

City of London

Hyde Park Community Storm Drainage and Stormwater Management Servicing Municipal Class EA Addendum Executive Summary

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1. Executive Summary

1.1 Introduction

AECOM Canada Ltd. on behalf of the City of London completed a Municipal Class Environmental Assessment (EA) Addendum to the *Hyde Park Community Storm Drainage and Stormwater Management Servicing Municipal Class Environmental Assessment* study, completed in 2002. The 2018 EA addendum study (now called Hyde Park Community Storm Drainage and Stormwater Management Servicing Municipal Class EA Addendum) provides an update on recommendations for stormwater management to meet growth needs through the optimization of existing stormwater management facilities (SWMFs), re-evaluation of the location and design of future SWMFs, and the implementation of low impact development (LID) measures and permanent private systems (PPSs). The updated strategy provides the required quantity control, surface water quality control, and erosion control to support existing and future development within the Hyde Park development area (refer to **Figure ES1**).

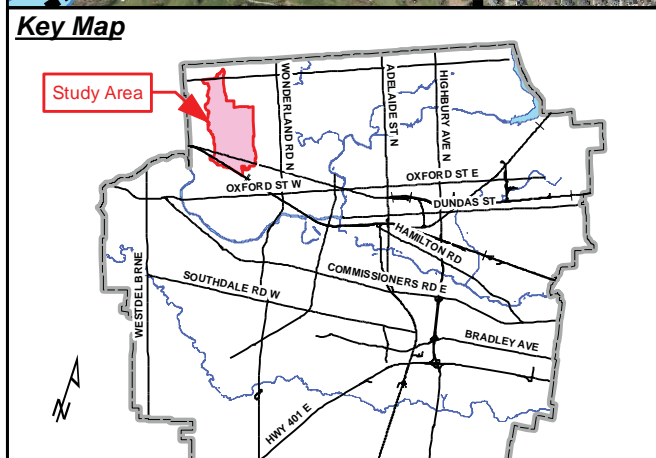
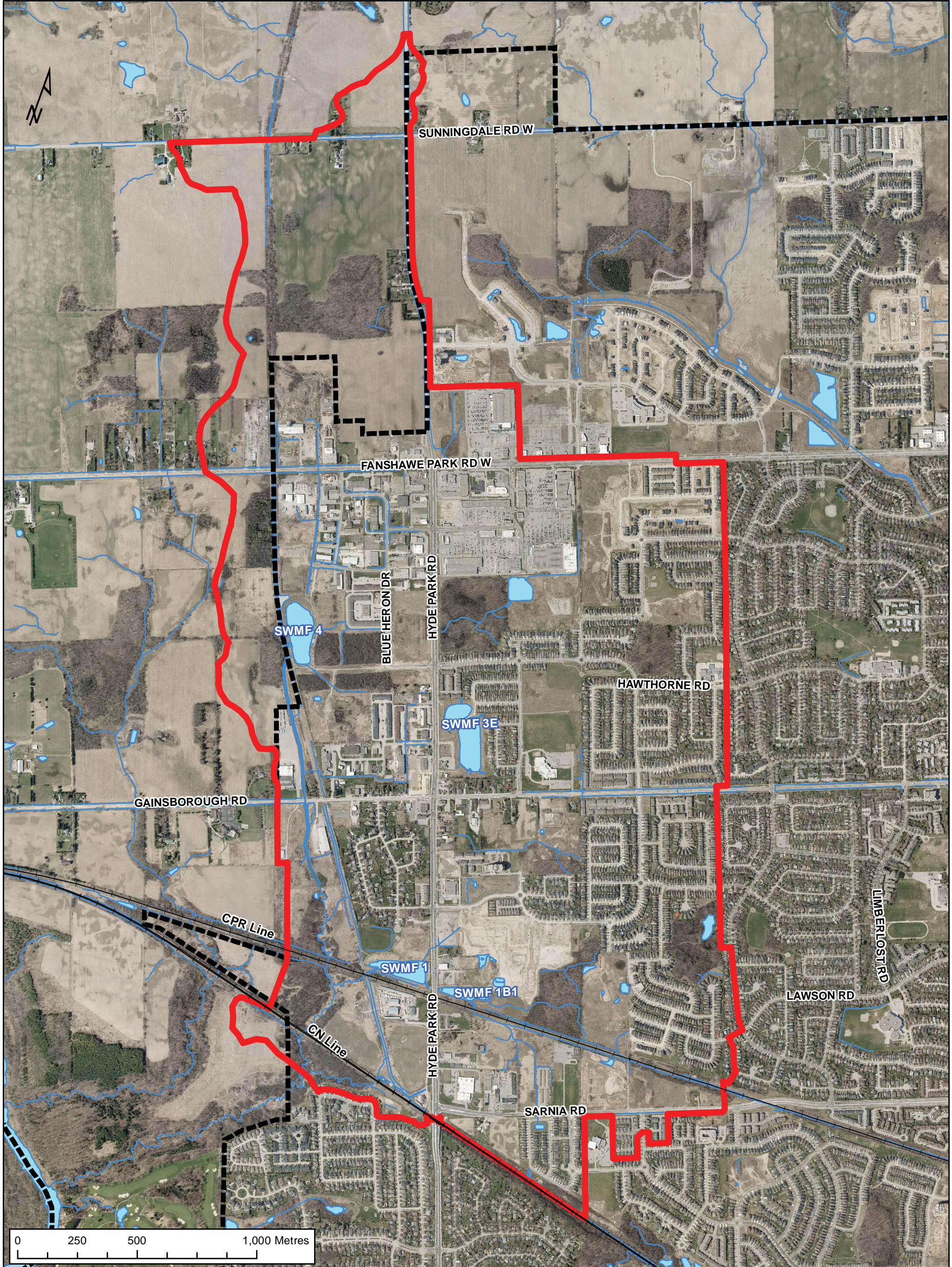
The EA addendum study was completed in accordance with the Ontario *Environmental Assessment Act* (EAA), and followed Approach #2 of the Municipal Engineers Association (MEA) Master Planning Process.

1.2 Background

Stormwater drainage and stormwater management (SWM) was originally assessed as part of the City of London's planning initiatives through the Stanton Drain Subwatershed Study (SDSS) and the Hyde Park Community Plan (HPCP) completed in 1994 and 1997, respectively. The SDSS Study reviewed the existing natural heritage of the watershed including the Stanton Drain, and identified objectives for preservation and enhancement of the environmental resources. These overall watershed objectives were translated to specific SWM criteria for the Stanton Drain and subwatershed area. The HPCP reviewed the stormwater management requirements for the study area and identified design criteria for required SWM facilities. Alternative locations for SWMFs were reviewed and preferred locations were identified.

Stormwater management measures were identified for the Hyde Park area through these studies to address existing drainage issues, flood protection and to facilitate future development. AECOM (formerly Earth Tech Canada) finalized the HPCP plan in 2001. The 2002 Hyde Park SWM Class EA was completed by AECOM to properly assess and support the design and construction of the recommended works, many of which have been constructed to date.

In consideration of the SWMFs implemented to date, anticipated development patterns, new City of London stormwater management policy and permitting requirements, and pending Low Impact Development (LID) direction from the Ontario Ministry of Environment and Climate Change (MOECC), an update to the original storm drainage and stormwater management servicing strategy is required.



Hyde Park Community Storm Drainage and Stormwater Management Servicing Municipal Class EA Addendum

Legend

- Railways
- City Boundary
- Watercourse / Drains
- Study Area
- Urban Growth Boundary

Figure ES1: Study Area

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1.3 Problem and opportunity Statement

The Problem/Opportunity Statement is the principle starting point in the undertaking of a Municipal Class EA and becomes the central theme and integrating element of the project. It also assists in setting the scope of the project. The following problem/opportunity statement was prepared for this EA addendum study in consideration of past studies and current City and MOECC initiatives.

Considering recent changes to permitting requirements and anticipated development patterns, the City needs to revisit the original Class EA assumptions and update the Hyde Park storm drainage and SWM servicing strategy. The recommended strategy will address long term planned growth with consistent stormwater management requirements and minimize impacts to the natural environment while also providing opportunities for enhancements. The recommended strategy will incorporate policy updates including the application of Permanent Private Systems (PPS), Low Impact Development (LID), and Best Management Practices (BMP) for future developments as well as road corridors, where applicable and feasible. It will also maximize the function of the existing and future infrastructure, refine land use assumptions outside of the Urban Growth Boundary, and incorporate interim facilities where appropriate and feasible.

1.4 Storm Drainage and Stormwater Management

1.4.1 Storm Drainage and Stormwater Management

The 2002 EA recommended six stormwater management facilities (SWMFs) to be constructed along with improvements to the Stanton Drain.

- SWMF 1 was constructed in 2007.
- SWMF 1B was constructed in 2011.
- SWMF 3E was constructed in 2009.
- SWMF 4 was constructed in 2013.
- SWMF 5 has not been constructed. The functional design phase of SWMF 5 commenced in 2014, and was put on hold subject to the outcome of this EA addendum.
- SWMF 6 has not been constructed. The functional design phase of SWMF 6 was commenced in 2014, and was put on hold subject to the outcome of this EA addendum. To support development pressures and growth demands in the interim, several interim measures for the service area have been implemented. and are further described in Section 1.4.2 below.

The Stanton Drain was recommended to be remediated from SWMF 5 north to Gainsborough Road and up to the CNR spur line crossing. A major flow channel was recommended to be relocated to the CNR spur line from this point to Fanshawe Park Road. The remediation portion of the work was recommended to provide proper servicing and address flooding problems north of Gainsborough Road.

The recommended remediation of the Stanton Drain and construction of the major flow channel was completed in 2013 from Fanshawe Park Road to approximately 350 m south of Gainsborough Road. The works were completed in conjunction with the construction of SWMF 4. The remediated drain was designed with a nested low flow channel and high flow overbank to sustain diverted major flows from SWMF 4 for quantity and erosion control treatment by SWMF 5 downstream. Due to land access constraints at the time of construction, the final section of the recommended remediation along the proposed SWMF 5 property has not been constructed.

1.4.2 Interim Works

Several interim SWMFs and SWM controls not identified in the 2002 EA have been constructed to address growth demands as development has occurred.

- Interim Mathews Hall Subdivision SWMF was designed and constructed in 2009 to provide interim/temporary water quality and water quantity control for the Mathews Hall residential development, in advance of the construction of SWMF 6. As part of the recent Sarnia Road reconstruction and storm sewer works completed in 2017, a storm sewer connection has been provided to support the future decommissioning of Interim Mathews Hall Subdivision SWMF.
- Interim SWMF 6 and OGS 3. Due to delays in the design and construction of Hyde Park SWMF 6 located west of Hyde Park Road, an interim SWM arrangement for water quality and quantity was implemented
- Hyde Park OGS 4 and 5 were installed as part of the Phase 1 widening of Hyde Park Road in 2016.
- Sarnia Road Bioretention Cells were constructed in 2017 to support the reconstruction of Sarnia Road, from Hyde Park Road to Beaverbrook Avenue.

1.5 SWM Strategy Overview

In consideration of the SWMFs implemented to date, anticipated development patterns, new City of London stormwater management policy and permitting requirements, pending LID direction from the Ontario Ministry of Environment and Climate Change (MOECC), and the need to consider climate change and infrastructure resiliency, an update to the original storm drainage and stormwater management servicing strategy was required.

1.5.1 SWM Objectives

SWM objectives for the study area include:

- water quality,
- water quantity control,
- erosion control, and
- conveyance measures.

As part of the preferred SWM strategy, major and minor flow conveyance is to be improved. New outlets to existing SWMFs or watercourses are to be identified. The preferred strategy will also identify development areas requiring onsite flow attenuation due to identified major and/or minor flow constraints. SWM controls for these areas will be implemented in accordance with the City of London PPS policy, through the implementation of source controls (ex. depressed storage in parking lots, subsurface storage, and roof top storage) or LID measures (ex. bioretention cells, swales, and infiltration trenches).

1.6 Identification and Evaluation of Alternative Solutions

1.6.1 Alternatives Evaluated as Part of EA Addendum

As summarized in **Section 1.4.1**, four of the recommended six SWMFs from the 2002 EA have been implemented to date. Interim stormwater water management measures have also been constructed to meet SWM requirements as development has occurred.

The recommended SWM works from the 2002 EA still to be constructed include

- SWMF 5,
- SWMF 6, and
- remaining Stanton Drain remediation works.

This addendum considers alternative solutions to SWMF 5 and SWMF 6 as recommended in the 2002 EA. The entire Hyde Park drainage area has been re-evaluated to provide an update on the recommendations for stormwater management to meet growth needs. The alternatives considered the optimization of existing SWMFs, re-evaluation of the location and design of future SWMFs, and the implementation of low impact development (LID) measures and permanent private systems (PPSs). The overall strategy is to meet the design objectives and provide the required quantity control, surface water quality control, and erosion control to support existing and future development.

The Stanton Drain remediation works have not been re-evaluated as part of the EA addendum, as the works have commenced and are recommended to be completed. The remaining portion of the Stanton Drain works are identified and further described in **Section 1.7.3**

Alternatives were evaluated under future land use conditions (ultimate build-out) of the Hyde Park Area, including potential expansion and development outside the current City of London Urban Growth Boundary. Interim development scenarios were evaluated to determine triggers for SWM needs.

SWMF 5

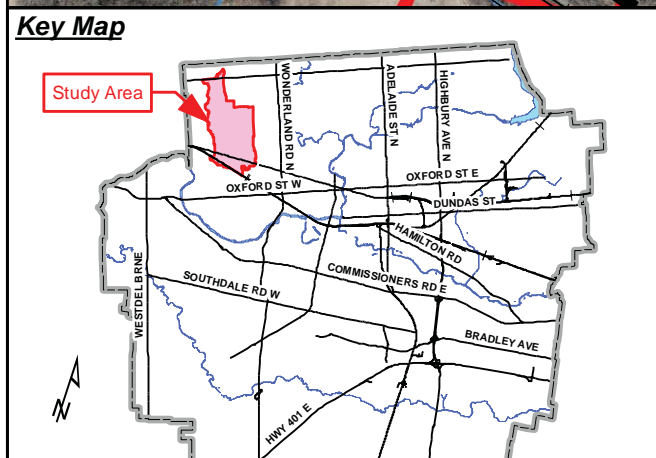
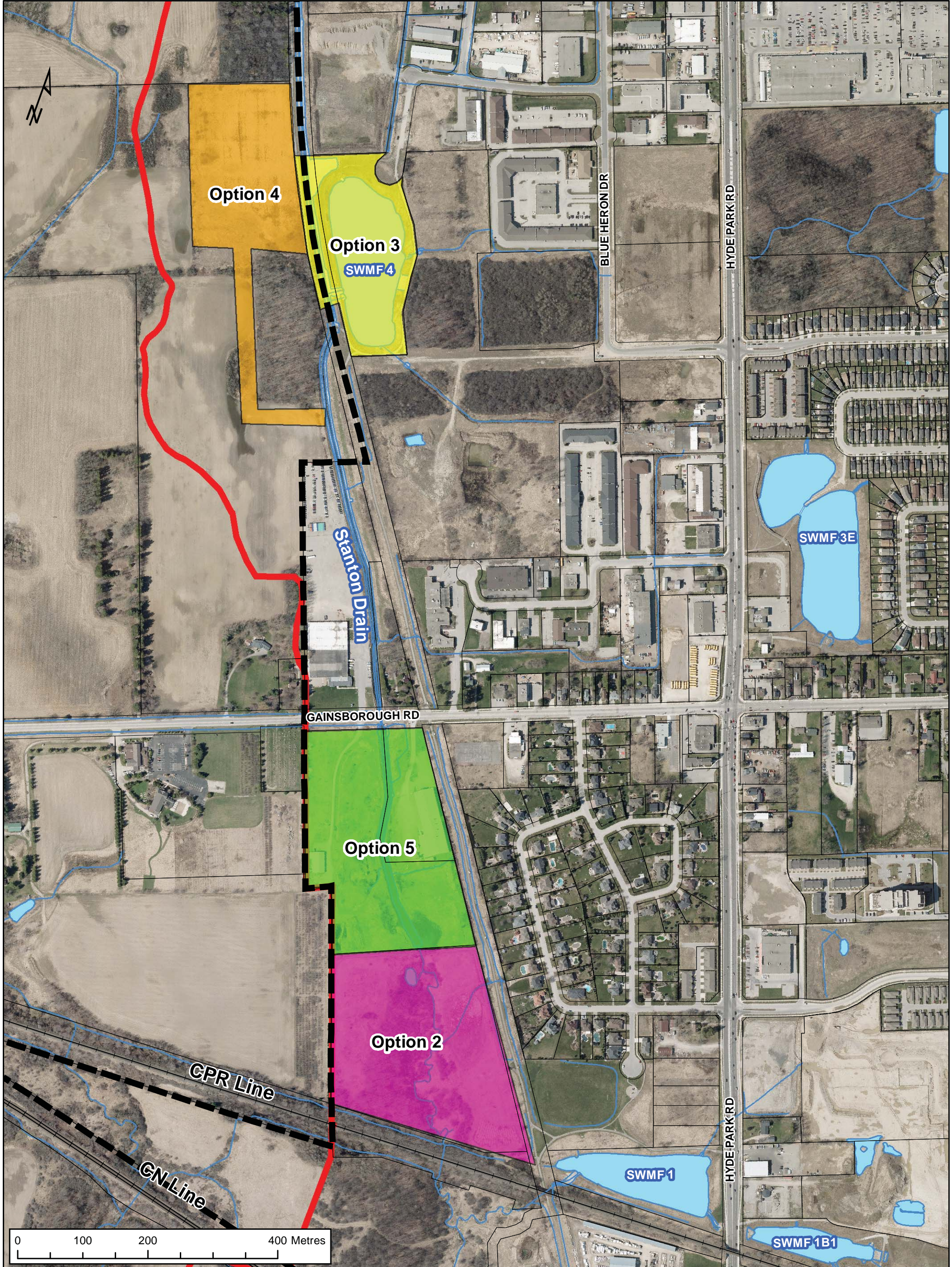
Alternatives evaluated for SWMF 5 are illustrated in **Figure ES2**, and further described below.

- Option 1: Do Nothing
- Option 2: 2002 Recommended SWMF 5
- Option 3: SWMF 4 Upsize and Retrofit
- Option 4: New Hyde Park Erosion and Flood Control Facility – Outside Urban Growth Boundary
- Option 5: New Hyde Park Erosion and Flood Control Facility – Inside Urban Growth Boundary

SWMF 6

Alternatives evaluated for SWMF 6 are illustrated in **Figure ES3**, and further described below.

- Option 1: Do Nothing
- Option 2: 2002 Recommended SWMF 6
- Option 3: Trunk Sewer/Channel and Conveyance through Existing CP Rail Crossing
- Option 4: Trunk Sewer/Channel and Conveyance through New CP Rail Storm Sewer



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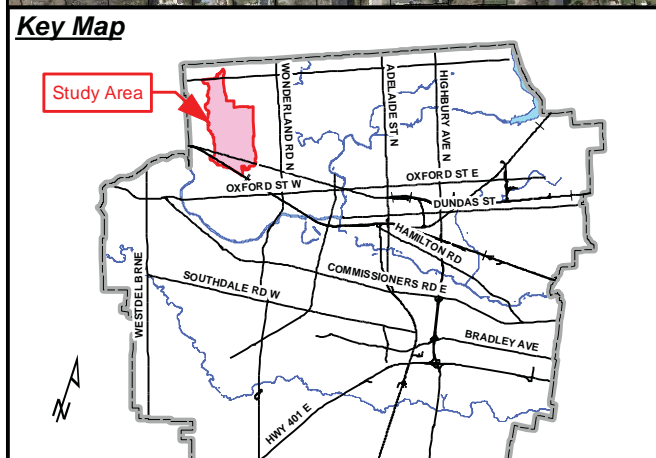
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| <ul style="list-style-type: none"> ▭ Study Area Urban Growth Boundary (UGB) — Watercourse / Drains <p>SWMF 5 Alternatives</p> <ul style="list-style-type: none"> Option 2: 2002 EA Recommended SWMF 5 Option 3: SWMF 4 Upsize and Retrofit Option 4: New Hyde Park EFC Facility Outside UGB Option 5: New Hyde Park EFC Facility Inside UGB | |
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**Figure ES2:
SWMF 5 Alternatives**

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- Option 2: 2002 EA Recommended SWMF 6
- Option 3: Trunk Sewer/Channel and Conveyance through Existing CPRail Culvert Crossing
- Option 4: Trunk Sewer/Channel and Conveyance through New CPRail Storm Sewer Crossing
- Option 3 and 4: Shared Route
- Study Area
- Urban Growth Boundary
- Watercourse / Drains

Figure ES3: SWMF 6 Alternatives

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1.6.2 Recommended SWMF 5 Alternative

Based on the criteria and methodology applied as part of the evaluation process, the preferred alternative for SWMF 5 is **Option 3: SWMF 4 Upsize and retrofit** for the following reasons:

- The preferred alternative optimizes the service level of SWMF 4 and removes the need for SWMF 5.
- SWMF 4 would be retrofitted to service all areas naturally draining to the Stanton Drain upstream of SWMF 4, thereby significantly increasing the overall service level and function of the facility.
- Major flows would no longer be diverted from SWMF 4 to be treated by the proposed SWMF 5 downstream.
- To provide the additional water quality, water quantity, and erosion controls required to the Stanton Drain downstream, this alternative would be implemented in conjunction with retrofits of SWMF 3E, LID implementation along Gainsborough Road, PPS/LID controls on future development outside the urban growth boundary, and PPS/LID controls on future development of lands that do not naturally drain to an existing or proposed facility.

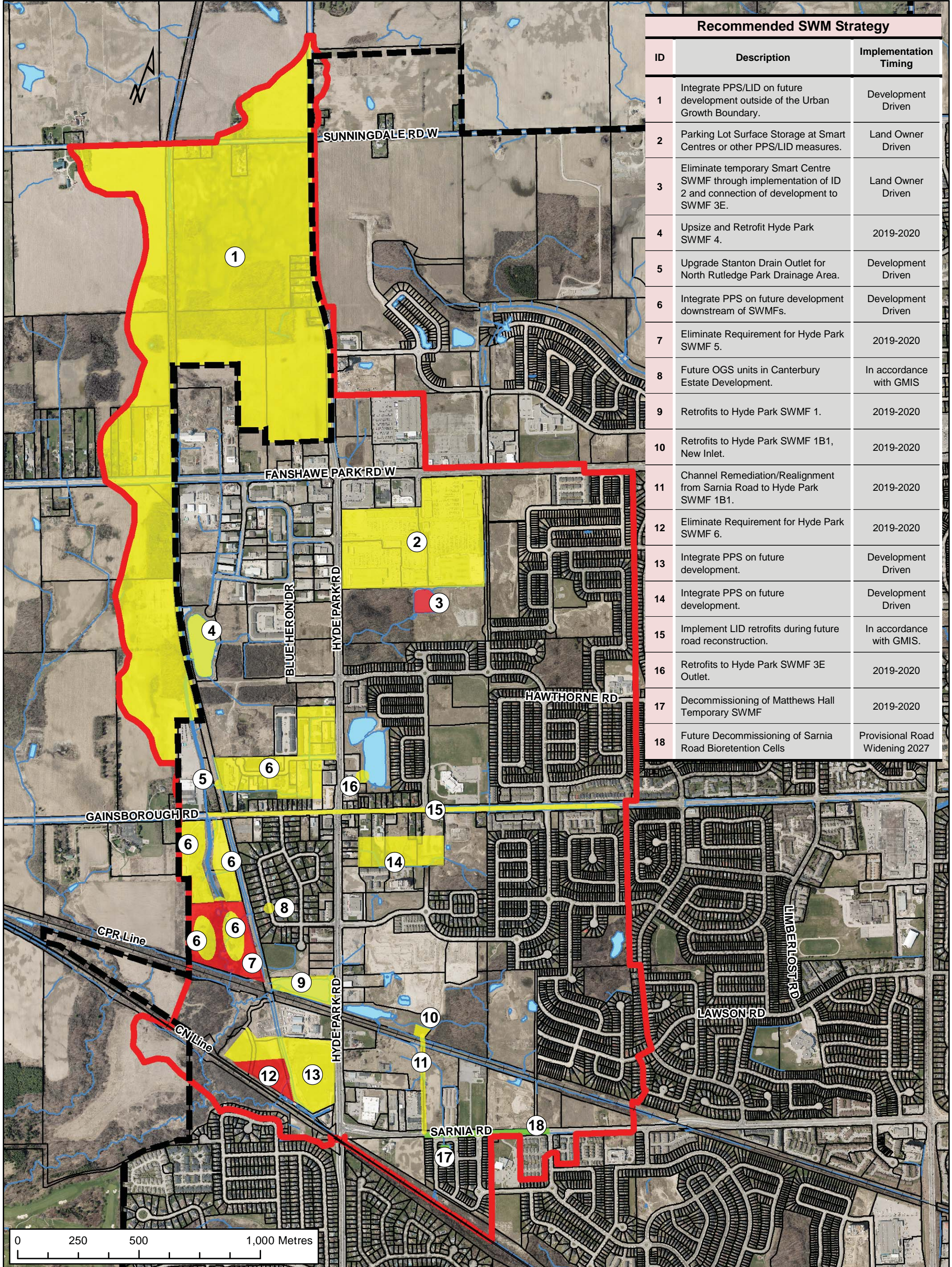
1.6.3 Recommended SWMF 6 Alternative

Based on the criteria and methodology applied as part of the evaluation process, the preferred alternative for SWMF 6 is **Option 4: Trunk Sewer/Channel and Conveyance through New CP Rail Storm Sewer** for the following reasons:

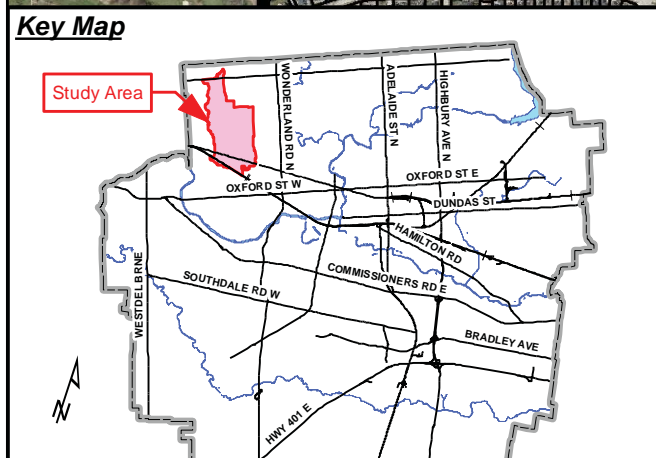
- The preferred alternative would optimize the service area of the existing SWMF 1B1 and SWMF 1, remove the need for SWMF 6, and support the decommissioning of Mathews Hall Temporary SWMF.
- Upon the provisional future road widening of Sarnia Road, from Beaverbrook Avenue to Hyde Park Road, the Sarnia Road bioretention cells may be decommissioned with treatment provided by SWMF 1B1 and SWMF 1 downstream.
- The recommended trunk sewer and channel would divert flows north to SWMF 1B1 via a new trunk sewer and channel. A new trenchless outlet through the CPR line embankment is recommended to discharge storm flows directly to the upper tier dry cell of SWMF 1B1.
- Quantity control would be provided by the upper tier dry cell and water quality would be provided by the lower tier wet cell. SWMF 1B1 and SWMF 1 operating in tandem would provide the required water quality, water quantity and erosion control for the increased upstream tributary area.
- As part of this alternative, Interim SWMF 6 and OGS 3 are to become permanent SWM controls for approximately 340 m of Hyde Park Road and a small portion of widened Sarnia Road. PPS controls are required for any future development of lands located west of Hyde Park Road to provide the additional water quality, water quantity, and erosion controls for the Stanton Drain.
- This alternative will provide a segment of a multi-use pathway link, connecting Sarnia Road to Hyde Park SWMF 1B1.

1.7 Preferred Storm Drainage and SWM Strategy: Project Descriptions

Figure ES4 illustrates the preferred SWM Strategy recommended works described below.



| Recommended SWM Strategy | | |
|--------------------------|--|--------------------------------|
| ID | Description | Implementation Timing |
| 1 | Integrate PPS/LID on future development outside of the Urban Growth Boundary. | Development Driven |
| 2 | Parking Lot Surface Storage at Smart Centres or other PPS/LID measures. | Land Owner Driven |
| 3 | Eliminate temporary Smart Centre SWMF through implementation of ID 2 and connection of development to SWMF 3E. | Land Owner Driven |
| 4 | Upsize and Retrofit Hyde Park SWMF 4. | 2019-2020 |
| 5 | Upgrade Stanton Drain Outlet for North Rutledge Park Drainage Area. | Development Driven |
| 6 | Integrate PPS on future development downstream of SWMFs. | Development Driven |
| 7 | Eliminate Requirement for Hyde Park SWMF 5. | 2019-2020 |
| 8 | Future OGS units in Canterbury Estate Development. | In accordance with GMIS |
| 9 | Retrofits to Hyde Park SWMF 1. | 2019-2020 |
| 10 | Retrofits to Hyde Park SWMF 1B1, New Inlet. | 2019-2020 |
| 11 | Channel Remediation/Realignment from Sarnia Road to Hyde Park SWMF 1B1. | 2019-2020 |
| 12 | Eliminate Requirement for Hyde Park SWMF 6. | 2019-2020 |
| 13 | Integrate PPS on future development. | Development Driven |
| 14 | Integrate PPS on future development. | Development Driven |
| 15 | Implement LID retrofits during future road reconstruction. | In accordance with GMIS. |
| 16 | Retrofits to Hyde Park SWMF 3E Outlet. | 2019-2020 |
| 17 | Decommissioning of Matthews Hall Temporary SWMF | 2019-2020 |
| 18 | Future Decommissioning of Sarnia Road Bioretention Cells | Provisional Road Widening 2027 |



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Key

- Study Area
- Urban Growth Boundary
- Watercourse / Drains

Recommended SWM Strategy Works

- Recommended New Works
- Eliminated 2002 EA Recommended Works
- Recommended Decommissioning of Interim Works

**Figure ES4:
Overview of Recommended Works**

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1.7.1 SWMF Retrofits

The following retrofits are required to address erosion and quantity control for the current and ongoing development of the service area.

- SWMF 1 is recommended to be retrofitted to increase the erosion and quantity control capacity of the facility, through grading works and reduction in the permanent pool elevation. The facility footprint is proposed to be expanded through grading works to the northwest bank, adjacent to Canterbury Park. A new outlet structure is proposed to lower the permanent pool to 236.5 m (1 m deep). A reconstructed outlet is recommended to include a reverse slope pipe, complete with a 200 mm low flow control orifice and high flow weir/orifice structure. A reverse slope outlet pipe will draw water from the bottom of the permanent pool and includes several benefits such as temperature mitigation and reduction in potential blockages/clogging from floating debris and vegetation.
- The upper dry cell of SWMF 1B1 will require grading and inlet works to support the connection of the Sarnia Road Channel/Trunk Sewer, summarized in **Section 1.6.3**. An ECA amendment will be required to support the inlet works. No changes are proposed to the outlet structure or treatment volumes of the upper or lower cells.
- The outlet structure for SWMF 3E is recommended to be retrofitted to optimize the quantity and erosion control volume of the existing facility. It is recommended that the outlet structure is retrofitted to include a 375 mm orifice plate on the outlet sewer, located on the outlet pipe of the high flow catch basin. The proposed orifice plate will restrict outlet flows of the facility, and improve erosion and flooding conditions downstream. The orifice plate will not impact the emergency grate flow capacity, located downstream. The maximum ponding depth will increase for the 100 year event to 270.43 (3.18 m above pond bottom), and maintain a 0.27 m freeboard to the emergency overflow structure. The total active storage utilized in the 100-year event will be increase from 48,600 m³ to 68,600 m³, representing a 41 % increase. No changes to the facility grading are recommended. A total storage of approximately 101,300 m³ (including the permanent pool) is provided to a depth of 3.45 m, prior to activating the emergency grate overflow. The facility will continue to contain the 250 year event, with overflow to the emergency grate overflow structure. Under the 250 year event, a freeboard of 0.36 m is provided to the top of the facility.
- SWMF 4 is recommended to be retrofitted to provide water quantity, water quality, and erosion control to all upstream lands, including lands outside the current urban growth boundary that natural drain to the SWM facility. Lands outside of the urban growth boundary will additionally require onsite PPS/LID. The proposed retrofit includes expansion of the facility to the west, to include a connection to the major flow channel. Major flows will no longer by-pass SWMF4. Habitat enhancement components are recommended to be included in the retrofit of the facility through inclusion of shallow wet pools along west boundary, adjacent to Hyde Park Rotary Link trail system. The outlet of the facility is recommended to be reconstructed to include a low flow reverse slope pipe, complete with a 230 mm low flow control orifice and high flow weir/orifice structure. Due to the significant surface water base flow component to the existing SWMF, it is recommended that a base flow monitoring program is initiated during detailed design to confirm the sizing requirement for the low flow control orifice.

1.7.2 Elimination of 2002 Recommended and temporary SWMFs

The preferred SWM strategy will eliminate two of the recommended SWMFs identified in the 2002 EA, SWMF 5 and SWMF 6, and will also facilitate decommissioning of the Mathews Hall Temporary SWMF.

1.7.3 Conveyance

- The preferred alternative includes the construction of the Sarnia Road Channel/Trunk sewer to convey flows from Sarnia Road north to SWMF 1B1. Stanton Drain Profile Regrading
- The Stanton Drain is recommended to be remediated for a total length of 70 m, from approximately 350 m south of Gainsborough Road southerly towards the CPR line downstream.
- The preferred alternative identifies future outlet upgrades for the North Routledge Park drainage area connecting to the Stanton Drain.
- LIDs are recommended to be included in all future development and municipal infrastructure projects.

1.8 Implementation of Capital Projects

| Project Description | Implementation Timing |
|---|---|
| SWMF 1 – Retrofit to increase erosion and quantity control. Increase footprint and construct new outlet | 2019-2020 |
| SWMF 1B1 –Inlet works for Sarnia Road Channel/Trunk Sewer | 2019-2020 (timed with Sarnia Road Channel/Trunk Sewer works) |
| SWMF 3E – Retrofit outlet structure to optimize quantity and erosion control. | 2019-2020 |
| SWMF 4 – Expand facility to the west and include a connection to Stanton Drain major flow channel. Reconstruct facility outlet. | 2019-2020 |
| Eliminate the requirement for SWMF 5 | 2019-2020 |
| Eliminate the requirement SWMF 6 | 2019-2020 |
| Eliminate Matthews Hall Temporary SWMF | 2019-2020 (timed with Sarnia Road Channel/Trunk Sewer works) |
| Sarnia Road Channel – Construct a Channel / Trunk Sewer from Sarnia Road to SWMF 1B1. | 2019-2020 |
| Stanton Drain Profile Regrading – Remediate 70m of Stanton Drain from 350m south of Gainsborough Road southerly toward the CPR line. | 2019-2023 (timed with maintenance easement acquisition) |