WHRM - Windsor Flood Study

Council Meeting – October 14, 2025

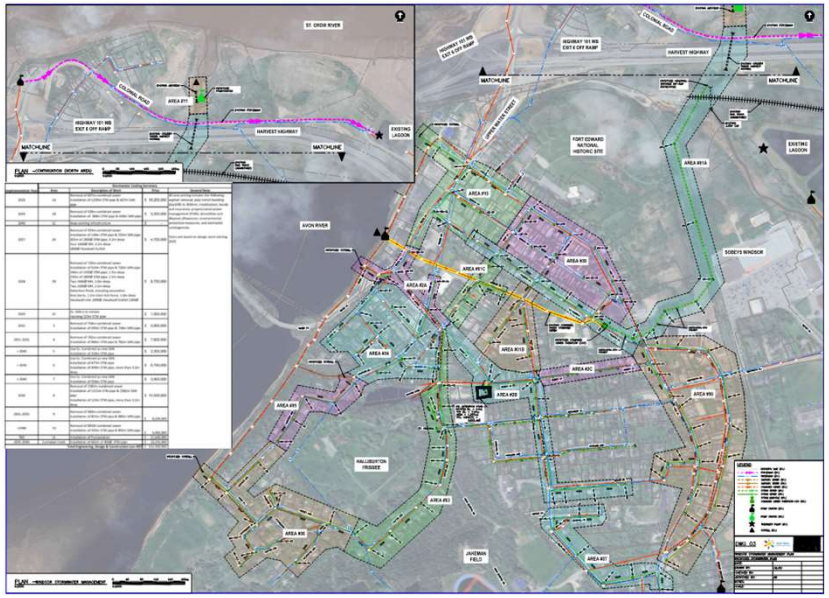
Agenda / Outline

1 ■ Background Information

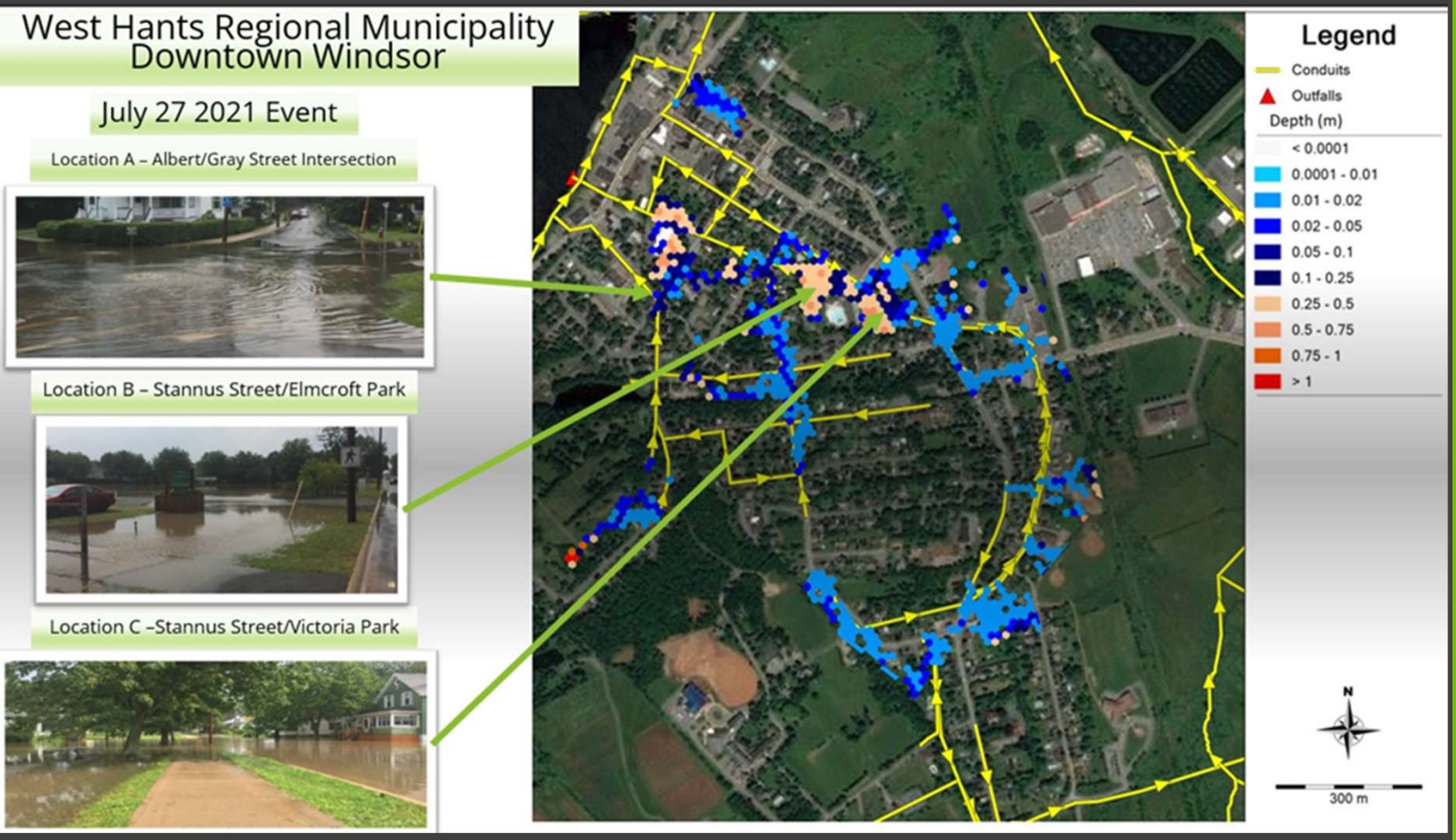
2 ■ Option Development

3 ■ Integrated Options

4 ■ Project Progression

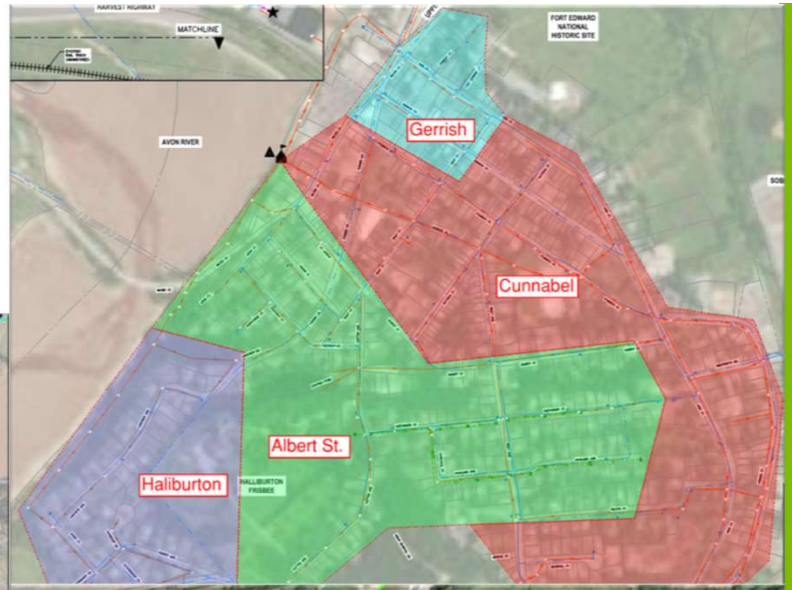


Background Information



- Increased frequency of large storms and flooding in the areas between Stannus Street and Gray Street.
- July 2021 Storm
  - 48.5 mm in 1.5 hr; 1hr&2hr rain intensity was equal to the 1:100-year storm
- July 2023 Storm
  - 208mm of rain over a 24hr period; Classified as 1:100-year storm

Data Collection & Model Building



SURVEY

- Review of existing drawings & GIS data
- Gap analysis
- Field data collection

FLOW METERING

- Programs in 2022 and 2024
- April 12, 2024, used for calibration

MODELLING

- 1D & **2D Models**
- Over 100 models developed, with 12 primary scenarios

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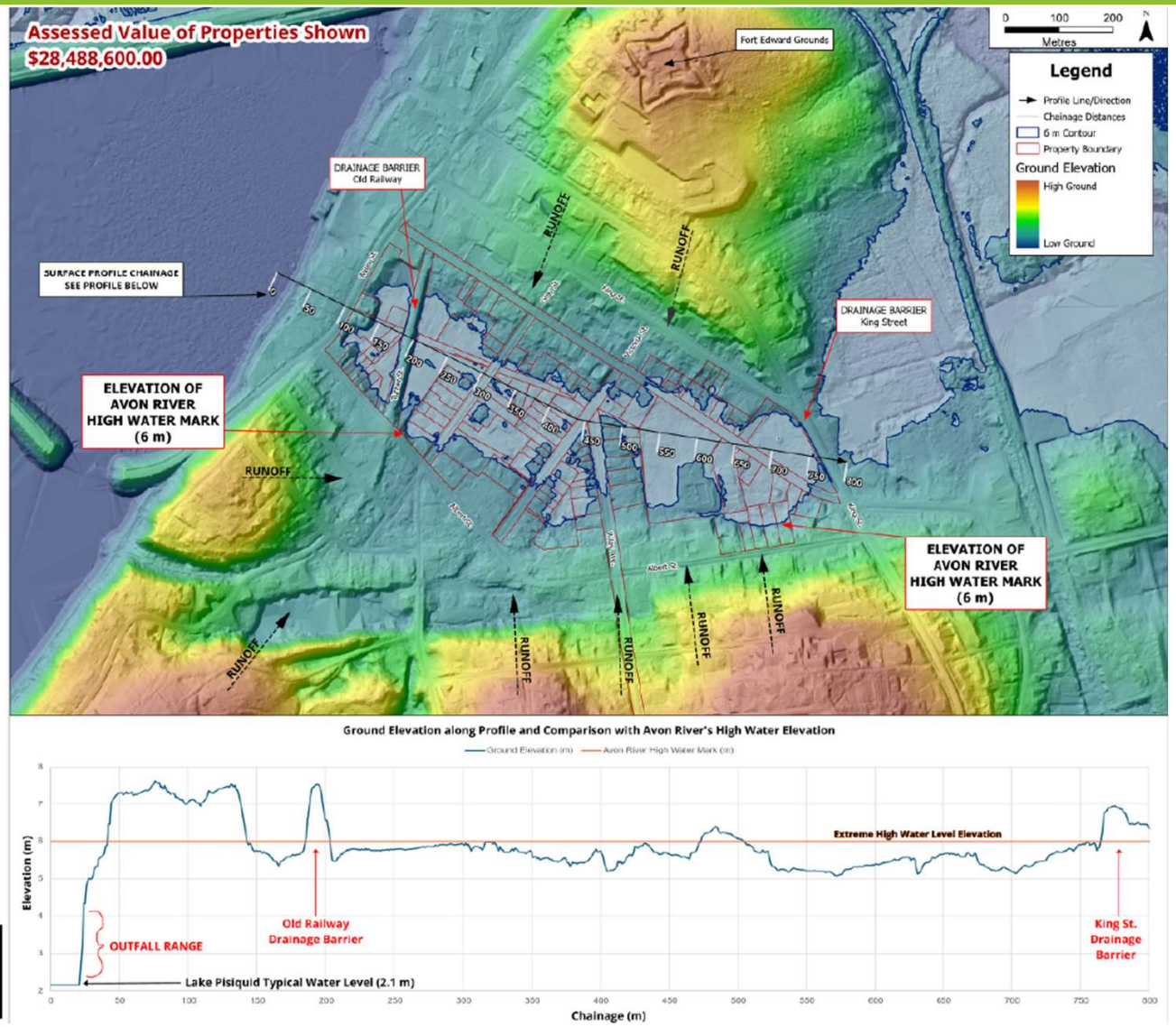


Existing Conditions

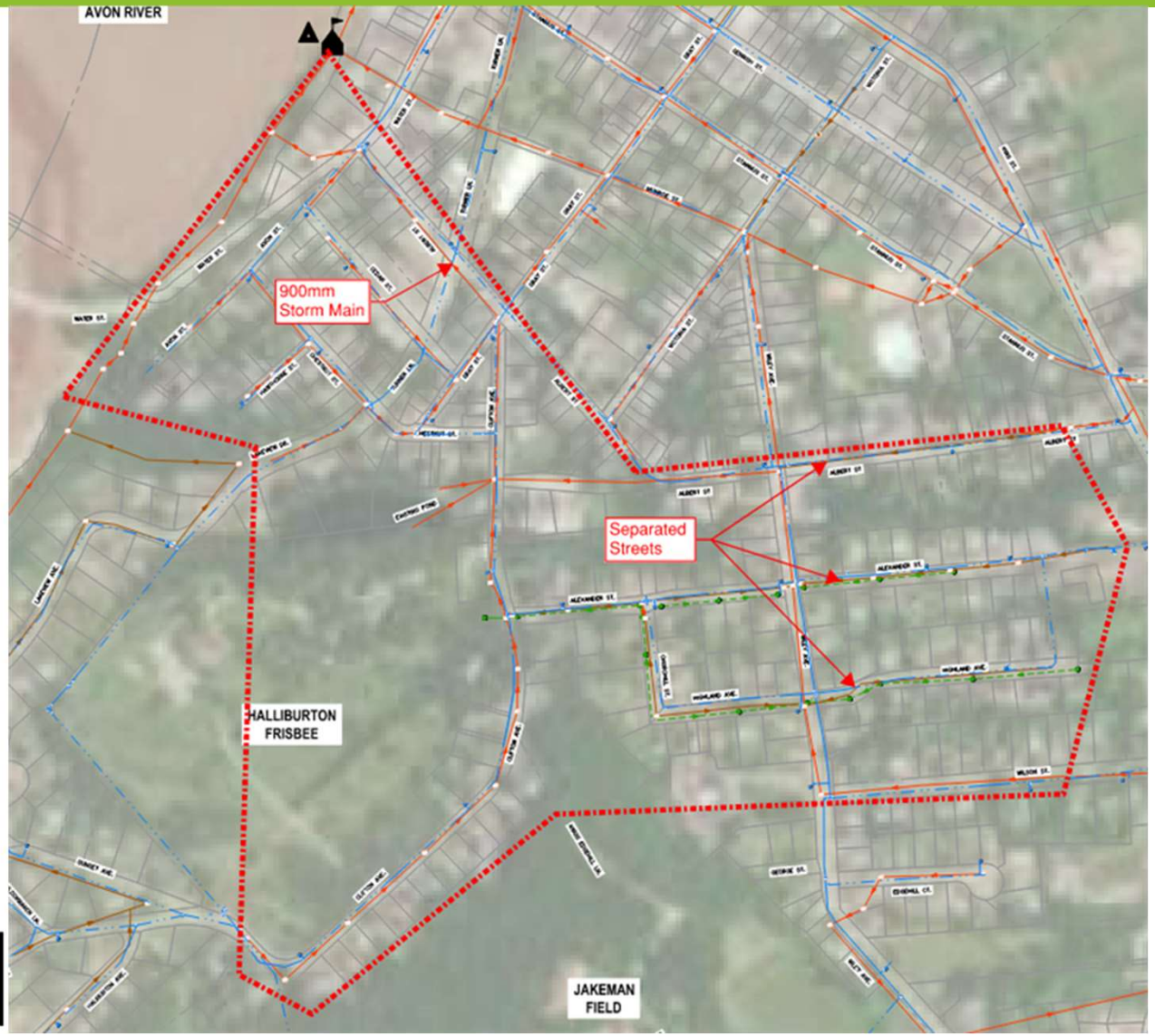
- High water elevation Lake Pisiquid is 6m
- Topography is bowl shaped with no natural outlet

CBCL

Windsor Downtown Flooding

- Simulated Surface Flooding during the 1 in 5-year Design Storm

CBCL



Sewershed 2: Albert Street

- ~425,000m2
- ~200 homes
- Separated and Combined areas

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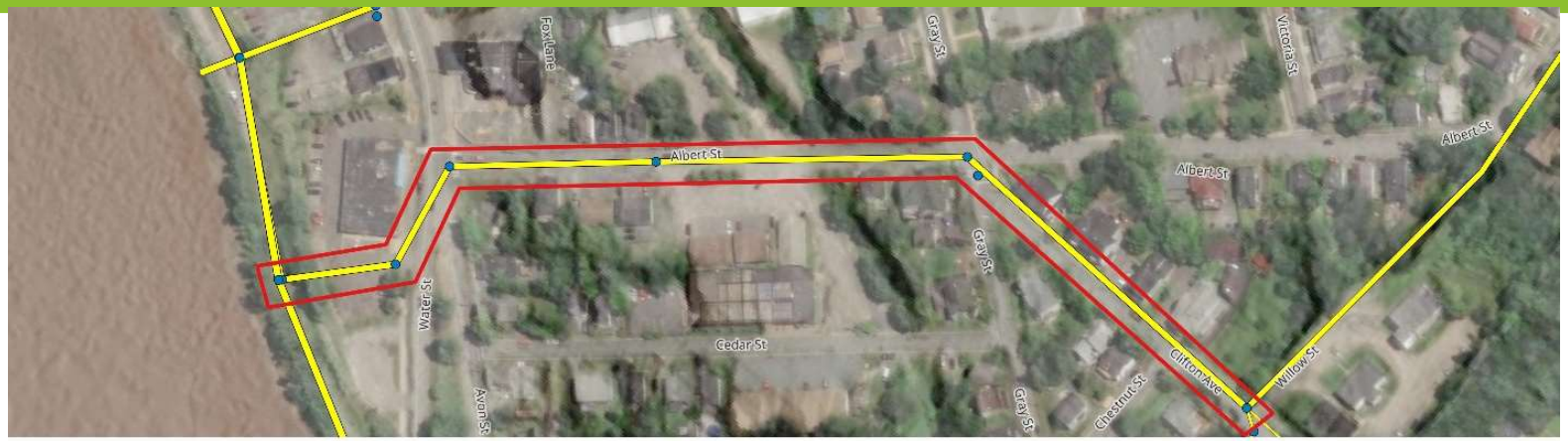
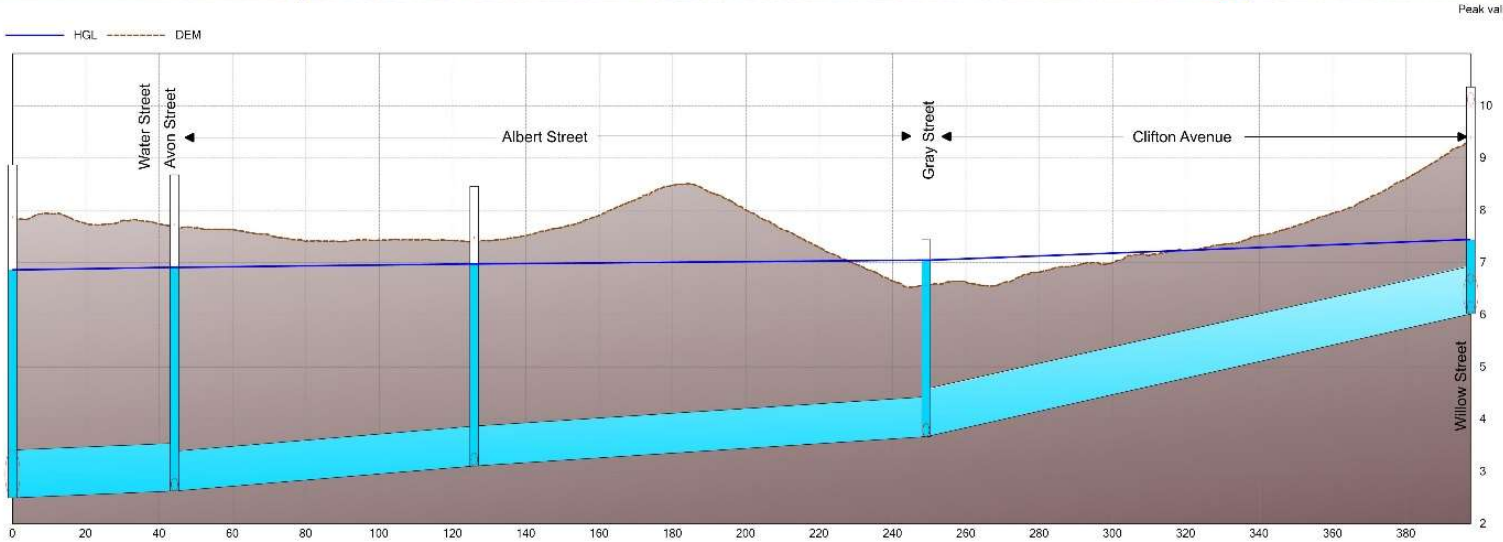
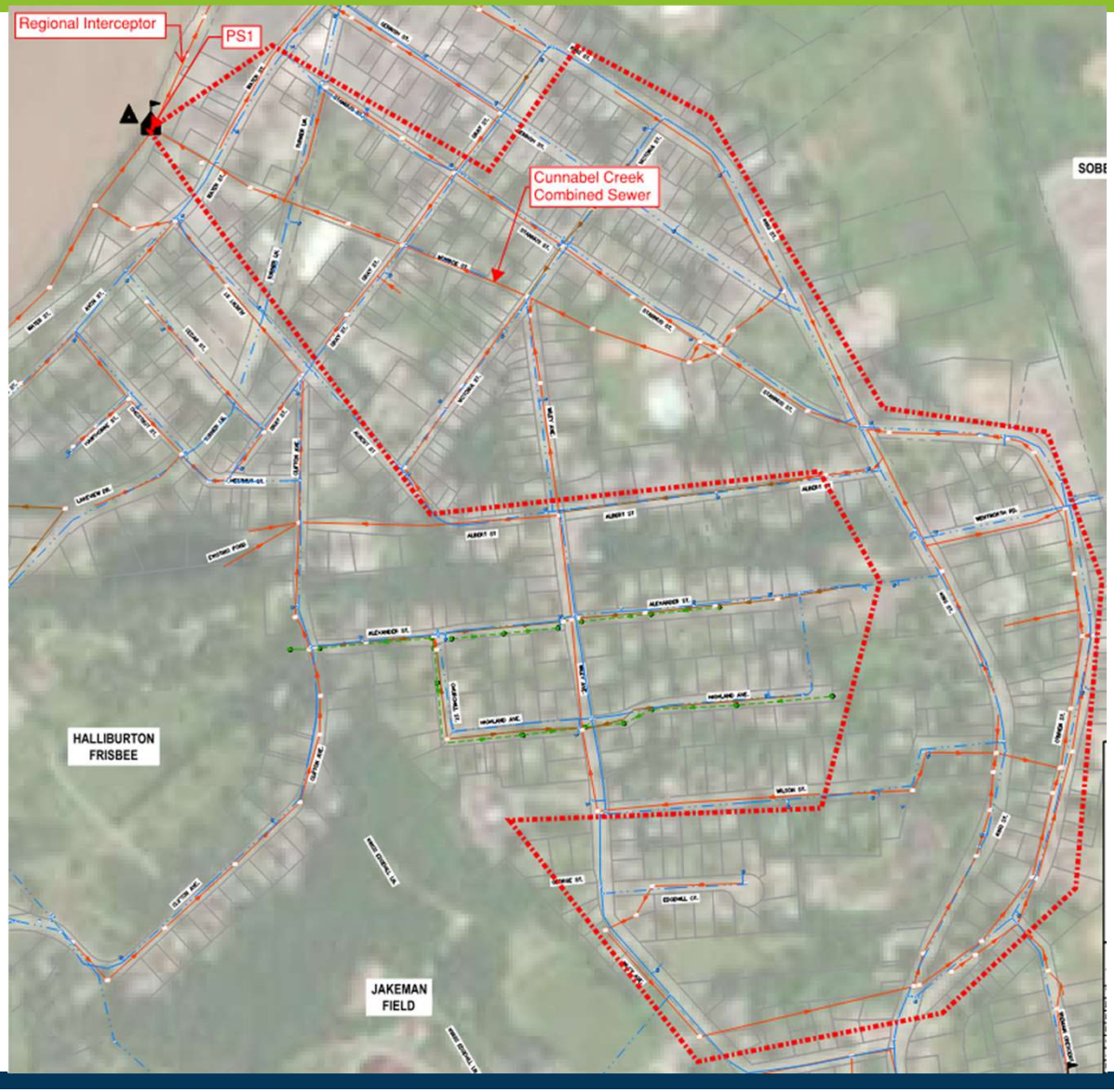




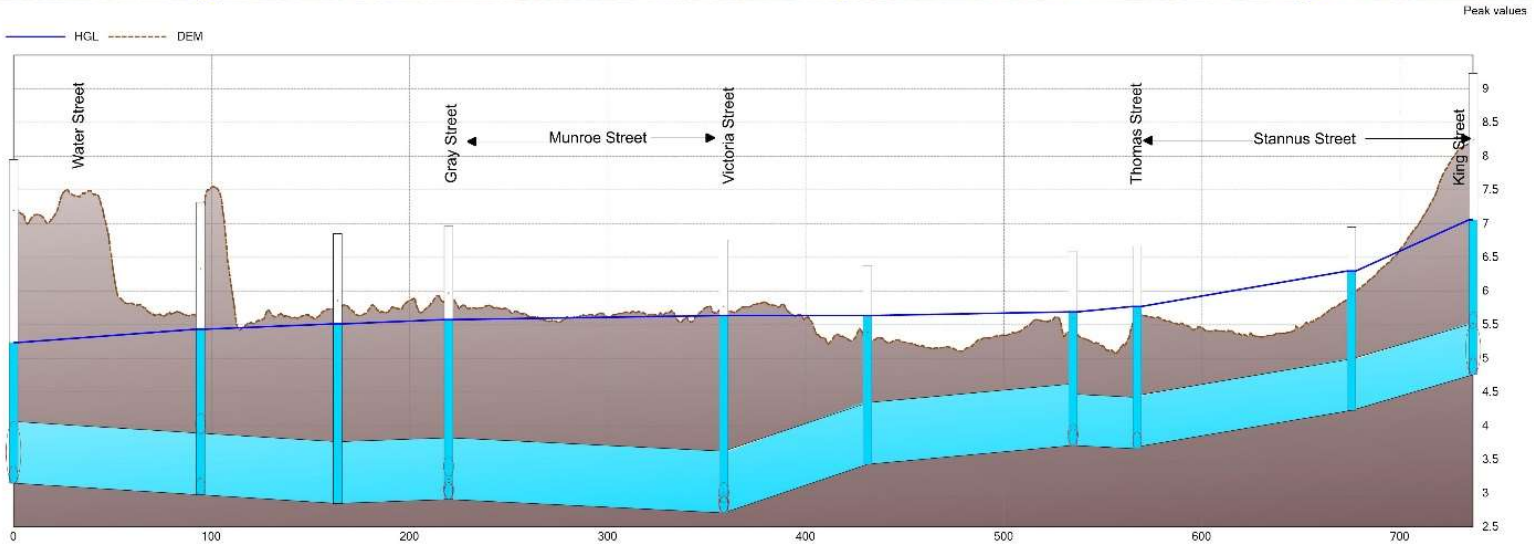
Sewershed 2: Albert Street

- Plan and Profile 1 in 5-year design storm
- Flooding at Gray Street



Sewershed 3: Cunnabel Creek

- ~441,000m2
- ~220 homes
- Combined Sewer
- Cunnabel Creek



Sewershed 3: Cunnabel Creek

- Plan and Profile 1 in 5-Year design storm
- Flooding at multiple structures

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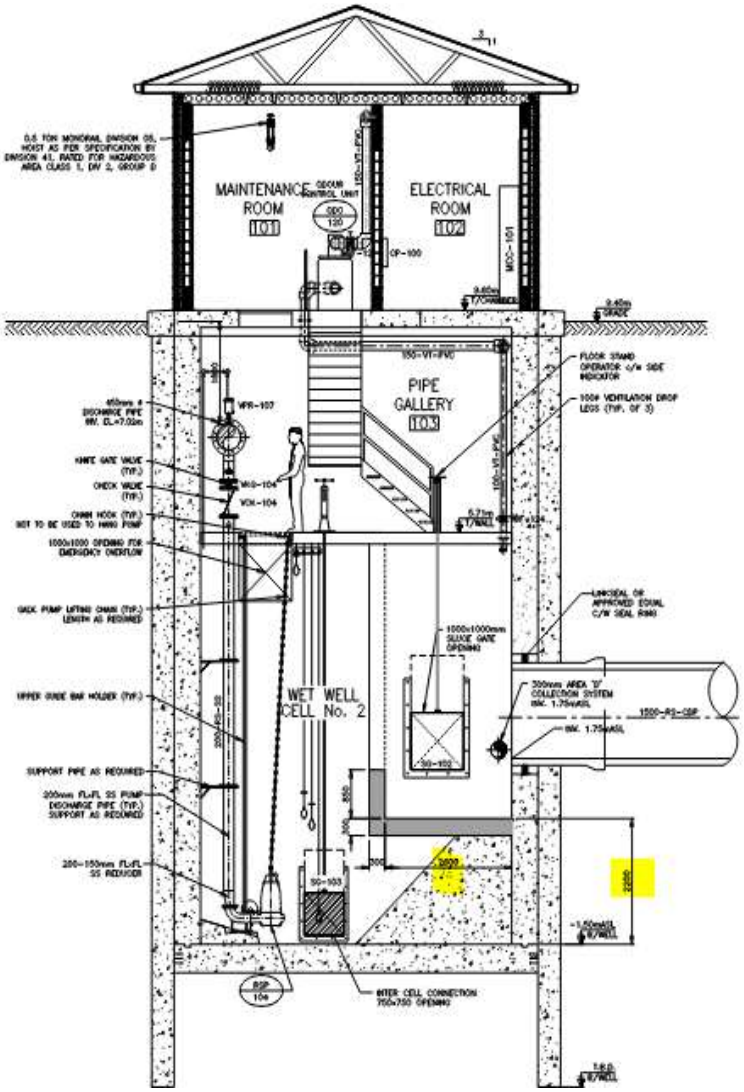


Regional Interceptor

- Gravity sewer that runs parallel to Lake Pisiquid and drains to PS7.
- Design Capacity: 215 LPS
- Tested Capacity: 188 LPS
- 450mm force main
- Max Capacity of force main: 480LPS

Option Development

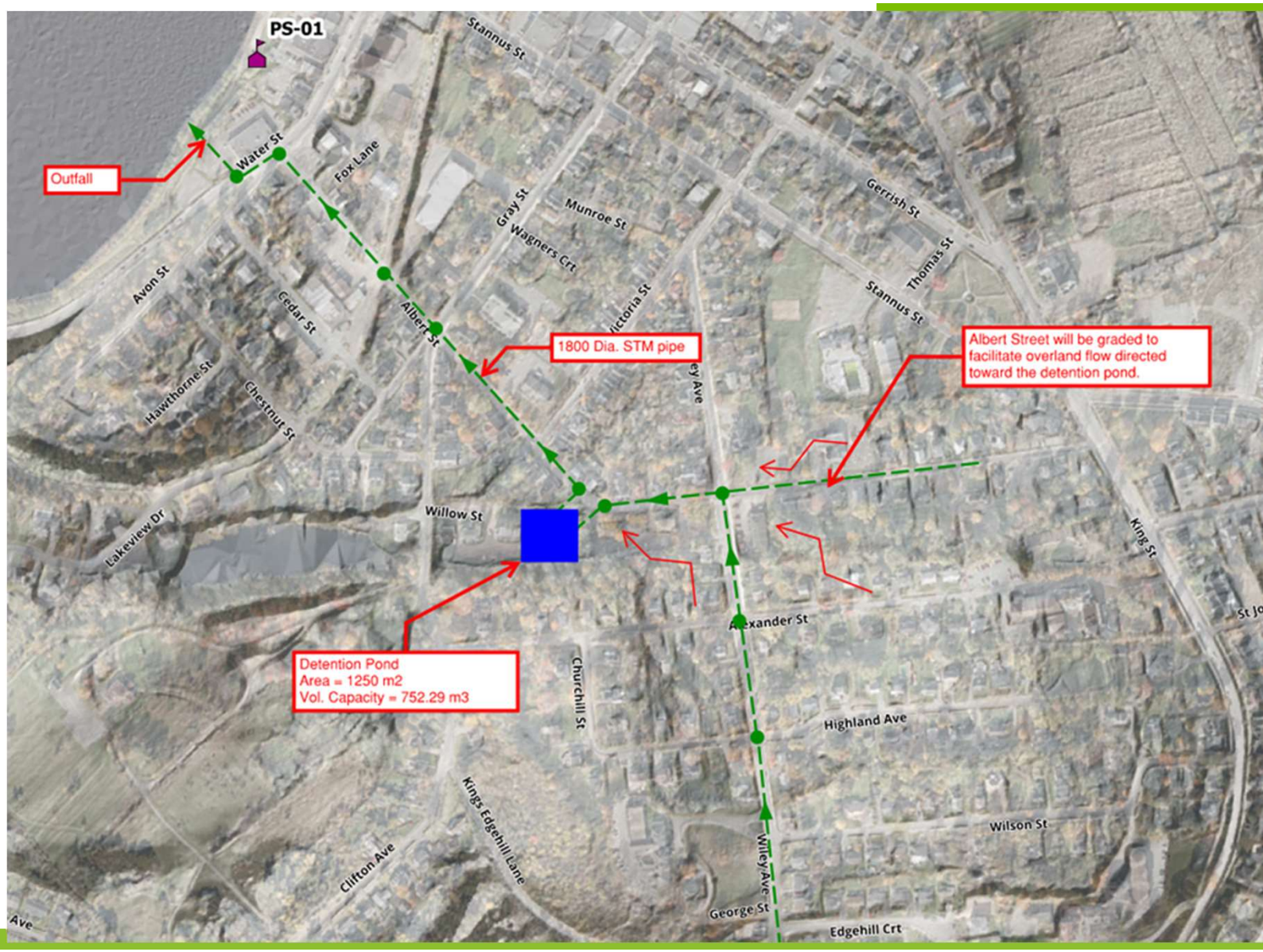
Option 1 Albert St Diversion

Storage

~1000m^3

Gravity Pipes

1800mm



Option 1 Albert St Diversion

1:5 Existing

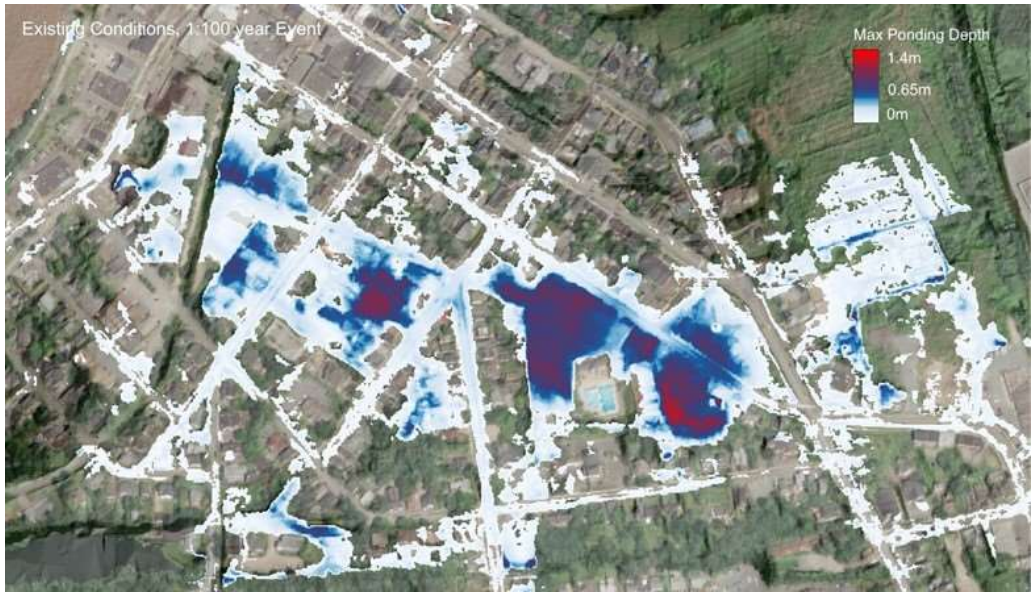
With Upgrades

Option 1 Albert St Diversion

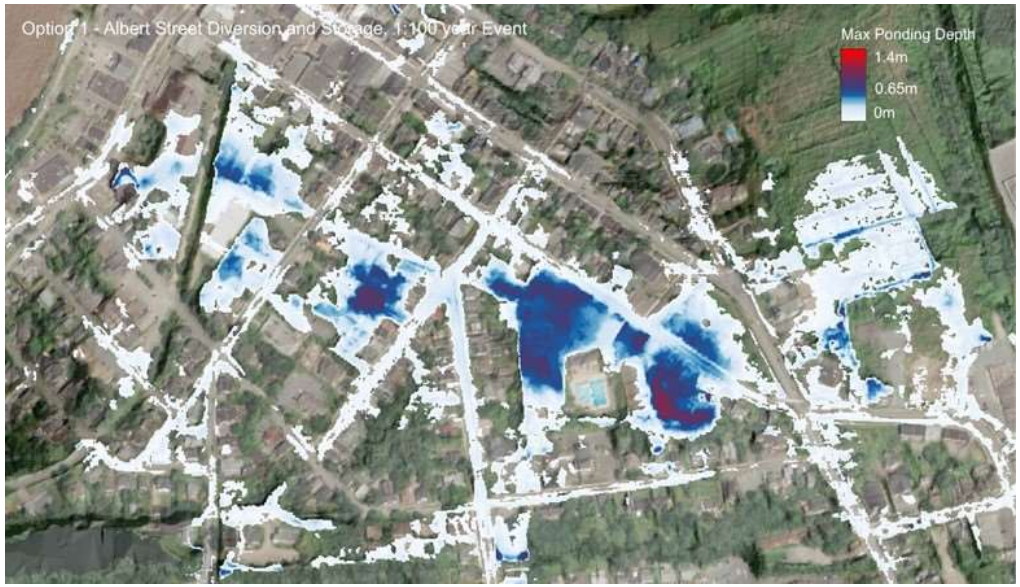
1:10 Existing

With Upgrades

Option 1 Albert St Diversion

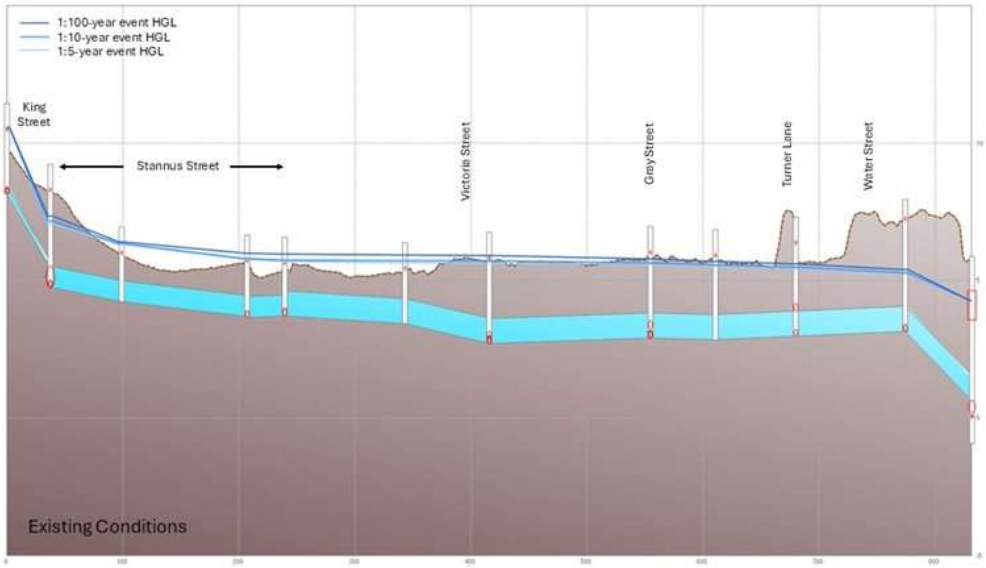


1:100 Existing

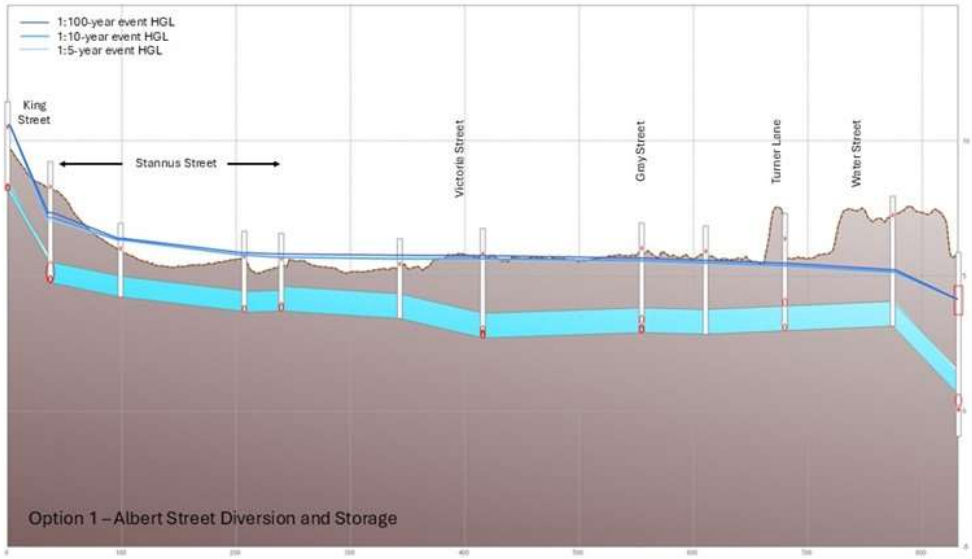


With Upgrades

Option 1 Albert St Diversion



Cunnabel Creek Existing



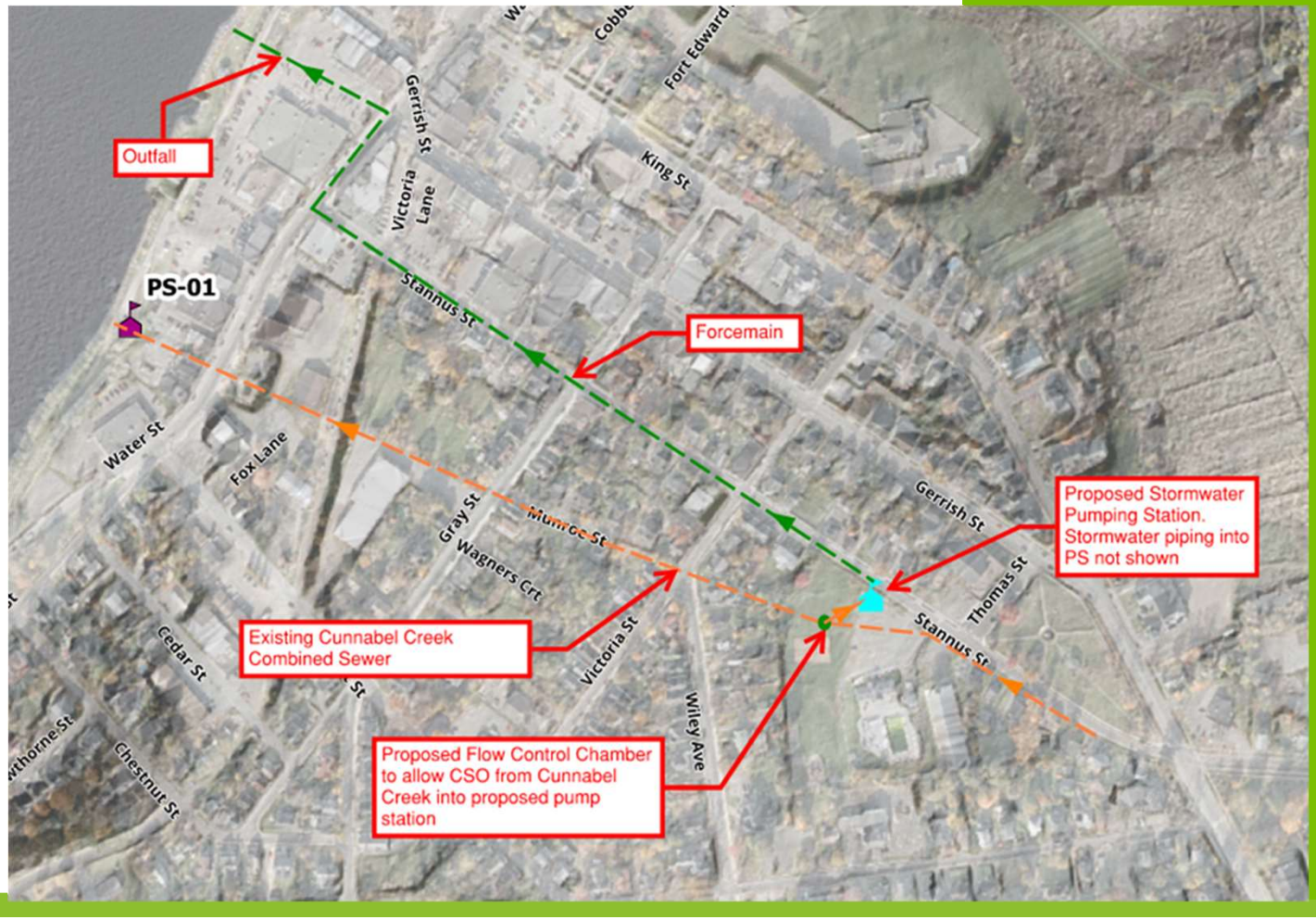
With Upgrades

Option 4 Stannus Street Storage and Connection to Cunnabel Creek

Pumping

$10m^3/s$

Combined Overflow Connection to Cunnabel Creek



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Option 4 Stannus Street Storage and Connection to Cunnabel Creek

1:5 Existing

With Upgrades

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1:10 Existing

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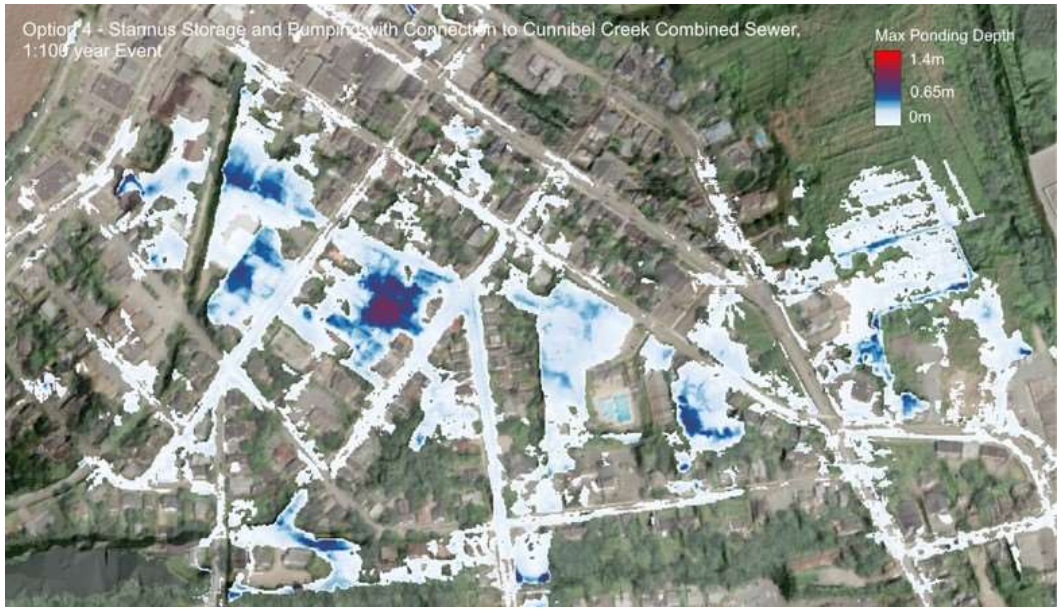

With Upgrades

CBCL

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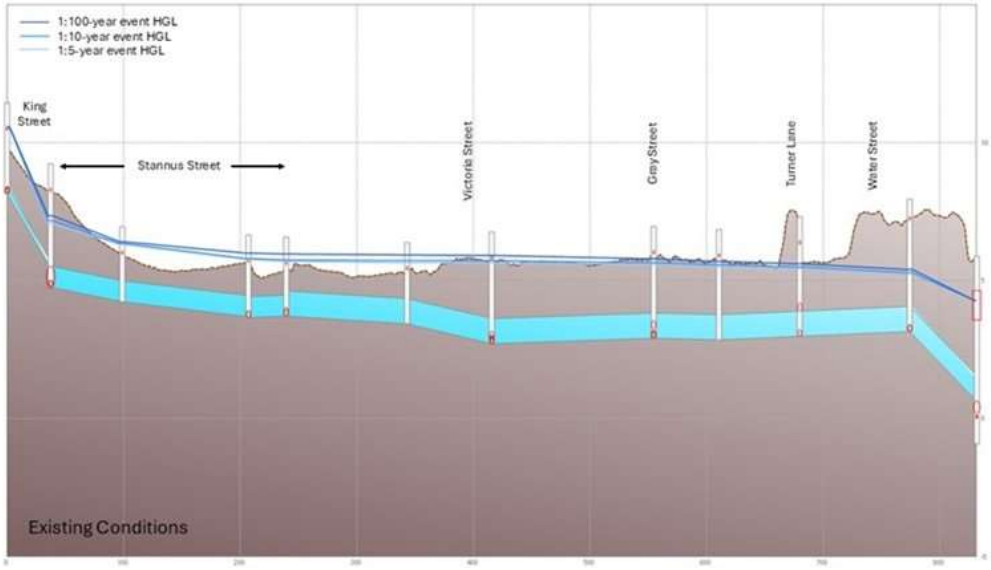
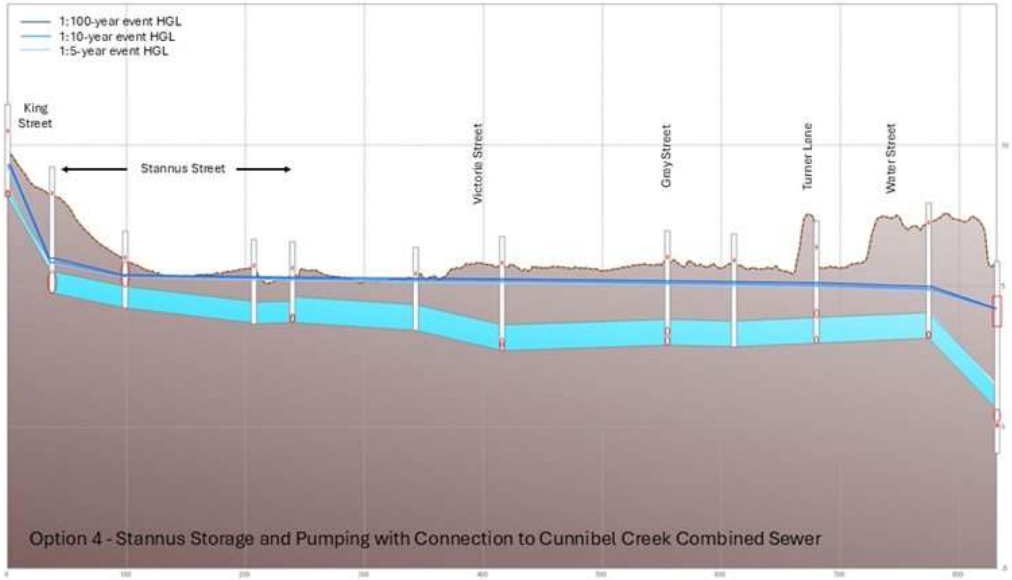


Cunnabel Creek Existing



With Upgrades

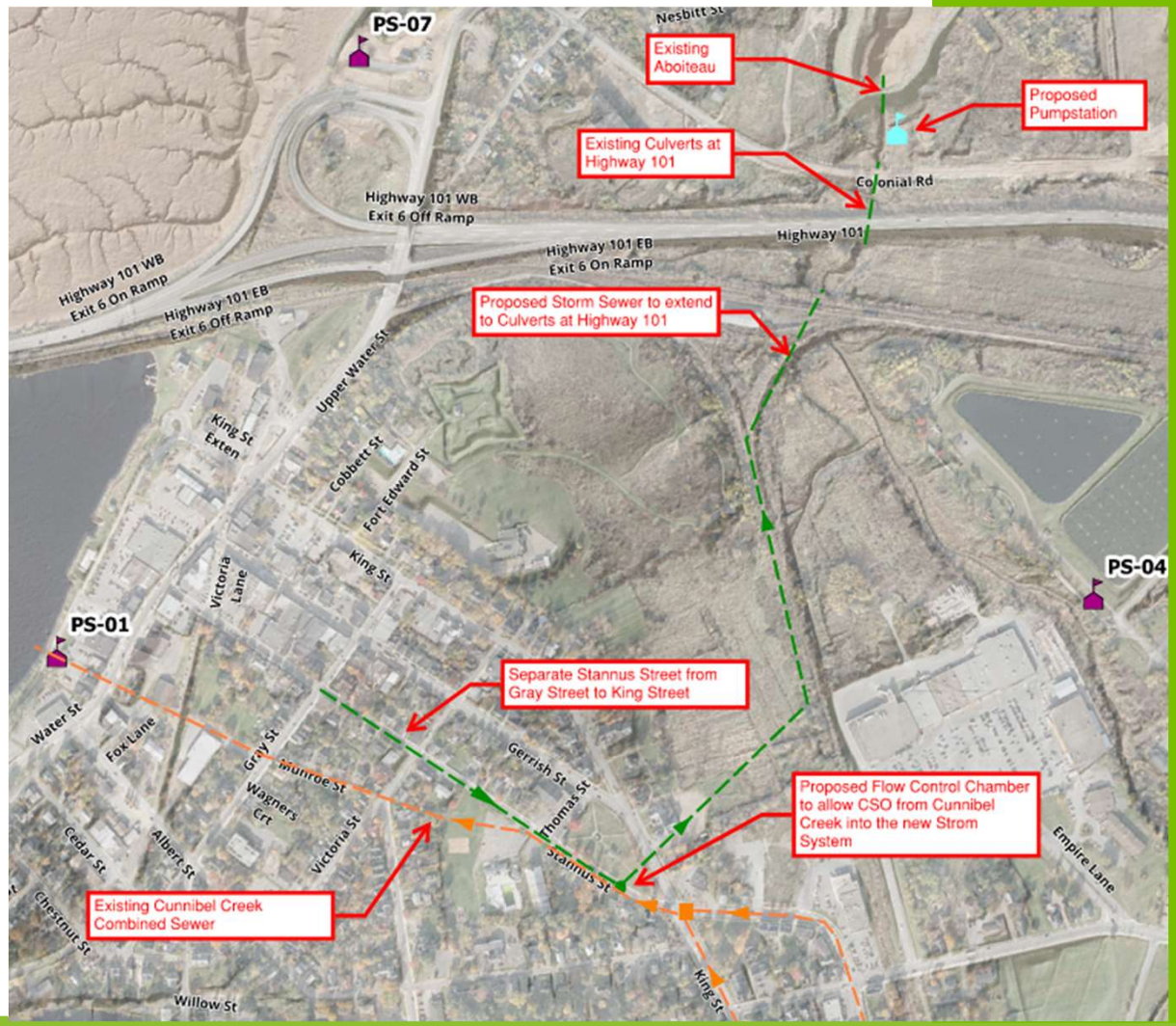
Option 5 Stormwater Connection to Tregothic Marsh

2400x1200 Box Culvert

Combined Sewer Overflow

Only separate Stannus Street from Gray to CSO

Could add future PS



Option 5 Stormwater Connection to Tregothic Marsh

1:5 Existing

With Upgrades

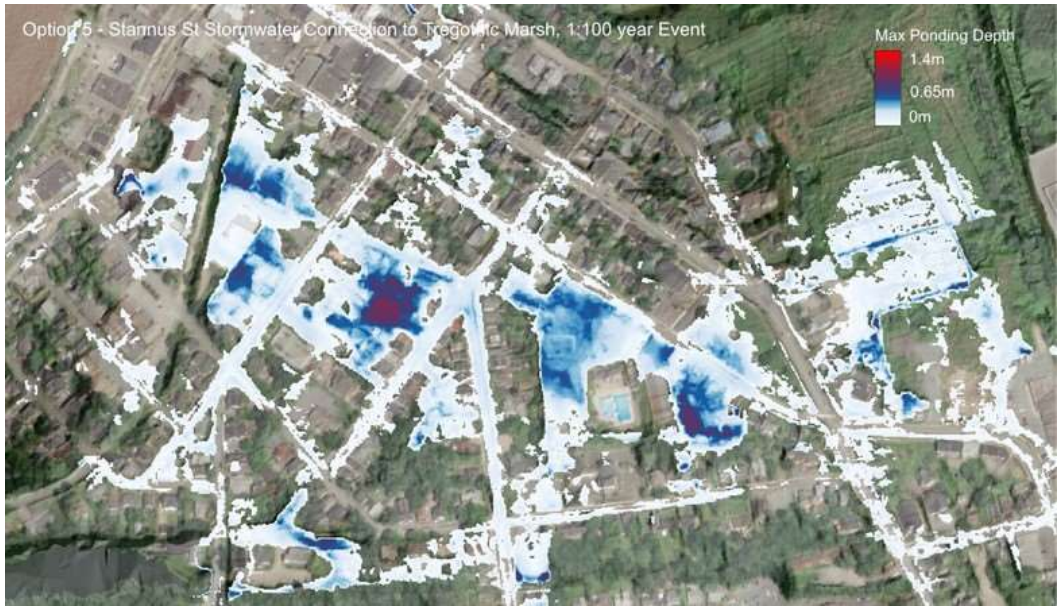
Option 5 Stormwater Connection to Tregothic Marsh

1:10 Existing

With Upgrades

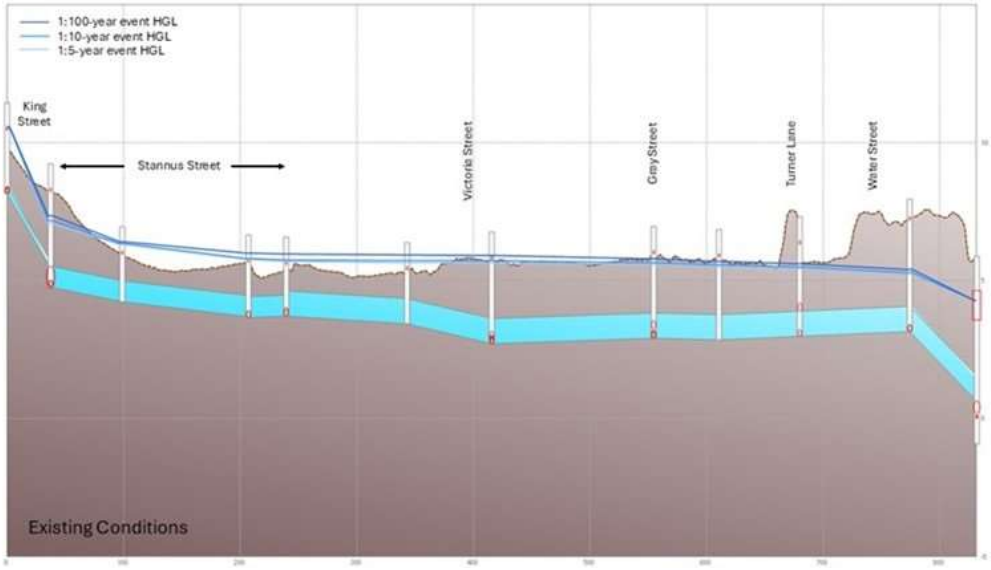
Option 5 Stormwater Connection to Tregothic Marsh

1:100 Existing

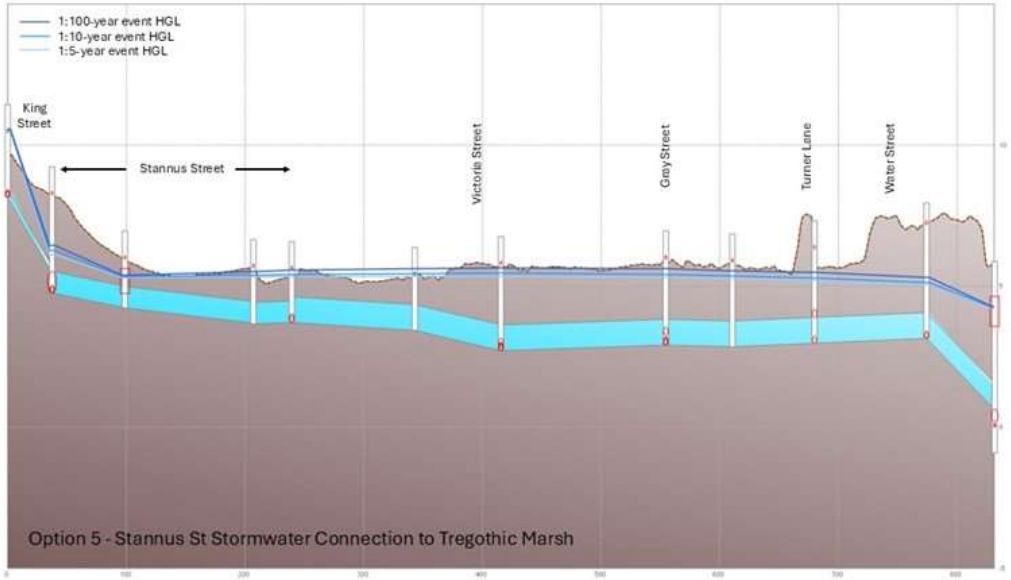


With Upgrades

Option 5 Stormwater Connection to Tregothic Marsh



Cunnabel Creek Existing



With Upgrades

CBCL

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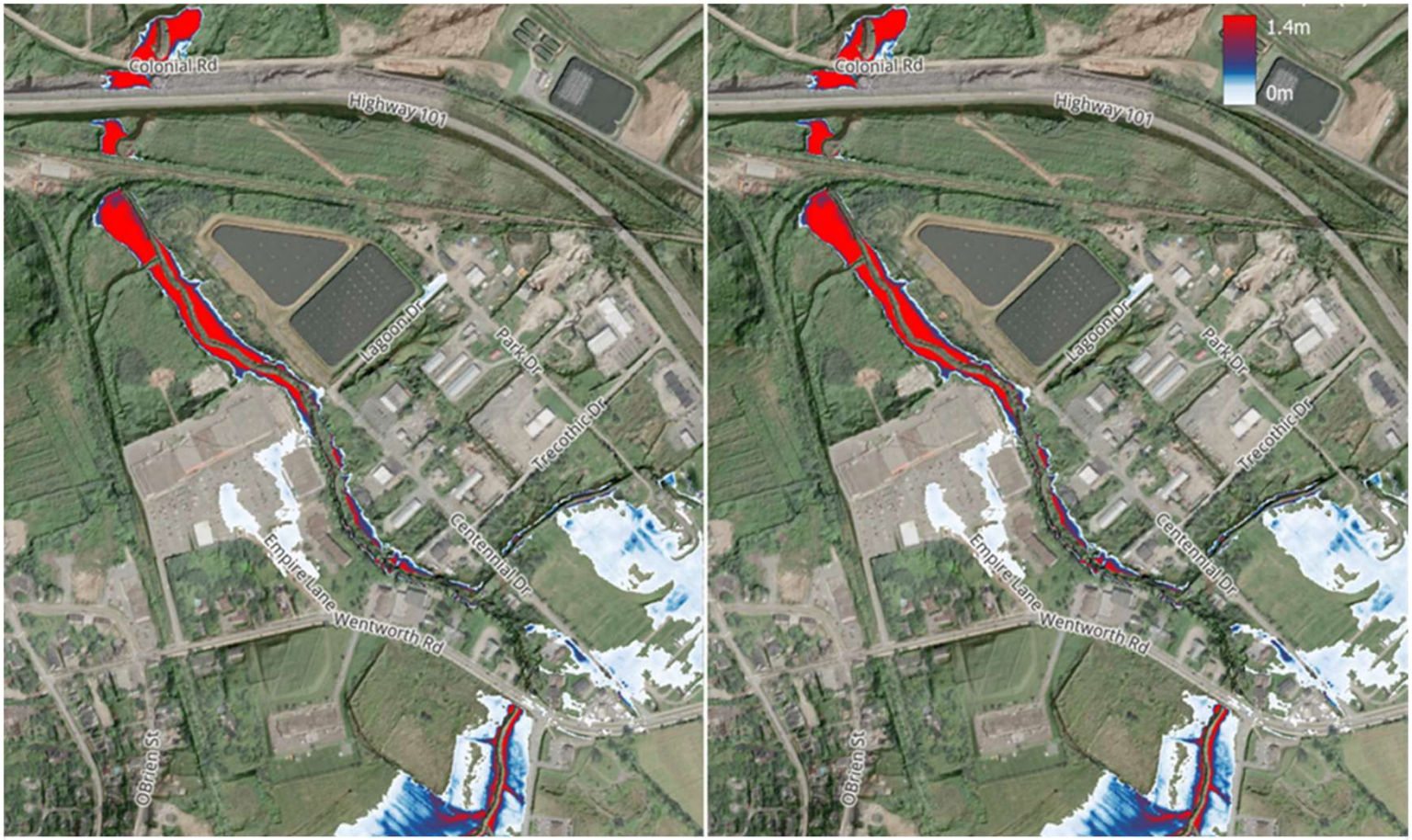


Existing Conditions 1:100 year Climate Change Event

With flow from Stannus Street 1:100 year Climate Change Event

Flooding Comparison at Exhibition Grounds

Integrated Options

Integrated Option 1

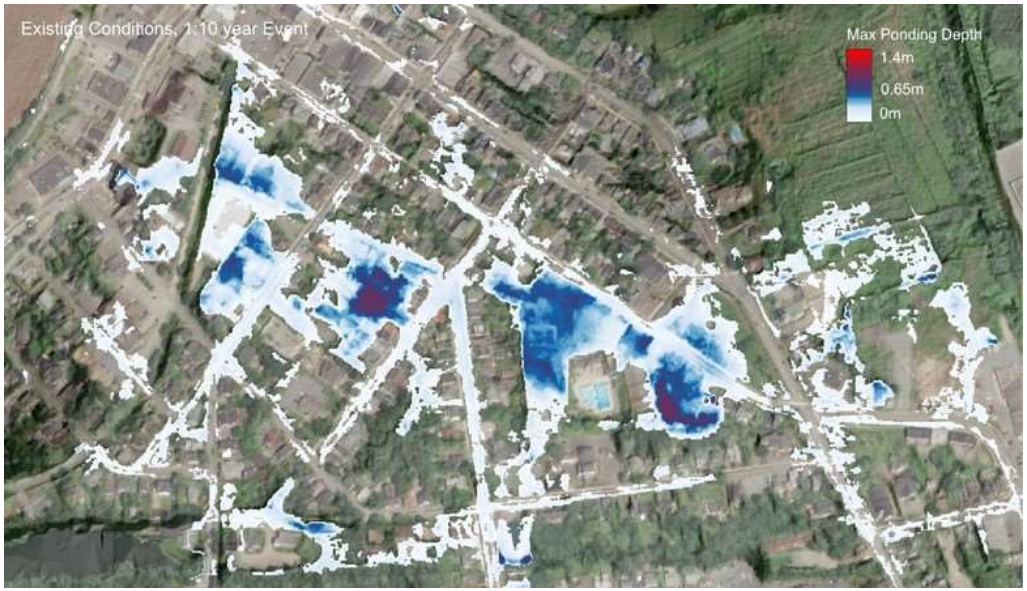
Albert Street Diversion & Stannus Pump Station c/w CSO Connection

1:5 Existing

With Upgrades

Integrated Option 1

Albert Street Diversion & Stannus Pump Station c/w CSO Connection



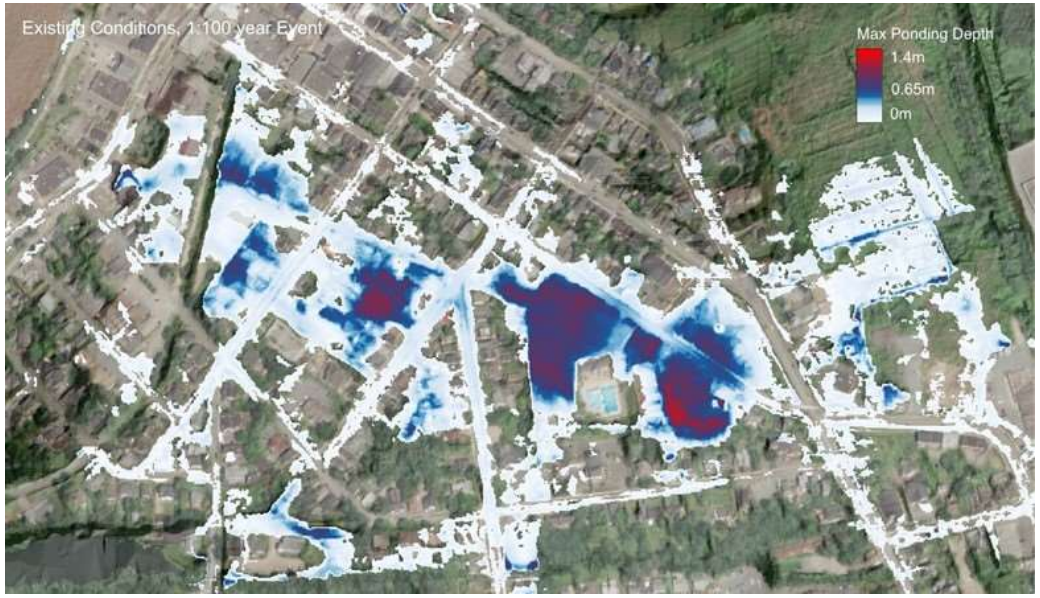
1:10 Existing

With Upgrades

CBCL

Integrated Option 1

Albert Street Diversion & Stannus Pump Station c/w CSO Connection



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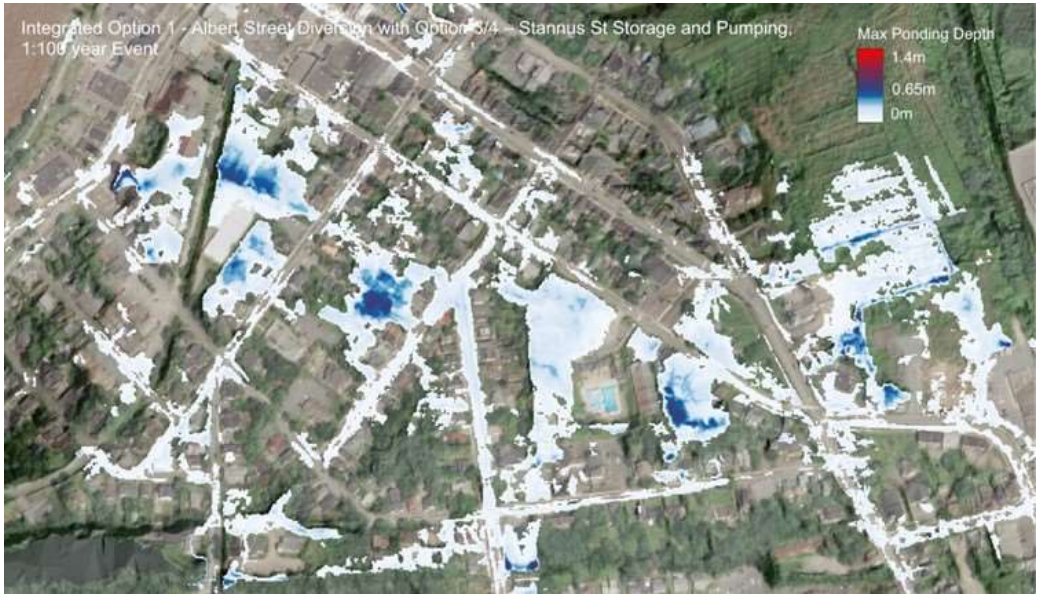
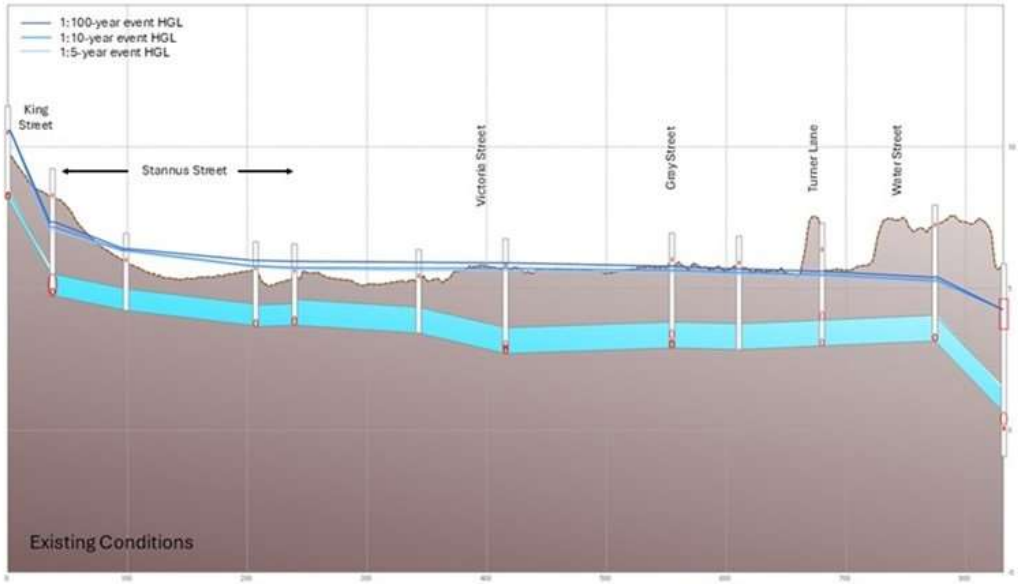


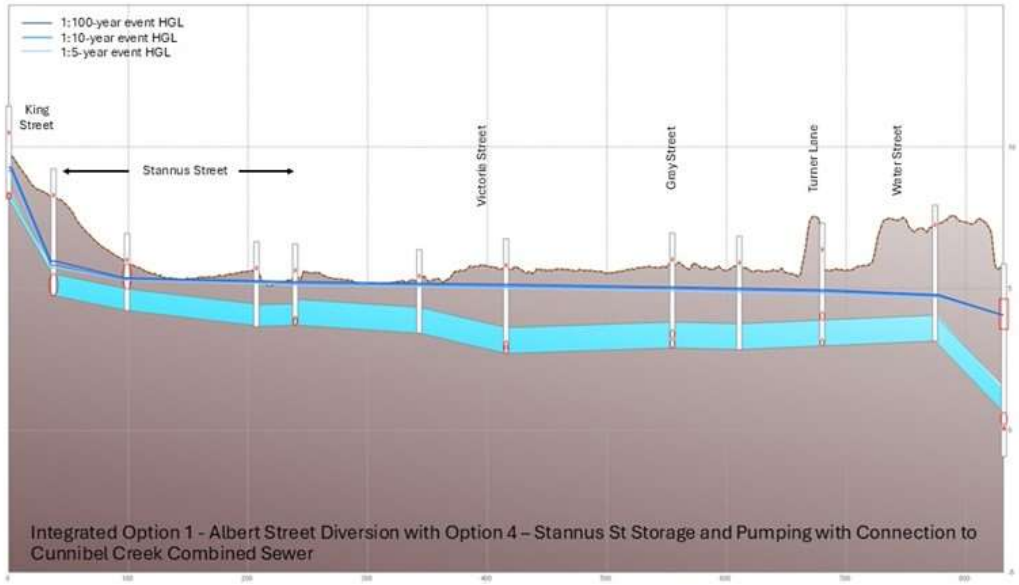
With Upgrades

Integrated Option 1

Albert Street Diversion & Stannus Pump Station c/w CSO Connection



Cunnabel Creek Existing



With Upgrades

CBCL

Integrated Option 2

Albert Street Diversion & Stannus Connection to Tregothic Marsh

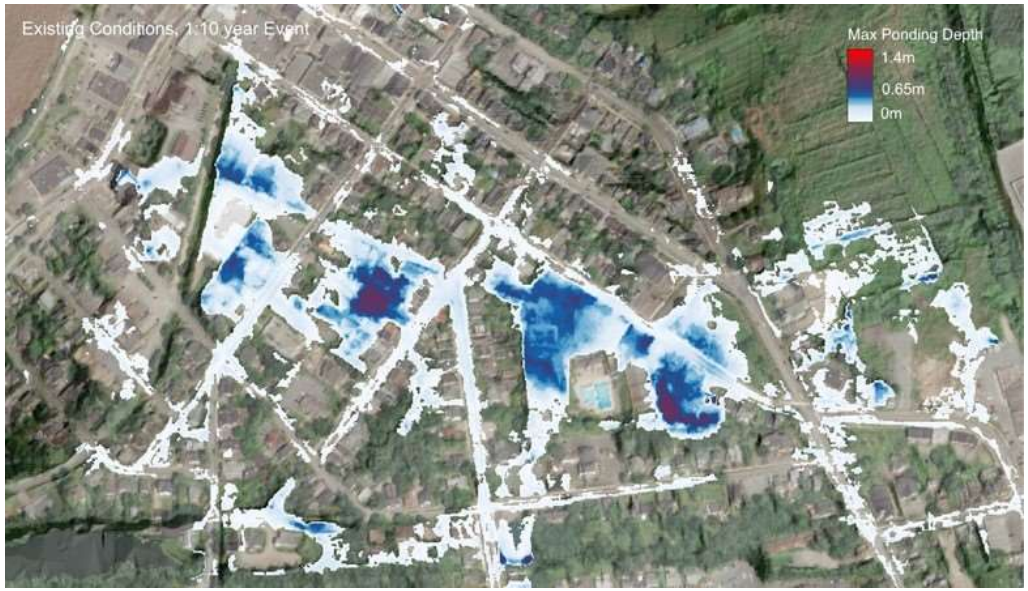
1:5 Existing

With Upgrades

CBCL

Integrated Option 2

Albert Street Diversion & Stannus Connection to Tregothic Marsh



1:10 Existing

With Upgrades

CBCL

Integrated Option 2

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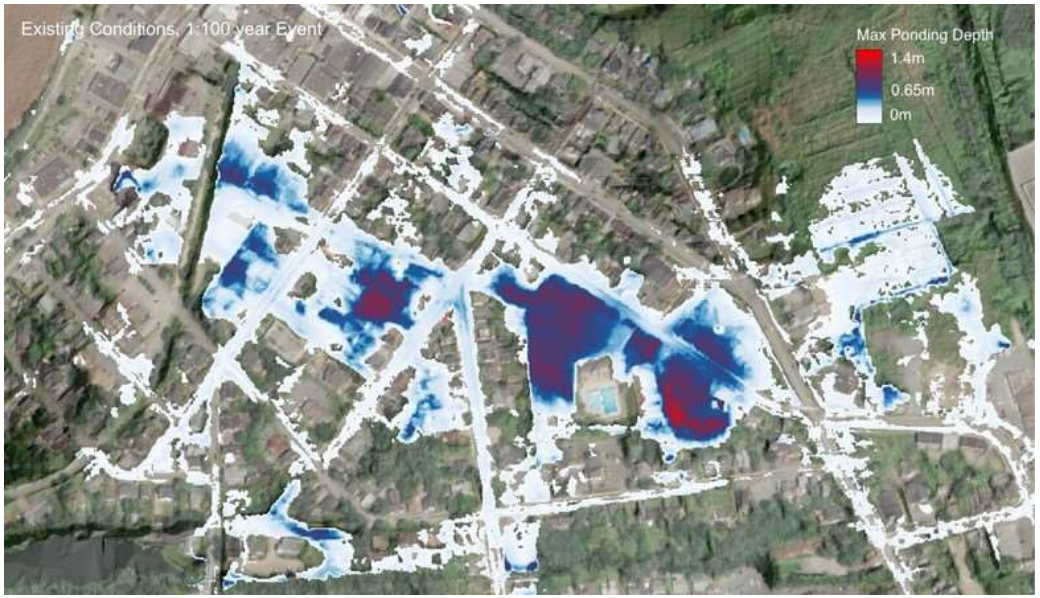

1:100 Existing

With Upgrades

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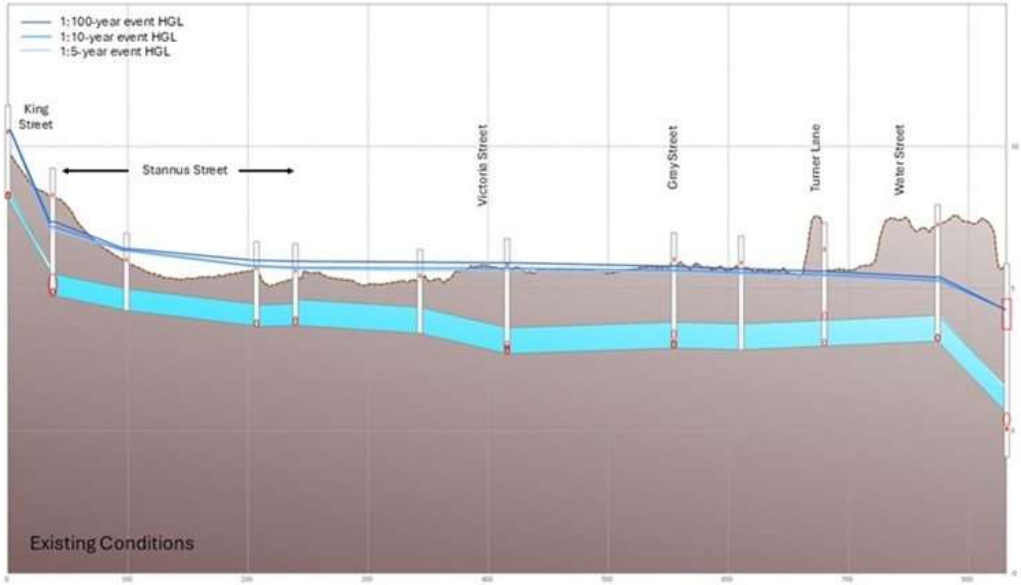
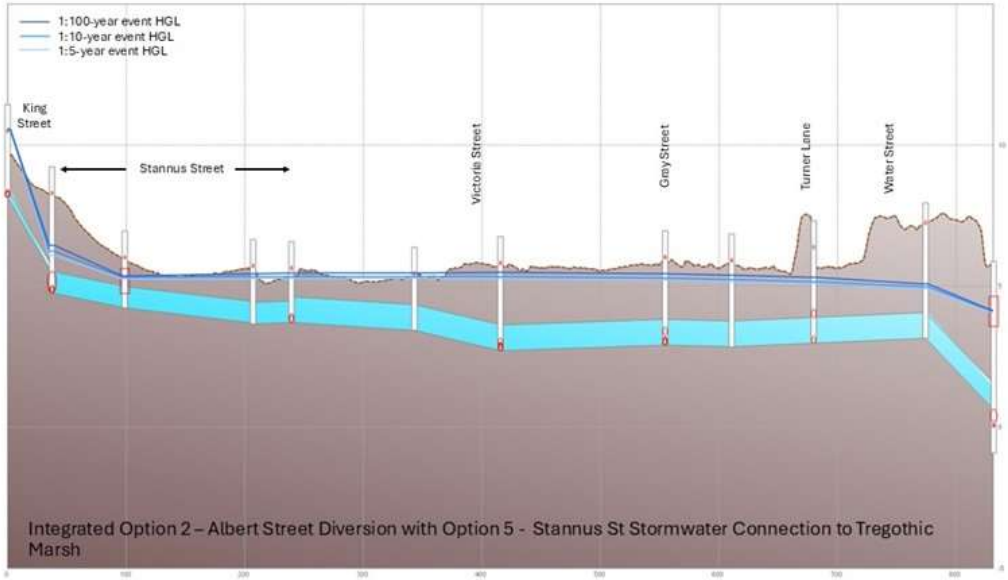


Cunnabel Creek Existing



With Upgrades

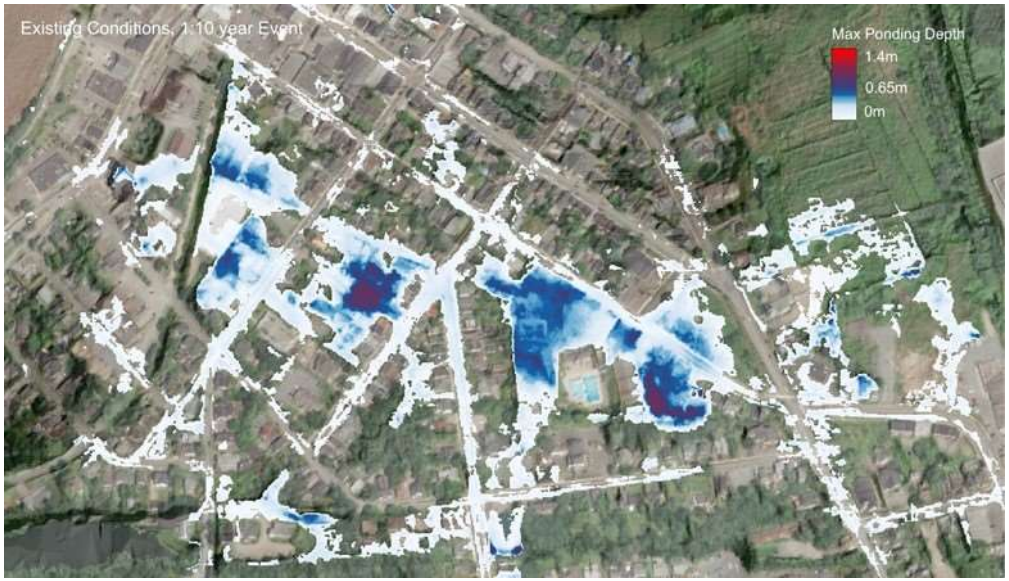
CBCL

Complete Separation

1:5 Existing

With Upgrades

Complete Separation



1:10 Existing

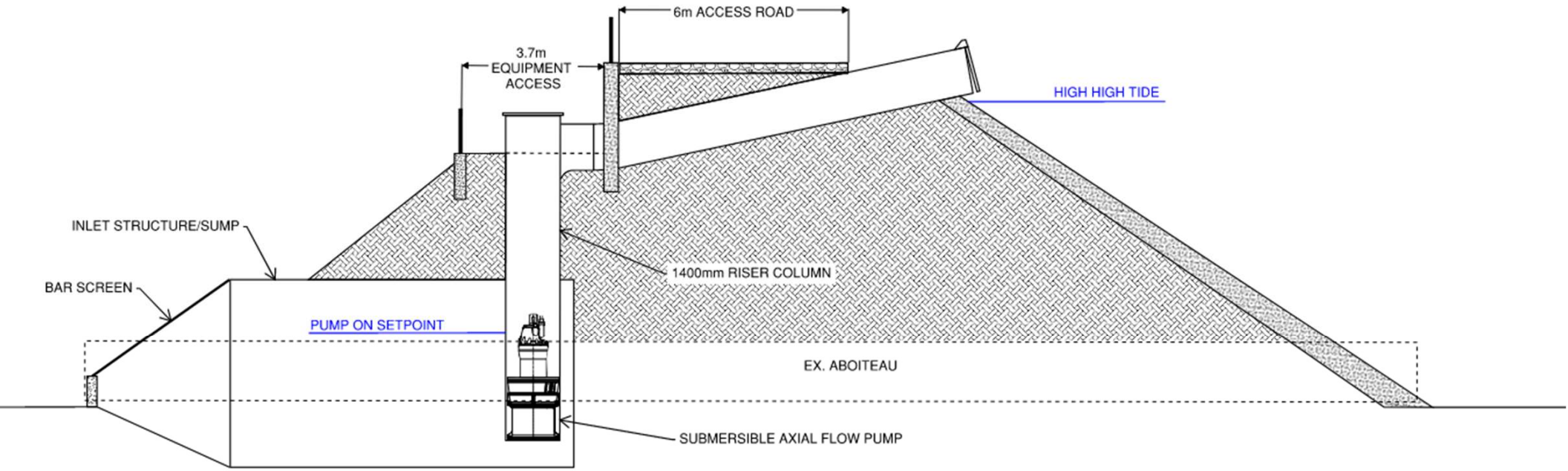
With Upgrades

Complete Separation

1:100 Existing

With Upgrades

Future Aboiteau Pump Station



Project Progression

Recommendation

Integrated Option 2

- Simpler design and construction

Gray Street

- Deep construction, small catchment area
- Drain local storm into Cunnabel Creek

Cunnabel Creek Upgrades

- Replace sections that are deteriorating or not functioning
- Multiple methods available depending on conditions

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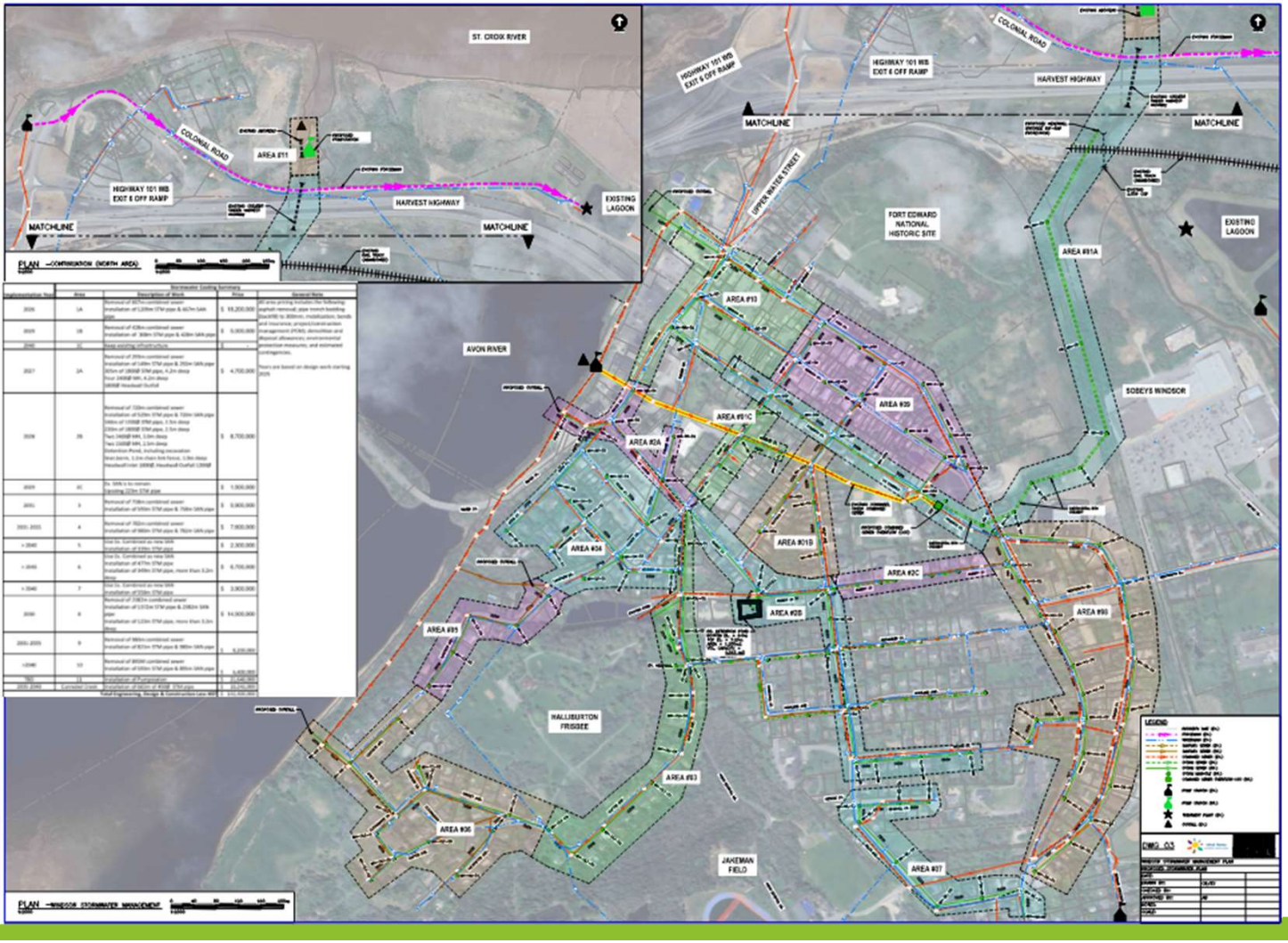
Construction Phasing



INCREMENTAL

- Remove existing combined sewer, replace with separated system

FLOW CONTROL

- At temporary re-connection points

OPPORTUNITIES

- Upgrade road, sidewalks, watermains, etc.

Next Steps

Preliminary Design Phase 1A

- Select desired option
- Begin funding, permitting discussions

Detailed Design and NSE Approvals

- Develop tender documents
- Apply for regulatory approval

Tender and Construction

- Issue tender documents, build current phase
- Could simultaneously design future phases

CBCL

Opinion of Probable Cost

OPINION of PROBABLE CONSTRUCTION COSTS
Stormwater Management Plan Town of Windsor

Date:	14/7/2025
Project No.	221101.00
Prepared & Revieed by:	EJ / AT / AB
Budget Class	Class C

(Based on CBCL Stormwater Report Plan - dated 05-06-2025)

SUMMARY

No.	AREA		AREA TOTALS
1	AREA 01A - Stannus Street	$	18,200,000
2	AREA 01B - Victoria Street	$	5,000,000
3	AREA 01C - Gray Street	$	-
4	AREA 2A - Albert Street to Outfall	$	4,700,000
5	AREA 2B - Wiley Ave. to Albert Street	$	8,700,000
6	AREA 2C - Optional Albert Street	$	1,500,000
7	AREA 3 - Clifton Ave	$	5,900,000
8	AREA 4 - Cedar, Avon, and Chestnut Street	$	7,600,000
9	AREA 5 - Lakeview Drive	$	2,300,000
10	AREA 6 - Sunset Ave to River Street	$	6,700,000
11	AREA 7 - Wiley Avenue	$	3,900,000
12	AREA 8 - O'Brien and King Street	$	14,500,000
13	AREA 9 - Gerrish Street	$	8,200,000
14	AREA 10 - Water Street and King Street	$	6,400,000
15	Cunnabel Creek - Upgrades	$	10,241,000
16	Aboiteau Pump Station	$	21,372,750
17	Land Purchase	$	300,000
18	DESIGN DEVELOPMENT CONTINGENCY ALLOWANCE - *Note 1*		*Included*
19	CONSTRUCTION CONTINGENCY - *Note 2*		*Included*
20	LOCATION FACTOR - *Note 3*		*Included*
21	ESCALATION (Based on 2025 Dollars) - *Note 4*		*Not Included*
22	**TOTAL - OPINION of PROBABLE CONSTRUCTION COSTS Less HST**	**$**	**126,000,000**
23	**Enginneering & Design**	$	16,400,000
	TOTAL - ENGINEERING & DESIGN and CONSTRUCTION COSTS Less HST	**$**	**142,400,000**

AREA 1

- Combined Sewer Overflow
- Connection to Tregothic Marsh

AREA 2

- Albert Street to Outfall
- Storage pond, surface flow away from Stannus