Public Information Centre – October 6, 2025

Stormwater Management Master Plan – Parkhill

Acknowledgement of Ancestral Lands

We acknowledge that this land on which we are gathered today is part of the ancestral land of the Attawandaron, Anishinabeg, Haudenosaunee, and Lunaapeewak peoples. It is through the connection with the spirit of the land, water and air that we recognize their unique cultures, traditions, and values. Together as treaty people, we have a shared responsibility to act with respect for the environment that sustains all life, protecting the future for those generations to come.

Language Pronunciations:
Attawandaron (Add-a-won-da-run),
Anishinabeg (Ah-nish-in-a-beg)
Haudenosaunee (Hoden-oh-show-nee)
Lunaapeewak (Len-ahpay-wuk)

Public Information Centre

Purpose of the PIC

- Share information on the Parkhill Stormwater Management Master Plan process
- Present the findings of the existing conditions review and preliminary analysis
- Gather input from the community to help shape recommended solutions

What Will Be Presented

- Study objectives and scope
- Existing infrastructure conditions and challenges
- Hydrologic and hydraulic assessment results
- Preliminary strategies for stormwater management and infrastructure renewal
- Next steps in the Master Plan process

How You Can Participate

- Review the display materials and ask questions to the project team
- Provide feedback through comment forms and online submissions
- Share local knowledge of flooding, drainage, or infrastructure issues
- Stay engaged through future PICs and project updates

Introduction

Why do we need a Stormwater Management Master Plan?

The community of Parkhill faces significant stormwater management challenges due to limited existing infrastructure, ongoing urban intensification, and increasingly severe rainfall events. These factors contribute to localized flooding, erosion, and system capacity issues. As the community continues to grow, the need for effective stormwater solutions becomes increasingly urgent.

Corner of Main Street and McLeod St
February 2023

Introduction

Problem & Opportunity Statement

- Address deficiencies in the existing stormwater system and infrastructure gaps
- Provide solutions to reduce flooding risks
- Support future development through sustainable, long-term drainage strategies
- Verify compliance with municipal, provincial, and conservation authority requirements

The SWMMP will Address the Following:

- Evaluate existing stormwater infrastructure performance and identify deficiencies
- Develop strategies to improve capacity, reduce flood risk, and enhance system resilience
- Incorporate updated hydrologic and hydraulic modeling to reflect current and future conditions
- Provide a framework for cost-effective, sustainable infrastructure replacement for the Parkhill community

Public Information Centre Objectives

Present Findings of Existing Stormwater Conditions

Present Alternative Solutions to address System Deficiencies

Gather Feedback and Discuss Next Steps in the Master Plan Process

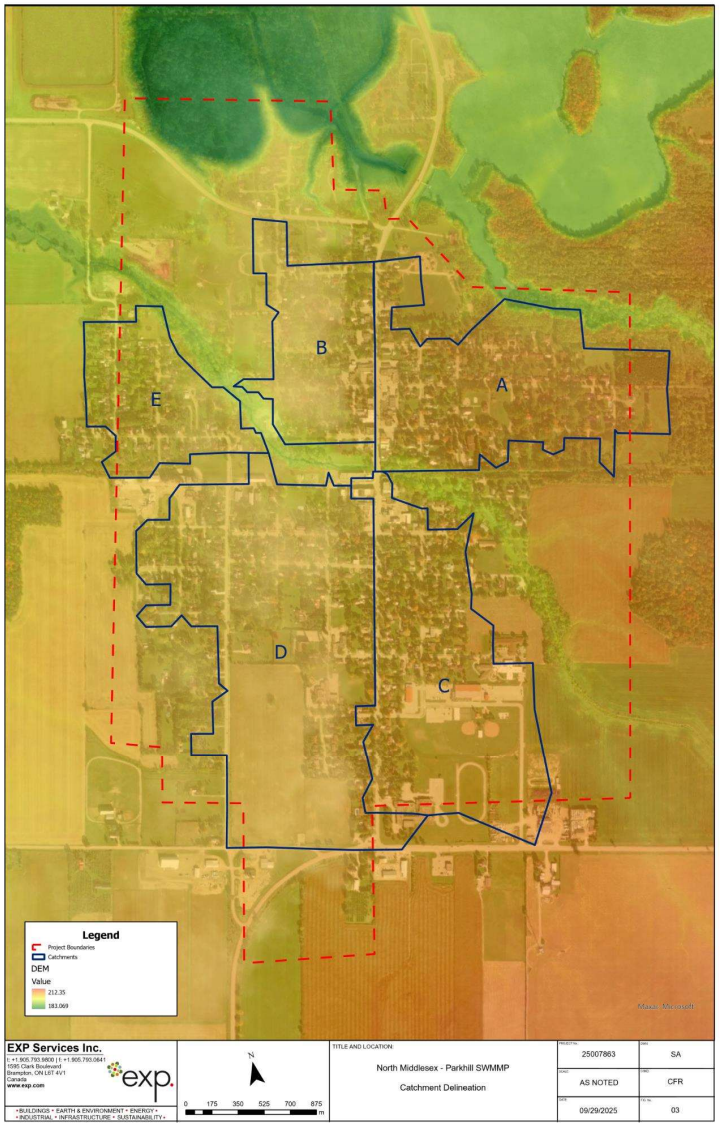
Glossary for the Public:

- **Stormwater Management Master Plan (SWMMP):** A long-term plan that guides how a community will handle rainwater to reduce flooding, protect property, and improve the environment.
- **Rational Method**: An engineering method used to estimate how much rainwater becomes runoff during a storm.
- **Catchment**: An area of land where rainwater drains into the same sewer system or watercourse.
- **Drainage Area**: A smaller section within a catchment that directs water into a specific pipe or manhole.
- **Runoff Coefficient**: A number that shows how much rainfall soaks into the ground vs. how much runs off into sewers.
- **Time of Concentration (Tc):** The time it takes for rainwater from the farthest point in a catchment to reach the sewer system.
- **Manning's Equation**: A formula engineers use to calculate how much water a pipe can carry, based on its size and slope.

Study Area

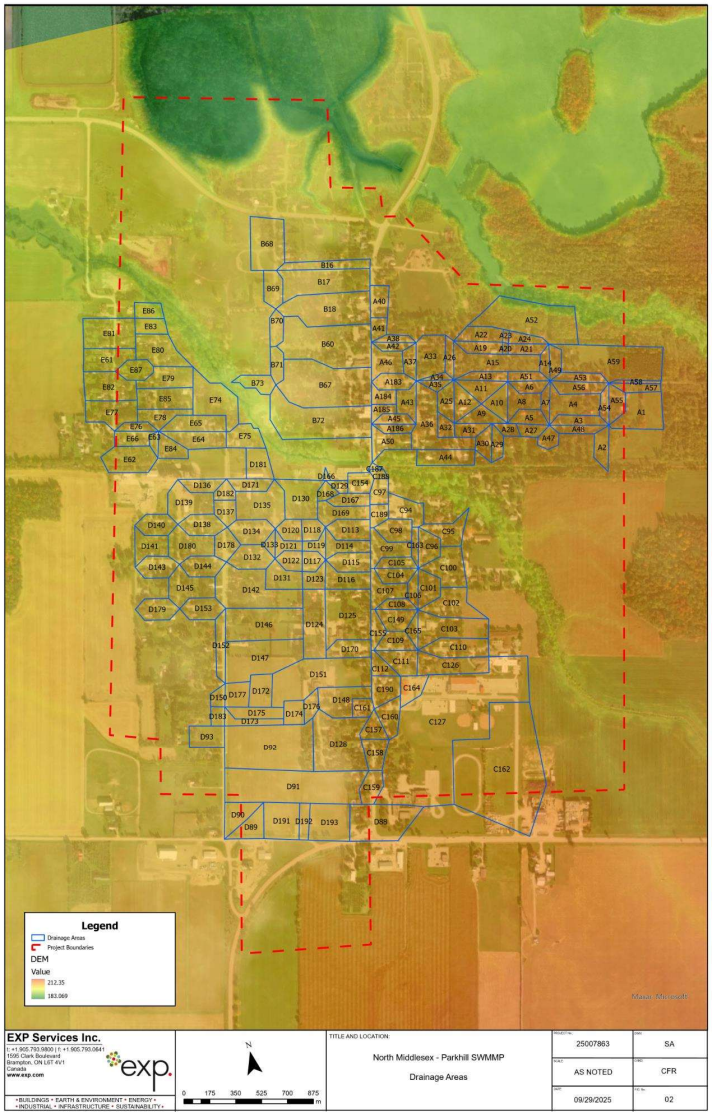
The Master Plan study area includes the entire urban boundary of Parkhill, encompassing residential, institutional, and commercial lands supported by a storm sewer network and outlet drains. For the purposes of hydrologic and hydraulic assessment, the drainage system was divided into five major catchments, each representing a dominant portion of the urban area:

- Catchment A: Northeast (Covers the Hastings Street and Eagle Street corridors, extending through Anna Street, George Street, Elk Street, Pearl Street, and portions of Main Street and William Street)
- Catchment B: Northwest (Serves the Bethany Street and Station Street areas, with drainage connections along William Street, Emily Street, Broad Street, and parts of Main Street)
- Catchment C: Southeast (Includes Main Street and surrounding streets such as Ellen Street, King Street, Catherine Street, McLeod Street, Ardross Street, Roskeen Street, Leonard Avenue, and the Elginfield Road corridor)
- Catchment D: Southwest (Encompasses the Ann Street and King Street neighborhoods, extending across Broadway Street, John Street, Albert Street, Elliot Street, West Park Drive, Duke Street, Centre Street, Prince Street, Michelle Avenue, and connecting to McLeod Street)
- Catchment E: West (Covers Union Street and the western residential blocks including Mill Street, Richmond Street, and Victoria Street)



Drainage Areas

The storm sewer system within Parkhill was divided into a series of individual drainage areas, each representing the contributing flow to a pipe segment or manhole. These areas were aggregated into five major catchments (A through E). The delineation was completed using GIS topographic data, DEM elevation information, and municipal mapping to verify consistency with overland flow paths and sewer connectivity. This framework provides the basis for the hydrologic and hydraulic assessment of existing system capacity.



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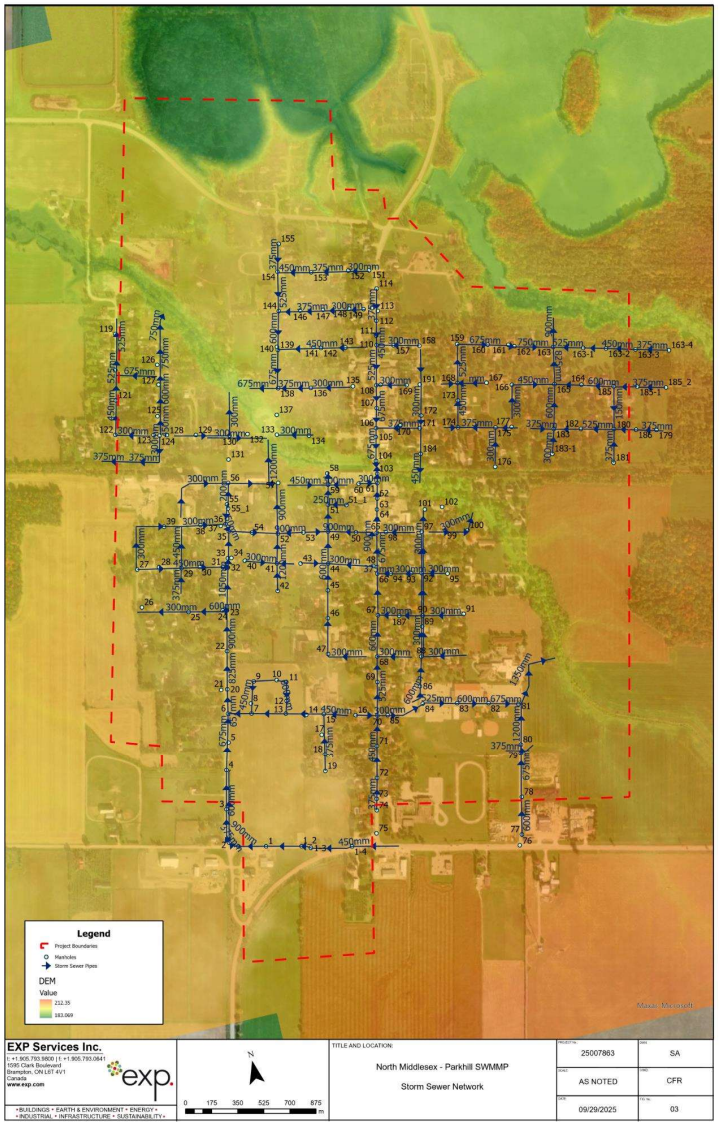
Channel Flooding Analysis Process

The main watercourse within Parkhill is the Cameron-Gilles Municipal Drain. This watercourse and its operation is managed by the Ausable Bayfield Conservation Authority, and therefore flood risk cannot be mitigated solely by improvements to the Municipal Drain.

Hydraulic Assessment

The hydraulic assessment of the Parkhill storm sewer network was completed using a standardized design sheet to evaluate the capacity and performance of existing infrastructure. Flow rates, velocities, and hydraulic gradients were calculated using Manning's equation, and results were compared against municipal design standards. The analysis highlighted that several pipe segments, particularly within the core areas of the network, are undersized under current conditions. A smaller number of segments demonstrated adequate capacity, but overall, the assessment identified widespread limitations that will require targeted upgrades to support future growth and mitigate flood risk.



North Middlesex

Hydraulic Assessment

The hydraulic assessment of the Parkhill storm sewer system was carried out using standardized design methods to evaluate performance. Flow rates, velocities, and pipe capacities were calculated and compared to municipal design standards. The results indicate that while some pipes provide sufficient conveyance, a significant portion of the network is undersized, with capacity ratios above acceptable limits. This highlights system deficiencies that may contribute to localized flooding risks and points to priority areas for future upgrades and coordinated infrastructure renewal.

Catchment	Capacity Ratio	Pipes Over Capacity (%)
Catchment A	0.1-4.7	52
Catchment B	0.3-3.4	44
Catchment C	0.1-4.7	64
Catchment D	0.1-4.5	70
Catchment E	0.1-2.7	83

Adjacent Infrastructure

A review of installation years for storm sewers, sanitary sewers, and watermains across the five catchments shows that most of the underground infrastructure is considered old (>50 years). Storm sewers were generally installed between 1940 and 1987, with newer segments concentrated in Catchment E.

Sanitary sewers were typically introduced circa 1980, meaning the entire sanitary system is likely in need of repair.

Watermains are also generally considered old, with most dating from the 1960s to early 2000s.

This overall distribution indicates that much of the network is at or beyond its expected service life, highlighting the importance of coordinated renewal strategies.

Adjacent Infrastructure

Pipes	Catchment	Installation Year	Aging Condition		
			% Old	% Mid	% New
Storm Sewer	Catchment A	1950-2006	71	11	18
	Catchment B	1950	100	0	0
	Catchment C	1940-2006	51	10	39
	Catchment D	1950-2018	41	10	49
	Catchment E	1899-2008	67	33	0
Sanitary	Catchment A	1980	0	100	0
	Catchment B	1980	0	100	0
	Catchment C	1980-2010	0	78	22
	Catchment D	1980-2010	0	79	21
	Catchment E	1980	0	100	0
Watermain	Catchment A	1950-1987	68	18	14
	Catchment B	1960-2002	94	0	6
	Catchment C	1960-2002	38	18	44
	Catchment D	1954-2010	37	19	44
	Catchment E	1960-2013	39	50	11

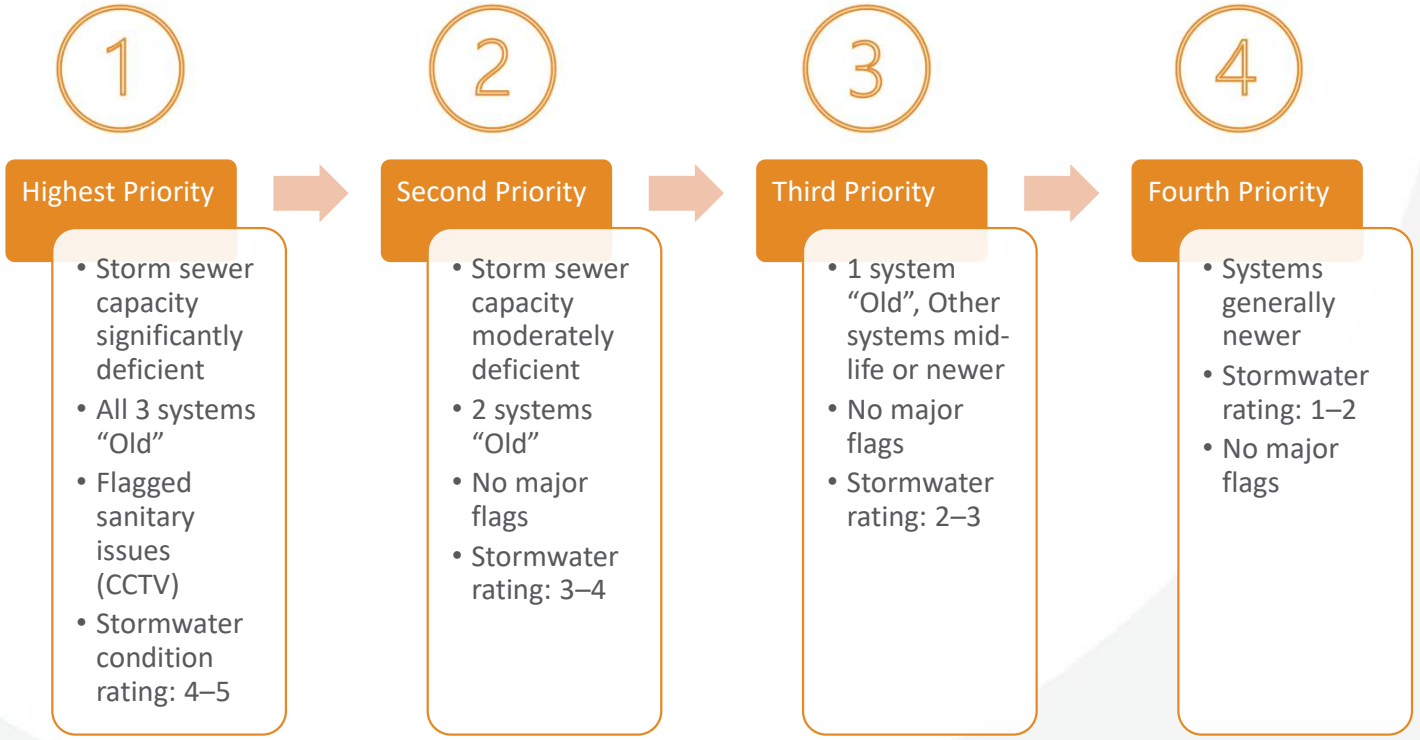
Prioritization Schedule

A prioritization schedule for replacing stormwater infrastructure focuses on capacity corrections to alleviate flooding but should also consider age and remaining service life of adjacent infrastructure.

Older systems are more vulnerable to failure, leading to higher maintenance costs and service disruptions. By identifying corridors where multiple systems have reached the end of their life, municipalities can coordinate replacements to reduce emergency repairs and avoid repeated excavation.

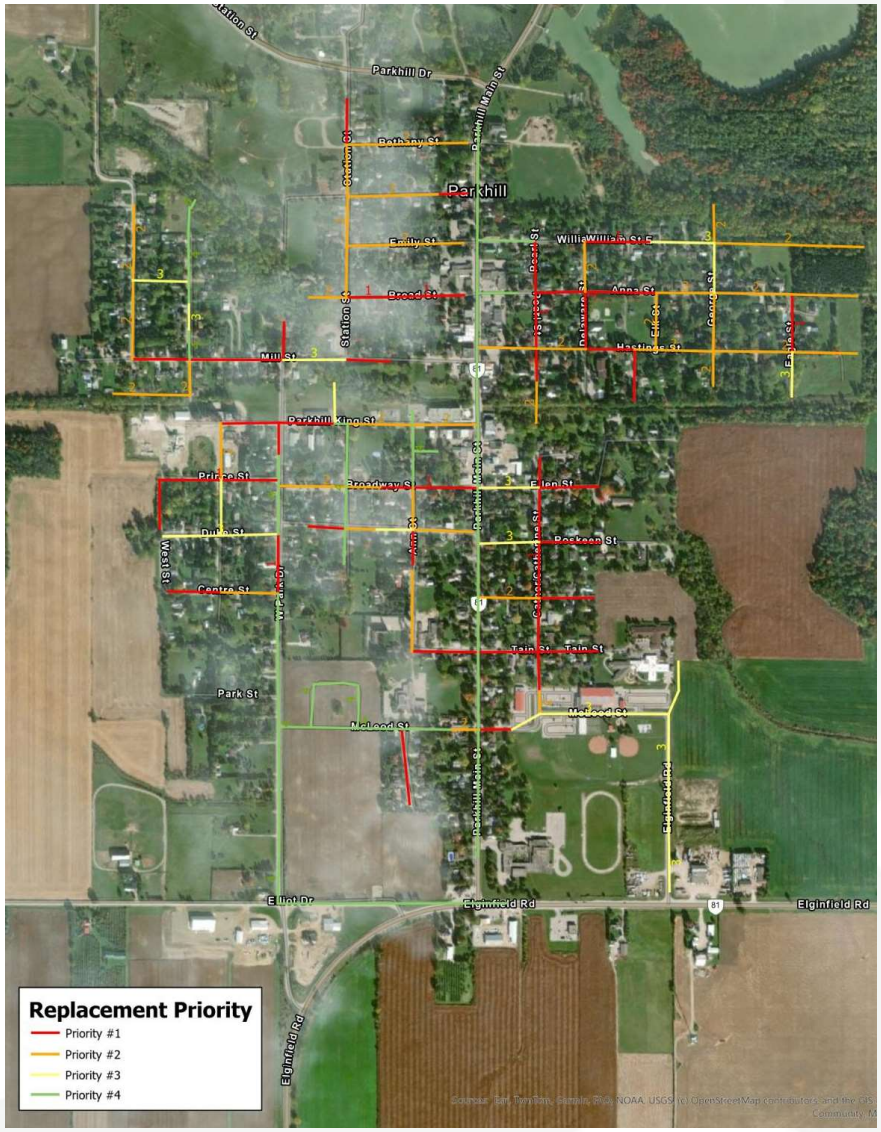
This approach supports proactive renewal, bundled project delivery, and long-term system reliability.

Prioritization Schedule



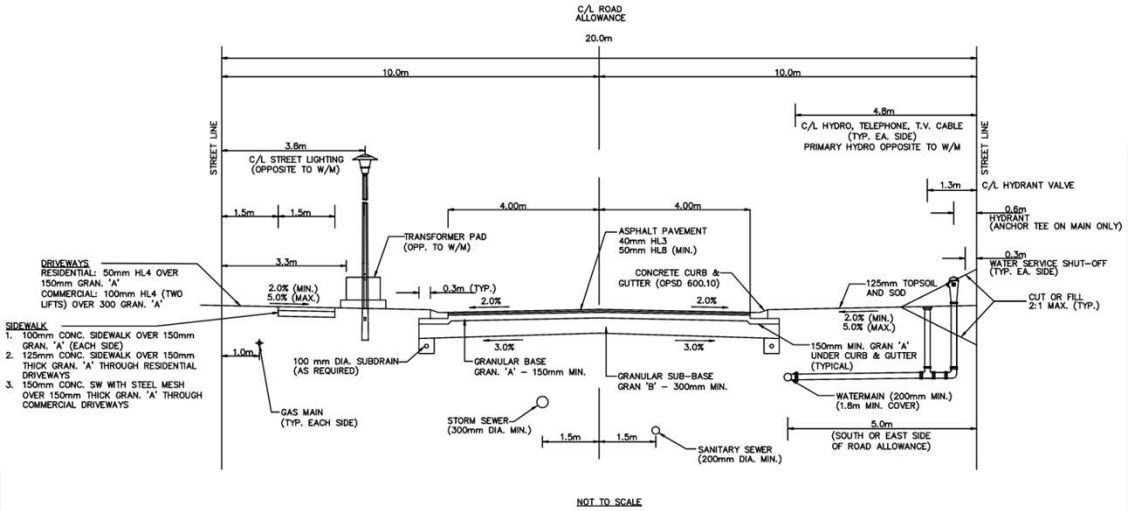
Street Replacement Priorities

1 (Highest Priority)
2 (Second Priority)
3 (Third Priority)
4 (Lowest Priority)



Conclusion

- Assessment of existing system performance completed using municipal guidelines.
- Undersized infrastructure was identified for each catchment.
- Proposed pipe sizing completed following the same approach.
- Adjacent infrastructure age was cross-referenced to determine most might-risk areas.



References

- Municipality of North Middlesex. Infrastructure Design Guidelines and Construction Standards (2025)
- Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA, 2022)
- Ontario Ministry of Transportation Highway Drainage Design Standards (HDDS, 2008)
- Ministry of the Environment Stormwater Management Planning and Design Manual (SWMPDM, 2003)

Next Steps

Following the Public Information Centre, we will:

- Review public feedback to better understand the priorities of Parkhill residents and stakeholders.
- Refine the identified stormwater system needs, issues, and opportunities based on input received.
- Finalize recommended solutions for each servicing area within the Parkhill urban boundary.
- Present the Master Plan Report and recommendations to North Middlesex Council.

Next Steps

November 19, 2025 — Council Review (Parkhill Council presentation date)

December 2025 — Finalizing the Master Plan

Beginning in 2026 — Implementation Phases (To be initiated in 2026, based on Council direction, budget, and priorities)

Next Steps

Please visit the community website (www.northmiddlesex.on.ca) for study updates and more information.

Please forward any comments prior to October 27, 2025, to either of the contacts below.

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