THE MUNICIPALITY OF
LAMBTON SHORES

Council Presentation – October 1, 2024

West Bosanquet Stormwater Management Master Plan

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Acknowledgement of Ancestral Lands

We acknowledge that this land on which we are gathered today is part of the ancestral land of the Chippewa, Odawa, and Potawatomi peoples, referred to collectively as the Anishinaabeg. It is through the connection of the Anishinaabeg 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:
Anishinaabeg (ah-nish-i-nah-beg)
Chippewa (chip-up-wah)
Odawa (o-dah-wah)
Potawatomi (pot-uh-wah-tuh-mee)

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Introduction

Why do we need a Stormwater Management Master Plan?

The community of West Bosanquet faces critical stormwater management challenges due to its proximity to Lake Huron and surrounding physiology. The existing drainage system is inadequate, resulting in localized flooding, erosion, and potential water quality degradation. As the community continues to grow and land use patterns evolve, the demand for effective stormwater solutions becomes increasingly urgent.

Problem & Opportunity Statement

- Advise residents and municipal partners of stormwater issues within the study area.
- Provide effective solutions to resolve the existing stormwater infrastructure gaps.
- Accommodate for future development in the area.

Corner of Marilyn Street and Cedarview Drive August 2023

The SMP will Address the Following:

- Scope of project will focus on communities, with additional context related to larger flood potential and flow regime related to municipal drains.
- Leverage findings of broader reports from related studies and other agency recommendations on flood management and risk reduction.
- Develop technical analysis approach to assess flood risk based on existing information.

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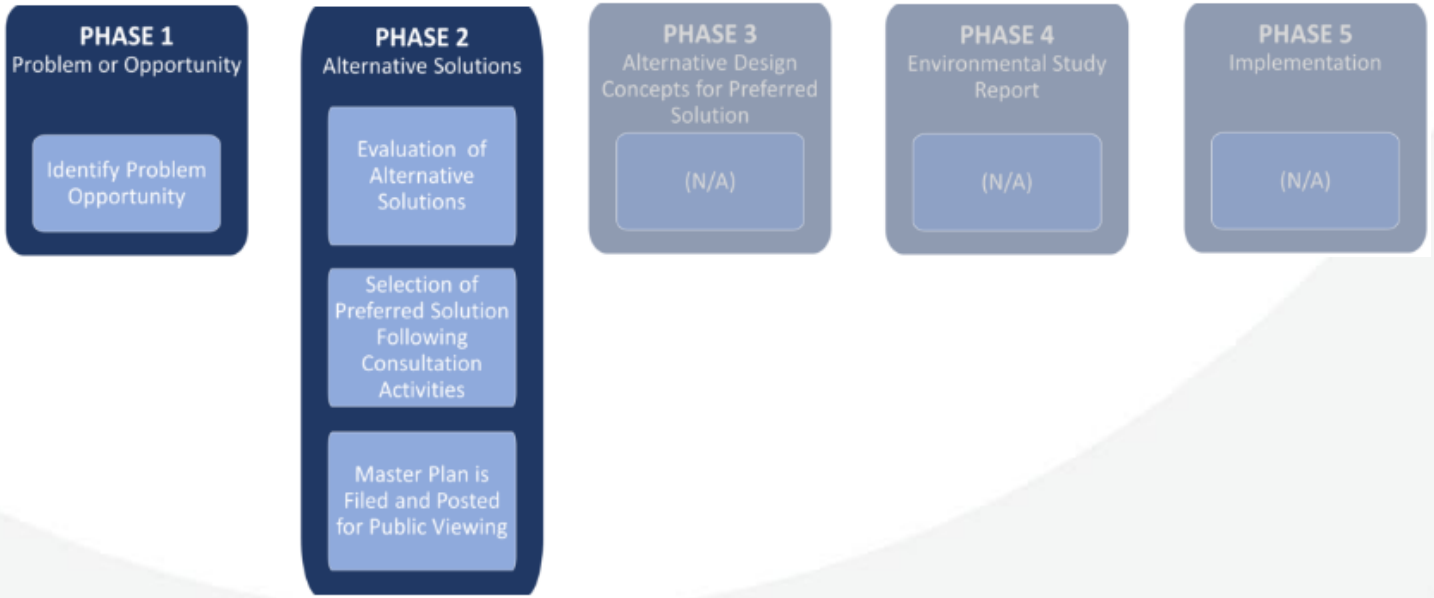
The EA Process

The Environmental Assessment (EA) Master Plan Process:

This study is being undertaken in accordance with the Master Planning Process, as outlined in the Municipal Class Environmental Assessment (Class EA) (February 2024). It will follow Approach #2 with the intent to select Schedule B projects identified within the Master Plan as well as provide the basis for future Schedule C projects. **The Master Plan will address Phase 1 and Phase 2 of the Municipal Class EA**.

The Master Plan will include Schedule B project matters related to culverts replacement, ditches restoration, ponds cleaning and new ditches along dedicated easements. More significant projects (Schedule C) identified through this process may require additional phases through the Municipal Class EA process (Phase 3, 4).

The Class EA defines master plans as long-range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. These plans examine an infrastructure system or group of related projects to outline a framework for planning for subsequent projects and/or developments.



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Public Information Centre Objectives

Present Stormwater Modelling Results/Existing Conditions

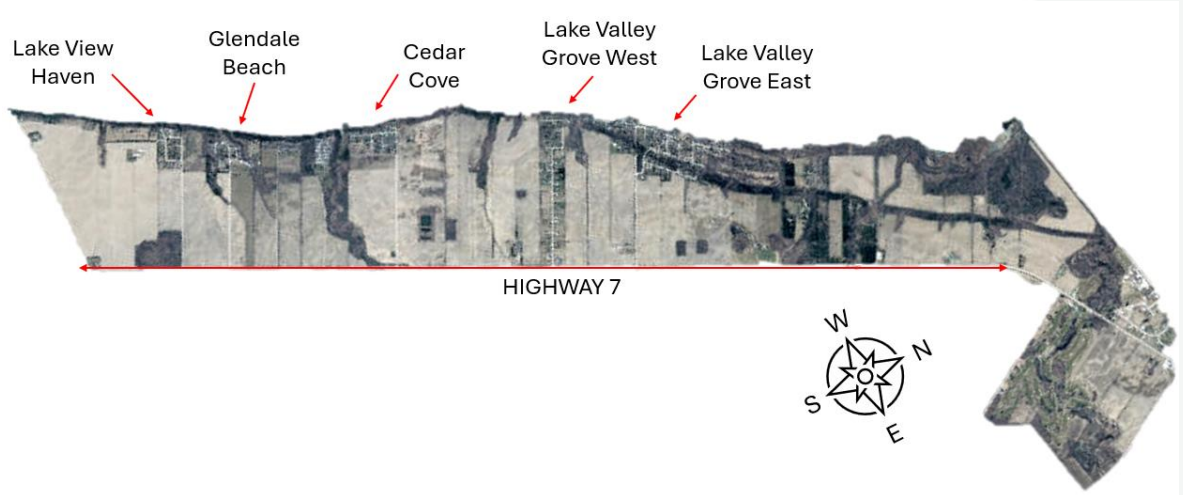
Present Alternative Solutions for Stormwater Servicing Areas/Projects

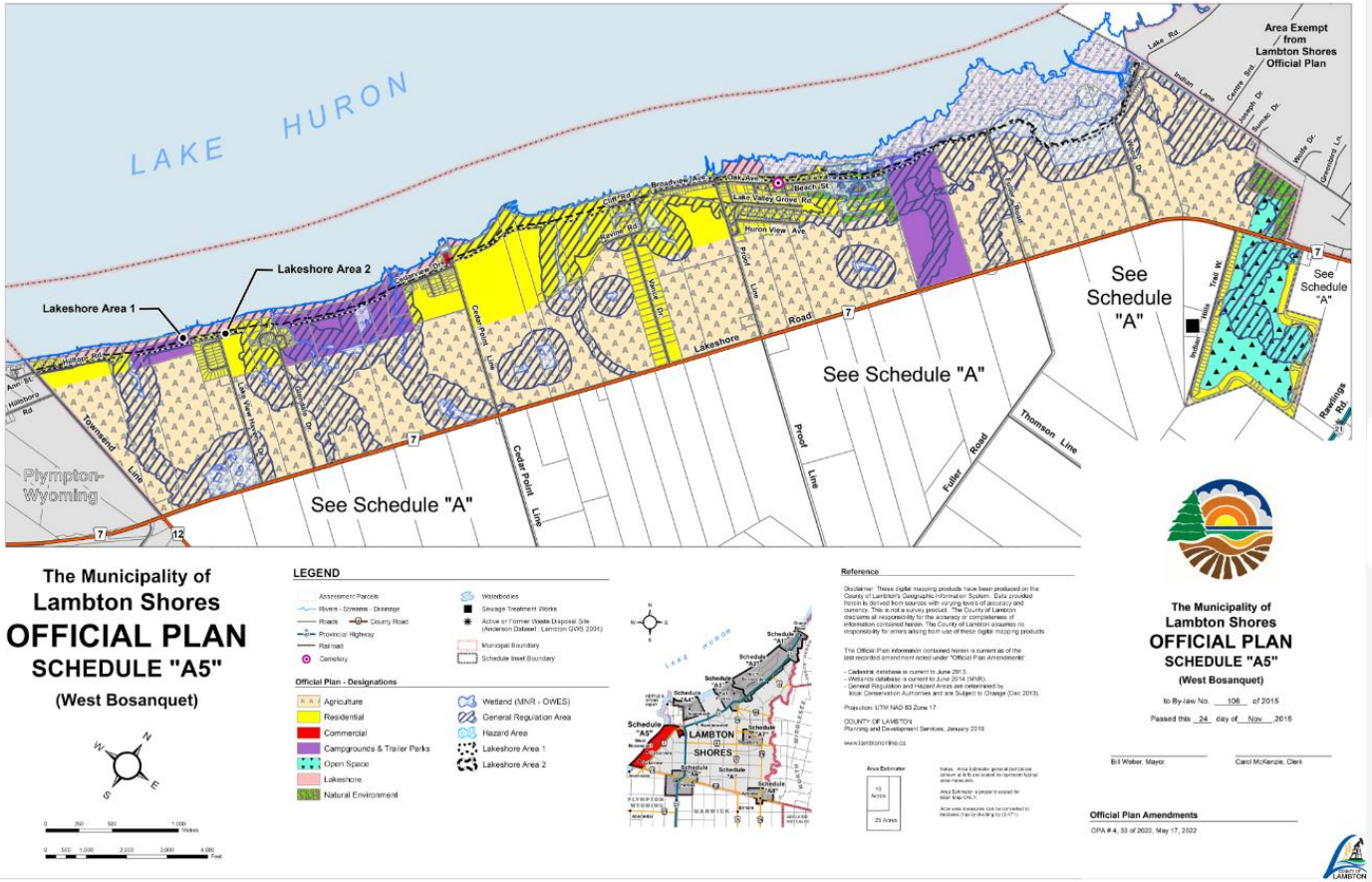
Gather Feedback/Next Steps in Master Plan EA Process

Study Area

The Master Plan is focused on the lakeshore area of West Bosanquet. West Bosanquet within the study area is predominately agricultural with pockets of residential communities including:

- Lake View Haven;
- Glendale Beach;
- Cedar Cove;
- Lake Valley Grove West; and
- Lake Valley Grove East.





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Analysis Areas

Lake View Haven

Glendale Beach

Cedar Cove

Lake Valley Grove East & West

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Terminology

MECP – Ministry of Environment, Conservation, and Parks plays a crucial role in safeguarding the environment, including air quality, land, and water conservation, climate change action coordination, protecting species and habitats, and parks/reserves.

SCRCA – St. Clair Region Conservation Authority was established in 1961 and plays a crucial role in environmental stewardship, flood risk reduction, and land conservation.

ABCA – Ausable Bayfield Conservation Authority was established in 1946 and plays a crucial role in environmental stewardship, flood risk reduction, and land conservation.

Master Plan – A long-term plan to identify issues and integrate solutions for existing problem areas and future development.

EA – Environmental Assessment is the process to identify adverse impacts of a project and selection of remedial approaches to remedy those impacts.

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Terminology

LID – Low Impact Development is an approach used to manage stormwater runoff as part of green infrastructure. It utilizes on-site, small-scale natural features that mimic pre-development watershed conditions.

SWM – Stormwater Management refers to the way in which runoff from rainwater or melted snow is controlled and treated. It involves managing the flow of water to prevent flooding, improve water quality, and minimize environmental impact.

Municipal Drain – A municipal drain is a system to move water. It is created pursuant to a bylaw passed by the local municipality. The municipality is responsible for the construction of the drainage system and future maintenance and repair. Costs may be recovered from the property owners in the watershed of the drain.

O&M - Operation and Maintenance is the process outlined to ensure the long-term effectiveness of stormwater management infrastructure.

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Flood Management – Shared Responsibility

Lake Flooding:	Urban Flooding:	Private Property Flooding:
• Higher lake levels and wave action cause erosion of lakefront properties.	• Rainfall exceeds system capacity, leading to surface flooding on private property.	• Runoff from roofs and lawns stagnates due to poor grading or inadequate public drainage.

Specific Concerns:

- Riverine Flooding: Minimal risk due to grade separation from developed areas in West Bosanquet.
- Private Flooding: Landowners manage lot level stormwater individually as per their needs.

Challenges:

- Increased Rainfall: More frequent and intense rainfall strains existing stormwater infrastructure.
- Causes of Urban Flooding: Identified through drainage assessment.
- Private Property Flooding Causes:
  - ⑩Clogged private drainage systems.
  - ⑩Deficient or damaged private drain systems.
  - ⑩Low-lying areas with poor drainage collecting water.

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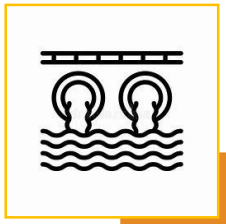
Flood Management – Shared Responsibility

Private Drainage Solutions Vs. Public Drainage Solutions:

Private Drainage Solutions

- **Importance:** Critical for flood risk management and property protection.
- **Responsibility:** Property owners maintain and improve private drainage systems.
- **Custom Solutions:** Tailored to individual property needs.



Public Drainage Solutions

- **Role**: Enhance public drainage to reduce strain on private systems.
- **Complementary Measure**: Does not eliminate surface water ponding entirely.
- **Importance of Private Solutions**: Essential alongside public upgrades.

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Channel Flooding Analysis Process

Watercourses within the residential/developed areas of West Bosanquet did not have an impact on flooding of private/public property. Over time, watercourses have cut deep gullies into the bluff that provide significant grade separation from developed lands.

There are four Lake Huron Community Action Areas within the West Bosanquet Community:

- Shashawandah;
- James, Hodgson & Beth Watercourses;
- Woods Creek Watercourse; and,
- Anderson, Elliot & Coultis Watercourses.

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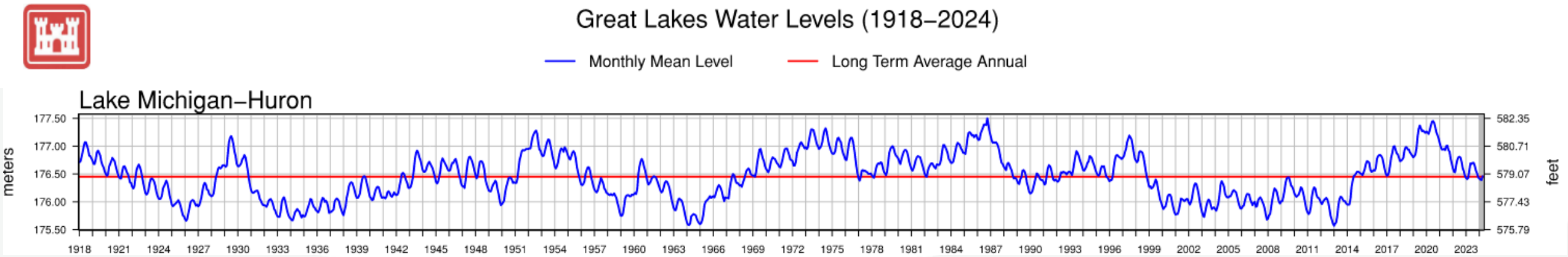
Lake Flooding Analysis Process

- Backwater impacts form Lake Huron are not a main contributor to flooding of private property within West Bosanquet.
- Lake levels were compared to the waterfront properties which are typically much higher than the long-term average water level.



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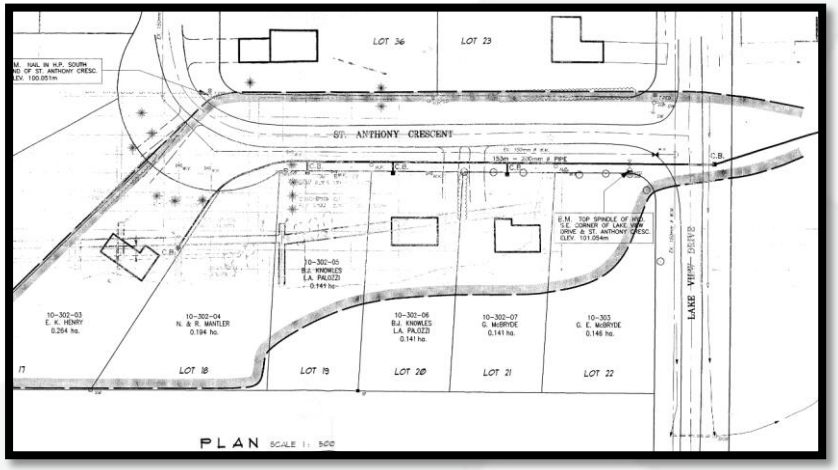
Analysis in Areas with No Lakes or Rivers Process

Review of Deficient Private Drainage Systems

All comments received during the consultation phase were compiled and organized to show key problem areas and common issues.

Incorporation of Existing Infrastructure

Approximate elevations, crossing culverts, municipal drains, and storm sewers were included to assess the effectiveness of existing drainage infrastructure and compare it against infrastructure design standards.



Existing Conditions Modelling

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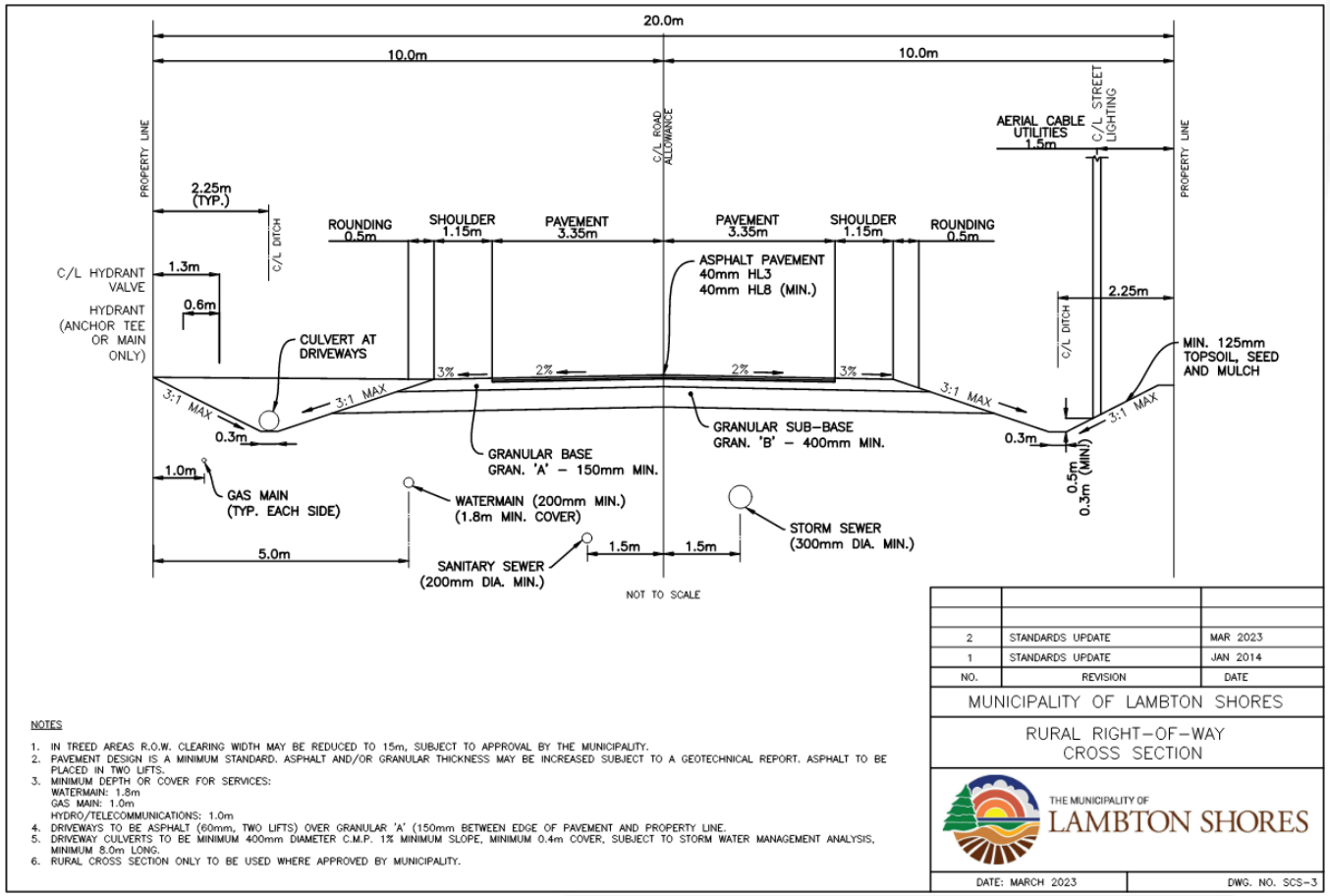
Alternative Approaches

1. Do Nothing (Existing Conditions)
2. Roadside Ditches
   - Sized for the 5-year and up to 100-year event.
3. Storm Sewers
   - Sized for the 5-year event.
   - Private connection stubs for sump pumps provided at lot line.



Alternative 2 – Ditch Conveyance Modelling

Alternative 3 – Sewer Conveyance Modelling

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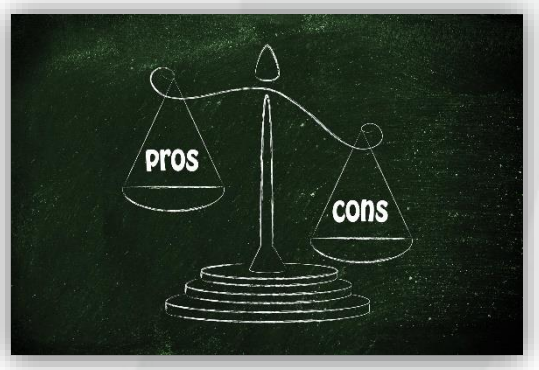
Proposed Modelling & Analysis, Alternative Selection

Each alternative (do-nothing, storm sewers, and open roadside ditches) was evaluated against criteria and given a ranking to determine the most advantageous approach based on specific evaluation criteria:

- Socio-Economic Environment;
- Cultural Environment;
- Natural Environment;
- Technical; and,
- Cost.



Alternative	Pros	Cons
Do Nothing	• No cost and implemented immediately.	• Private drainage not improved. • Public drainage not improved.
Roadside Ditches	• Easily implemented with little change to existing infrastructure. • Private landowners can connect easily. • Landowners can maintain. • Also provides a major overland flow route.	• Could potentially lead to standing water in ditches if not graded correctly.
Storm Sewers	• Runoff is taken underground and away from the ground surface.	• Greater cost to implement. • Additional maintenance considerations. • Challenging for landowners to access. • Will still require ditches for major overland flow route.

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Alternative Selection Process

Alternative	Addresses Public Drainage Concerns	Addresses Private Drainage Concerns	Cost of Implementation	Difficulty of Construction
Do Nothing				
Roadside Ditches				
Storm Sewers				

 – Most Positive

 – Neutral/Average

 – Most Prohibitive

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Opinion of Probable Cost – Lake View Haven

The following tables provide a detailed cost estimation for the preferred public drainage system across different communities. These estimates were developed in 2024, considering current pricing and potential variations in scope, design, and market conditions.

Community: Lake View Haven					
Project: Lake View Haven and Saint Anthony Crescent					
Item #	**Description**	**QTY.**	**UM**	**Unit Price[1]**	**Total Price**
PRE	Mobilization/Demobilization	1	LS	$23,000	$23,000
1	Lake View Haven – Roadside Ditch – 576m	1600	m^3	$20	$32,000
2	Lake View Haven – Topsoil & Sod – 576m	3341	m^2	$12	$40,100
3	450mm Culvert Minimum (8m)	40	m	$1,300	$52,000
4	375mm Culvert Replacement for Driveways (6m)	180	m	$1,150	$207,000
5	Erosion & Sediment Control – Rip-Rap and Geotextile (Lake View Haven-North (Lake View Haven-North Outlet)	30	m^2	$100	$3,000
6	Outlet	1	ea	$50,000	$50,000
7	**Total Construction Cost + Contingency (5%)**				**$427,500**
8	**Total Engineering Cost[2] + Contingency (5%)**				**$89,800**
9	**Total Overall Cost**				**$517,300**

[1] Construction costs were estimated using recently tendered projects in similar geographies.

[2] The engineering cost has been estimated at 20% of the total price.

Prices are rounded to the nearest hundred.

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Opinion of Probable Cost – Glendale Beach

Community: Glendale Beach Community					
Project: Cole Crescent, Glendale Crescent					
Item #	**Description**	**QTY.**	**UM**	**Unit Price**	**Total Price**
PRE	Mobilization/Demobilization	1	LS	$30,000	$30,000
1	Glendale Beach – Roadside Ditch – 487m	1354	m^3	$20.00	$27,100
2	Glendale Beach – Topsoil & Sod – 487m	2825	m^2	$12.00	$33,900
3	450mm Culvert Minimum (8m)	64	m	$1,300	$83,200
4	375mm Culvert for Driveway Replacement (6m)	234	m	$1,150	$269,100
5	Erosion & Sediment Control – Rip-Rap and Geotextile (Glendale Beach East & (Glendale Beach East & West Outlet)	60	m^2	$100	$6,000
6	Outlet	2	ea	$50,000	$100,000
7	**Total Construction Cost + Contingency (5%)**				**$576,800**
8	**Total Engineering Cost + Contingency (5%)**				**$121,100**
9	**Total Overall Cost**				**$697,900**

[1] Construction costs were estimated using recently tendered projects in similar geographies.

[2] The engineering cost has been estimated at 20% of the total price.

Prices are rounded to the nearest hundred.

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Opinion of Probable Cost – Cedar Cove

Community: Cedar Cove					
Project: Keith Street, Cedarview Drive, Cedar Point Line, Marylin Street					
Item #	**Description**	**QTY.**	**UM**	**Unit Price**	**Total Price**
PRE	Mobilization/Demobilization	1	LS	$43,000	$43,000
1	Cedar Cove – Roadside Ditch – 879m	2444	m^3	$20	$48,900
2	Cedar Cove – Topsoil & Sod – 879m	5098	m^2	$12	$61,200
3	450mm Culvert Minimum (8m)	80	m	$1,300	$104,000
4	375mm Culvert Replacement for Driveways (6m)	348	m	$1,150	$400,200
5	Erosion & Sediment Control – Rip-Rap and Geotextile (Cedarview Drive West (Cedarview Drive West Outlet)	30	m^2	$100	$3,000
6	Outlet	1	ea	$50,000	$50,000
7	**Total Construction Cost + Contingency (5%)**				**$745,800**
8	**Total Engineering Cost + Contingency (5%)**				**$156,600**
9	**Total Overall Cost**				**$902,400**

[1] Construction costs were estimated using recently tendered projects in similar geographies.

[2] The engineering cost has been estimated at 20% of the total price.

Prices are rounded to the nearest hundred.

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Opinion of Probable Cost – Lake Valley Grove West

Community: Lake Valley Grove West					
Project: Ravine Road, Vance Drive, Freeman Street, Cliff Road					
Item #	**Description**	**QTY.**	**UM**	**Unit Price**	**Total Price**
PRE	Mobilization/Demobilization	1	LS	$28,000	$28,000
1	450mm Culvert Minimum (8m)	56	m	$1,300	$72,800
2	375mm Culvert Replacement for Driveways (6m)	276	m	$1,150	$317,400
3	Erosion & Sediment Control – Rip-Rap & Geotextile (North & South Outlet of (North & South Outlet of Lake Valley Grove West)	60	m^2	$100	$6,000
4	Outlet	2	ea	$50,000	$100,000
5	**Total Construction Cost + Contingency (5%)**				**$550,400**
6	**Total Engineering Cost + Contingency (5%)**				**$115,600**
7	**Total Overall Cost**				**$666,000**

[1] Construction costs were estimated using recently tendered projects in similar geographies.

[2] The engineering cost has been estimated at 20% of the total price.

Prices are rounded to the nearest hundred.

Opinion of Probable Cost – Lake Valley Grove East

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Community: Lake Valley Grove East					
Project: Birch Street, Beach Street, Broadview Avenue, Oak Avenue, Proof Line, Franklin Street, Park Street, Lake Valley Grove Road					
Item #	**Description**	**QTY.**	**UM**	**Unit Price**	**Total Price**
PRE	Mobilization/Demobilization	1	LS	$107,000	$107,000
1	Lake Valley Grove East – Roadside Ditch – 1593m	4429	m^3	$20	$88,600
2	Lake Valley Grove East – Topsoil & Sod – 1593m	9239	m^2	$12	$110,900
3	450mm Culvert Minimum (8m)	168	m	$1,300	$218,400
4	375mm Culvert Replacement for Driveways (6m)	630	m	$1,150	$724,500
5	Lake Valley Grove East – Low Impact Development	6	ea	$50,000	$300,000
6	Erosion & Sediment Control – Rip-Rap & Geotextile (North Outlet of Lake Valley (North Outlet of Lake Valley Grove East)	60	m^2	$100	$6,000
7	Outlet	4	ea	$50,000	$200,000
8	Park Street, Birch Street, Beach Street – 300mm Storm Sewer Sewer	229	m	$285	$65,200
9	Concrete Headwalls	1	ea	$9,900	$9,900
10	**Total Construction Cost + Contingency (5%)**				**$1,922,050**
11	**Total Engineering Cost + Contingency (5%)**				**$403,650**
12	**Total Overall Cost**				**$2,325,700**

[1] Construction costs were estimated using recently tendered projects in similar geographies.

[2] The engineering cost has been estimated at 20% of the total price.

Prices are rounded to the nearest hundred.

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Selection of Proposed Alternative – Roadside Ditches

Roadside Ditches will provide the most benefit for the community for the following reasons:

- Open ditches will allow landowners to connect sump pumps to with minimal excavation
- Open ditches will allow landowners to provide their own maintenance of vegetation, culvert blockages, and sediment build-up
- Construction will be easily phased with minimal impacts to residential access
- Construction may be carried out without disturbing the existing pavement
- Grassed ditches provide water quality improvements through lower velocities and vegetative uptake
- Reduction of peak flows may be achieved through additional storage provided by the ditches and strategic placement of rock flow check dams, improving downstream watercourse health
- Total proposed estimated costs in 2024 dollars for the proposed alternative, including a 5% project contingency, equates to $5,109,300.

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References

- Municipality of Lambton Shores Official Plan (OP, 2015)
- Municipality of Lambton Shores Design and Construction Standards (LSDCS, 2023)
- Consolidated Linear Infrastructure Environmental Compliance Approval (CLI ECA, 2023)
- Ontario Ministry of Transportation Highway Drainage Design Standards (HDDS, 2008)
- Ministry of the Environment Stormwater Management Planning and Design Manual (SWMPDM, 2003)

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Next Steps

Following the Council Meeting, we will:

- Submit the Notice of Completion and publish the Master Plan Report out for 30-day public review.
- Pending no Section 16(6) Orders, the Master Plan Report will be finalized.

Please visit the project website (lambtonshores.ca/WBSWMMP) for study updates and more information.

Who's Listening?

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