban	HCB	Storm Sewer		101	C/R	5	0	8	0	0	0	0	100	20	10	10	969
8690	ROBERT ST	WINSOME AVE	HERITAGE DR	2	Urban	HCB	Storm Sewer		245	L/R	5	0	8	0	0	0	0	88.3	18	9	9	576
8710	ROBERT ST	ROBERT CRT	MARGARET ST	2	Urban	HCB	Storm Sewer		99	L/R	5	0	8	0	0	0	0	92.8	19	9	9	449
8720	ROBERT ST	KENNEDY AVE	ROBERT CRT	2	Urban	HCB	Storm Sewer		113	L/R	5	0	8	0	0	0	0	68.3	13	9	9	371
8700	ROBERT ST	MARGARET ST	WINSOME AVE	2	Urban	HCB	Storm Sewer		190	L/R	5	0	8	0	0	0	0	83.8	17	9	8	351
9330	SALISBURY DR	THIRTEEN MILE RD	SALISBURY PL	2	Urban	HCB	Storm Sewer		168	L/R	6	0	6	0	0	0	0	94.5	19	10	9	173
9340	SALISBURY DR	SALISBURY PL	THIRTEEN MILE RD	2	Urban	HCB	Storm Sewer		164	L/R	6	0	6	0	0	0	0	92.8	19	9	9	173
9320	SALISBURY DR	SALISBURY PL	SALISBURY PL	2	Urban	HCB	Storm Sewer		566	L/R	6	0	8	0	0	0	0	83.8	17	9	9	27
9310	SALISBURY PL	SALISBURY DR	SALISBURY DR	2	Urban	HCB	Storm Sewer		199	L/R	6	0	6	0	0	0	0	92.8	19	9	9	75
620	SHARON DR	HWY 402 E	BELLS RD	2	Rural	HCB	Open Ditch	Gravel	594	500	3	10.6	7	0	0	0	0	70.3	14	9	8	1788
640	SHARON DR	BRIGHAM RD	HWY 402 W	2	Rural	HCB	Open Ditch	Gravel	377	500	3	10.5	7	0	0	0	0	99	20	10	10	1788
610	SHARON DR	BELLS RD	CARRIAGE RD	2	Rural	HCB	Open Ditch	Gravel	1338	500	3	11.2	7	0	0	0	0	63.4	13	8	7	1423
660	SHARON DR	TWP LIMIT	WOODHULL RD	2	Rural	HCB	Open Ditch	Gravel	728	500	3	10.8	7	0	0	0	0	92.8	19	9	10	1190
650	SHARON DR	WOODHULL RD	BRIGHAM RD	2	Rural	HCB	Open Ditch	Gravel	341	500	3	10.5	7	0	0	0	0	92.8	19	9	10	1165
600	SHARON DR	CARRIAGE RD	SPRINGER RD	2	Rural	LCB	Open Ditch	Gravel	1417	200	4	9.2	7	0	0	0	0	71.1	14	7	8	196
2680	SIDDALL RD	VANNECK RD	FERNHILL DR	2	Rural	Gravel	Open Ditch	Gravel	831	200	4	0	7	0	0	0	0					109
6050	SIMCOE AVE	SIMCOE CRES	DELAWARE ST N	2	Urban	HCB	Storm Sewer		113	L/R	5	9.1	8	0	0	0	0	72.4	15	8	8	450
6060	SIMCOE AVE	QUEEN ST	SIMCOE CRES	2	Urban	HCB	Storm Sewer		332	L/R	5	8.9	8	0	0	0	0	67.9	14	8	8	416
6040	SIMCOE AVE	DELAWARE ST N	KOMOKA RD	2	Semi Urban	HCB	Storm Sewer	Gravel	184	L/R	6	7.3	6	0	0	0	0	63.4	13	8	8	173
6140	SIMCOE CRES	SIMCOE PL	SIMCOE CRT	2	Semi Urban	HCB	Open Ditch	Earth	98	L/R	5	7.9	6	0	0	0	0	65.8	13	9	8	370
6150	SIMCOE CRES	QUEEN ST	SIMCOE PL	2	Semi Urban	HCB	Open Ditch	Earth	78	L/R	5	7.8	6	0	0	0	0	61.3	12	9	8	315
6130	SIMCOE CRES	SIMCOE CRT	SPRINGER ST	2	Semi Urban	HCB	Open Ditch	Gravel	65	L/R	5	8.3	6	0	0	0	0	58.9	12	8	8	283
6120	SIMCOE CRES	SPRINGER ST	SIMCOE AVE	2	Semi Urban	HCB	Open Ditch	Earth	215	L/R	5	7.9	6	0	0	0	0	58.9	12	8	7	242
6170	SIMCOE CRT	N END	SIMCOE CRES	2	Semi Urban	HCB	Open Ditch	Earth	85	L/R	6	7.7	6	0	0	0	0	45.4	9	8	7	107
6160	SIMCOE PL	SIMCOE CRES	S END	2	Semi Urban	HCB	Open Ditch	Earth	69	L/R	6	7.6	6	0	0	0	0	49.9	10	8	7	123
1530	SINCLAIR DR	NAIRN RD	COLDSTREAM RD	2	Rural	Gravel	Open Ditch	Gravel	2437	100	6	0	5	0	0	0	0					28
1520	SINCLAIR DR	COLDSTREAM RD	EGREMONT DR	2	Rural	Gravel	Open Ditch	Gravel	345	200	4	0	6	0	0	0	0					79
1550	SINCLAIR DR	VANNECK RD	BEAR CREEK RD	2	Rural	Gravel	Open Ditch	Gravel	1098	200	4	0	5	0	0	0	0					85
1510	SINCLAIR DR	EGREMONT DR	KOMOKA RD	2	Rural	Gravel	Open Ditch	Gravel	2100	200	4	0	6	0	0	0	0					107
1500	SINCLAIR DR	KOMOKA RD	AMIENS RD	2	Rural	Gravel	Open Ditch	Gravel	2440	200	4	0	6	0	0	0	0					115
1540	SINCLAIR DR	BEAR CREEK RD	NAIRN RD	2	Rural	LCB	Open Ditch	Gravel	2444	200	4	9	6	0	0	0	0	72.7	14	8	8	149
9450	SIR JAMES CRT	E END	SIR ROBERT PL	2	Urban	HCB	Storm Sewer		229	L/R	6	0	8	0	0	0	0	88.3	18	9	9	197

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
9480	SIR ROBERT PL	E END	SIR JAMES CRT	2	Urban	HCB	Storm Sewer		528	L/R	5	0	8	0	0	0	0	92.8	19	9	9	272
9470	SIR ROBERT PL	SIR JAMES CRT	ELGIN ST	2	Urban	HCB	Storm Sewer		46	L/R	5	0	8	0	0	0	0	99	20	10	9	272
2750	SIXTEEN MILE RD	HIGHBURY AVE N	ADELAIDE ST N	2	Rural	Gravel	Open Ditch	Gravel	2456	100	6	0	6	0	0	0	0					48
2720	SIXTEEN MILE RD	WONDERLAND RD N	HYDE PARK RD	2	Rural	Gravel	Open Ditch	Gravel	2467	100	6	0	6	0	0	0	0					50
2770	SIXTEEN MILE RD	PROSPECT HILL RD	CLARKE RD	2	Rural	Gravel	Open Ditch	Gravel	2414	200	4	0	5	0	0	0	0					54
2740	SIXTEEN MILE RD	ADELAIDE ST N	RICHMOND ST	2	Rural	Gravel	Open Ditch	Gravel	2457	200	4	0	6	0	0	0	0					72
2760	SIXTEEN MILE RD	CLARKE RD	HIGHBURY AVE N	2	Rural	Gravel	Open Ditch	Gravel	2459	200	4	0	6	0	0	0	0					73
2730	SIXTEEN MILE RD	RICHMOND ST	WONDERLAND RD N	2	Rural	Gravel	Open Ditch	Gravel	2457	200	4	0	6	0	0	0	0					81
2710	SIXTEEN MILE RD	HYDE PARK RD	DENFIELD RD	2	Rural	Gravel	Open Ditch	Gravel	2462	400	4	0	6	0	0	0	0					448
2700	SIXTEEN MILE RD	DENFIELD RD	MILL LANE	2	Rural	LCB	Open Ditch	Gravel	1833	200	4	7.6	7	0	0	0	0	47	9	6	6	73
2690	SIXTEEN MILE RD	MILL LANE	VANNECK RD	2	Rural	LCB	Open Ditch	Gravel	426	200	4	8.3	7	0	0	0	0	53.1	10	7	7	73
30300	SOUTHDEL BRNE	BODKIN RD	CARRIAGE RD	2	Rural	LCB	Open Ditch	Gravel	1389	500	3	9.2	8	0	0	0	0	68.2	13	8	6	1133
30310	SOUTHDEL BRNE	CARRIAGE RD	BELLS RD	2	Rural	LCB	Open Ditch	Gravel	1394	400	4	8.8	7	0	0	0	0	75.6	15	7	8	604
30320	SOUTHDEL BRNE	BELLS RD	SOUTHMINSTER BRNE	2	Rural	LCB	Open Ditch	Gravel	531	400	4	8.8	7	0	0	0	0	80.1	16	7	8	595
50043	SOUTHDEL DR	RIVER RD	END OF ROAD (WEST LIMIT)	2	Rural	Gravel	Open Ditch	Gravel	1934	100	6	0	7.2	0	0	0	0					28
50040	SOUTHDEL DR	BODKINS RD	FAIRGROUNDS RD	2	Rural	Gravel	Open Ditch	Gravel	1395	200	4	0	8	0	0	0	0					58
50042	SOUTHDEL DR	BALL PARK RD	RIVER RD	2	Rural	Gravel	Open Ditch	Gravel	646	200	4	0	8	0	0	0	0					96
50041	SOUTHDEL DR	FAIRGROUNDS RD	BALL PARK RD	2	Rural	Gravel	Open Ditch	Gravel	1382	400	4	0	7.9	0	0	0	0					416
890	SPRINGER RD	LONGWOODS RD	WILLIAM ST	2	Urban	HCB	Storm Sewer		275	C/R	5	0	8	0	0	0	0	88.3	18	9	9	1022
880	SPRINGER RD	WILLIAM ST	TOWERLINE RD	2	Rural	LCB	Open Ditch	Gravel	94	400	4	0	7	0	0	0	0	72.7	14	8	8	677
870	SPRINGER RD	TOWERLINE RD	MILLER RD	2	Rural	LCB	Open Ditch	Gravel	209	400	5	9	6	0	0	0	0	68.2	13	8	8	455
860	SPRINGER RD	MILLER RD	HWY 402 W	2	Rural	LCB	Open Ditch	Gravel	907	300	4	8.7	7	0	0	0	0	50.2	9	8	7	241
840	SPRINGER RD	HWY 402 E	HEATLY DR	2	Rural	LCB	Open Ditch	Gravel	615	300	4	8.2	6	0	0	0	0	50.2	9	8	7	241
850	SPRINGER RD	HWY 402 W	HWY 402 E	2	Rural	LCB	Open Ditch	Gravel	31	300	4	8.2	6	0	0	0	0	93.8	18	10	9	241
830	SPRINGER RD	HEATLY DR	SHARON DR	2	Rural	LCB	Open Ditch	Gravel	861	300	4	7.9	6	0	1	0	0	53.1	10	7	7	230
820	SPRINGER RD	SHARON DR	HEATLY DR	2	Rural	Gravel	Open Ditch	Gravel	904	100	6	0	4	2	0	1	0					37
6100	SPRINGER ST	ST LAWRENCE AVE	HURON AVE	2	Semi Urban	HCB	Open Ditch	Earth	127	L/R	6	6.9	6	0	0	0	0	99	20	10	10	177
5740	SPRINGER ST	THAMES AVE	GLENDON DR	2	Semi Urban	HCB	Open Ditch	Earth	112	L/R	6	7.2	6	0	0	0	0	45.4	9	8	7	158
6110	SPRINGER ST	SIMCOE CRES	ST LAWRENCE AVE	2	Semi Urban	HCB	Ditch Sewer	Gravel	96	L/R	6	6.5	5	0	0	0	0	40.9	8	8	7	154
5750	SPRINGER ST	ERIE AVE	THAMES AVE	2	Semi Urban	HCB	Open Ditch	Gravel	143	L/R	6	7.1	6	0	0	0	0	54.4	11	8	7	149
5760	SPRINGER ST	ONTARIO AVE	ERIE AVE	2	Semi Urban	HCB	Open Ditch	Earth	132	L/R	6	6.9	6	0	0	0	0	60.3	13	7	7	142
5770	SPRINGER ST	RAILWAY AVE	ONTARIO AVE	2	Semi Urban	HCB	Open Ditch	Earth	130	L/R	6	6.8	6	0	0	0	0	49.9	10	8	7	73
7690	SPRINGFIELD WAY	GLENDON DR	DOAN DR	2	Urban	HCB	Storm Sewer		143	L/R	5	0	8	0	0	0	0	97.3	20	9	9	1543
7692	SPRINGFIELD WAY	DOAN DR	WILLARD CRES	2	Urban	HCB	Storm Sewer		64	L/R	5	0	8	0	0	0	0	97.3	20	9	10	583
7696	SPRINGFIELD WAY	WILLARD CRES	WILLARD CRES	2	Urban	HCB	Storm Sewer		113	L/R	5	0	8	0	0	0	0	97.3	20	9	10	242
6030	ST CLAIR AVE	DELAWARE ST N	KOMOKA RD	2	Semi Urban	HCB	Ditch Sewer	Earth	174	L/R	6	7.2	6	0	0	0	0	33.3	7	7	6	198
9405	ST JOHNS DR	PARK ENTRANCE	ARVA ST	2	Urban	HCB	Storm Sewer		238	L/R	5	0	8	0	0	0	0	79.3	16	9	8	857
6010	ST LAWRENCE AVE	DELAWARE ST N	KOMOKA RD	2	Semi Urban	HCB	Open Ditch	Gravel	176	L/R	5	8.9	6	0	0	0	0	94.9	20	8	9	393
6020	ST LAWRENCE AVE	SPRINGER ST	DELAWARE ST N	2	Semi Urban	HCB	Open Ditch	Earth	185	L/R	6	8	7	0	0	0	0	84.9	19	9	7	174
9220	STATION ST	DENFIELD RD	E END	2	Semi Urban	LCB	No Drainage	Earth	333	L/R	5	6.6	7	0	0	0	0	26.1	4	7	6	232
9210	STATION ST	BROOKFIELD ST	DENFIELD RD	2	Semi Urban	HCB	Ditch Sewer	Earth	105	L/R	6	8	7	0	0	0	0	58.9	12	8	7	137
7010	STEPHEN MOORE DR	JEFFERIES RD	AYLESFORD CRT	2	Urban	HCB	Storm Sewer		51	C/R	5	0	10	0	0	0	0	92.8	19	9	9	1501
6680	STEPHEN MOORE DR	KRISTEN CRT	MAXINE CRT	2	Urban	HCB	Storm Sewer		90	L/R	5	0	9	0	0	0	0	88.3	18	9	8	974
6650	STEPHEN MOORE DR	WINGREEN LANE	WESTBROOK DR	2	Urban	HCB	Storm Sewer		122	L/R	5	0	9	0	0	0	0	97.3	20	9	9	966
7000	STEPHEN MOORE DR	AYLESFORD CRT	WINONA RD	2	Urban	HCB	Storm Sewer		20	L/R	5	0	10	0	0	0	0	88.3	18	9	9	933
6690	STEPHEN MOORE DR	WINONA RD	KRISTEN CRT	2	Urban	HCB	Storm Sewer		72	L/R	5	0	10	0	0	0	0	88.3	18	9	9	933
6670	STEPHEN MOORE DR	MAXINE CRT	DAVENTRY WAY	2	Urban	HCB	Storm Sewer		260	L/R	5	0	9	0	0	0	0	99	20	10	9	915
6660	STEPHEN MOORE DR	DAVENTRY WAY	WINGREEN LANE	2	Urban	HCB	Storm Sewer		142	L/R	5	0	9	0	0	0	0	97.3	20	9	9	577
6640	STEPHEN MOORE DR	WESTBROOK DR	RIVERS EDGE LANE	2	Urban	HCB	Storm Sewer		144	L/R	5	0	9	0	0	0	0	97.3	20	9	9	354
8510	STONE FIELD LANE	HYDE PARK ROAD	OAKMONT GARDENS	2	Urban	HCB	Storm Sewer		101	C/R	5	0	8	0	0	0	0	70.3	14	9	8	1747

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
8500	STONE FIELD LANE	OAKMONT GARDENS	MEADOWSWEET CRES	2	Urban	HCB	Storm Sewer		126	L/R	5	0	8	0	0	0	0	67.9	14	8	8	1004
8490	STONE FIELD LANE	MEADOWSWEET CRES	RED CLOVER CRT	2	Urban	HCB	Storm Sewer		86	C/R	5	0	8	0	0	0	0	97.3	20	9	9	965
8480	STONE FIELD LANE	RED CLOVER CRT	MEREDITH DR	2	Urban	HCB	Storm Sewer		89	L/R	5	0	8	0	0	0	0	94.5	19	10	9	844
9652	STONEFIELD GATE	HAVENWOOD ST	KING ST	2	Urban	HCB	Storm Sewer		173	L/R	5	0	8	0	0	0	0	88.3	18	9	9	446
9656	STONEFIELD GATE	MEREDITH DRIVE	HAVENWOOD LN	2	Urban	HCB	Storm Sewer		91	L/R	5	0	8	0	0	0	0	88.3	18	9	9	434
9654	STONEFIELD GATE	HAVENWOOD LN	HAVENWOOD ST	2	Urban	HCB	Storm Sewer		87	L/R	5	0	8	0	0	0	0	88.3	18	9	9	434
8920	STONERIDGE CRES	CALVERT DR	CALVERT DR	2	Urban	HCB	Storm Sewer		341	L/R	5	0	8	0	0	0	0	54.4	11	8	7	265
1205	SUNNINGDALE RD W	1.8 KM EAST OF DENFIELD RD	DENFIELD RD	2	Rural	HCB	Open Ditch	Gravel	678	500	3	9.2	7	0	0	0	0	65.8	13	9	8	1585
1200	SUNNINGDALE RD W	DENFIELD RD	VANNECK RD	2	Rural	LCB	Open Ditch	Gravel	2272	500	3	9.6	7	0	0	0	0	44.1	8	7	7	1311
30285	SWAMP COLLEGE ROAD	PROSPRECT HILL ROAD	W END	2	Rural	LCB	Open Ditch	Gravel	236	100	6	6.8	4	0	0	0	0	35.1	6	7	7	20
8240	SYDENHAM DR	LEWIS DR	ASHLEY LANE	2	Urban	HCB	Storm Sewer		316	L/R	5	0	8	0	0	0	0	63.4	13	8	8	267
1800	TEN MILE RD	ADELAIDE ST N	RICHMOND ST	2	Rural	LCB	Open Ditch	Gravel	2377	200	4	7.8	7	0	0	0	0	57.6	11	7	8	185
1760	TEN MILE RD	DENFIELD RD	VANNECK RD	2	Rural	Gravel	Open Ditch	Gravel	2272	100	6	0	6	0	0	0	0					37
1830	TEN MILE RD	PROSPECT HILL RD	CLARKE RD	2	Rural	Gravel	Open Ditch	Gravel	2468	100	6	0	6	0	0	0	0					50
1780	TEN MILE RD	WONDERLAND RD N	HYDE PARK RD	2	Rural	Gravel	Open Ditch	Gravel	2459	200	4	0	7	0	0	0	0					90
1790	TEN MILE RD	220 m WEST OF RICHMOND ST	WONDERLAND RD N	2	Rural	Gravel	Open Ditch	Gravel	2254	200	4	0	6	0	0	0	0					94
1770	TEN MILE RD	HYDE PARK RD	DENFIELD RD	2	Rural	Gravel	Open Ditch	Gravel	2469	200	4	0	7	0	0	0	0					100
1820	TEN MILE RD	CLARKE RD	HIGHBURY AVE N	2	Rural	Gravel	Open Ditch	Gravel	2469	200	4	0	6	0	0	0	0					101
1810	TEN MILE RD	HIGHBURY AVE N	ADELAIDE ST N	2	Rural	Gravel	Open Ditch	Gravel	2472	200	4	0	6	0	0	0	0					113
1795	TEN MILE RD	RICHMOND ST	220 m WEST OF RICHMOND ST	2	Rural	LCB	Open Ditch	Gravel	220	200	4	7	6	0	0	0	0	50.2	9	8	6	94
5860	THAMES AVE	DELAWARE ST S	KOMOKA RD	2	Semi Urban	HCB	Open Ditch	Earth	185	L/R	6	6.8	6	0	0	0	0	45.4	9	8	7	81
5870	THAMES AVE	SPRINGER ST	DELAWARE ST S	2	Semi Urban	HCB	Open Ditch	Earth	188	L/R	6	6.6	6	0	0	0	0	46.8	10	7	7	40
5290	THAMES ST	ATKINSON CRT	YOUNG ST	2	Urban	HCB	Storm Sewer		266	L/R	6	0	7	0	0	0	0	86.3	17	8	7	201
8250	THIRLWALL BLVD	CAMPBELL CRES	ILDERTON RD	2	Urban	HCB	Storm Sewer		132	L/R	5	0	10	0	0	0	0	54.4	11	8	7	255
2180	THIRTEEN MILE RD	HYDE PARK RD	DENFIELD RD	2	Rural	LCB	Open Ditch	Gravel	2460	400	4	9	7	0	0	0	0	69.1	14	8	8	809
2190	THIRTEEN MILE RD	WONDERLAND RD N	HYDE PARK RD	2	Rural	LCB	Open Ditch	Gravel	2455	400	4	9.8	7	0	0	0	0	60.1	13	8	8	749
2200	THIRTEEN MILE RD	615 m WEST of SALISBURY DR	WONDERLAND RD N	2	Rural	LCB	Open Ditch	Gravel	1902	400	4	9.6	7	0	0	0	0	66.6	13	7	8	435
2205	THIRTEEN MILE RD	SALISBURY DR	615 m WEST OF SALISBURY DR	2	Rural	LCB	Open Ditch	Gravel	1902	400	5	9.6	7	0	0	0	0	81.7	16	8	8	435
2230	THIRTEEN MILE RD	RICHMOND ST	GWENDOLYN ST	2	Rural	HCB	Open Ditch	Gravel	159	400	5	8.2	7	0	0	0	0	88.3	18	9	9	435
2220	THIRTEEN MILE RD	GWENDOLYN ST	SALISBURY DR	2	Rural	HCB	Ditch Sewer	Gravel	197	400	5	8.9	7	0	0	0	0	94.5	19	10	9	435
2210	THIRTEEN MILE RD	SALISBURY DR	SALISBURY DR	2	Rural	HCB	Ditch Sewer	Gravel	194	400	5	8.7	7	0	0	0	0	94.5	19	10	9	435
2170	THIRTEEN MILE RD	DENFIELD RD	VANNECK RD	2	Rural	LCB	Open Ditch	Gravel	2291	300	4	7.6	6	0	0	0	0	97.7	19	10	10	303
2240	THIRTEEN MILE RD	ADELAIDE ST N	RICHMOND ST	2	Rural	LCB	Open Ditch	Gravel	2461	300	4	9.1	6	0	0	0	0	39.6	7	7	7	206
2250	THIRTEEN MILE RD	HIGHBURY AVE N	ADELAIDE ST N	2	Rural	LCB	Open Ditch	Gravel	2467	200	4	9	7	0	0	0	0	54.7	10	8	7	167
2260	THIRTEEN MILE RD	CLARKE RD	HIGHBURY AVE N	2	Rural	LCB	Open Ditch	Gravel	2449	200	4	7.3	6	0	0	0	0	63.7	12	8	7	159
2270	THIRTEEN MILE RD	PROSPECT HILL RD	CLARKE RD	2	Rural	LCB	Open Ditch	Gravel	2421	200	4	7.9	7	0	0	0	0	59.2	11	8	7	81
3490	THODY LANE	VANNECK RD	E END	2	Rural	HCB	Open Ditch	Earth	564	100	6	7.5	6	1	0	0	0	27.4	5	8	6	47
50075	TIMBERWALK TR	ILDERTON RD	ARROWOOD PATH	2	Urban	HCB	Storm Sewer		339	L/R	5	0	8	0	0	0	0	97.3	20	9	10	834
5000	TOWERLINE RD	HIGHLAND RD	SPRINGER RD	2	Urban	HCB	Storm Sewer		235	L/R	6	0	8	0	0	0	0	83.8	17	9	8	110
9000	TRILLIUM CRT	E END	CALVERT DR	2	Urban	HCB	Storm Sewer		111	L/R	6	0	8	0	0	0	0	54.4	11	8	7	113
5850	TUNKS LINE	229 N OF GLENDON DR	RAILWAY AVE	2	Rural	HCB	Open Ditch	Gravel	282	500	5	13.6	12	0	0	0	0	72.4	15	8	8	1279
5855	TUNKS LINE	GLENDON DR	229 N OF GLENDON DR	2	Semi Urban	HCB	Open Ditch	Gravel	229	C/R	5	13.6	12	0	0	0	0	81.4	17	8	9	1279
2085	TWELVE MILE RD	HIGHBURY AVE N	650 M WEST OF HIGHBURY AVE N	2	Rural	LCB	Open Ditch	Gravel	644	300	4	8.1	6	0	0	0	0	62.1	12	7	8	237
2040	TWELVE MILE RD	HYDE PARK RD	DENFIELD RD	2	Rural	Gravel	Open Ditch	Gravel	2466	200	4	0	6	0	0	0	0					82
2030	TWELVE MILE RD	DENFIELD RD	VANNECK RD	2	Rural	Gravel	Open Ditch	Gravel	2264	200	4	0	6	0	0	0	0					90
2070	TWELVE MILE RD	ADELAIDE ST N	RICHMOND ST	2	Rural	Gravel	Open Ditch	Gravel	2452	200	4	0	6	0	0	0	0					133
2060	TWELVE MILE RD	RICHMOND ST	WONDERLAND RD N	2	Rural	Gravel	Open Ditch	Gravel	2477	200	4	0	6	0	0	0	0					171
2050	TWELVE MILE RD	WONDERLAND RD N	HYDE PARK RD	2	Rural	Gravel	Open Ditch	Gravel	2469	200	4	0	6	0	0	0	0					196
2080	TWELVE MILE RD	650 M WEST OF HIGHBURY AVE N	ADELAIDE ST N	2	Rural	Gravel	Open Ditch	Gravel	1821	300	4	0	6	0	0	0	0					237

APPENDIX G.3 ROADS BY SURFACE CONDITION

Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
6436	UNION AVE	OXBOW DRIVE	VALLEYVIEW CRES	2	Urban	HCB	Storm Sewer		270	L/R	5	0	8	0	0	0	0	92.8	19	9	10	546
6400	UNION AVE	HEATHER PL	KOMOKA RD	2	Urban	HCB	Storm Sewer		79	L/R	5	0	8	0	0	0	0	83.8	17	9	8	405
6405	UNION AVE	DELAWARE ST N	HEATHER PL	2	Urban	HCB	Storm Sewer		103	L/R	5	0	8	0	0	0	0	88.3	18	9	9	346
6410	UNION AVE	OAKCREST DR	DELAWARE ST N	2	Semi Urban	HCB	Open Ditch	Gravel	115	L/R	5	8.4	7	0	0	0	0	92.8	19	9	9	334
6434	UNION AVE	VALLEYVIEW CRES	VALLEYVIEW CRES	2	Urban	HCB	Storm Sewer		251	L/R	5	0	8	0	0	0	0	97.3	20	9	10	313
6430	UNION AVE	60 m EAST of PARKVIEW DR	PARKVIEW DR	2	Semi Urban	HCB	Open Ditch	Gravel	60	L/R	5	8.4	7	0	0	0	0	92.8	19	9	9	312
6432	UNION AVE	VALLEYVIEW CRES	60 m EAST of PARKVIEW DR	2	Urban	HCB	Storm Sewer		38	L/R	5	8.4	7	0	0	0	0	97.3	20	9	10	312
6420	UNION AVE	PARKVIEW DR	OAKCREST DR	2	Semi Urban	HCB	Open Ditch	Earth	269	L/R	5	8.4	7	0	0	0	0	99	20	10	10	286
6540	VALLEYVIEW CES	UNION AVE	UNION AVE	2	Urban	HCB	Storm Sewer		303	L/R	6	0	8	0	0	0	0	88.3	18	9	9	177
6350	VALLEYVIEW DR	OXBOW DR	PARKVIEW DR	2	Semi Urban	HCB	Open Ditch	Earth	270	L/R	5	8.1	6	0	0	0	0	97.3	20	9	10	283
3570	VANNECK RD	WYNFIELD GATE	EGREMONT DR	2	Rural	LCB	Open Ditch	Gravel	244	700	3	10.6	7	0	0	0	0	53.1	10	7	7	3824
3580	VANNECK RD	350 m NORTH of WYNFIELD GATE	WYNFIELD GATE	2	Rural	LCB	Open Ditch	Gravel	360	700	3	10.6	7	0	0	0	0	68.2	13	8	7	3824
3585	VANNECK RD	SUNNINGDALE RD W	350 m NORTH of WYNFIELD GATE	2	Rural	LCB	Open Ditch	Gravel	212	700	3	10.6	7	0	0	0	0	84.6	17	7	7	3824
3600	VANNECK RD	GOLD CREEK DR	SUNNINGDALE RD W	2	Rural	HCB	Open Ditch	Gravel	1317	700	3	9.8	7	0	0	0	0	30.6	5	7	6	3229
3610	VANNECK RD	MEDWAY RD	GOLD CREEK DR	2	Rural	HCB	Open Ditch	Gravel	144	700	3	9.3	7	0	0	0	0	68.2	13	8	7	3229
3680	VANNECK RD	ILDERTON RD	IVAN DR	2	Rural	HCB	Open Ditch	Gravel	1215	600	3	10	8	0	0	0	0	97.3	20	9	9	2655
3620	VANNECK RD	BEAR CREEK RD	MEDWAY RD	2	Rural	HCB	Open Ditch	Gravel	165	600	3	9.3	7	0	0	0	0	92.8	19	9	9	2453
3670	VANNECK RD	IVAN DR	TEN MILE RD	2	Rural	HCB	Open Ditch	Gravel	275	600	3	10	8	0	0	0	0	97.3	20	9	9	2431
3690	VANNECK RD	ATTWOOD LANE	ILDERTON RD	2	Rural	HCB	Open Ditch	Gravel	286	600	3	8.7	7	0	0	0	0	92.8	19	9	9	2266
3700	VANNECK RD	NEW ONTARIO RD	ATTWOOD LANE	2	Rural	LCB	Open Ditch	Gravel	311	600	3	8.7	7	0	0	0	0	84.2	18	8	7	2266
3790	VANNECK RD	SIXTEEN MILE RD	MCEWEN DR	2	Rural	LCB	Open Ditch	Gravel	800	600	3	9.3	7	0	0	0	0	81	18	9	9	2221
3660	VANNECK RD	TEN MILE RD	SINCLAIR DR	2	Rural	HCB	Open Ditch	Gravel	1227	600	3	10	8	0	0	0	0	92.8	19	9	9	2199
3780	VANNECK RD	MCEWEN DR	FIFTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	595	600	3	9.3	7	0	0	0	0	97.7	19	10	10	2106
3710	VANNECK RD	TWELVE MILE RD	NEW ONTARIO RD	2	Rural	LCB	Open Ditch	Gravel	805	500	3	8.7	7	0	0	0	0	64.6	14	7	6	1998
3630	VANNECK RD	EIGHT MILE RD	BEAR CREEK RD	2	Rural	HCB	Open Ditch	Gravel	1191	500	3	9.2	8	0	0	0	0	99	20	10	10	1941
3650	VANNECK RD	SINCLAIR DR	NINE MILE RD	2	Rural	HCB	Open Ditch	Gravel	85	500	3	10	8	0	0	0	0	92.8	19	9	9	1851
3800	VANNECK RD	FERNHILL DR	SIXTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	704	500	3	9.2	8	0	0	0	0	76.5	16	9	9	1844
3770	VANNECK RD	FIFTEEN MILE RD	GREYSTEAD DR	2	Rural	LCB	Open Ditch	Gravel	863	500	3	8.9	7	0	0	0	0	97.7	19	10	10	1823
3720	VANNECK RD	HEDLEY DR	TWELVE MILE RD	2	Rural	LCB	Open Ditch	Gravel	384	500	3	8.9	7	0	0	0	0	82.6	16	7	7	1763
3640	VANNECK RD	NINE MILE RD	EIGHT MILE RD	2	Rural	HCB	Open Ditch	Gravel	1423	500	3	9.1	7	0	0	0	0	99	20	10	10	1705
3730	VANNECK RD	THIRTEEN MILE RD	HEDLEY DR	2	Rural	LCB	Open Ditch	Gravel	1013	500	3	8.9	7	0	0	0	0	78.1	15	7	7	1670
3750	VANNECK RD	FOURTEEN MILE RD	CHARLTON DR	2	Rural	LCB	Open Ditch	Gravel	958	500	3	10.5	7	0	0	0	0	100	20	10	10	1648
3810	VANNECK RD	ELGINFIELD RD	FERNHILL DR	2	Rural	LCB	Open Ditch	Gravel	686	500	3	8.6	6	0	0	2	0	76.5	16	9	9	1634
3760	VANNECK RD	GREYSTEAD DR	FOURTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	557	500	3	8.9	7	0	0	0	0	100	20	10	10	1584
3740	VANNECK RD	CHARLTON DR	THIRTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	490	500	3	10.5	7	0	0	0	0	100	20	10	10	1441
900	VICTORIA ST	PRINCE OF WALES ST	LONGWOODS RD	2	Urban	HCB	Storm Sewer		183	L/R	5	0	8	0	0	0	0	94.5	19	10	9	945
910	VICTORIA ST	WELLINGTON ST	PRINCE OF WALES ST	2	Urban	HCB	Storm Sewer		121	L/R	5	8.5	8	0	0	0	0	94.5	19	10	9	911
920	VICTORIA ST	WELLINGTON ST	WELLINGTON ST	2	Urban	HCB	Storm Sewer		52	C/R	5	0	8	0	0	0	0	99	20	10	9	911
930	VICTORIA ST	YOUNG ST	WELLINGTON ST	2	Semi Urban	HCB	Open Ditch	Gravel	386	L/R	5	7	6	0	0	0	0	63.4	13	8	7	486
5330	VICTORIA ST	HOGS BACK CS	YOUNG ST	2	Semi Urban	HCB	Open Ditch	Gravel	27	L/R	5	8.4	7	0	0	0	0	81.4	17	8	8	486
8990	WARBLER CIR	CALVERT DR	W END	2	Urban	HCB	Storm Sewer		48	L/R	6	0	8	0	0	0	0	74.8	15	9	8	83
9430	WELDON AVE	ARVA ST	W END	2	Urban	HCB	Storm Sewer		180	L/R	6	0	8	0	0	0	0	76.9	16	8	8	82
440	WELDON WAY	COOK RD	WESTDEL BRNE	2	Rural	Gravel	Open Ditch	Gravel	913	100	6	0	5	1	0	0	0					34
5410	WELLINGTON ST	HILLCREST AVE	YORK ST	2	Urban	HCB	Storm Sewer		87	L/R	5	0	7	0	0	0	0	99	20	10	10	737
5400	WELLINGTON ST	YORK ST	GIDEON DR	2	Semi Urban	HCB	No Drainage	Earth	123	L/R	5	7.2	6	0	0	0	0	99	20	10	10	661
5430	WELLINGTON ST	DAVIS ST	HILLCREST AVE	2	Urban	HCB	Storm Sewer		361	L/R	5	0	7	0	0	1	0	54.4	11	8	7	500
5450	WELLINGTON ST	VICTORIA ST	85 M WEST OF PRINCE ALBERT ST	2	Semi Urban	HCB	Ditch Sewer	Earth	118	L/R	5	8.5	6	0	0	0	0	63.4	13	8	7	443
5435	WELLINGTON ST	85 M WEST OF PRINCE ALBERT ST	PRINCE ALBERT ST	2	Semi Urban	HCB	Open Ditch	Earth	87	L/R	5	8	6	0	0	0	0	63.4	13	8	7	443
5440	WELLINGTON ST	PRINCE ALBERT ST	DAVIS ST	2	Semi Urban	HCB	Ditch Sewer	Earth	75	L/R	5	7.8	6	0	0	0	0	67.9	14	8	8	379

APPENDIX G.3 ROADS BY SURFACE CONDITION

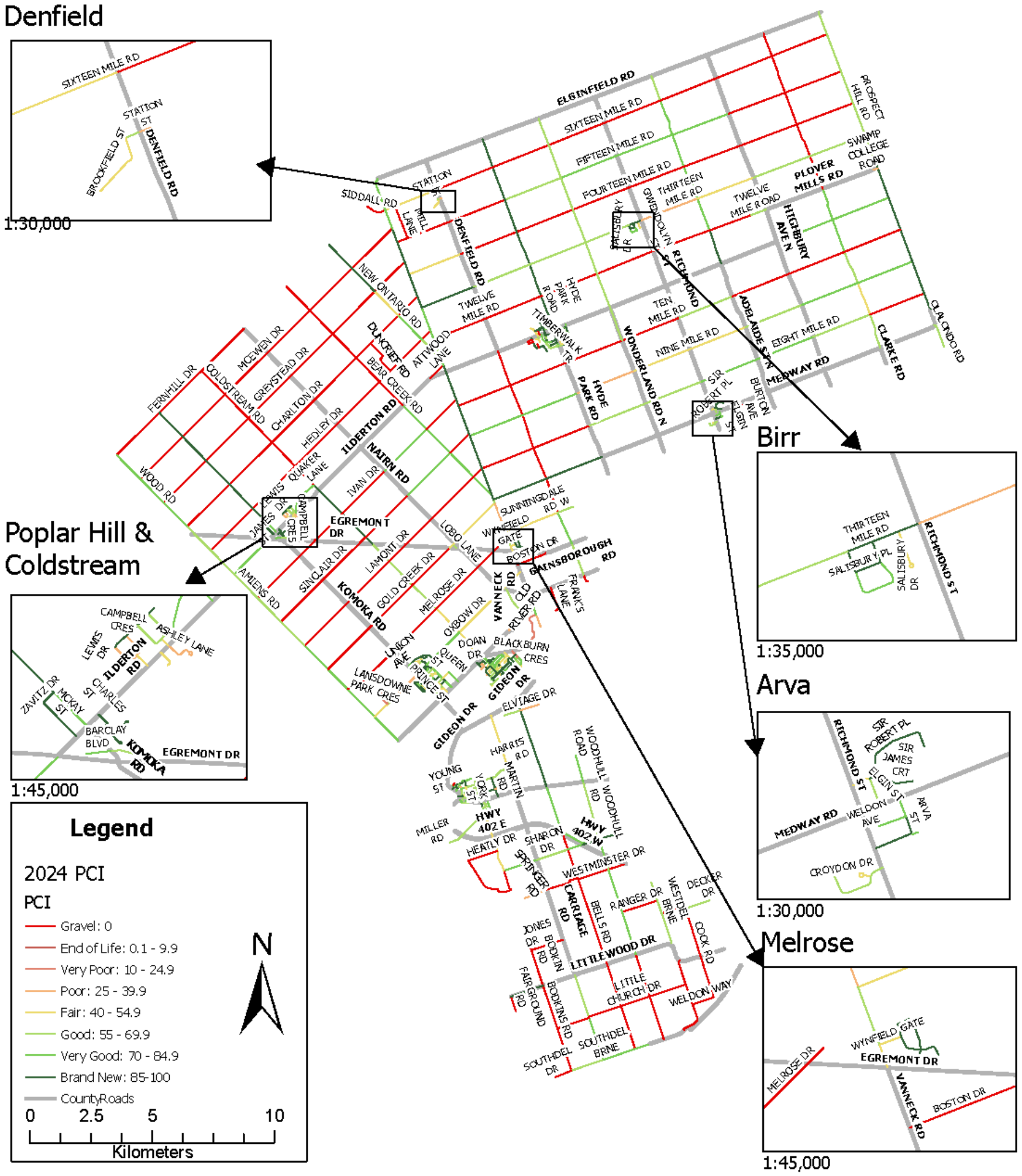
Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
5460	WELLINGTON ST	MARTIN RD	VICTORIA ST	2	Urban	HCB	Storm Sewer		729	L/R	5	0	8	0	0	0	0	94.5	19	10	9	250
5390	WELLINGTON ST	GIDEON DR	W END	2	Semi Urban	HCB	Open Ditch	Gravel	71	L/R	6	7.8	6	0	0	0	0	99	20	10	10	128
5470	WELLINGTON ST	65 M EAST OF MARTIN ROAD	MARTIN RD	2	Semi Urban	LCB	Ditch Sewer	Earth	66	L/R	6	5.4	4	0	0	0	0	39.6	7	7	7	52
5475	WELLINGTON ST	E END	65 M EAST OF MARTIN RD	2	Semi Urban	LCB	Open Ditch	Earth	284	L/R	6	5.4	4	0	0	0	0	50.2	9	8	7	52
7480	WESTBROOK CRES	BLACKBURN CRES	WESTBROOK DR	2	Urban	HCB	Storm Sewer		314	L/R	5	0	8	0	0	0	0	85.9	18	8	8	473
7450	WESTBROOK CRES	WESTBROOK DR	WOODLAND DR	2	Urban	HCB	Storm Sewer		120	L/R	5	0	8	0	0	0	0	90.4	19	8	9	215
7470	WESTBROOK CRES	WESTBROOK DR	BLACKBURN CRES	2	Urban	HCB	Storm Sewer		307	L/R	5	0	8	0	0	0	0	81.4	17	8	8	214
7460	WESTBROOK CRES	WOODLAND DR	BIRCHCREST DR	2	Urban	HCB	Storm Sewer		124	L/R	5	0	9	0	0	0	0	90.4	19	8	9	213
7190	WESTBROOK DR	PHEASANT TRAIL	WESTBROOK CRES	2	Urban	HCB	Storm Sewer		126	C/R	5	0	8	0	0	0	0	99	20	10	9	1110
7200	WESTBROOK DR	KILWORTH PARK DR	PHEASANT TRAIL	2	Urban	HCB	Storm Sewer		95	C/R	5	0	8	0	0	0	0	99	20	10	9	926
7160	WESTBROOK DR	JEFFERIES RD	WINONA RD	2	Urban	HCB	Storm Sewer		68	L/R	5	0	8	0	0	0	0	97.3	20	9	9	883
7140	WESTBROOK DR	STEPHEN MOORE DR	W END	2	Urban	HCB	Storm Sewer		52	L/R	5	0	8	0	0	0	0	76.9	16	8	8	696
7150	WESTBROOK DR	WINONA RD	STEPHEN MOORE DR	2	Urban	HCB	Storm Sewer		297	L/R	5	0	8	0	0	0	0	92.8	19	9	9	696
7170	WESTBROOK DR	WESTBROOK CRES	JEFFERIES RD	2	Urban	HCB	Storm Sewer		227	L/R	5	0	8	0	0	0	0	90.4	19	8	9	642
7180	WESTBROOK DR	WESTBROOK CRES	WESTBROOK CRES	2	Urban	HCB	Storm Sewer		360	L/R	5	0	8	0	0	0	0	92.8	19	9	9	526
270	WESTDEL BRNE	TWP LIMIT	RANGER DR	2	Rural	LCB	Open Ditch	Gravel	700	400	4	8.9	7	0	0	0	0	68.2	13	8	8	840
260	WESTDEL BRNE	RANGER DR	DECKER DR	2	Rural	LCB	Open Ditch	Gravel	542	400	4	9.3	7	0	0	0	0	68.2	13	8	8	770
250	WESTDEL BRNE	DECKER DR	LITTLEWOOD DR	2	Rural	LCB	Open Ditch	Gravel	1470	400	4	9.3	7	0	0	0	0	68.2	13	8	8	724
200	WESTDEL BRNE	WELDON WAY	SOUTHMINSTER BRNE	2	Rural	Gravel	Open Ditch	Gravel	1398	200	4	0	6	0	0	0	0					81
210	WESTDEL BRNE	LITTLE CHURCH DR	WELDON WAY	2	Rural	Gravel	Open Ditch	Gravel	865	200	4	0	6	0	0	0	0					84
220	WESTDEL BRNE	LITTLEWOOD DR	LITTLE CHURCH DR	2	Rural	Gravel	Open Ditch	Gravel	1194	200	4	0	7	0	0	0	0					94
500	WESTMINSTER DR	CARRIAGE RD	COOKS RD	2	Rural	LCB	Open Ditch	Gravel	948	200	4	9	7	0	1	0	0	39.6	7	7	6	117
510	WESTMINSTER DR	BELLS RD	CARRIAGE RD	2	Rural	Gravel	Open Ditch	Gravel	1429	200	4	0	5	0	0	0	0					54
530	WESTMINSTER DR	TWP LIMIT	WOODHULL RD	2	Rural	Gravel	Open Ditch	Gravel	754	200	4	0	7.3	0	0	0	0					77
520	WESTMINSTER DR	WOODHULL RD	BELLS RD	2	Rural	Gravel	Open Ditch	Gravel	1310	200	4	0	5	0	0	0	0					88
7700	WILLARD CRES	SPRINGFIELD WAY	SPRINGFIELD WAY	2	Urban	HCB	Storm Sewer		345	L/R	6	0	8	0	0	0	0	33.3	7	7	7	154
7705	WILLARD CRES	SPRINGFIELD WAY	W END	2	Urban	HCB	Storm Sewer		55	L/R	6	0	8	0	0	0	0	58.9	12	8	6	54
5020	WILLIAM ST	BLOSDALE CRES	SPRINGER RD	2	Urban	HCB	Storm Sewer		104	L/R	5	0	8	0	0	0	0	67.9	14	8	8	358
5030	WILLIAM ST	HIGHLAND RD	BLOSDALE CRES	2	Urban	HCB	Storm Sewer		126	L/R	6	0	8	0	0	0	0	67.9	14	8	8	136
9090	WILLOW RIDGE RD	ILDERTON RD	MARTIN DR	2	Urban	HCB	Storm Sewer		149	C/R	5	0	8	0	0	0	0	79.3	16	9	8	1227
9080	WILLOW RIDGE RD	MARTIN DR	WILLOW RIDGE RD	2	Urban	HCB	Storm Sewer		205	C/R	5	0	8	0	0	0	0	94.5	19	10	9	744
9110	WILLOW RIDGE RD	DOGWOOD TRAIL	WILLOW RIDGE RD	2	Urban	HCB	Storm Sewer		88	L/R	5	0	8	0	0	0	0	98.4	19	9	9	314
9100	WILLOW RIDGE RD	BLUE HERRON DR	DOGWOOD TRAIL	2	Urban	HCB	Storm Sewer		89	L/R	5	0	8	0	0	0	0	100	20	9	9	264
9070	WILLOW RIDGE RD	WILLOW RIDGE RD	BLUE HERRON DR	2	Urban	HCB	Storm Sewer		505	L/R	6	0	8	0	0	0	0	84.9	17	9	9	182
7130	WINGREEN LANE	WINONA RD	STEPHEN MOORE DR	2	Urban	HCB	Storm Sewer		293	L/R	6	0	8	0	0	0	0	58.9	12	8	8	95
7050	WINONA RD	STEPHEN MOORE DR	CANDLEWOOD LANE	2	Urban	HCB	Storm Sewer		115	L/R	5	0	8	0	0	0	0	97.3	20	9	9	558
7040	WINONA RD	CANDLEWOOD LANE	DAVENTRY WAY	2	Urban	HCB	Storm Sewer		112	L/R	5	0	8	0	0	0	0	97.3	20	9	9	391
7030	WINONA RD	DAVENTRY WAY	WINGREEN LANE	2	Urban	HCB	Storm Sewer		112	L/R	5	0	8	0	0	0	0	97.3	20	9	9	231
7020	WINONA RD	WINGREEN LANE	WESTBROOK DR	2	Urban	HCB	Storm Sewer		109	L/R	6	0	8	0	0	0	0	97.3	20	9	9	174
7510	WISHINGWELL CRT	N END	PIONEER DR	2	Urban	HCB	Storm Sewer		42	L/R	6	0	8	0	0	0	0	99	20	10	9	51
4130	WONDERLAND RD N	SIXTEEN MILE RD	FIFTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	1432	700	3	10.1	8	0	0	0	0	59.2	11	8	8	4033
4140	WONDERLAND RD N	ELGINFIELD RD	SIXTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	1168	700	3	9.5	8	0	0	0	0	68.2	13	8	8	3790
4090	WONDERLAND RD N	TWELVE MILE RD	ILDERTON RD	2	Rural	LCB	Open Ditch	Gravel	1489	700	3	10.3	8	0	0	0	0	68.2	13	8	7	3603
4100	WONDERLAND RD N	THIRTEEN MILE RD	TWELVE MILE RD	2	Rural	LCB	Open Ditch	Gravel	1359	600	3	10	8	0	0	0	0	57.6	11	7	8	2895
4120	WONDERLAND RD N	FIFTEEN MILE RD	FOURTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	1389	600	3	9.6	8	0	0	0	0	63.7	12	8	8	2724
4110	WONDERLAND RD N	FOURTEEN MILE RD	THIRTEEN MILE RD	2	Rural	LCB	Open Ditch	Gravel	1438	600	3	9.4	8	0	0	0	0	62.1	12	7	7	2585
8590	WOOD LILY LANE	PERRIWINKLE DR	STONE FIELD LANE	2	Urban	HCB	Storm Sewer		84	L/R	5	0	8	0	0	0	0	72.4	15	8	8	468
8560	WOOD LILY LANE	RED CLOVER CRT	PERRIWINKLE DR	2	Urban	HCB	Storm Sewer		374	L/R	6	0	8	0	0	0	0	64.8	14	7	8	177
50033	WOOD RD	FERNHILL DR	MCEWEN DR	2	Rural	LCB	Open Ditch	Gravel	1371	400	4	7.5	9	0	0	0	0	77.2	15	8	7	918
50032	WOOD RD	MCEWEN DR	GREYSTEAD DR	2	Rural	LCB	Open Ditch	Gravel	1360	400	4	7.5	9	0	0	0	0	77.2	15	8	7	918

APPENDIX G.3 ROADS BY SURFACE CONDITION

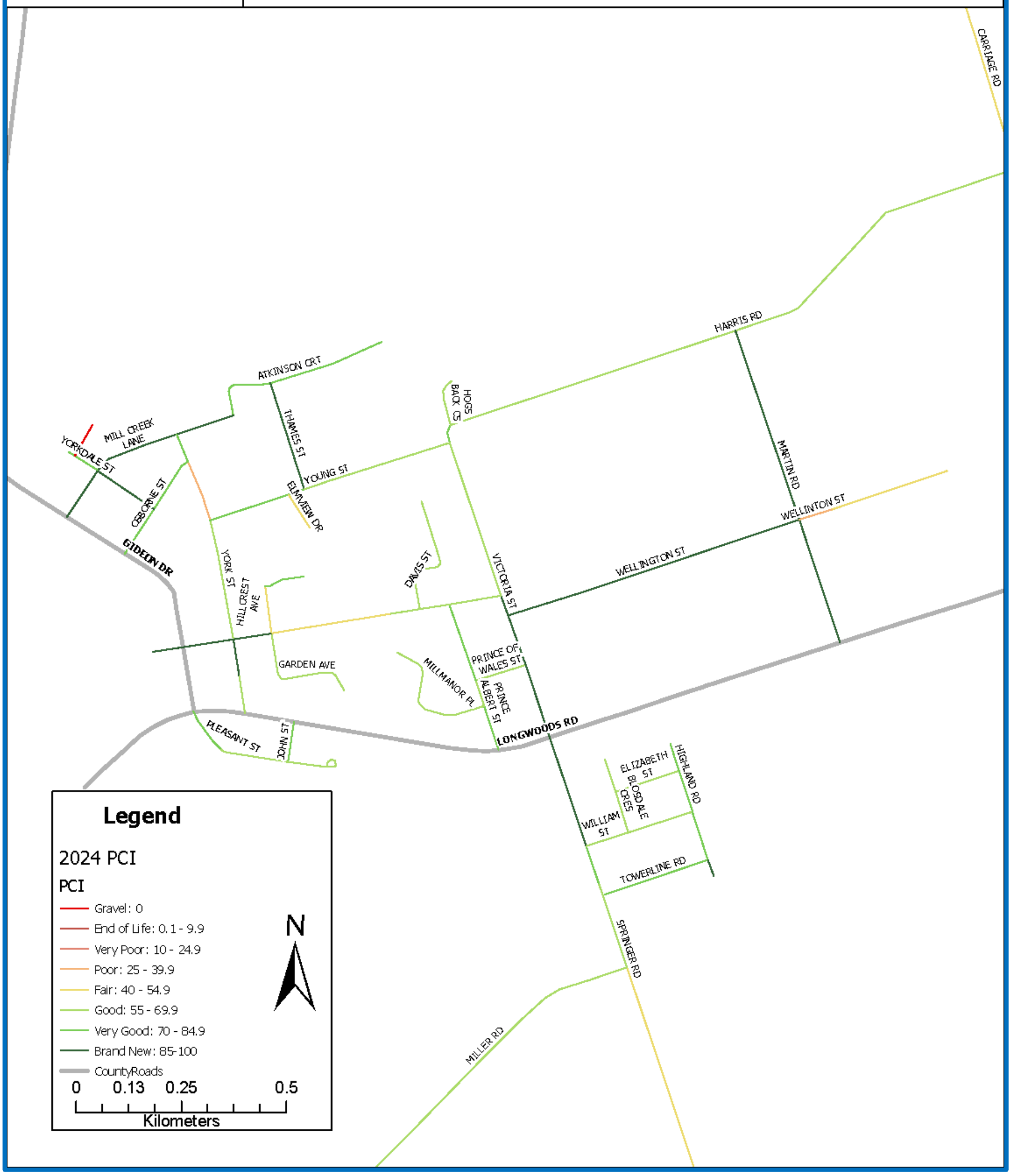
Section	Street	From	To	Lanes	Roadside Environment	Surface Type	Drainage Type	Shoulder Type	Length (m)	Class	MMS Class	Platform Width (m)	Surface Width (m)	Horizontal Curve	Horizontal SSD	Vertical Curve	Vertical SSD	PCI	Structural Adequacy	Ride Quality	Maintenance Demand	AADT 2024
50031	WOOD RD	GREYSTEAD DR	CHARLTON DR	2	Rural	LCB	Open Ditch	Gravel	1365	400	4	7.5	9	0	0	0	0	81.7	16	8	7	918
50030	WOOD RD	CHARLTON DR	HIGHWAY 22	2	Rural	LCB	Open Ditch	Gravel	399	400	4	7.5	9	0	0	0	0	81.7	16	8	7	918
170	WOODHULL RD	LONGWOODS RD	SHARON DR	2	Rural	LCB	Open Ditch	Gravel	2435	400	4	9.1	7	0	0	0	0	68.2	13	8	8	422
175	WOODHULL RD	NORTH LIMITS	LONGWOODS ROAD	2	Rural	LCB	Open Ditch	Gravel	1139	400	5	8.5	7	0	0	0	0	72.7	14	8	8	422
120	WOODHULL RD	RANGER DR	LITTLEWOOD DR	2	Rural	LCB	Open Ditch	Gravel	1825	300	4	9.1	7	0	0	0	0	81.7	16	8	8	391
140	WOODHULL RD	HWY 402 E	WESTMINSTER DR	2	Rural	LCB	Open Ditch	Gravel	593	300	4	8.2	6	0	0	0	0	59.2	11	8	8	324
160	WOODHULL RD	SHARON DR	HWY 402 W	2	Rural	LCB	Open Ditch	Gravel	653	300	4	9.6	6	0	0	0	0	77.2	15	8	8	324
130	WOODHULL RD	WESTMINSTER DR	RANGER DR	2	Rural	LCB	Open Ditch	Gravel	1829	300	4	8.2	7	0	0	0	0	72.7	14	8	8	277
100	WOODHULL RD	LITTLE CHURCH DR	SOUTHMINSTER BRNE	2	Rural	Gravel	Open Ditch	Gravel	1841	100	6	0	5	0	0	0	0					40
110	WOODHULL RD	LITTLEWOOD DR	LITTLE CHURCH DR	2	Rural	Gravel	Open Ditch	Gravel	1811	200	4	0	5	0	0	0	0					68
7380	WOODLAND DR	ERLSCOURT TERRACE	BARON CRES	2	Urban	HCB	Storm Sewer		101	L/R	5	0	8	0	0	0	0	83.8	17	9	8	236
7385	WOODLAND DR	BARON CRES	BIRCHCREST DR	2	Urban	HCB	Storm Sewer		107	L/R	5	0	8	0	0	0	0	85.9	18	8	9	236
7390	WOODLAND DR	BIRCHCREST DR	WESTBROOK CRES	2	Urban	HCB	Storm Sewer		273	L/R	6	0	8	0	0	0	0	40.9	8	8	7	106
7800	WYNFIELD GATE	WYNFIELD LANE	VANNECK RD	2	Urban	HCB	Storm Sewer		237	L/R	5	0	8	0	0	0	0	54.4	11	8	7	813
7810	WYNFIELD LANE	WYNFIELD GATE	WYNFIELD LANE	2	Urban	HCB	Storm Sewer		212	L/R	5	0	8	0	0	0	0	97.3	20	9	9	345
7830	WYNFIELD LANE	WYNFIELD LANE	WYNFIELD GATE	2	Urban	HCB	Storm Sewer		520	L/R	5	0	8	0	0	0	0	97.3	20	9	9	214
7820	WYNFIELD LANE	WYNFIELD LANE	WYNFIELD LANE	2	Urban	HCB	Storm Sewer		577	L/R	6	0	8	0	0	0	0	92.8	19	9	9	172
5145	YORK ST	100 M N OF LONGWOOD RD	LONGWOOD RD	2	Urban	HCB	Storm Sewer		100	L/R	5	0	14	0	0	0	0	67.9	14	8	8	740
5150	YORK ST	WELLINGTON ST	100 M N OF LONGWOODS RD	2	Urban	HCB	Storm Sewer		76	C/R	5	0	6	0	0	0	0	99	20	10	10	740
5160	YORK ST	YOUNG ST	WELLINGTON ST	2	Semi Urban	HCB	Ditch Sewer	Earth	291	L/R	5	8.3	7	0	0	0	0	63.4	13	8	7	679
5170	YORK ST	OSBORNE ST	YOUNG ST	2	Semi Urban	HCB	Ditch Sewer	Earth	138	L/R	5	8.5	7	0	0	0	0	36.4	7	8	6	520
5180	YORK ST	MILL CREEK LANE	OSBORNE ST	2	Semi Urban	HCB	Ditch Sewer	Earth	83	L/R	5	7.2	6	0	0	0	0	79.3	16	9	8	269
5230	YORKDALE ST	MILL CREEK LANE	W END	2	Semi Urban	LCB	No Drainage	Earth	75	L/R	6	6	6	0	0	0	0	76.2	15	8	7	61
5220	YORKDALE ST	OSBORNE ST	MILL CREEK LANE	2	Semi Urban	LCB	Ditch Sewer	Earth	163	L/R	6	6.6	5	0	0	0	0	100	20	10	8	9
5320	YOUNG ST	VICTORIA ST	THAMES ST	2	Semi Urban	LCB	Ditch Sewer	Earth	355	L/R	5	8.5	7	0	0	0	0	68.2	13	8	7	377
5310	YOUNG ST	THAMES ST	ELMVIEW DR	2	Semi Urban	LCB	Ditch Sewer	Gravel	40	L/R	5	8.5	6	0	0	0	0	74.3	14	9	7	337
5300	YOUNG ST	ELMVIEW DR	YORK ST	2	Semi Urban	LCB	No Drainage	Earth	198	L/R	5	8.4	6	0	0	0	0	77.2	15	8	8	337
8110	ZAVITZ DR	POPLAR HILL RD	MCKAY ST	2	Semi Urban	HCB	Open Ditch	Earth	131	L/R	6	8.7	7	0	0	0	0	85.9	18	8	9	41

middlesex centre
in the centre of it all

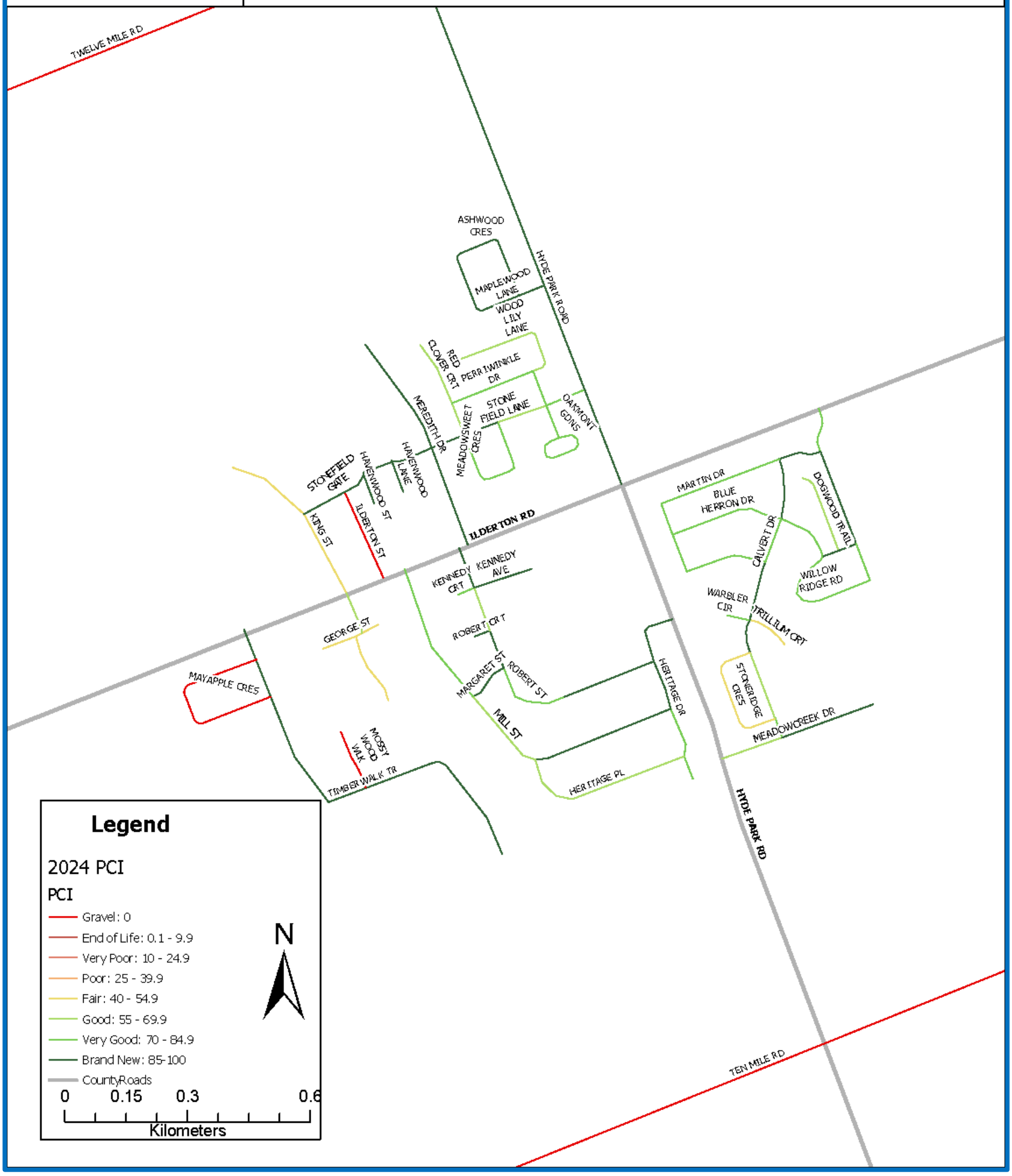
Pavement Condition Index (PCI)
Middlesex Centre



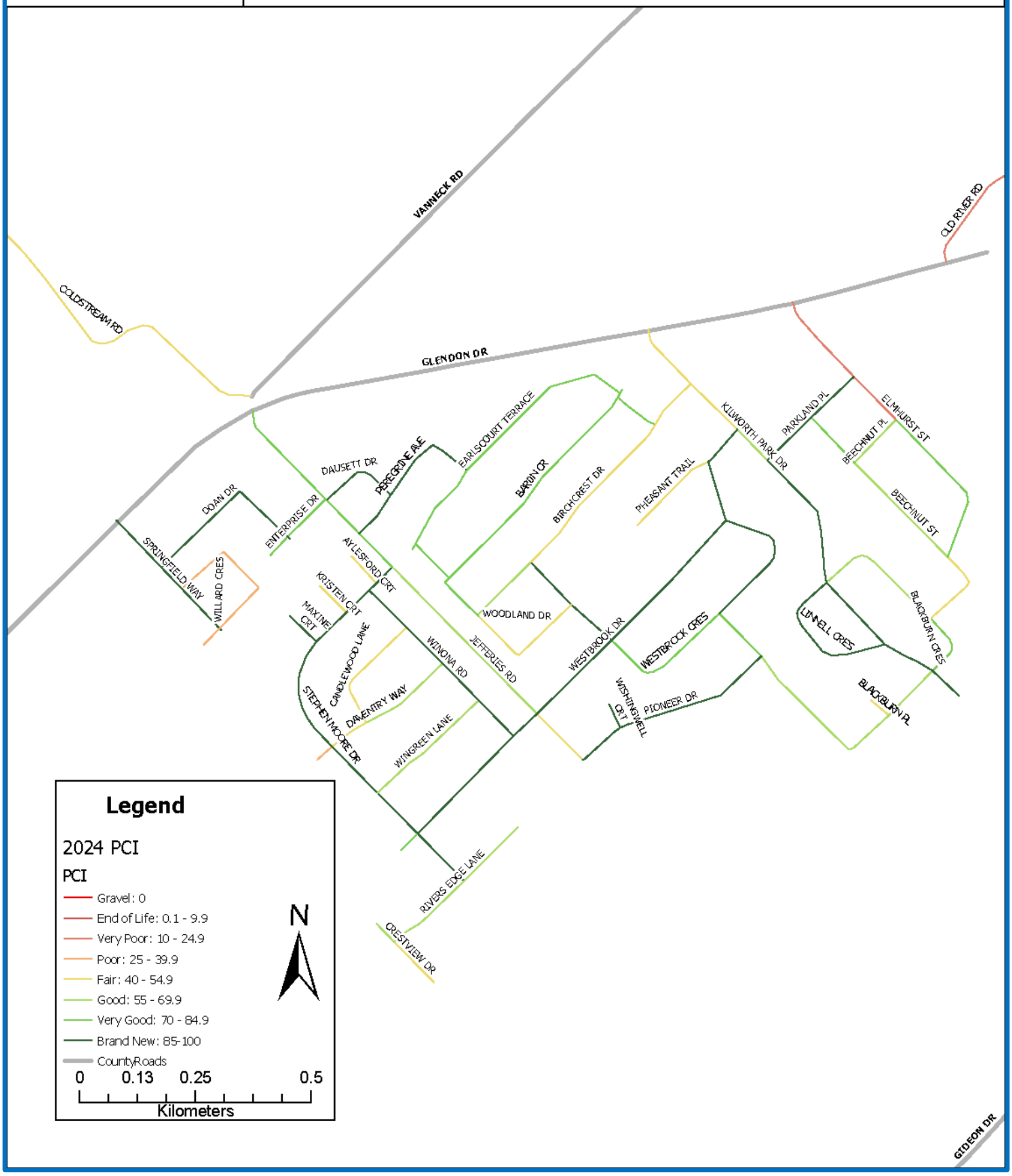
Pavement Condition Index (PCI) - Delaware



Pavement Condition Index (PCI) - Ilderton



Pavement Condition Index (PCI) - Kilworth



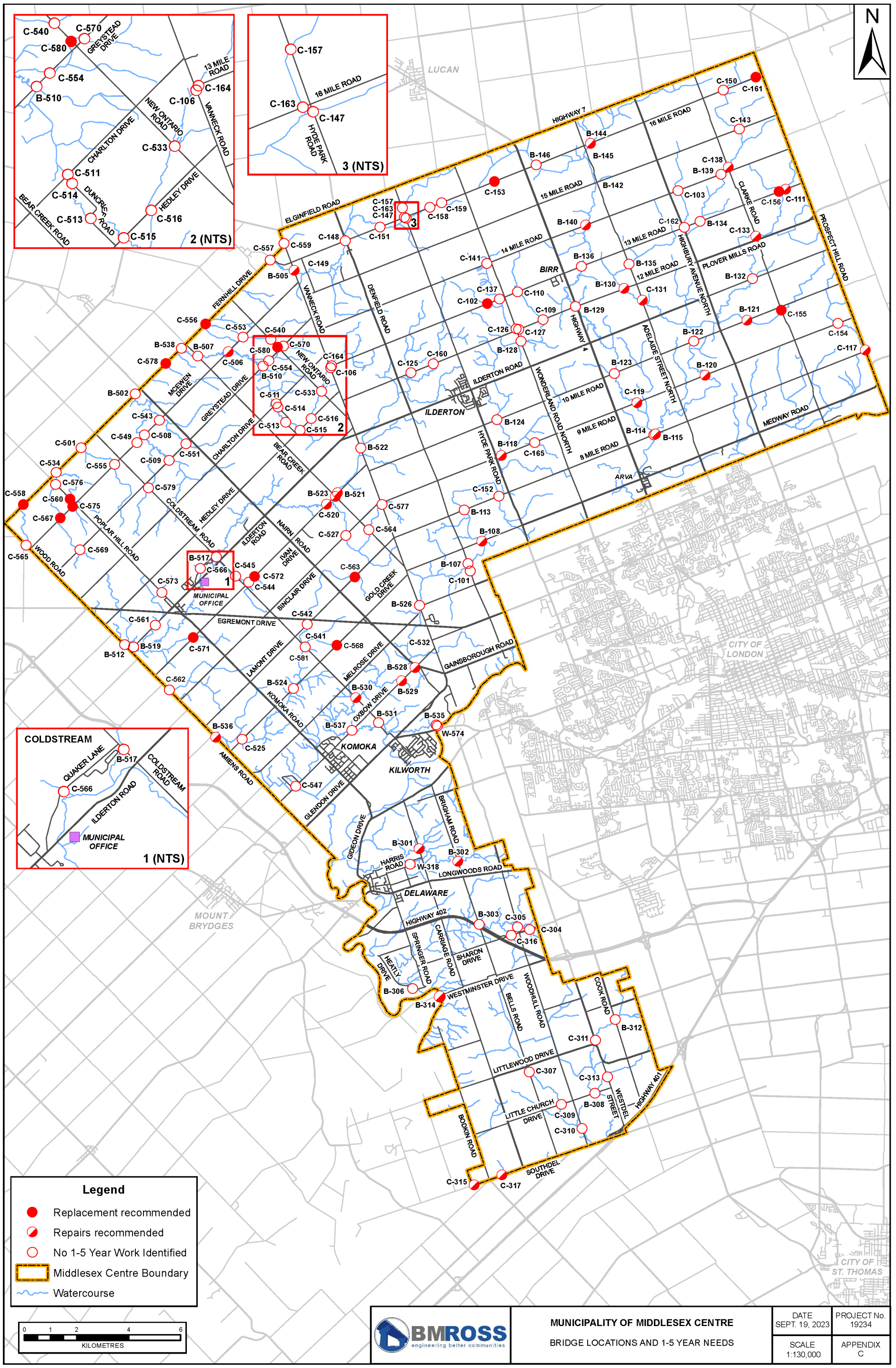
Pavement Condition Index (PCI) - Komoka

APPENDIX H

LEVELS OF SERVICE

ONTARIO REGULATION 588/17

BRIDGES AND CULVERTS


N
2 (NTS)
3 (NTS)
1 (NTS)
COLDSTREAM
LUCAN
BIRR
ILDERTON
KOMOKA
KILWORTH
DELAWARE
ARVA
MOUNT BRYDGES
CITY OF LONDON
CITY OF ST. THOMAS
MUNICIPAL OFFICE
HIGHWAY 7
HIGHWAY 4
HIGHWAY 402
HIGHWAY 401
16 MILE ROAD
15 MILE ROAD
14 MILE ROAD
13 MILE ROAD
12 MILE ROAD
10 MILE ROAD
9 MILE ROAD
8 MILE ROAD
ELGINFIELD ROAD
EGREMONT DRIVE
ILDERTON ROAD
FERNHILL DRIVE
MCEWEN DRIVE
GREYSTEAD DRIVE
CHARLTON DRIVE
BEAR CREEK ROAD
NEW ONTARIO ROAD
VANNECK ROAD
DENFIELD ROAD
HIGHBURY AVENUE NORTH
ADELAIDE STREET NORTH
WONDERLAND ROAD NORTH
CLARKE ROAD
PROSPECT HILL ROAD
PLOVER MILLS ROAD
MEDWAY ROAD
HYDE PARK ROAD
HEDLEY DRIVE
COLDSTREAM ROAD
POPLAR HILL ROAD
WOOD ROAD
NAIRN ROAD
IVAN DRIVE
SINCLAIR DRIVE
GOLD CREEK DRIVE
LAMONT DRIVE
MELROSE DRIVE
KOMOKA ROAD
OXBOW DRIVE
GLENDON DRIVE
AMIENS ROAD
GAINSBOROUGH ROAD
GIDEON DRIVE
BRIGHAM ROAD
HARRIS ROAD
LONGWOODS ROAD
SPRINGER ROAD
CARRIAGE ROAD
SHARON DRIVE
HEATLY DRIVE
WESTMINSTER DRIVE
BELLS ROAD
WOODHULL ROAD
COOK ROAD
LITTLEWOOD DRIVE
LITTLE CHURCH DRIVE
WESTDEL STREET
SOUTHDEL DRIVE
BODKIN ROAD
QUAKER LANE
Legend
Replacement recommended
Repairs recommended
No 1-5 Year Work Identified
Middlesex Centre Boundary
Watercourse
0 1 2 4 6
KILOMETRES
BMROSS
engineering better communities
MUNICIPALITY OF MIDDLESEX CENTRE
BRIDGE LOCATIONS AND 1-5 YEAR NEEDS
DATE SEPT. 19, 2023
PROJECT No. 19234
SCALE 1:130,000
APPENDIX C

APPENDIX H.2 BRIDGES AND CULVERTS INVENTORY SUMMARY BY BCI

Site Number	Structure Type	Structure Name	Road Name	Structure Location	Total Span Length (m)	Year Built	BCI	Probable Cost of 1-5 Year Recommended Work	Probable Cost of 6-10 Year Recommended Work	Probable Cost of 11-20 Year Recommended Work	Priority Score
C-563	Rectangular Culvert		Lamont Drive	0.8 km East of Nairn Road	3	1940 est.	20	$449,000	$0	$0	12
C-153	Rectangular Culvert		Sixteen Mile Road	1.2 km East of Wonderland Road	3	1940 est	22	$409,000	$0	$0	12
C-558	CSP Arch Culvert		Fernhill Drive	1.0 km East of Wood Road	3.75	1970 est.	24	$429,000	$0	$0	12
C-572	Rectangular Culvert		Ivan Drive	0.5 km East of Coldstream Road	2.4	1950 est.	26	$286,000	$0	$0	14
C-161	Rectangular Culvert		Sixteen Mile Road	0.25 km East of Prospect Hill Road	2.4	1955 est.	27	$261,000	$0	$0	12
C-156	Rectangular Culvert		Thirteen Mile Road	1.0 km West of Prospect Hill Road	2.75	1940 est	28	$368,000	$0	$0	12
C-317	Rectangular Culvert		Southdel Drive	0.5 km East of Bodkin Road	2.7	1955 est.	28	$125,000	$0	$0	14
C-575	Arch Culvert		McEwen Drive	0.1 km West of Poplar Hill Road	2.4	1970 est.	32	$264,000	$0	$0	12
C-155	CSP Arch Culvert		Clarke Road	0.1 km South of 10 Mile Road	3.05	1960 est	33	$365,000	$0	$0	14
C-157	Rectangular Culvert		Hyde Park Road	0.4 km North of 16 Mile Road	2.9	1950 est	34	$0	$394,000	$0	17
C-568	Rectangular Culvert		Gold Creek Drive	1.25 km Southwest of Egremont Drive	2.7	1955 est.	34	$261,000	$0	$0	12
C-580	Rectangular Culvert		New Ontario Road	0.1 km North of Greystead Road	1.8	1955 est.	34	$252,000	$0	$0	13
B-312	Rigid Frame, Vertical Legs	Cook Road Bridge	Cook Road	0.5 km South of Decker Drive	6.5	1950 est	35	$0	$585,000	$0	13
C-514	CSP Arch Culvert	Culvert No. 14	Duncrief Road	0.2 km South of Charlton Drive	4.6	1970 est.	36	$0	$0	$0	12
C-554	CSP Arch Culvert		Greystead Drive	0.6 km West of New Ontario Road	2.8	1970 est.	36	$0	$423,000	$0	13
C-571	CSP Arch Culvert		Ivan Drive	0.35 km West of Komoka Road	2.6	1975 est.	37	$323,000	$0	$0	12
C-102	Rectangular Culvert		Thirteen Mile Road	0.7 km West of Wonderland Road	3.7	1945 est.	38	$340,000	$0	$0	15
C-159	Rectangular Culvert		Sixteen Mile Road	1.0 km West of Wonderland Road North	2.75	1940 est	38	$0	$390,000	$0	12
C-515	CSP Arch Culvert		Hedly Drive	0.8 km East of Bear Creek Road	6	1970 est	38	$0	$0	$0	13
C-578	CSP Arch Culvert		Fernhill Drive	1.4 km East of Nairn Road	3	1970 est.	38	$341,000	$0	$0	12
C-545	CSP Arch Culvert		Coldstream Road	0.4 km North of Ivan Drive	3.5	1975 est.	39	$0	$0	$397,000	15
C-162	Rectangular Culvert		Thirteen Mile Road	20m East of Highbury Avenue North	2.9	1955 est.	40	$0	$297,000	$0	11
C-310	CSP Round Culvert	Conc. 4 Bridge	Woodhull Road	0.6 km North of Southdel Drive	4.6	1995	40	$0	$0	$0	11
C-513	CSP Ellipse Culvert		Duncrief Road	0.7 km North of Hedly Drive	6.4	1970 est.	40	$0	$0	$0	10
C-534	CSP Arch Culvert		Fernhill Road	0.3 km East of Poplar Hill Road	3.6	1970 est.	40	$0	$0	$0	11
C-570	CSP Arch Culvert		Greystead Drive	0.2 km East of New Ontario Road	2.6	1970 est.	40	$0	$0	$0	10
C-576	CSP Round Culvert		Poplar Hill Road	0.3 km South of Fernhill Drive	2.6	1980 est.	40	$0	$0	$0	13
C-556	Rectangular Culvert		Fernhill Drive	1.1 km East of Bear Creek Road	3.33	1960 est.	41	$439,000	$0	$0	10
C-559	Rectangular Culvert		Vanneck Road	75m North of Fernhill Drive	2.76	1950 est.	42	$0	$327,000	$0	14
C-560	CSP Arch Culvert		Poplar Hill Road	0.25 km North of McEwen Drive	2.62	1970 est.	42	$389,000	$0	$0	10
C-567	CSP Arch Culvert		McEwen Drive	0.75 km West of Poplar Hill Road	2.7	1970 est.	44	$262,000	$0	$0	10
C-164	CSP Arch Culvert		Thirteen Mile Road	50m East of Vanneck Road	2.7	1970 est.	47	$0	$0	$0	11
C-541	Rectangular Culvert		Coldstream Road	0.4 km S of Lamont Drive	5.2	1950 est.	47	$0	$0	$572,000	14
B-139	Rigid Frame, Vertical Legs	O'Neil Bridge	Fourteen Mile Road	0.3 km West of Clarke Road	15.3	1960	50	$0	$353,000	$0	11
B-538	Rigid Frame, Vertical Legs		Fernhill Drive	0.2 km West of Bear Creek Road	10.67	1962	50	$0	$35,000	$0	11
C-143	Rectangular Culvert	Fitzgerald-Fifteen Mile Culvert	Fifteen Mile Road	0.9 km East of Clarke Road	6.1	1965 est.	50	$0	$0	$0	11
C-547	Rectangular Culvert		Oxbow Drive	0.9 km East of Amiens Road	3.7	1945 est.	50	$0	$451,000	$0	14
C-520	CSP Round Culvert		Ivan Drive	0.5 km West of Bear Creek Drive	6.6	2017	51	$100,000	$0	$0	12
B-302	Box Beams of Girders	Mumford Bridge	Brigham Road	0.6 km North of Longwoods Road	20	1956	52	$42,000	$0	$0	13
C-138	CSP Arch Culvert	Bilyea Bridge	Clarke Road	0.2 km North of Fourteen Mile Road	8	1983	52	$19,000	$0	$0	12
C-581	CSP Ellipse Culvert		Coldstream Road	0.5 km South of Lamont Drive	2.9	1975 est.	52	$0	$383,000	$0	12
C-131	Rectangular Culvert	Sleight Bridge	Adelaide Street	0.8 km North of Illderton Road	15.2	1973	53	$142,000	$0	$0	15
B-134	Rigid Frame, Vertical Legs	Risdon Bridge	Thirteen Mile Road	0.8 km E of Highbury Ave	12.1	1957	54	$0	$150,000	$0	12
C-137	Rectangular Culvert	Buddo Bridge	Thirteen Mile Road	0.2 km West of Wonderland Road	7.1	1967	54	$0	$21,000	$0	12
C-149	CSP Ellipse Culvert	Mill Lane Bridge	Mill Lane	0.8 km North of Fifteen Mile Road	11	1978	54	$0	$0	$801,000	10
C-309	Rectangular Culvert		Little Church Drive	0.5 km West of Woodhull Road	5.6	1960 est.	54	$0	$0	$0	11
B-308	Rigid Frame, Vertical Legs	Baker Bridge	Little Church Drive	0.5 km West of Westdel Bourne	10.7	1968	56	$0	$287,000	$0	9
B-505	Rigid Frame, Vertical Legs		Vanneck Road	0.2 km North of McEwen Drive	15.6	1963	56	$163,000	$0	$0	12
C-117	Rectangular Culvert	Schroeder Bridge	Prospect Hill Road	0.1 km North of Eight Mile Road	6.1	1967	56	$20,000	$0	$0	12
C-316	Rectangular Culvert		Sharon Drive	0.2 km East of Brigham Road	3	1958	56	$0	$0	$0	10
B-120	Box Beams of Girders	Moir Bridge	Nine Mile Road	1.2 km East of Adelaide Street	20.8	1979	57	$816,000	$0	$0	10

APPENDIX H.2 BRIDGES AND CULVERTS INVENTORY SUMMARY BY BCI

Site Number	Structure Type	Structure Name	Road Name	Structure Location	Total Span Length (m)	Year Built	BCI	Probable Cost of 1-5 Year Recommended Work	Probable Cost of 6-10 Year Recommended Work	Probable Cost of 11-20 Year Recommended Work	Priority Score
C-109	Rectangular Culvert	Patrick - Twelve Mile Culvert	Twelve Mile Road	1.1 km East of Wonderland Road	3	1960 est.	57	$0	$0	$0	9
C-111	Rectangular Culvert	Risdon Drain Culvert	Thirteen Mile Road	0.5 km West of Prospect Hill Road	3.2	1958	57	$59,000	$0	$0	9
C-508	CSP Arch Culvert		McEwan Drive	1.1 km West of Nairn Road	7	1980 est.	57	$0	$0	$0	9
C-540	Rectangular Culvert	Bridge No. 36	New Ontario Road	0.6 km North of Graystead Drive	3.1	1968	57	$0	$0	$0	11
C-566	CSP Arch Culvert		Quaker Lane (Coldstream)	0.65 km Northeast of Ilderton Road	2.8	1980 est.	57	$0	$324,000	$0	8
B-301	I-beam of Girders	Bridge No. 1	Carriage Road	1.6k m South of Elviage Drive	21.7	1978	59	$936,000	$0	$0	12
C-532	CSP Arch Culvert	Bridge No. 85	Oxbow Drive	0.2 km West of Vanneck Road	4.4	1970 est.	60	$0	$0	$396,000	12
C-543	CSP Arch Culvert		McEwan Drive	0.4 km West of Nairn Road	5.4	1999	60	$0	$0	$0	9
B-132	Rigid Frame, Vertical Legs	Smibert Bridge	Ilderton Road	1.2 km East of Clarke Road	15.4	1954	61	$0	$1,353,000	$0	11
C-551	Rectangular Culvert		Greystead Road	0.2 km West of Nairn Road	3.1	1939	61	$0	$430,000	$0	9
B-140	Rigid Frame, Vertical Legs	Morrow Bridge	Fourteen Mile Road	1.5 km East of Hwy #4	15.8	1970	62	$284,000	$0	$0	9
C-304	Rectangular Culvert		Sharon Drive	0.4 km East of Woodhull Road	5.7	1970	62	$0	$0	$0	12
C-562	CSP Arch Culvert		Amiens Road	0.6 km North of Sinclair Drive	4.31	1970 est.	62	$0	$0	$0	12
B-517	Rigid Frame, Vertical Legs	Bridge No. 53	Coldstream Road	0.1 km North of Ilderton Road	15.4	1974	63	$0	$334,000	$0	11
B-530	I-beam of Girders		Coldstream Road	0.6 km South of Melrose Drive	20.7	1959	63	$644,000	$0	$0	11
C-133	Rectangular Culvert	Marshall Bridge	Clarke Road	0.1 km North of Plover Mills Road	8.8	1974	63	$79,000	$0	$0	9
W-318	Retaining Wall		Harris Road	0.5 km West of Carriage Road	0	1990 est.	63	$0	$0	$0	8
B-118	Rigid Frame, Vertical Legs	Loft Bridge	Nine Mile Road	0.5 km East of Hyde Park Road	13.1	1981	64	$61,000	$0	$0	11
B-303	Rigid Frame, Vertical Legs	Faulds Bridge	Brigham Road	1.7 km South of Longwoods Road	9.2	1970	64	$0	$146,000	$0	10
B-502	Rigid Frame, Vertical Legs	County Bridge No. 116	Fernhill Drive	0.3 km West of Nairn Road	12.5	1968	64	$0	$174,000	$0	9
C-141	Rectangular Culvert	Southgate Bridge	Fourteen Mile Road	0.5 km West of Wonderland Road	6.2	1965	64	$0	$0	$0	9
C-154	Rectangular Culvert		Nine Mile Road	0.6 km West of Prospect Hill Road	5.5	1970 est.	64	$0	$0	$0	8
C-305	Rectangular Culvert	Sharon Creek Bridge	Woodhull Road	0.2 km North of Sharon Drive	7.6	1963	64	$0	$0	$0	11
C-516	Rectangular Culvert	Culvert No. 49	Hedly Drive	1.0 km West of New Ontario Road	6.4	1967	64	$0	$0	$0	10
C-549	CSP Arch Culvert		McEwen Drive	1.5 km West of Nairn Road	2.8	1980 est.	64	$0	$0	$0	9
C-555	Rectangular Culvert		McEwen Drive	0.3 km West of Coldstream Road	3.7	1980 est.	64	$0	$0	$0	9
B-535	Rigid Frame, Vertical Legs	Bridge No. 35	Old River Road	0.2 km East of Glendon Road	14.8	1978	65	$0	$109,000	$0	12
B-108	Box Beams of Girders	Ferguson Bridge	Medway Road	0.9 km East of Denfield Road	14.7	1988	66	$681,000	$0	$0	12
B-523	Rigid Frame, Vertical Legs	Bear Creek Bridge	Bear Creek Road	0.1 km South of Ivan Drive	13.9	1962	66	$30,000	$0	$0	10
B-526	Box Beams of Girders		Vanneck Road	0.9 km North of County Road 22	16.2	1974	66	$0	$813,000	$0	12
B-529	I-beam of Girders		Oxbow Drive	0.9 km West of Nairn Road	20.6	1960 est.	66	$1,288,000	$0	$0	12
B-537	I-beam of Girders	Robinson Bridge	Oxbow Drive	1.0 km West of Coldstream Road	21.5	1954	66	$0	$1,063,000	$0	12
C-148	Rectangular Culvert	Seeley Bridge	Sixteen Mile Road	0.01 km West of Denfield Road	7.6	1964	66	$0	$0	$0	9
B-512	I-beam of Girders		Amiens Road	0.3 km North of Ilderton Road	31.7	1965	67	$0	$1,498,000	$0	12
B-521	Rigid Frame, Vertical Legs	Caverhill Bridge	Ivan Drive	0.2 km East of Bear Creek Drive	13.9	1967	67	$28,000	$0	$0	10
C-119	Rectangular Culvert	McFarlane Bridge	Nine Mile Road	1.1 km East of Hwy. #4	12.4	1969	67	$67,000	$0	$0	10
B-145	Rigid Frame, Vertical Legs	Rudd Bridge	Adelaide Street	0.3 km South of Sixteen Mile Road	9.9	1987	68	$0	$0	$400,000	12
B-522	Rigid Frame, Vertical Legs	Bridge No. 66	Vanneck Road	0.5 km South of Ilderton Road	10.7	1987	68	$0	$0	$0	12
B-536	Rigid Frame, Vertical Legs		Amiens Road	0.8 km North of Gold Creek Drive	11.7	1969	68	$46,000	$0	$0	11
C-160	CSP Arch Culvert		Twelve Mile Road	1.0 km West of Hyde Park Road	3.3	1970 est.	68	$0	$0	$0	8
C-315	CSP Arch Culvert		Southdel Drive	0.6 km West of Bodkin Road	3.9	1970 est.	68	$3,000	$0	$0	9
C-509	CSP Arch Culvert		Greystead Drive	1.1 km West of Nairn Road	4.2	1980 est.	68	$0	$0	$0	9
C-569	CSP Arch Culvert		Greystead Drive	1.0 km West of Poplar Hill Road	2.3	1975 est.	68	$0	$0	$0	8
B-115	Rigid Frame, Vertical Legs	Connor Bridge (East)	Eight Mile Road	1.3 km East of Hwy. #4	25.8	1980	69	$34,000	$0	$0	11
B-122	I-beam of Girders	Needham Bridge	Ten Mile Road	1.3 km East of Adelaide Street	20.7	1968	69	$0	$756,000	$0	9
C-506	Rectangular Culvert	Bridge No. 5	McEwan Drive	0.9 km East of Bear Creek Drive	9.1	1980 est.	69	$64,000	$0	$0	9
B-144	Rigid Frame, Vertical Legs	Stewart Bridge	Sixteen Mile Road	0.2 km East of Adelaide Street	9.5	1967	70	$28,000	$0	$0	6
B-314	I-beam or Girders	Giles Bridge	Westminster Drive	1km SW of Carriage Road	114.8	1970	70	$335,000	$0	$0	9
B-519	I-beam of Girders	Wark Bridge	Ilderton Road	0.2 km East of Amiens Road	32.9	1965	70	$0	$142,000	$0	10
B-524	Rigid Frame, Vertical Legs	Bridge No. 82	Gold Creek Drive	0.9 km East of Komoka Road	9.1	1971	70	$0	$0	$0	7
B-531	Rigid Frame, Vertical Legs	Bridge No. 31	Coldstream Road	0.5 km South of Oxbow Drive	15.3	1986	70	$0	$0	$0	10

17 GLOSSARY OF TERMS

Unless otherwise specified, the following definitions align with those set out in **Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure**, under the *Infrastructure for Jobs and Prosperity Act, 2015*, and in **ISO 55000:2 014 – Asset Management: Overview, Principles, and Terminology**.

Asset – a tangible item, thing, or entity that has potential or actual value to a municipality.

Asset Management (AM) – coordinated activities to realize value from all types of assets including but not limited to activities involving the asset's life cycle from planning and acquisition, to operational and maintenance, to rehabilitation and renewal, and to replacement and disposal. AM is a holistic approach balancing costs, risks, opportunities, and benefits to achieve the lowest total lifecycle cost for each asset. AM give us evidence to "do the right thing to the right asset at the right time."

Asset Management Plan (AMP) – a document that specifies the activities, resources and timescale requirements of individual assets, or group of assets to achieve the Municipality's asset management objectives. O. Reg. 588/17 required all core municipal assets to be documented by July 2023, including but not limited to attributes, levels of service, performance, categories, replacement costs, conditional assessment protocols, and lifecycle activities. By July 2024, the plan must include detailed information on current levels of service for all infrastructure assets including non-core assets. By July 1, 2025, municipalities must build upon the 2024 requirements by including information on proposed levels of service and determining the lifecycle activities needed to achieve these proposed levels of service.

Bridge Condition Index (BCI) – a standardized rating (typically 0–100) used to assess the condition of bridge components based on inspections. It helps prioritize maintenance and renewal investments.

Capital Plan – a long-term plan for capital investments and asset renewal.

Citywide – is a system developed by PSD Citywide, a comprehensive Enterprise Asset Management System (EAMS) and Computerized Maintenance Management Software (CMMS) platform tailored specifically for municipalities and public sector organization.

Closed-Circuit Television (CCTV) – in asset management, CCTF refers to the use of camera systems to inspect the interior condition of underground infrastructure, such as sewer and stormwater pipes. Identifies structural defects, blockages, or infiltration. Supports condition assessment and prioritization of repairs or replacements. Provided visual documentation for regulatory compliance and capital planning.

Computerized Maintenance Management System (CMMS) – software designed to centralize maintenance information and streamline maintenance operations. It maintains the Municipality's maintenance activities, helping to manage work orders, track assets, schedule preventative maintenance, and monitor asset inventory.

Enterprise Asset Management System (EAMS) – integrates software, system, and services to manage and maintain the Municipality's assets throughout their entire lifecycle.

Geographic Information System (GIS) – mapping software used to track asset locations.

Infrastructure – all capital assets required to create and maintain a safe, secure, and sustainable community. Municipal Infrastructure includes but is not limited to:

- transportation infrastructure (e.g., roads, bridges, public transit)
- utilities and environmental infrastructure (e.g., water delivery systems, sewage treatment systems, recycling systems, landfills)
- fleet and equipment resources
- infrastructure enabling the provision of protective services (e.g., police, fire, flood mitigation)
- parks, recreation, and cultural facilities (e.g., arenas, playgrounds, pools, trails, libraries, community and art centres)
- electronic infrastructure (e.g., broadband networks, information systems)
- municipal civic institutions (e.g., city/municipality hall, administration buildings)

Infrastructure Deficit – the gap between available funding and the amount needed to maintain, renew, and replace infrastructure assets at required service levels. It reflects underinvestment over time.

Internet of Things (IoT) – the use of connected sensors and devices embedded in infrastructure (e.g., water meters, vehicles) to collect real-time data. This supports condition monitoring, predictive maintenance, and data-driven decision-making.

ISO 55000 Series – a set of international standards developed by the International Organization for Standardization (ISO) that provides a framework for effective asset management. It is widely recognized across industries and governments for promoting best practices in managing physical and intangible assets. For municipalities like Middlesex Centre, aligning with ISO 55000 helps: *improve decision-making* by linking asset performance to service delivery and financial planning; *enhance accountability and transparency* through structured governance and documentation; *optimize lifecycle costs* by balancing performance, risk, and cost over time; *support regulatory compliance* and demonstrate due diligence; and *enable continuous improvement* through performance monitoring and feedback loops.

- ***ISO 55000: Overview, Principles and Terminology –*** introduces the concepts and vocabulary of asset management and outlines the benefits of a structured approach.
- ***ISO 55001: Management Systems Requirements –*** specifies the requirements for establishing, implementing, maintaining, and improving and asset management system. It is the standard organizations that can be certified against.
- ***ISO 55002: Guidelines for the Application of ISO 55001 –*** provides guidance on how to apply ISO 55001, including practical examples and interpretations.

Level of Service (LOS) – parameters, or combination of parameters which reflect social, political, environmental, and economic outcomes the municipality delivers, including but not limited to safety, customer satisfaction, quality, quantity, capacity, reliability, responsiveness, environmental acceptability, cost, and availability.

Lifecycle – stages involved in the management of assets from planning, acquisition, operation, maintenance, and decommission or disposal.

Lifecycle Costing – estimating the total cost of ownership over an asset's life.

Municipal Assets – tangible assets, including green infrastructure assets, directly owned by the Municipality or included on the consolidated financial statements of the Municipality.

Oil and Grit Separator (OGS) – a stormwater treatment device designed to remove oil, grease, sediment, and debris from runoff before it enters the storm sewer system or natural water bodies. Helps municipalities meet environmental regulations. Reduces maintenance costs by preventing clogging and contamination in downstream infrastructure. Often tracked in asset inventories for inspection, maintenance, and lifecycle planning.

Operations and Maintenance (O&M) – ongoing activities to keep infrastructure assets functioning as intended:

- **Operations:** Day-to-day service delivery (e.g. running a facility)
- **Maintenance:** Routine and preventative work to preserve asset condition.

Pavement Condition Index (PCI) – a numerical rating (0–100) that reflects the condition of pavement based on visual inspection. It guides maintenance and rehabilitation planning.

Reinvestment Ratio – is a performance indicator that measures the level of reinvestment in infrastructure. A low ratio may indicate underinvestment, while higher ratio suggest proactive asset renewal. It is calculated as:

$$Reinvestment\ Ratio = \frac{Annual\ Minimum\ Investment\ Need}{Total\ Replacement\ Cost}$$

Risk Management – identifying and mitigating risks that could affect performance or service delivery.

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