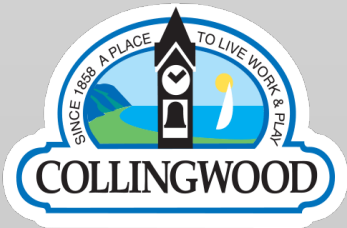


Collingwood Stormwater Management Master Plan – Phase II

Public Information Centre #1

Presented By: Greenland International Consulting Ltd.

June 10th 2024

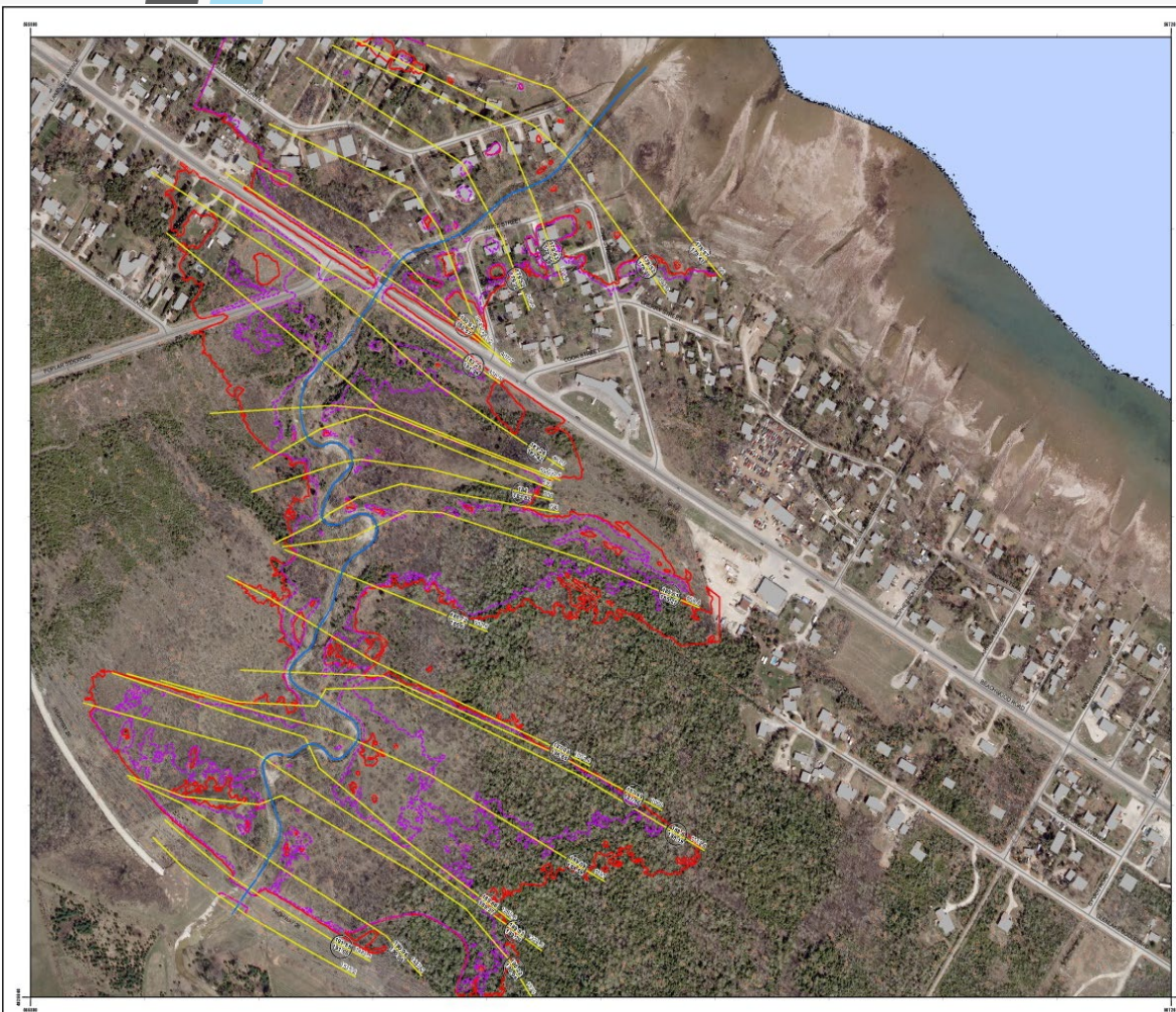


Background – Phase I

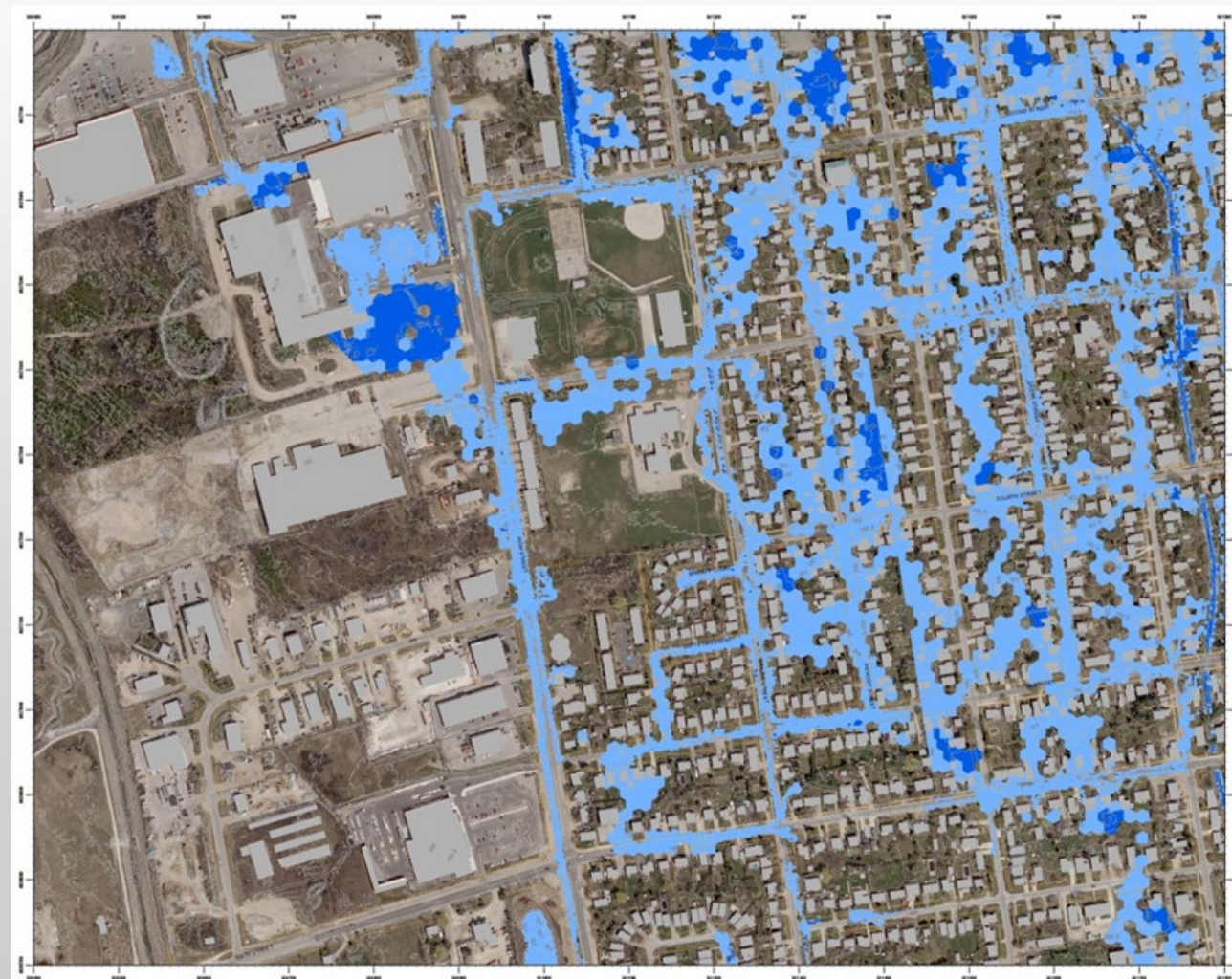
- Existing conditions Master Stormwater Management (SWM) model developed, consisting of the existing storm sewer drainage system and multiple watercourses that traverse the Town of Collingwood limits.
- The purpose was to gain a better understanding of the existing capacity of the stormwater infrastructure and riverine systems and identify potential flood damage zones within the Town of Collingwood.
- Deliverables:
 - Updated stormwater infrastructure database
 - Flood line mapping of the riverine systems
 - Flood mapping of the urban areas
 - Summary report

Phase I Mapping (Examples)

Riverine Flood Mapping
Batteaux Creek



Urban Overland Flood Mapping (100 year event)
West End of Town Centre



Purpose of Phase II

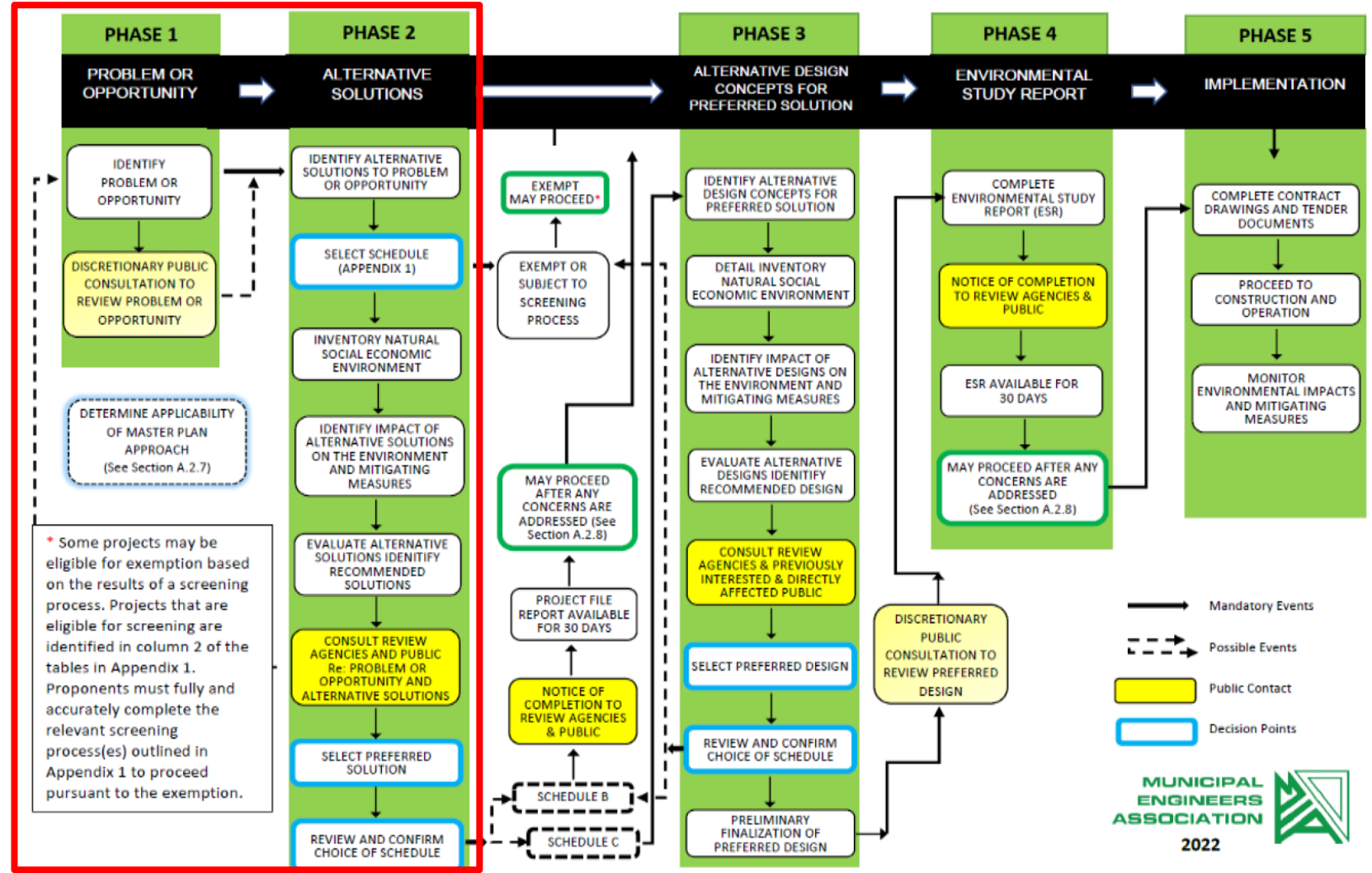
- Phase II of the SWM Master Plan will identify alternative solutions to address flooding issues within Collingwood and establish the preferred solution to effectively mitigate these flood issues
- The primary objectives of this assignment are to:
 - Analyze the model results obtained during Phase I and identify all existing flooding problems and opportunities related to the current conditions;
 - Update the modeling to account for future development scenarios; and,
 - Determine mitigation solutions that align with the Municipal Class EA process.

Municipal Class EA Process

The Master Plan will complete Phases 1 & 2 of the EA process

EXHIBIT A.2. MUNICIPAL CLASS EA PLANNING AND DESIGN PROCESS

NOTE: This flow chart is to be read in conjunction with Part A of the MCEA



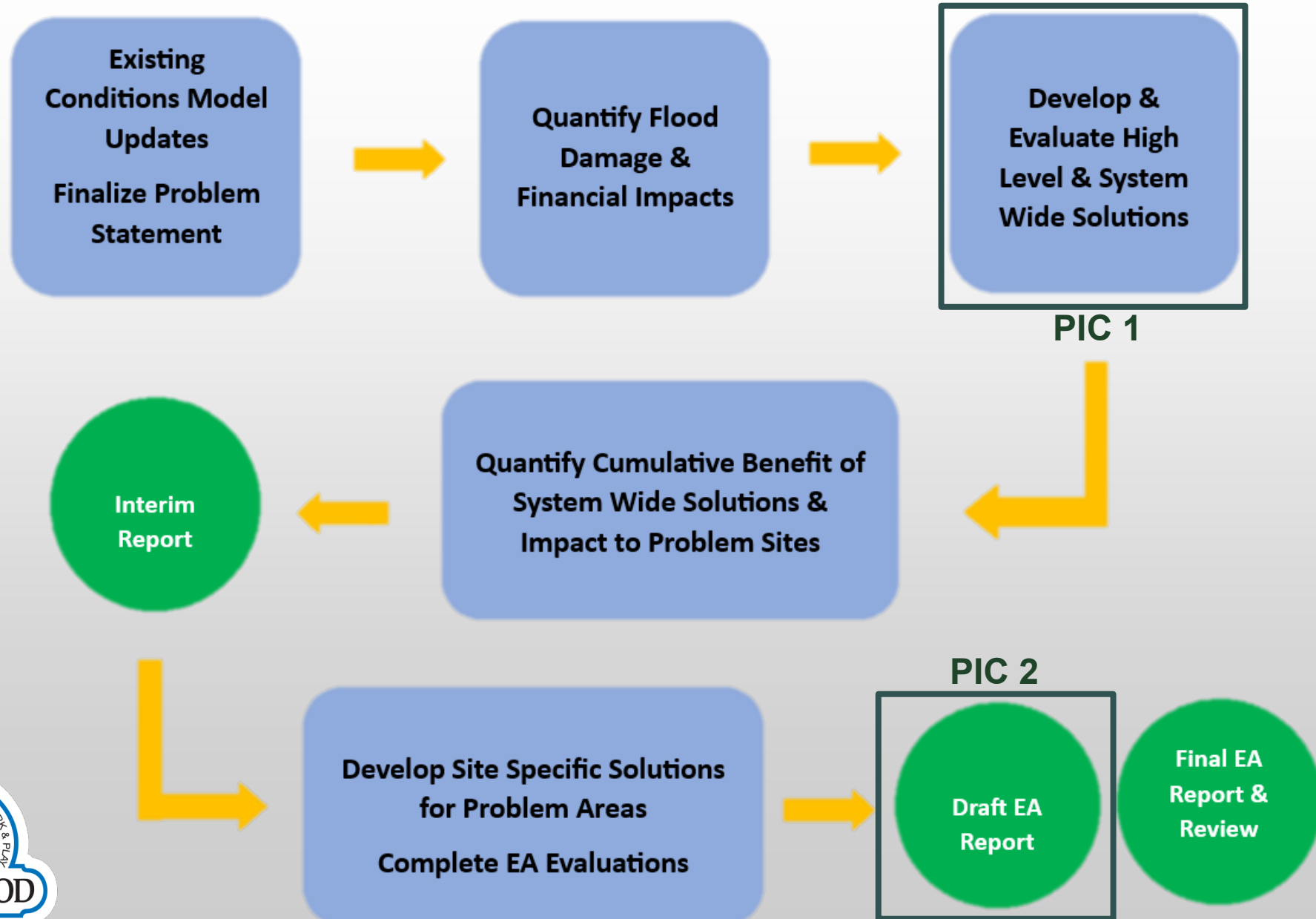
Problem & Opportunity Statement

The Objective of the Collingwood Stormwater Management Master Plan (SWM MP) is to identify and select preferred alternative stormwater management solutions to address existing and future anticipated flooding issues in Collingwood. Selected solutions will minimize impacts to both the natural and social environments and will be both technically feasible and economically sensible.

The SWM MP will also provide existing and future conditions infrastructure modeling and asset management/planning recommendations for the proposed stormwater management systems identified.

Project Process

We are Here

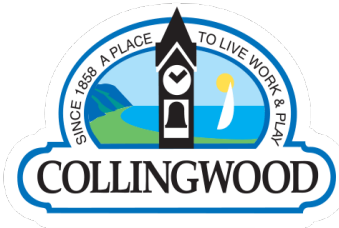


The map displays the City of Cambridge, Ontario, with flood damage centres and 100-year return period flood depths. The map is divided into several numbered regions (1-12) outlined in red. The legend indicates the following flood depths:

- 0 - 0.01 (Light Blue)
- 0.01 - 0.25 (Medium Blue)
- 0.25 - 1.583 (Dark Blue)

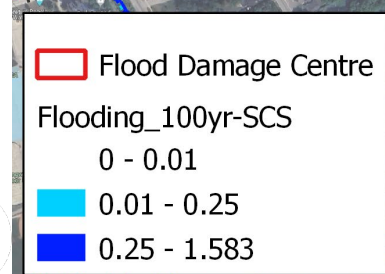
The map also shows the following streets:

- Harbour St W
- High St
- Cambridge St
- Stewart Rd
- Watts Cres
- 5th St
- 6th St
- 1st St
- 2nd St
- 3rd St
- 4th St W
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- 100th St



Existing Flood Damage Centres

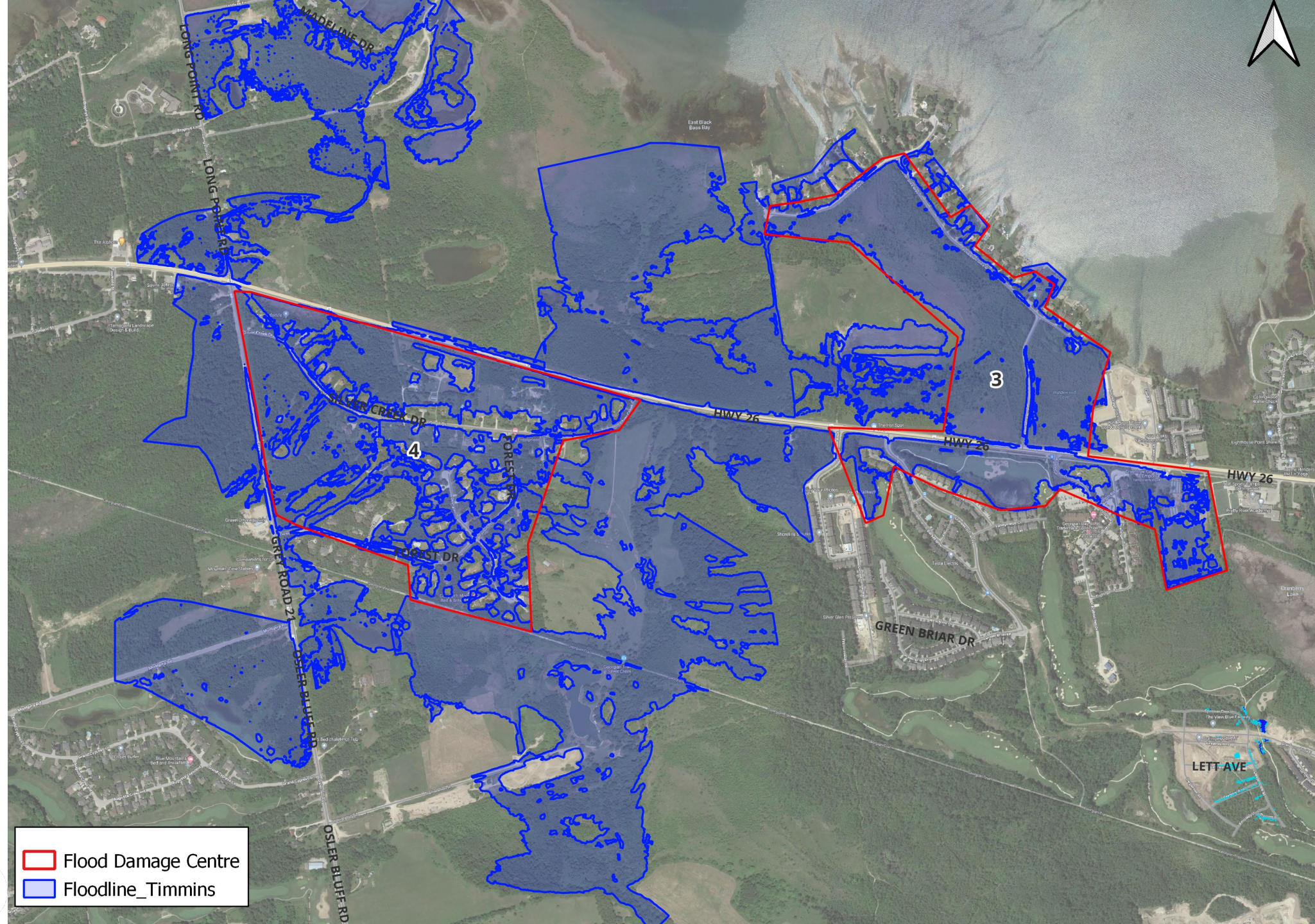




Existing Riverine Flood Damage Centres - Batteaux



Existing Riverine Flood Damage Centres – Silver/Townline



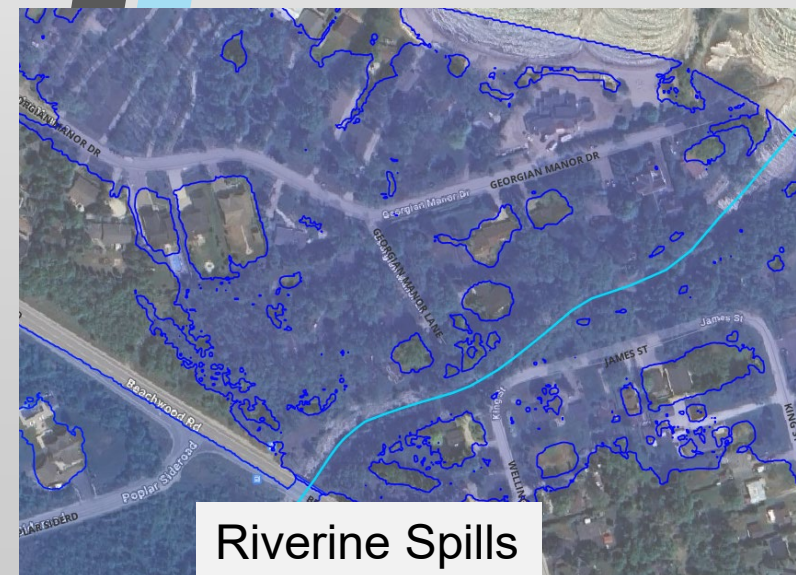
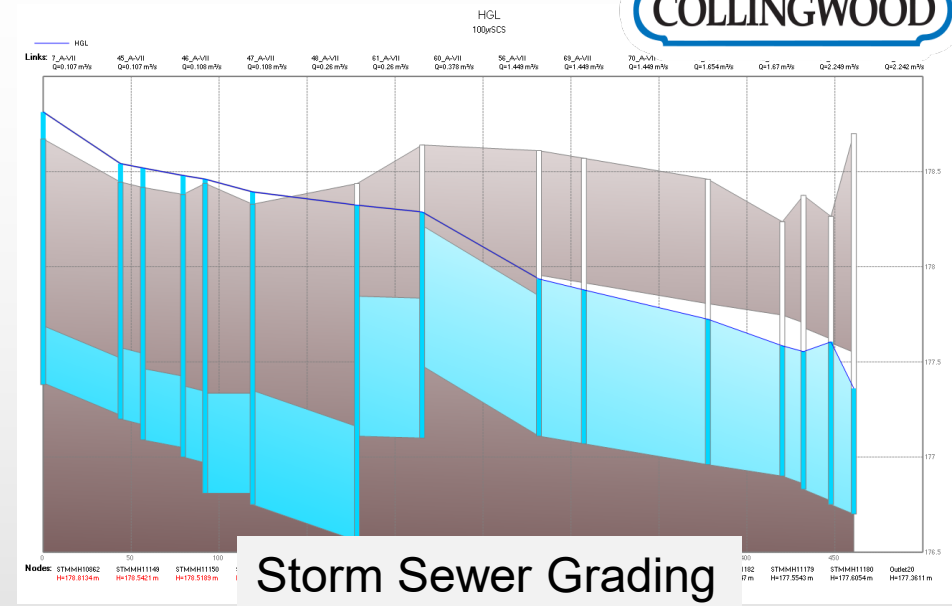
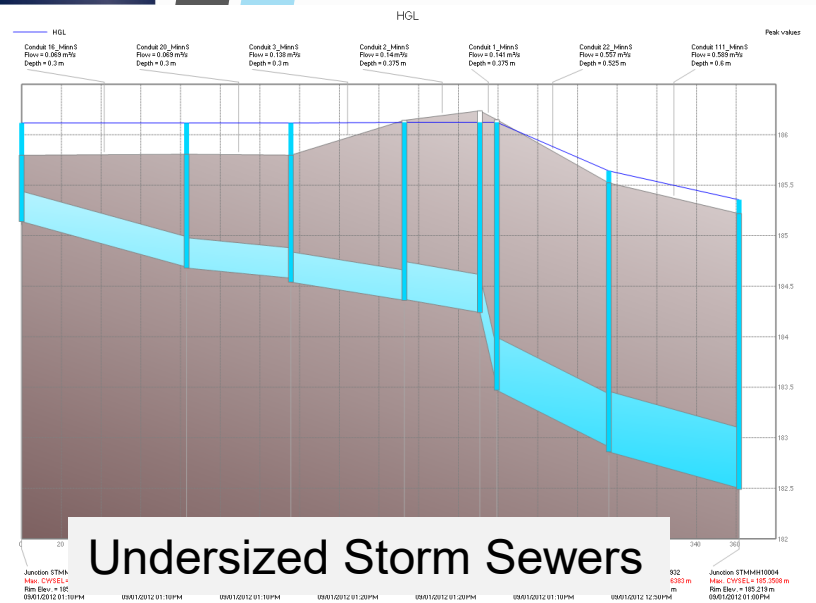
Existing Riverine Flood Damage Centres – Black Ash



Existing Riverine Flood Damage Centres - Pretty



Causes of Flooding (General)



Apparent Causes of Flooding (Detailed)

FDC. No	Area	Key infrastructure within flooded area	Apparent Causes
1	Elm St	Road	Property grading. Downstream sewer elevations are higher than Upstream. Undersized sewers
2	Hickory St, east of Spruce St, south of First St, north of Second St	Road	Spills from FDC 3. Lot grading. Right of Way grading
3	Residential Properties, back of lots: west of Walnut St, east of Spruce St, north of Fifth St	Private Property; Residential homes	Undersized sewers. Lot grading. Right of Way grading
4	West of Walnut St, north of Sixth St	Road, Private Property	Downstream sewer size smaller than Upstream. Lot grading
5	Residential Properties, back of lots: west of Cedar St, east of Walnut St, north of Fifth St	Private Property; Residential homes	Lot grading. Right of Way grading
6	Residential Properties, back of lots: east of Cedar St, Oak St	Private Property; Residential homes	Lot grading. Right of Way grading
7	Residential Properties, back of lots: Birch St, east of Oak St Channel, south of First St, north of Fourth St	Private Property; Residential homes	Lot grading. Right of Way grading
8	Birch St / Tenth St	Right of Way	Lot grading. Sewer surcharging.
9	Harbour St W	Harbour St W	Undersized ditch
10	East Street, south of Simcoe Street	Road	Downstream sewer higher than Upstream
11	Peel St / Harben Ct	Road	Downstream sewers are smaller than Upstream. Downstream sewer elevations higher than Upstream.
12	Seventh Street, west of Maple Street	Road	Right of Way grading. Undersized sewer.
13	between Robinson & Paterson St/Manning Ave	Private Property; Residential homes	Right of Way grading. Undersized sewer
14	Collingwood Collegiate Institute, north end of property	Parking, Road Access	Downstream sewer smaller than Upstream. Downstream sewer higher than Upstream.
15	Residential Properties, St. Clair St	Private Property; Residential homes	Spills from creek (Eden Oak). Lot grading. Right of Way grading.

Surcharged Storm Sewers – 5 Year Storm



Long List of Solutions

Catchment Level Solutions

Riverine Spills

Do Nothing

Flow Diversion – direct riverine storm flows through a different channel to prevent spills

Oversized Stormwater Management Ponds – over control storm flows from major developments

Offline flood storage – peak-shaving facility

Channel Maintenance – improve flow efficiency through channel by removal of vegetation

Construct a Levee to prevent spills

Overland Flooding - Urban

Do Nothing

Oversized Stormwater Management Ponds – over control storm flows from major developments

Flow capture through broad implementation of Low Impact Development (Rain Gardens, Permeable Pavement, Infiltration Trenches, Bioswales etc.)

Flow Capture through broad implementation of alternative stormwater management techniques (Underground Storage Tanks)

Size storm sewers to account for future climate change

Long List of Solutions

Site Level Solutions

Storm Sewer Surcharging

Do Nothing

Update Right of Way grading to re-direct storm flows

Replace / upgrade storm sewers through road re-construction program

Replace / upgrade storm sewers separate to road reconstruction program

Implement Low Impact Development features

Upsize ditches and culverts

Lot Grading

Do Nothing

Regrade Right-Of-Way to direct stormflows through roadways

Require Lot re-grading as part of proposed redevelopment

Implement Low Impact Development features

Require floodproofing for all proposed development

Optional floodproofing for existing residents

Riverine Spills

Do Nothing

Flow Diversion – direct riverine storm flows through a different channel to prevent spills

Update lot grading as part of proposed redevelopment

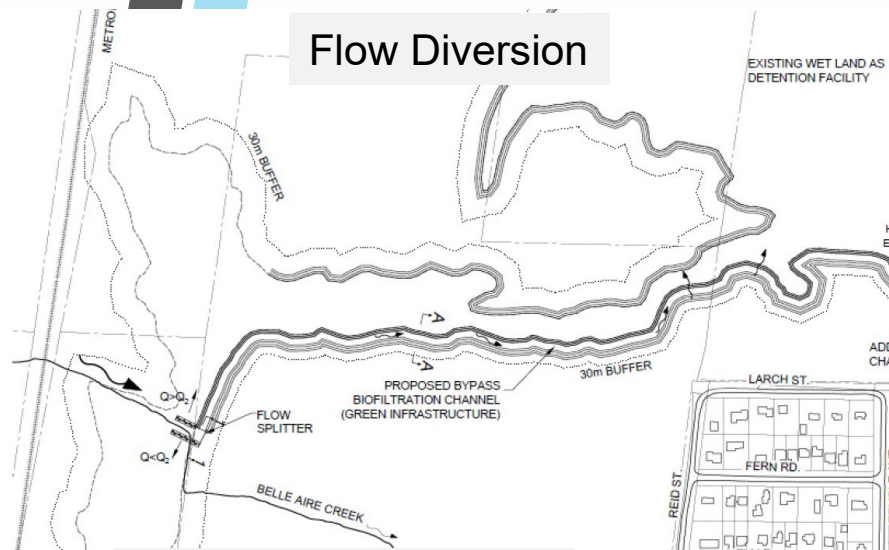
Update Right of Way grading to prevent overtopping of spills

Increase culvert size

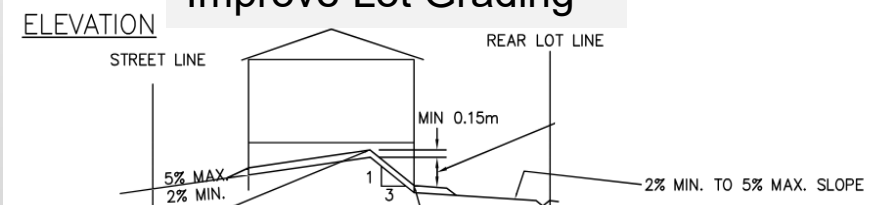
Construct a Levee to prevent spills

Long List of Solutions

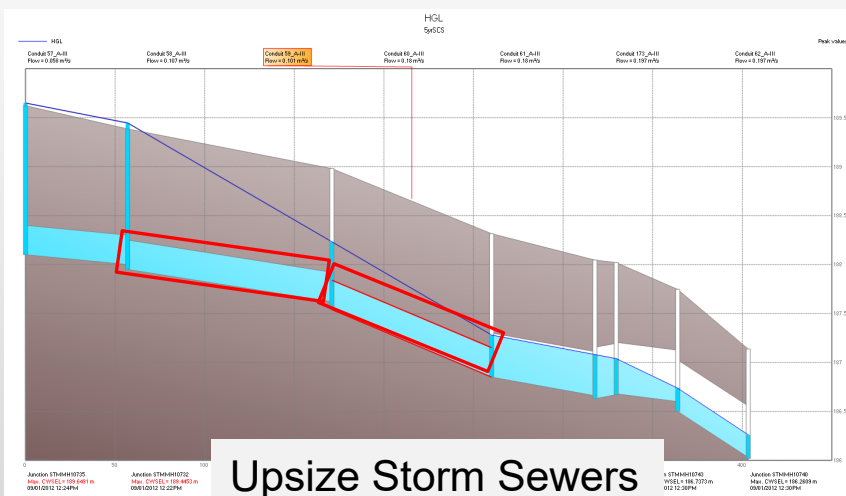
Flow Diversion



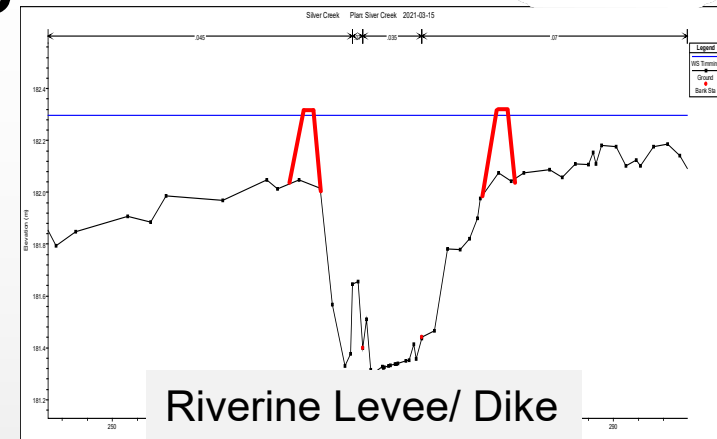
Improve Lot Grading



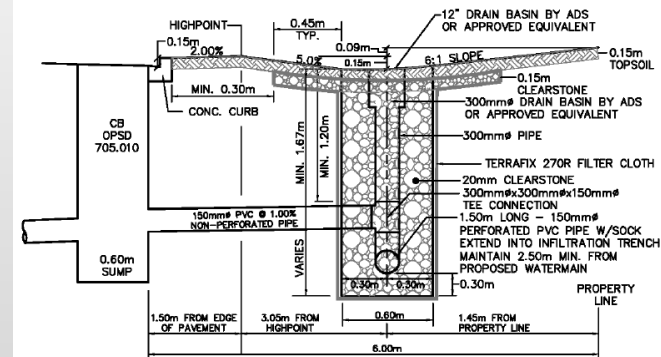
Upsize Storm Sewers



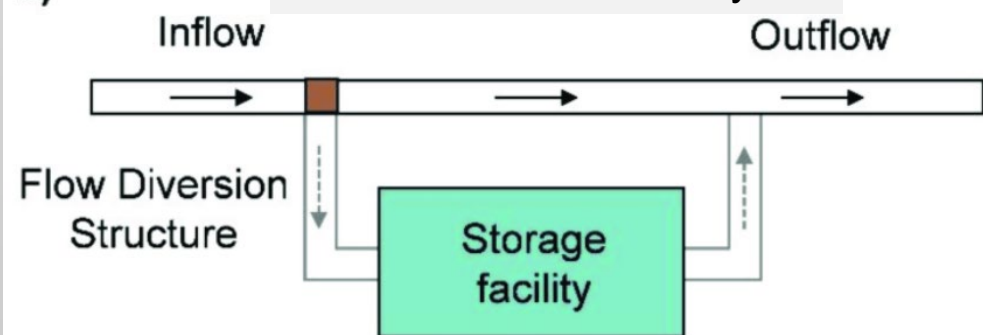
Riverine Levee/ Dike



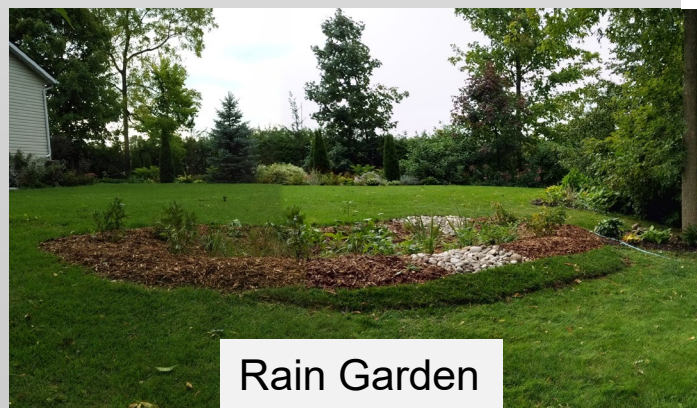
INFILTRATION TRENCH WITHIN BOULEVARD



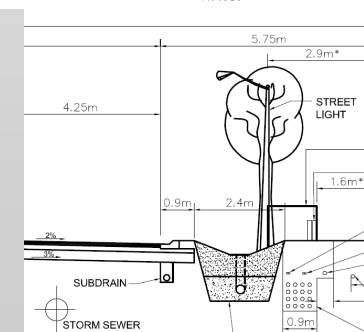
b) Offline Detention Facility



Rain Garden



Street-Side Basin with Trees



Long List Of Proposed Solutions & Screening Criteria


Screening criteria were developed to eliminate Options which will not be viable.

The long list of options will be subjected to the following screening questions:

1. Can the Option Satisfy the Requirements of the Problem / Opportunity Statement?
2. Does the Option have Obvious and Significant Environmental Impacts that could offset its ability to address the Problem / Opportunity Statement, as compared to other solutions (i.e. severe detrimental effects to the environment)?
3. Does the Option have Obvious and Significant Socio-Economic Impacts that could offset its ability to address the Problem / Opportunity Statement, as compared to other solutions (i.e. exorbitant cost)?
4. Does the Option have Obvious and Significant Technical Impacts that could offset its ability to address the Problem / Opportunity Statement, as compared to other solutions (i.e. exceptional technical difficulty)?

How Are You Involved?

- Engage Collingwood engage.collingwood.ca/swmmp
 - Public Survey – **Ends June 14th, 2024**
 - Subscribe for project updates
 - Ask a question anytime
- 2nd PIC in Fall 2024 to present proposed solutions and request additional public feedback
- Email the project contacts:



STAY INFORMED

Subscribe for project updates

Subscribe

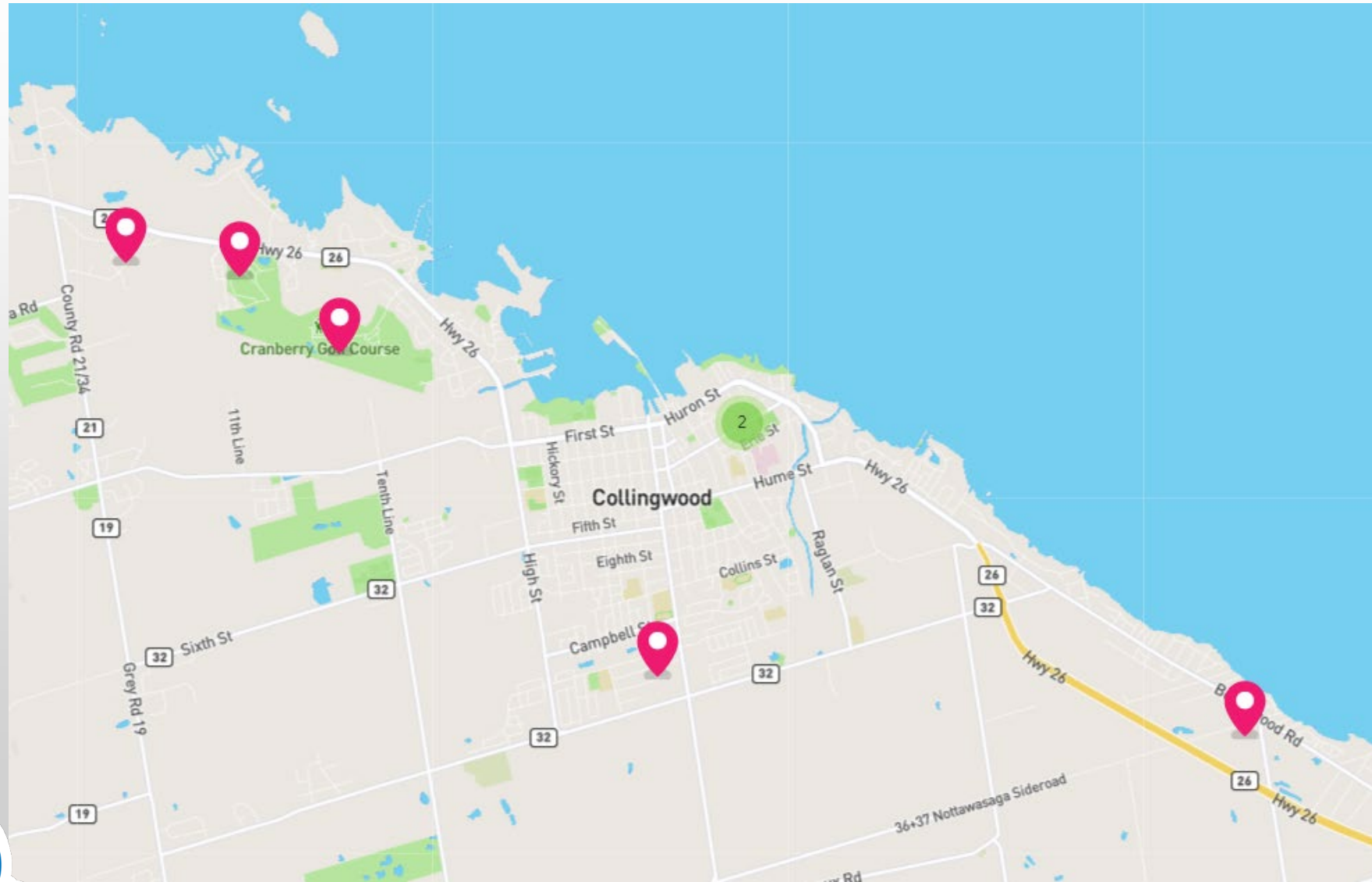
8 members of your community are following this project

Stuart West, P. Eng.
Manager, Engineering Services
Town of Collingwood
Email: swest@collingwood.ca

Josh Maitland, P. Eng.
Consultant Project Manager
Greenland Consulting Engineers
Email: jmaitland@grnland.com



Your Feedback So Far – Areas of Concern



Next Steps

1. Collect Feedback From the Public (This Meeting, Public Survey)
2. Finalize Shortlist of Solutions & Detailed Evaluation Criteria
3. Evaluate Short-Listed Solutions to Arrive at Preferred Solution
4. Consult with Public on Preferred Solution (PIC #2, Date TBD)
5. Implement Feedback & Finalize Municipal Class EA
6. Proceed to Implementation (Detailed Design & Construction) – **OUTSIDE THE SCOPE OF THIS STUDY**



Thank You For Your Time

