



URBANTECH®

**FUNCTIONAL SERVICING &
STORMWATER MANAGEMENT REPORT**

**ARGO TRAFALGAR
NORTH OAKVILLE**

TOWN OF OAKVILLE

REGION OF HALTON

**PREPARED FOR
ARGO TRAFALGAR CORPORATION**

Urbantech File No.: 22-709

**1ST SUBMISSION – JUNE 2022
2ND SUBMISSION – JUNE 2023**

TABLE OF CONTENTS

1	INTRODUCTION.....	4
1.1.	REFERENCE REPORTS.....	4
2	EXISTING SITE CONDITIONS.....	5
2.1.	EXISTING TOPOGRAPHY, SOILS, AND HYDROGEOLOGY.....	5
2.2.	WATER, SANITARY AND STORM SERVICING.....	5
2.2.1.	Existing Sanitary Servicing.....	5
2.2.2.	Existing Water Servicing.....	5
2.2.3.	Existing Storm Servicing.....	6
3	REVIEW AGENCIES.....	7
3.1.	TOWN OF OAKVILLE.....	7
3.2.	REGION OF HALTON.....	7
3.3.	CONSERVATION HALTON.....	7
4	PROPOSED SITE SERVICING.....	8
4.1.	SANITARY SERVICING.....	8
4.2.	MUNICIPAL WATER.....	9
4.3.	STORM SERVICING.....	10
4.4.	STORMWATER MANAGEMENT.....	10
4.5.	SURFACE GRADING AND DRAINAGE.....	12
4.6.	WATER BALANCE.....	12
4.7.	EROSION AND SEDIMENT CONTROL.....	12
5	CONCLUSION.....	13

APPENDICES

Appendix A – Introduction and Background:

- Figure 1A – Site Location Map
- Figure 2A - North Oakville East Secondary Plan
- Figure 3A - Preliminary Argo Trafalgar Concept Plan

Appendix B – Existing Site Conditions:

- Figure 1B – Soil Characteristics
- Figure 2B – NOCSS Figure 7.3.1 Topographic Depressions

Appendix C – Proposed Servicing and Grading:

- Figure 1C – Preliminary Sanitary Servicing Plan
- Figure 1C1 – Region of Halton Master Wastewater Servicing Plan
- Figure 2C – Preliminary Water Servicing Plan
- Figure 2C1 – Region of Halton Master Water Distribution Plan
- Figure 3C-A – Pre-Development Storm Drainage
- Figure 3C-B – Preliminary Post-Development Storm Servicing Plan
- Figure 3C1 – NOCSS Figure 7.4.6 Approximate SWM Facility Locations

Appendix D – SWM Information:

- SWM Targets from NOCSS Addendum

1 INTRODUCTION

Urbantech Consulting was retained by Argo Trafalgar Corporation to prepare the following Functional Servicing Report to review potential servicing constraints and opportunities for two parcels of land located on the northern and southern sides of William Halton Parkway, east of Trafalgar Road. The northern and southern parcels of the subject site are referenced as Argo Trafalgar I and II, respectively. This report has been prepared in support of a proposed Official Plan Amendment (OPA) application. The purpose of the OPA is to add residential land uses to the mix of uses permitted in the Trafalgar Urban Core Area 1 land use designation, as per the North Oakville East Secondary Plan **Figure 2A** in **Appendix A**. The subject lands have a total area of approximately 12.5 ha (1.9 ha Argo Trafalgar I + 10.6 ha Argo Trafalgar II) and are currently comprised of vacant land used for agricultural purposes. A Site Location Map is provided on **Figure 1A**.

The Preliminary Demonstration Concept Plan was prepared by Gerrard Design Inc. for the subject lands as a mix of residential and employment development. It should be noted that a draft plan has not yet been developed at this time, and only a conceptual plan is available for the purposes of this FSR in support of the OPA application. The conceptual plan is provided in **Appendix A, Figure 3A**. This plan has been coordinated with the Town of Oakville and adjacent lands owned by IO with respect to the proposed road network and preliminary location of the future SWM facilities.

The purpose of this FSR is to review the existing background information and to provide a general overview of the servicing requirements and conceptual design for the subject lands to support the requested OPA to the North Oakville East Secondary Plan. The servicing plan will be further refined through the future EIR/FSS as more information becomes available.

1.1. REFERENCE REPORTS

In preparation of this FSR, the following reports and documents were referenced:

1. North Oakville Creeks Subwatershed Study (NOCSS), Town of Oakville, August 2006.
2. North Oakville Creeks Subwatershed Study Addendum, Town of Oakville, September 5, 2007.
3. Official Plan Amendment Number 272, North Oakville East Secondary Plan, February 2008.
4. North Oakville East Secondary Plan – Area Servicing Plan, Oakville Ontario, MMM Group Limited, April 2011.
5. Trafalgar Road Corridor Improvements EA, Cornwall Road to Highway 407 – Stormwater Management.
6. Technical Memorandum – Trafalgar Road (Phase 2) – Hays Boulevard to William Halton Parkway Sanitary Sewer Design, R.V. Anderson Associates Limited, November 8, 2021.
7. Water and Wastewater Linear Design Manual, Regional Municipality of Halton, April 2019.

2 EXISTING SITE CONDITIONS

The subject lands are located on the northern and southern sides of William Halton Parkway, east of Trafalgar Road. The Argo Trafalgar I property is located east of Trafalgar Road, and is bound by William Halton Parkway to the south, lands managed by Infrastructure Ontario to the north, and natural heritage features to the east. The Argo Trafalgar II property is also located east of Trafalgar Road, and is bound by William Halton Parkway to the north, Burnhamthorpe Road to the south and natural heritage features, as well as agricultural lands to the east. A Site Location Map is provided on **Figure 1A** in **Appendix A**.

2.1. EXISTING TOPOGRAPHY, SOILS, AND HYDROGEOLOGY

The subject Lands are located in the northwest headwaters of the Joshua Creek subwatershed and are predominantly used for agricultural row crops. The Argo Trafalgar lands drain in a southerly direction at an approximate slope of 0.5% towards roadside ditches on the northern side of the existing Burnhamthorpe Road right-of-way.

A site-specific geotechnical investigation for the subject lands will be completed as part of the future draft plan supporting studies. However, based on the Ministry of Agriculture, Food and Rural Affairs AgMaps website, the subsurface soils generally consist of Chinguacousy clay loam and Oneida clay loam. These soils are characterized as Hydrologic Soil Group C as illustrated on **Figure 1B** in **Appendix B**.

The subject lands fall within the jurisdiction of Conservation Halton, but it does not appear that the lands are located within the authority's regulation limit. Moreover, it should be noted that the site is partially located in a source water protection area.

There are no significant natural heritage features within the subject lands, however, there is a watercourse which runs through both the Argo Trafalgar I and II properties along the east side of the subject site. The existing watercourse within the Argo I property was identified as a low-constraint, intermittent watercourse containing no habitat. The existing watercourse within the Argo II property was identified as a medium-constraint, intermittent watercourse containing no habitat. Hazards and regulatory allowances associated with this medium constraint stream (JC-10A) will be clarified in the future EIR/FSS. Refer to **Figure 2B** or **Figure 7.3.1** Topographic Depressions and Hydrologic Components from the NOCSS report for further details on the existing watercourses within the subject lands.

2.2. WATER, SANITARY AND STORM SERVICING

Existing servicing infrastructure information was provided by the Region of Halton, the Town of Oakville, and Conservation Halton, as described in the following **Sections 2.2.1** to **2.2.3**.

2.2.1. Existing Sanitary Servicing

There is currently no existing sanitary sewer infrastructure on Trafalgar Road or William Halton Parkway adjacent to the subject lands.

2.2.2. Existing Water Servicing

An existing 750 mm \varnothing watermain (Zone TWL 236 m) is located on Trafalgar Road which runs between Dundas Street and the elevated water tower located southwest of the Argo Trafalgar II property. An existing 1200 mm \varnothing feedermain (Zone TWL 250 m) is also located on Burnhamthorpe Road (west of Trafalgar Road), which runs north along Trafalgar Road adjacent to the subject site. Refer to **Figure 2C** Preliminary Water Servicing Plan which shows the existing water servicing. The subject lands are located wholly within Halton Pressure Zone 4.

2.2.3. Existing Storm Servicing

Adjacent to the subject lands, Trafalgar Road consists of an unimproved/rural road right-of-way (ROW), which drains via roadside ditches from Burnhamthorpe Road to William Halton Parkway. Drainage from Trafalgar Road between Burnhamthorpe Road and William Halton Parkway is currently conveyed to an existing culvert which passes flow across Trafalgar Road from west to east, towards the tributary of Joshua Creek.

William Halton Parkway is currently urbanized adjacent to the subject lands, with an existing storm sewer which conveys road drainage from William Halton Parkway to the Joshua Creek watercourse via temporary SWM pond on the Argo Trafalgar II lands.

The Argo Trafalgar lands are located within the JC7 sub-catchment, and the existing drainage conditions and storm infrastructure are shown on **Figure 3C-A** Pre-Development Storm Drainage in **Appendix C**.

3 REVIEW AGENCIES

3.1. TOWN OF OAKVILLE

The Town of Oakville will be responsible for the review and approval of development applications associated with the site.

3.2. REGION OF HALTON

The Region of Halton will also provide review services associated with any development applications for the subject lands related to sanitary and water servicing. In addition, it should be noted that both Trafalgar Road and William Halton Parkway are Regional Roads. All associated road works or service connections will require review, approval, and permitting by the Region of Halton.

The Region is currently undertaking detailed design for a major road widening project along Trafalgar Road, including adjacent to the subject site. The Region's project also includes a sanitary sewer component. Coordination with the Region's design team is on-going to ensure stormwater management and sanitary servicing is consistent between the development project and the Region's project.

3.3. CONSERVATION HALTON

The subject lands are located within the jurisdiction of Conservation Halton. It does not appear that the lands are located within the authority's regulated area, but any future storm runoff will be directed to tributaries of Joshua's Creek, which is regulated by Conservation Halton.

4 PROPOSED SITE SERVICING

Using the background information referenced above, the general preliminary servicing design concept for the subject lands is described below. It is noted that the general concepts presented herein are meant to demonstrate the feasibility of site servicing. Servicing concepts will be further refined at the EIR/FSS stage in support of draft plan application.

4.1. SANITARY SERVICING

Potential sanitary servicing options for the subject lands are shown on **Figure 1C** Preliminary Sanitary Servicing in **Appendix C**.

Per the sanitary drainage boundaries originally identified as part of the 2011 North Oakville East Area Servicing Plan (illustrated on **Figure 1C1**), the wastewater discharge from the subject lands is designated to be directed to the existing pump station at Dundas Street via a future 600 mm \varnothing trunk sanitary sewer on William Cutmore Road. The trunk sewer on William Cutmore is currently under construction and progressing from south to north with development. The timing for completion of the trunk sewer to Burnhamthorpe is currently unknown. As such, the external sanitary sewer alignments for connection to the William Cutmore sewer will be determined at a later date, based on the timing of future developments east and south of the Argo Trafalgar lands.

Given the number of years since the original North Oakville East Area Servicing Study was completed, it is our understanding that infrastructure planning work in this area needs to be updated, taking into account current land use plans, new density targets and available capacity in the downstream sanitary system (pump stations, treatment plants, etc.). Much of this work will be undertaken through the Region of Halton's Water and Wastewater Master Plan Update, which is and planned to be completed in the 2024 timeframe.

Given the on-going infrastructure planning work at the Region, it is reasonable to assume that drainage areas and sewersheds may change in the Trafalgar Urban Core going forward, depending on capacity in existing infrastructure and future infrastructure plans. As such, Figure 1C includes the following options for sanitary connections/servicing that can be explored further with the Region as engineering proceeds:

- Argo Trafalgar lands sanitary connections to either the future William Cutmore Blvd trunk sewer (as shown in the 2011 Area Servicing Plan) or to the proposed Trafalgar Road trunk sewer currently being designed by the Region of Halton as part of the Trafalgar Road widening project. Should the Master Plan study update confirm there is available permanent capacity in the existing sanitary trunk within the Green Ginger lands, the Argo Trafalgar lands may be accommodated in the Trafalgar Road trunk sewer. This is also a good interim servicing option for the Argo Trafalgar lands, should the William Cutmore trunk take longer to construct than anticipated or the Town of Oakville would like to coordinate construction of services with their Burnhamthorpe Road urbanization project, etc.
- Extension of the planned Trafalgar Road trunk sewer (to be completed with the Trafalgar Road widening) from Wheat Boom to Dundas Street. Through recent discussions with Region staff, there is concern that the sub-trunk sewer planned through the Green Ginger Phase 1 lands (connecting to an existing 675 mm \varnothing sewer on Ernest Appelbe Blvd.) may not be able to accommodate future sanitary flows due to the anticipated development intensification within the Trafalgar Road Urban Core. Extending the planned 600 mm \varnothing Trafalgar sewer from Wheat Boom to Dundas Street would add overall capacity in the North Oakville sewer network and would provide much needed flexibility for future development in this area.

Preliminary engineering shows that there are several feasible options available to service the Argo Trafalgar I and II lands. Additional studies for the interim and ultimate sanitary servicing for the Argo Trafalgar lands are to be completed under separate cover as part of a future draft plan application. These will be done to a greater level of detail, in consultation with the Region of Halton.

In accordance with the Region's Local Service Guidelines, sanitary pipes that are 450 mm \varnothing diameter or less would be funded by development as part of the subdivision agreement. Pipes greater than 450 mm \varnothing would be paid for by the Region's development charges program. This would include any new trunk or sub-trunk infrastructure identified as part of the on-going Master Plan update or through subsequent phases of development engineering.

4.2. MUNICIPAL WATER

The Argo Trafalgar lands are situated within Oakville Pressure Zone 4 (Zone TWL 236 m). Proposed development servicing is reliant on a future 400 mm \varnothing DC watermain, to be located along Burnhamthorpe Road, and a future 300 mm \varnothing local watermain extension on William Halton Parkway. See **Figure 2C** Preliminary Water Servicing in **Appendix C** which shows the proposed watermain layout. The proposed servicing scheme is consistent with the Area Servicing Plan illustrated on **Figure 2C1**.

The primary source of municipal water for the subject lands will be the existing 1200 mm \varnothing transmission watermain on Trafalgar Road. This is a Zone TWL 250 m watermain, but there is a pressure reducing valve at the intersection of Trafalgar Road and Burnhamthorpe Road that reduces the water pressure to Oakville Pressure Zone 4 service levels. A second pressure reducing valve may ultimately be required on the 300 mm \varnothing local servicing extension on William Halton Parkway, but this will be determined in consultation with the Region at the EIR/FSS stage. These lands are on a pressure zone boundary line and could ultimately be serviced by either zone. Hydraulic modeling will be done at the EIR/FSS stage to identify the level of service under various boundary conditions. The Region is also moving forward with a pressure boundary re-alignment project that will reduce the pressures in Oakville Pressure Zone 4 from a TWL of 236 m to a TWL of 224 m. This is anticipated to be completed in the 2025 timeframe. Modeling at the EIR/FSS stage will also review this change and the overall impact to servicing of the Argo development.

Hydraulic modeling completed as part of the 2011 Area Servicing Plan determined that there would be adequate flow and pressure at all Pressure Zone 4 nodes (including the Argo Trafalgar lands) during the maximum day and peak hour demand scenarios. The Area Servicing Plan determined that maximum day pressures at nodes within the subject lands could range from 58 psi to 72 psi. In addition, the Area Servicing Plan undertook maximum day + fire flow modelling to confirm that the water distribution could meet the Region's requirements of 5,000 L/min (92 L/s) for residential development and 15,000 L/min (250 l/s) for commercial, industrial, and institutional land uses. The analysis was performed targeting a minimum allowable pressure of 30 psi (versus the typical 20 psi) to account for additional system head losses that may occur when smaller diameter watermains infill within the final development plan. Results confirm the feasibility of servicing the Argo Trafalgar property. Refinement of the servicing strategy and updated modeling will be done at the EIR/FSS stage.

Internal watermain sizing for the subject lands, as well as the associated analysis of maximum day pressures, water demands and fire flow demands, have not been completed as part of this report, as this is a high-level study in support of an Official Plan Amendment. The water distribution analysis for the subject site will be completed/confirmed under separate cover, as part of the draft plan application. Interim water servicing and looping is also to be determined at detailed design based on the future development phasing, if applicable.

4.3. STORM SERVICING

The pre-development (existing) storm drainage for the subject area is shown on **Figure 3C-A**. As noted above, currently drainage from Trafalgar Road between Burnhamthorpe Road and William Halton Parkway is conveyed to an existing culvert which passes flow across Trafalgar Road from west to east, towards the tributary of Joshua Creek.

The post-development proposed preliminary storm servicing for the subject lands is shown on **Figure 3C-B**. Storm servicing is required for the subject development in order to capture and convey site flows to future stormwater management (SWM) Pond B for the Argo Trafalgar I lands, and SWM Pond C for the Argo Trafalgar II lands. The proposed storm servicing for the subject lands will also need to take into consideration flows from external areas entering the Argo Trafalgar I and II lands. Co-ordination is on-going with neighbouring development sites to ensure that stormwater servicing is consistent between development applications. Discussion with Halton Region's construction team is also on-going to ensure the stormwater plan for the Trafalgar Road widening project is coordinated with development. These plans are evolving as information becomes available and will be further refined in subsequent EIR/FSS submissions.

Future storm sewers will be designed to provide capacity to convey the storm runoff from the subject lands for the 5-year storm event, per the Town of Oakville design criteria. Existing road centerline grades are to be raised to accommodate the future storm servicing based on the downstream creek constraints. Future boundary road grades along Trafalgar Road and Burnhamthorpe Road are currently being coordinated with Halton Region and the Town of Oakville as part of the Trafalgar Road improvements project by the Region. A future clean water system is also proposed to convey flows from future SWM Pond A, located west of Trafalgar Road to either the existing ditch or to a new culvert on Burnhamthorpe Road, discharging to the existing tributary of Joshua Creek east of Trafalgar Road.

The existing SWM pond located on the Argo Trafalgar II lands just south of William Halton Parkway is a temporary SWM facility constructed by Halton Region for quality and quantity treatment of the William Halton Parkway ROW drainage. This SWM pond will be decommissioned following completion of the ultimate SWM Pond C at Burnhamthorpe Road (William Halton Parkway storm flow will be re-directed to Pond C in the ultimate condition). Due to the construction staging and the need to maintain the temporary pond outflow to the downstream watercourse, it would be recommended to accommodate the proposed blue stream realignment along the east limit of the future Argo Trafalgar development. The proposed channel alignment at this location would also provide flexibility with future development servicing as the post development storm drainage for the entire Argo Trafalgar II property would be captured by SWM Pond C.

4.4. STORMWATER MANAGEMENT

The NOCSS study identified areas to be used for potential SWM facilities for the subject lands, which are shown on **Figure 3C1 (NOCSS Figure 7.4.6) in Appendix C**.

As shown on **Figure 3C-B**, SWM Pond B is proposed northeast of Trafalgar Road and William Halton Parkway, partially within the Argo Trafalgar I lands. SWM Pond B is proposed to accommodate catchment JC7 (50.0ha), as identified in **Figure 3C-B**, which includes the Argo Trafalgar I lands (1.2 ha). SWM Pond B is proposed to outlet to a future culvert crossing across William Halton Parkway, which conveys flows to the future channel within the Argo Trafalgar II lands.

SWM Pond C is proposed southeast of the Argo Trafalgar II property, north of Burnhamthorpe Road. SWM Pond C is proposed to accommodate catchment JC7 and JC9 drainage (26.0ha), as identified on **Figure 3C-B**, which includes the Argo Trafalgar II lands, William Halton Parkway and Trafalgar Road drainage. SWM Pond C is proposed to outlet to the future channel which ultimately discharges to the

10

existing Joshua Creek watercourse south of Burnhamthorpe Road and the receiving culvert at Dundas Street East.

SWM criteria for the subject lands will be based on the North Oakville Creeks Subwatershed Study (NOCSS) report and the NOCSS Addendum, as well as SWM guidelines from the Ministry of the Environment, Conservation. The SWM criteria/requirements are as follows:

- Water Quality Control:
 - Total phosphorus (TP) loadings must not increase after development.
 - A Normal (70% TSS removal) level of water quality protection is stipulated for Joshua Creek, however in order to achieve the TP removal criteria, an Enhanced (80% TSS removal) level of protection will be implemented.
 - A dissolved oxygen level of 6 mg/L is required for Joshua Creek.
 - The Town of Oakville adopted a Salt Management Plan to address chlorides. The requirement for a salt management plan should be reviewed and addressed during the detailed design stage.

- Peak Flow Control:
 - Post-development peak flows for the 2-year to 100-year storm events, as well as the Regional Storm, are to be controlled based on target unit flow rates (m³/s/ha) as outlined in Table 7.4.1 in the NOCSS Addendum (provided in **Appendix D**). These target flows are based on maintaining existing condition flow rates to Joshua Creek.
 - **Table 4.4** below summarizes the required unitary target flow rates from the NOCSS Addendum.

Table 4.4 – Target Unit Flow Rates

Design Event	Target Flow (m ³ /s/ha)
2-year	0.007
5-year	0.011
10-year	0.013
25-year	0.017
50-year	0.019
100-year	0.021
Regional	0.052

Based on the criteria outlined above and the ultimate drainage areas, the SWM facilities will be MECP wet pond facilities complete with a permanent pool and forebay for water quality control. The proposed ponds will also include an active storage component that will provide erosion and quantity (peak flow) control, via a designed outlet control structure.

If the proposed SWM pond facilities (Ponds B and C) are not constructed at the time of site development, then temporary facilities can be constructed within the Argo Trafalgar lands as an interim measure. This will be reviewed in more detail at the EIR/FSS stage of work.

4.5. SURFACE GRADING and DRAINAGE

As indicated previously, the existing lands drain in a southerly direction towards Joshua Creek on the eastern side of Trafalgar Road within the subject site. It is expected that the proposed grading plan for any future development within the subject lands will direct underground (piped) and surface runoff (major overland flow) in the same general direction.

4.6. WATER BALANCE

Per the Town of Oakville standards, stormwater management plans should include the use of Low Impact Design (LID) measures. Several measures are available for residential land uses including grassed swales, additional topsoil, perforated pipe systems, etc.

A water balance will be completed at the EIR/FSS stage to determine post-development controls required (both ultimate and interim, if required). Additional information is required regarding land use, phasing, built form, hydrogeology and geotechnical prior to further study.

4.7. EROSION and SEDIMENT CONTROL

Erosion and sediment controls will be implemented during construction, in accordance with the *Town of Oakville Site Alteration: Erosion and Sediment Controls Permit Procedures and Guidelines* (February 2020). At a minimum, any sediment that is tracked onto the roadway during the course of construction will be cleaned by the contractor at the end of each day. Temporary siltation protection in the form of silt socks will be installed on all existing and new catchbasins on the site and within the immediately adjacent rights-of-way. Sediment control fence will be required around the perimeter of the active work area. In addition, depending on the size of area stripped for any future works, temporary sediment and erosion control ponds will be constructed.

5 CONCLUSION

Based on a review of the existing background information, the subject Argo Trafalgar development lands can be serviced as follows:

- Sanitary effluent from the Argo Trafalgar lands is proposed to be conveyed via a future trunk sanitary sewer on future William Cutmore Road south of Burnhamthorpe Drive for discharge to the existing pump station at Dundas Street. The external sanitary sewer alignments from the limit of the Argo Trafalgar property to the trunk sewer on William Cutmore Road will depend on the status of the future adjacent development applications. The Argo Trafalgar I and II development may be also accommodated in the proposed Trafalgar Road trunk sanitary sewer by the Region based on the findings in the on-going Master Plan update for the future Trafalgar urban corridor.
- Argo Trafalgar lands are situated within Oakville Pressure Zone 4, and their water servicing depends on the extension of external watermains (300 mm \varnothing main along William Halton Parkway and 400 mm \varnothing on Burnhamthorpe Road). Internal site watermain sizes are to be confirmed by hydraulic analysis and water distribution modelling as part of the draft plan application. Interim water servicing and looping is to be determined at detailed design based on the future development phasing if applicable.
- The Argo Trafalgar lands are to be serviced by future SWM Pond B and SWM Pond C, respectively, as per the NOCSS study. The proposed SWM facilities are proposed to discharge to the future channel within and external to the Argo Trafalgar II lands, ultimately discharging to the Joshua Creek watercourse south of Burnhamthorpe Road. The proposed SWM facilities will provide the required SWM controls, as per the NOCSS study. If the proposed SWM facilities are not constructed at the time of site development, then a temporary facility(ies) can be constructed within the Argo Trafalgar lands as an interim measure. It is anticipated that future development applications will require detailed servicing studies/plans to identify existing and necessary infrastructure to support future development within the subject lands. These would be subject to review and approval by the Town of Oakville, Region of Halton, and other circulated review agencies.

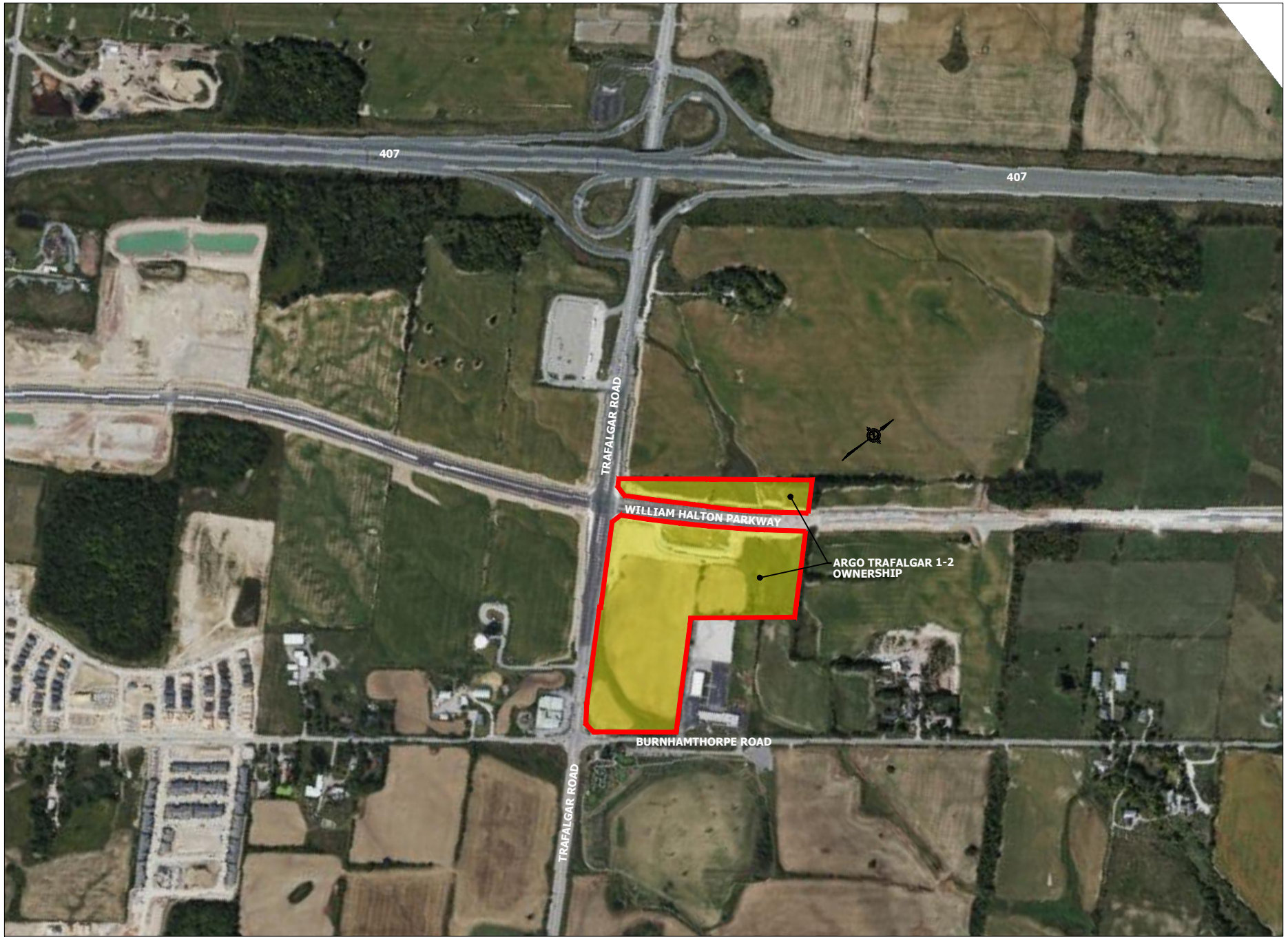
Report prepared by:
Urbantech Consulting



Kate Rothwell, M.Eng., P. Eng.
Senior Water Resources Engineer

APPENDIX A

INTRODUCTION AND BACKGROUND INFORMATION FIGURES



**ARGO TRAFALGAR 1-2
NORTH OAKVILLE
OPA APPLICATION**



REGIONAL MUNICIPALITY OF HALTON
TOWN OF OAKVILLE



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PROJECT No.
22-709

DATE:
JUNE 2023

SCALE:
1:10,000

FIGURE:
1A



HIGHWAY 407

HIGHWAY 407

SUBJECT SITE








WILLIAM HALTON PARKWAY

TRAFALGAR ROAD

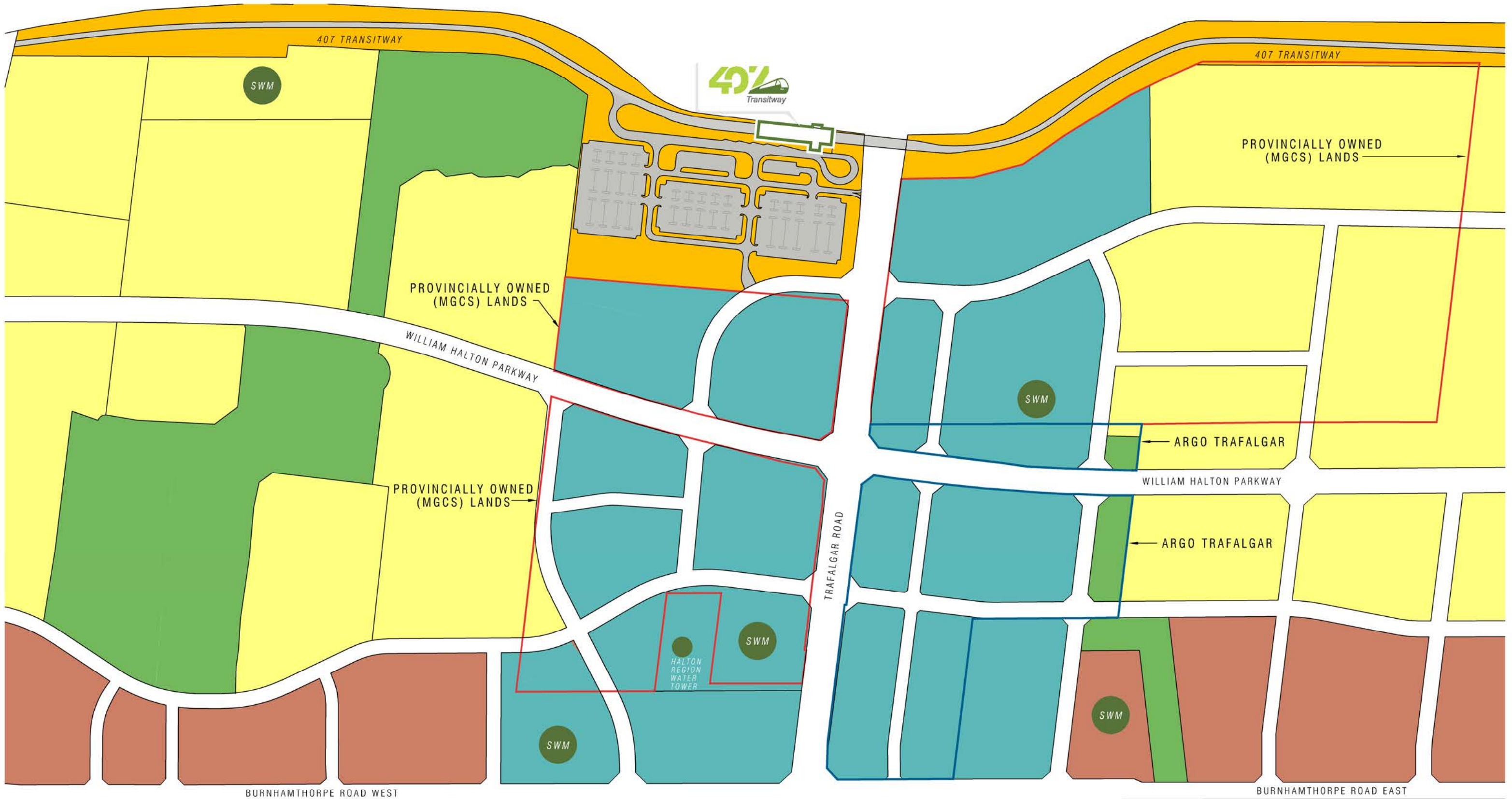
BURNHAMTHORPE ROAD E

ST. ANTHONY'S ROAD

LEGEND

-  SECONDARY PLAN AREA BOUNDARY
-  OAKVILLE / MILTON MUNICIPAL BOUNDARY
-  TRANSITWAY
-  TRAFALGAR ROAD URBAN CORE AREA
-  TRANSITIONAL AREA
-  EMPLOYMENT AREA
-  NATURAL HERITAGE SYSTEM AREA

-  STORMWATER MANAGEMENT FACILITY (final location tbd)
-  JOSHUA CREEK FLOODPLAIN AREA
-  COMMUNITY PARK AREA
-  VILLAGE SQUARE/URBAN SQUARE
-  GENERAL URBAN AREA



DRAFT

- TRANSITWAY
- TRANSITIONAL AREA
- NATURAL HERITAGE SYSTEM AREA
- TRAFALGAR ROAD URBAN CORE AREA
- EMPLOYMENT AREA
- STORM WATER MANAGEMENT FACILITY (LOCATION TBD)

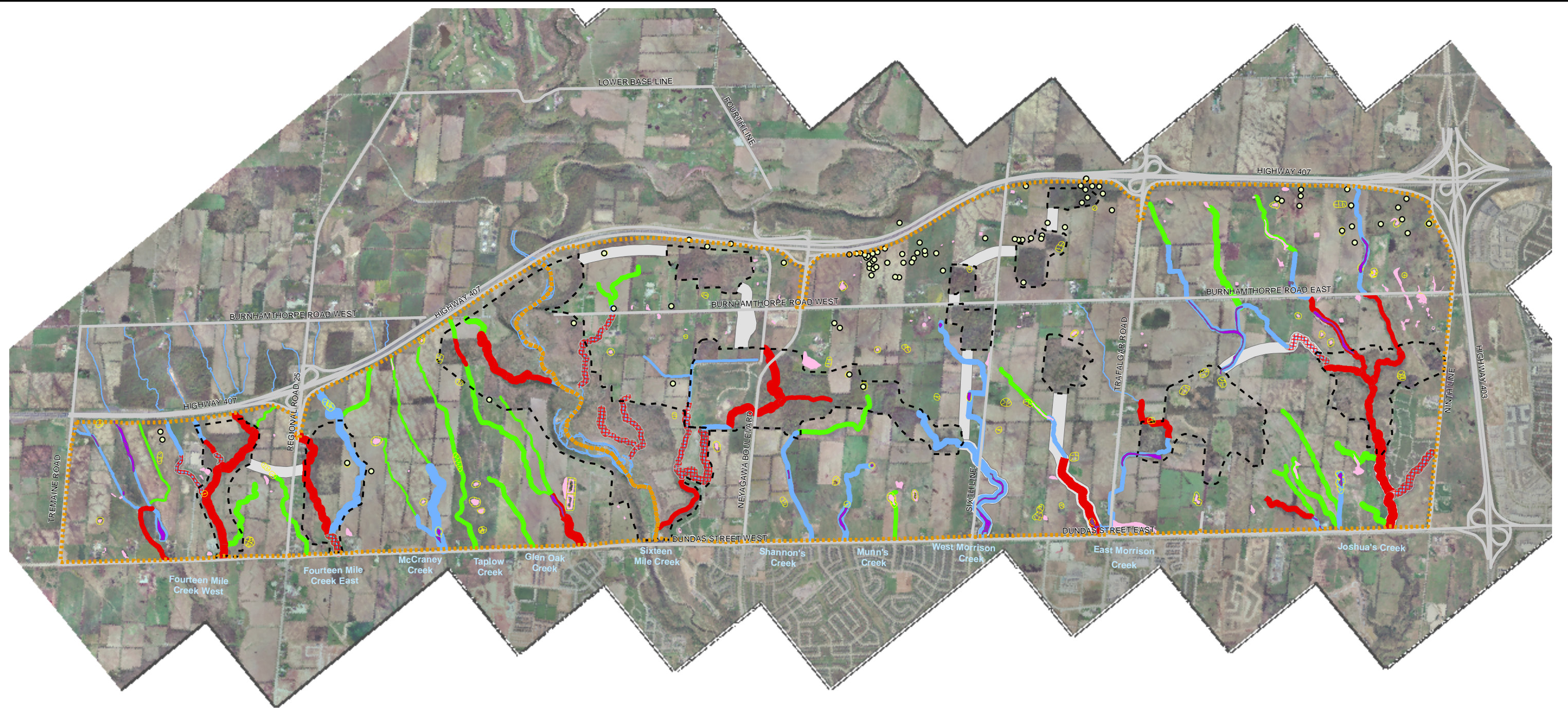
- All Units In Metric Unless Otherwise Noted.
- Base Information Obtained From Various Sources And Is Approximate.
- Schedule / Plan Information Is Conceptual And Requires Verification By Appropriate Agency.



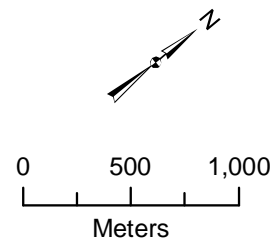
TRAFALGAR I & II | Oakville, Ontario
PRELIMINARY LAND USE PLAN

MAY 26, 2023
 PROJECT 1912
 SCALE 1:5000

APPENDIX B
EXISTING CONDITON FIGURES



NORTH OAKVILLE CREEKS SUBWATERSHED STUDY



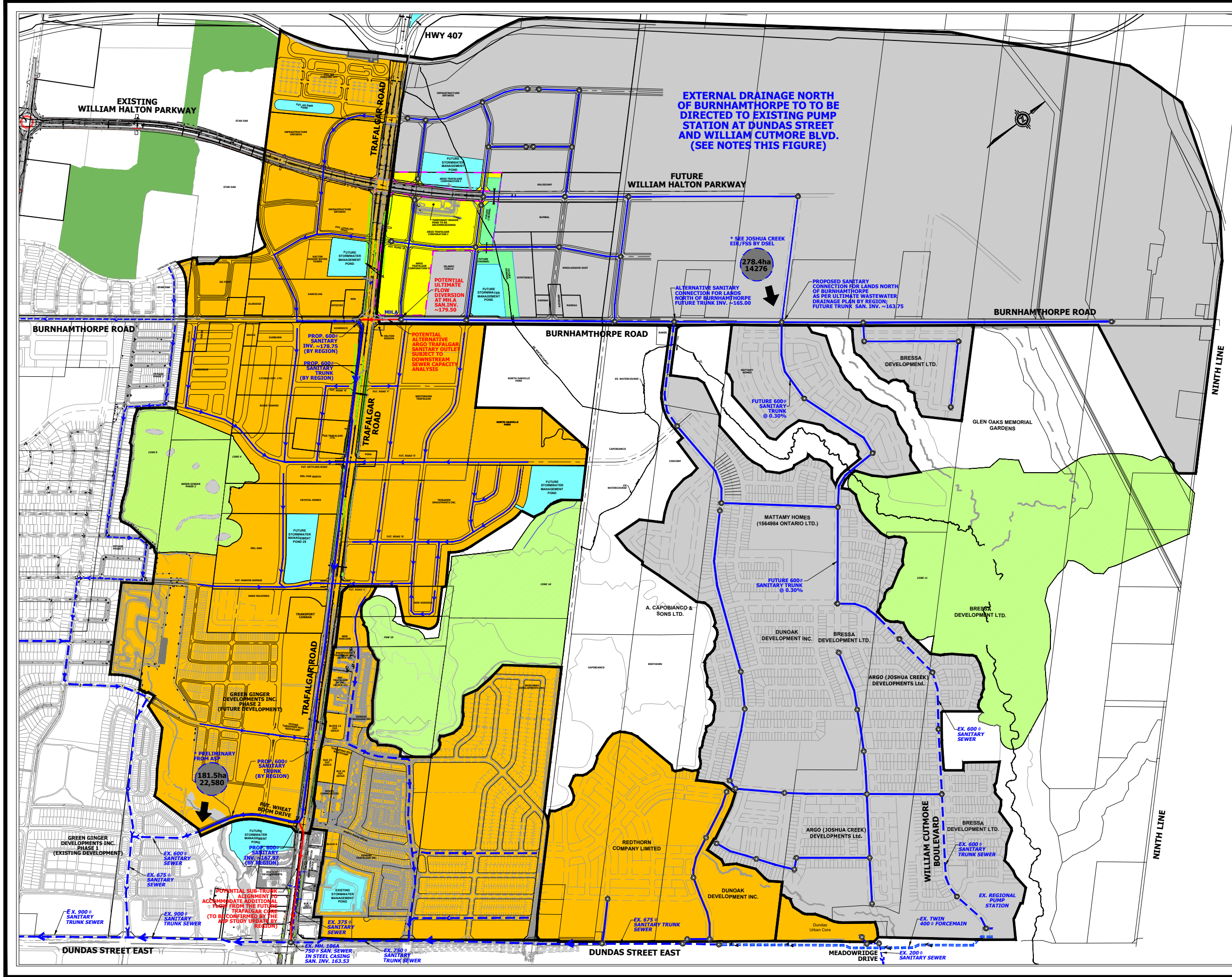
- Secondary Plan Boundary
 - Core
 - Linkage
 - Hydrologic Feature 'A'
 - Hydrologic Feature 'B'
 - Topographic Depressions (with Hydrologic Component)
 - Topographic Depressions
 - Watercourse
-
- Stream Corridor**
 - High Constraint
 - High Constraint - Requiring Rehabilitation
 - Medium Constraint
 - Low Constraint

Topographic Depressions with Hydrologic Components

Figure 7.3.1

APPENDIX C

PRELIMINARY SERVICING AND GRADING FIGURES



LEGEND:

- ARGO TRAFALGAR I & II PROPERTY BOUNDARY
- EXISTING SANITARY TRUNK SEWER AND FLOW DIRECTION
- ASP SUB-TRUNK SEWER DRAINAGE BOUNDARY TO DUNDAS TRUNK SANITARY
- FUTURE SANITARY SEWER
- ASP DRAINAGE BOUNDARY TO EXISTING REGION PUMP STATION AT DUNDAS AND WILLIAM CUTMORE BOULEVARD
- ALTERNATIVE INTERIM OR ULTIMATE SANITARY SEWER OUTLET
- DRAINAGE AREA IN HECTARES POPULATION

SANITARY SERVICING NOTES:

- * AS PER THE REGION HALTON'S 2011 ASP STUDY, THE ARGO TRAFALGAR I & II SANITARY DRAINAGE WILL BE ACCOMMODATED IN THE FUTURE WILLIAM CUTMORE BOULEVARD TRUNK SEWER FOR DISCHARGE TO EXISTING PUMP STATION AT DUNDAS STREET.
- * EXTERNAL TRUNK SANITARY SEWER ALIGNMENT FOR SERVICING OF THE ARGO TRAFALGAR I & II DEVELOPMENT TO BE CONFIRMED AT A LATER DATE BASED ON THE PARTICIPATION OF EXTERNAL LANDS AT THE TIME OF ARGO DEVELOPMENT. HOWEVER, BURNHAMTHORPE SEWER ALIGNMENT WILL PROVIDE MOST FLEXIBILITY FOR THE ARGO AND FUTURE ADJACENT DEVELOPMENT SERVICING.
- * SUBJECT TO THE DOWNSTREAM CAPACITY ANALYSIS OF THE EXISTING TRUNK SANITARY SEWER WITHIN THE GREEN GINGER LANDS, THE ARGO TRAFALGAR I & II DEVELOPMENT MAY BE ULTIMATELY ACCOMMODATED IN THE PROPOSED TRAFALGAR TRUNK SANITARY BY REGION. THE REGION'S 2011 ASP STUDY UPDATE, CURRENTLY UNDERWAY, TO CONFIRM ANTICIPATED PROJECTED POPULATION ESTIMATE BASED ON THE PROPOSED TRAFALGAR CORE DEVELOPMENT APPLICATIONS.
- * SHOULD THE ASP STUDY UPDATE CONCLUDE A LIMITED CAPACITY IN THE FUTURE DOWNSTREAM TRAFALGAR SUB-TRUNK, ARGO TRAFALGAR LANDS TO EXPLORE THE OPPORTUNITY FOR TEMPORARILY BORROWING TRAFALGAR SUB-TRUNK SEWER CAPACITY UNTIL FULL URBANIZATION OF THE TRAFALGAR SUB-TRUNK DRAINAGE AREA AND PRIOR TO COMPLETION OF THE DESIGNATED SANITARY OUTLET TO THE EXISTING PUMP STATION.
- * REGION'S ASP STUDY UPDATE TO INVESTIGATE IF THE EXTENSION OF THE TRAFALGAR SANITARY SEWER FROM WHEAT BOOM TO DUNDAS STREET WOULD BE FEASIBLE FOR ADDITIONAL FUTURE FLOW CONVEYANCE.

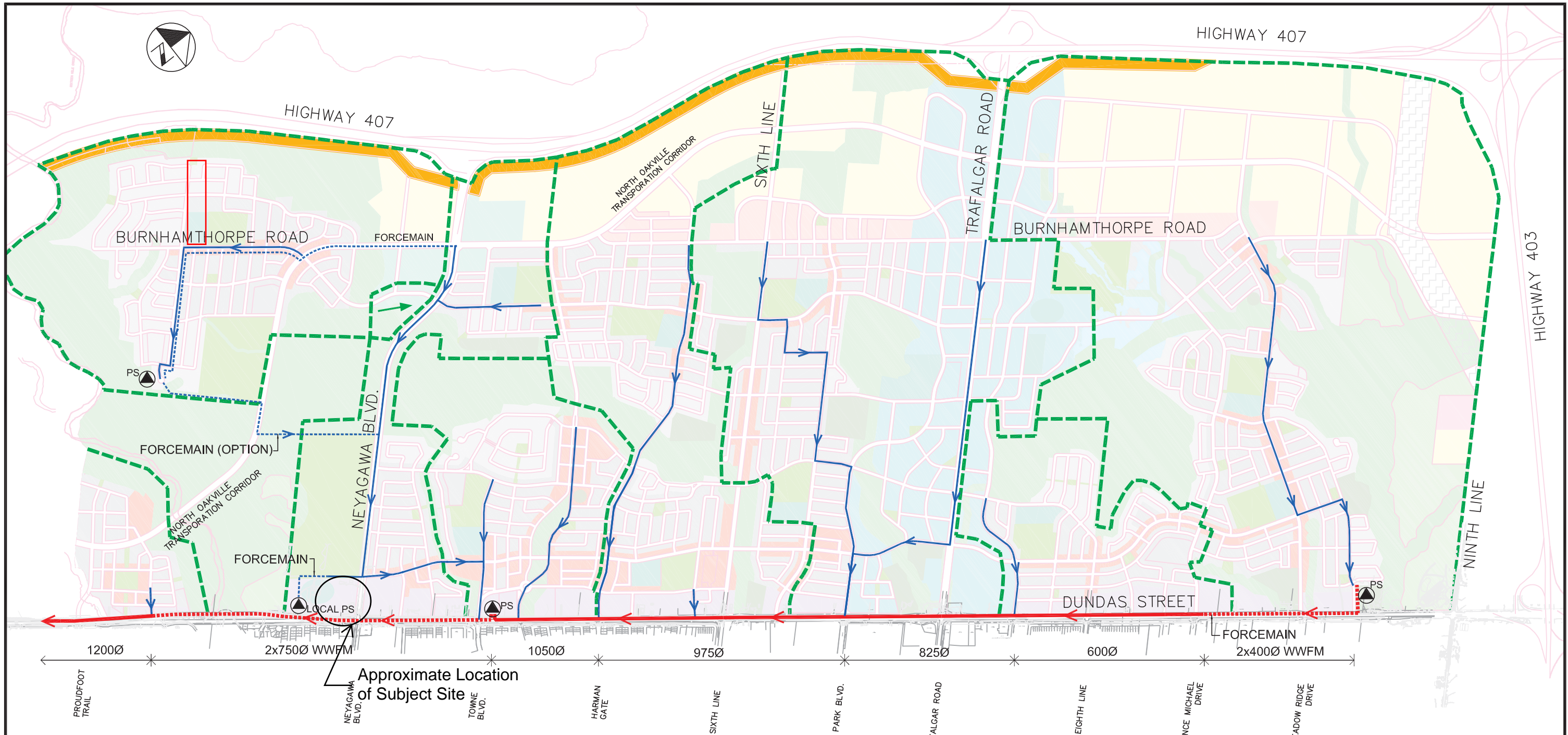

 REGIONAL MUNICIPALITY OF HALTON
 TOWN OF OAKVILLE
**ARGO TRAFALGAR I & II
 NORTH OAKVILLE
 OPA APPLICATION**


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**FIGURE 1C
PRELIMINARY SANITARY SERVICING**

PROJECT NO. 22-709	JUNE 2023	SCALE: 1:12,500
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LEGEND

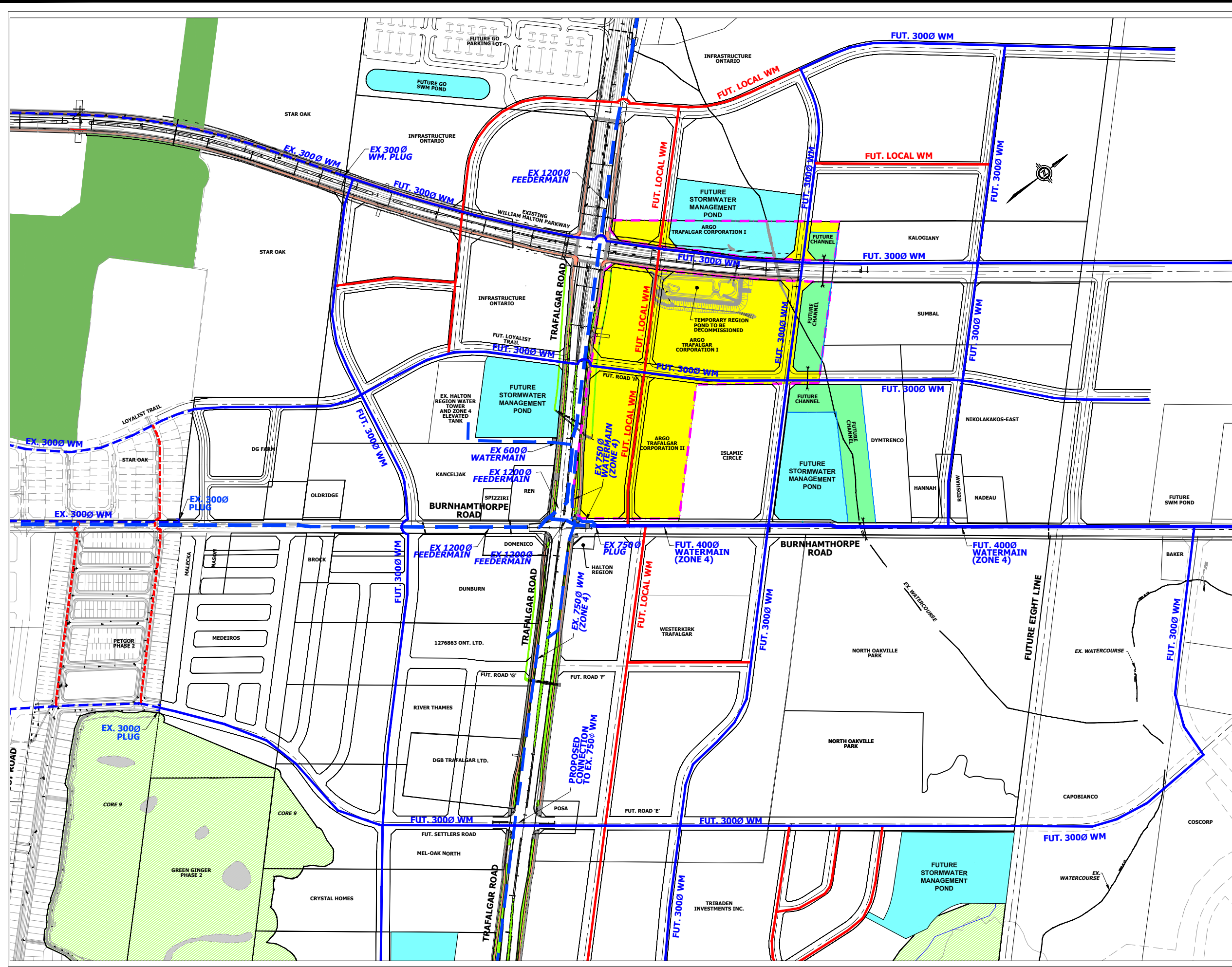
-  DUNDAS STREET TRUNK SEWER
-  DUNDAS STREET FORCEMAIN
-  SUB-TRUNK SEWER
-  SUB-TRUNK FORCEMAIN
-  WASTEWATER PUMPING STATION (APPROXIMATE LOCATION)
-  SUB-TRUNK DRAINAGE BOUNDARY

NOTE: SUB-TRUNK SEWER AND DRAINAGE BOUNDARY LOCATIONS ARE IN GENERAL CONFORMANCE TO HALTON REGION'S PROPOSED LOCATION AND SHALL BE FURTHER REFINED IN THE DEVELOPMENT SPECIFIC FUNCTIONAL SERVICING REPORTS.

PROJECT	NORTH OAKVILLE COMMUNITY BUILDERS INC.	
TITLE	ULTIMATE WASTEWATER DRAINAGE PLAN	



Checked	M.A.E.	Drawn	T.Y.
Date	AUGUST 2010	Proj. No.	10-02076
Scale	NTS	Exhibit No.	3.8



LEGEND:

- ARGO TRAFALGAR I & II PROPERTY BOUNDARY
- EXISTING TRUNK WATERMAIN
- EXISTING 300 ϕ WATERMAIN
- EXISTING LOCAL WATERMAIN
- PROPOSED 300 ϕ WATERMAIN
- PROPOSED LOCAL WATERMAIN

WATER SERVICING NOTES:

- * ARGO TRAFALGAR LANDS ARE SITUATED WITHIN PRESSURE ZONE 4. PROPOSED DEVELOPMENT SERVICING IS RELIANT ON THE FUTURE 400 ϕ WATERMAIN ALONG BURNHAMTHORPE AND FUTURE 300 ϕ WATERMAIN EXTENSION ON WILLIAM HALTON PARKWAY.
- * INTERNAL ARGO TRAFALGAR WATERMAIN SIZES TO BE CONFIRMED BY HYDRAULIC ANALYSIS AND WATER DISTRIBUTION MODEL AS PART OF THE DRAFT PLAN APPLICATION.
- * INTERIM WATER SERVICING AND LOOPING TO BE DETERMINED AT DETAILED DESIGN BASED ON THE FUTURE DEVELOPMENT PHASING IF APPLICABLE.

REGIONAL MUNICIPALITY OF HALTON
TOWN OF OAKVILLE

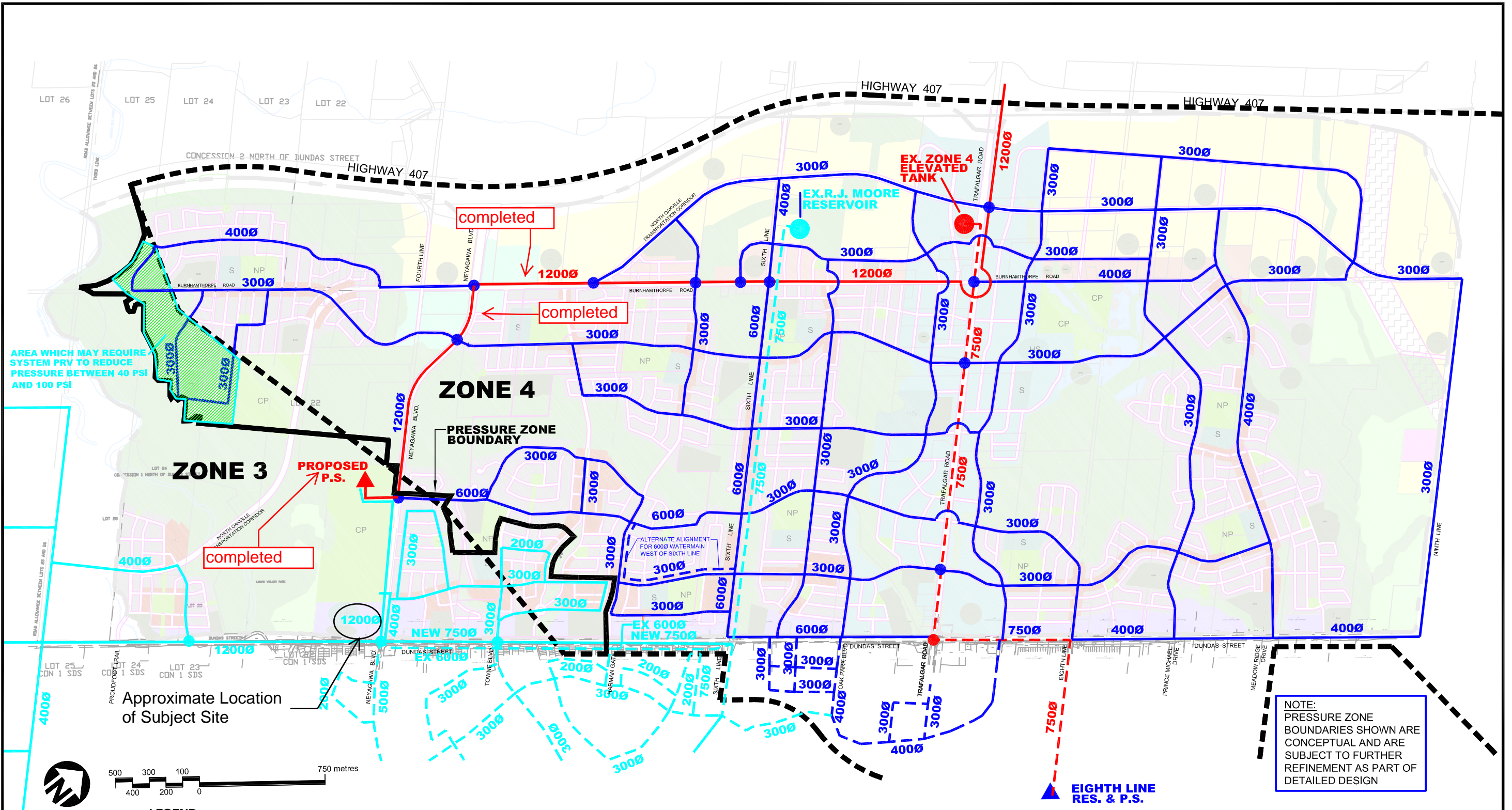
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**FIGURE 2C
PRELIMINARY WATER SERVICING**

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H:\P\Projects\22-709 - Argo Trafalgar I & II\Ops - Oak\Map\Reports\OPA Application\OPA Final\Fig 2C - Argo Trafalgar_WM.dwg - Issued by: c2252 - Sun, May 28 2023 - 1:08pm




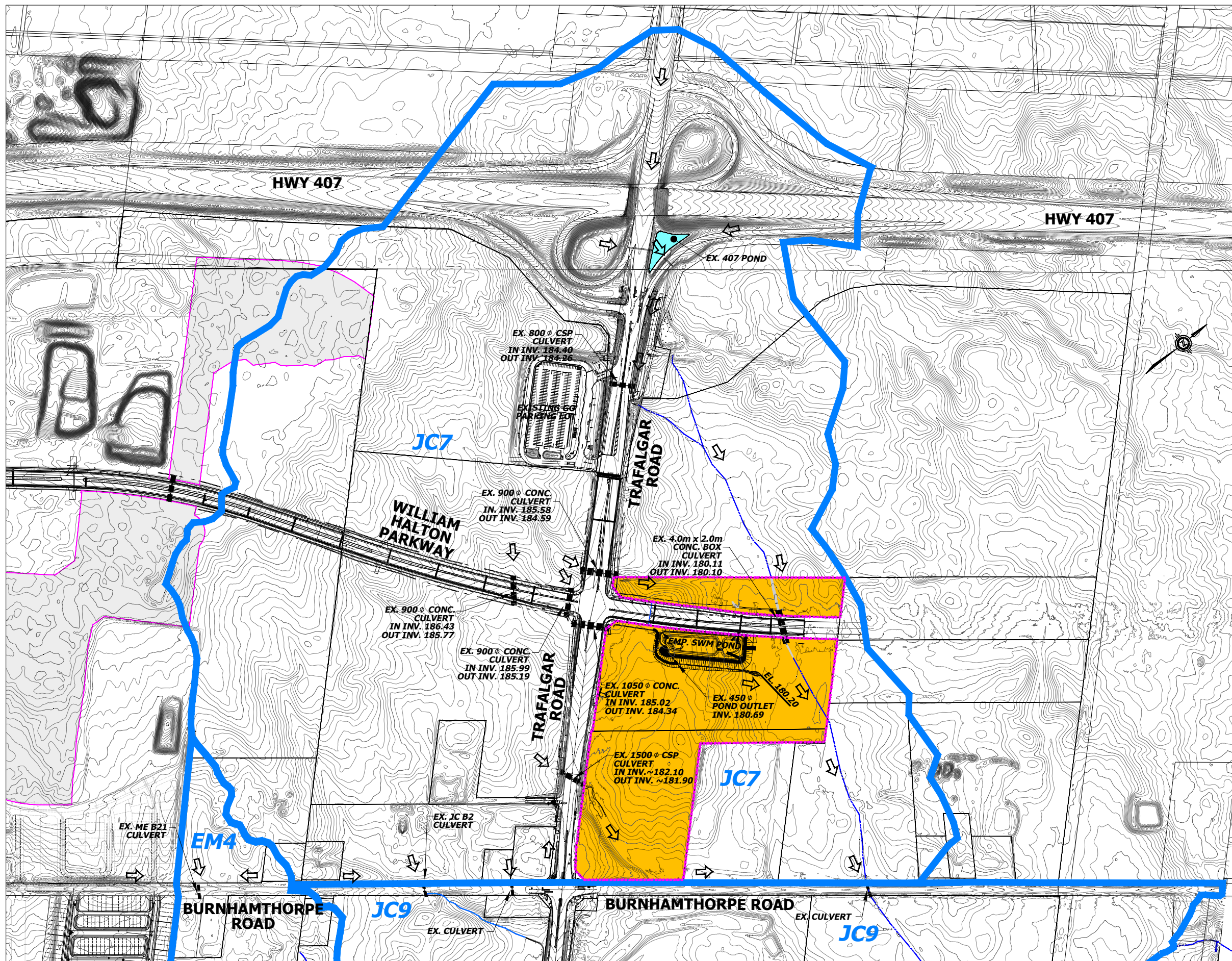
Approximate Location of Subject Site



LEGEND

- ZONE BOUNDARIES
- PROPOSED ZONE BOUNDARIES
- REGIONAL BOUNDARIES
- ▲ EX. BOOSTER PUMPING STATION
- EXISTING RESERVOIR
- ◼ EX. WATER TREATMENT PLAN
- - - - - EXISTING WATERMAIN
- PROP. CONNECTIONS TO REGIONAL WATERMAINS ON BOUNDARY ROADS
- ▲ PROP. BOOSTER PUMPING STATION
- PROP. RESERVOIR
- ◼ PROP. WATER TREATMENT PLAN
- PROPOSED ZONE 3 WATERMAIN
- PROPOSED ZONE 4 WATERMAIN

PROJECT		 100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1 t: 905.882.1100 f: 905.882.0055 www.mmm.ca	
NORTH OAKVILLE COMMUNITY BUILDERS INC.			
TITLE		Checked	Drawn
ULTIMATE WATER SUPPLY AND DISTRIBUTION SYSTEM PLAN		Date NOVEMBER 2010	Proj. No. 10-02076
		Scale NTS	Exhibit No. 2.10



LEGENDA

- ARGO TRAFALGAR I & II PROPERTY BOUNDARY
- EXISTING BLUE STREAM
- EXISTING ROAD CROSSING
- JC7** EXISTING SUBCATCHMENT BOUNDARY AND SUBCATCHMENT ID
- 188.00 EXISTING CONTOUR AND ELEVATION
- EXISTING OVERLAND FLOW DRAINAGE DIRECTION

NOTES

- * ARGO TRAFALGAR I & II LANDS ARE SITUATED WITHIN EXISTING DRAINAGE SUBCATCHMENT JC7 AS PER NOCSS FIGURE 7.4.2.
- * REFER TO FIGURE 3C-B FOR PRELIMINARY POST-DEVELOPMENT STORM DRAINAGE AND SERVICING.
- * EXISTING BLUE STREAM WITHIN SUBJECT LANDS IS PROPOSED FOR REALIGNMENT AS PER NOCSS FIGURE 5.4.3. REFER TO NOCSS FIGURE FOR 6.3.13 FOR THE EXISTING STREAM CLASSIFICATION.

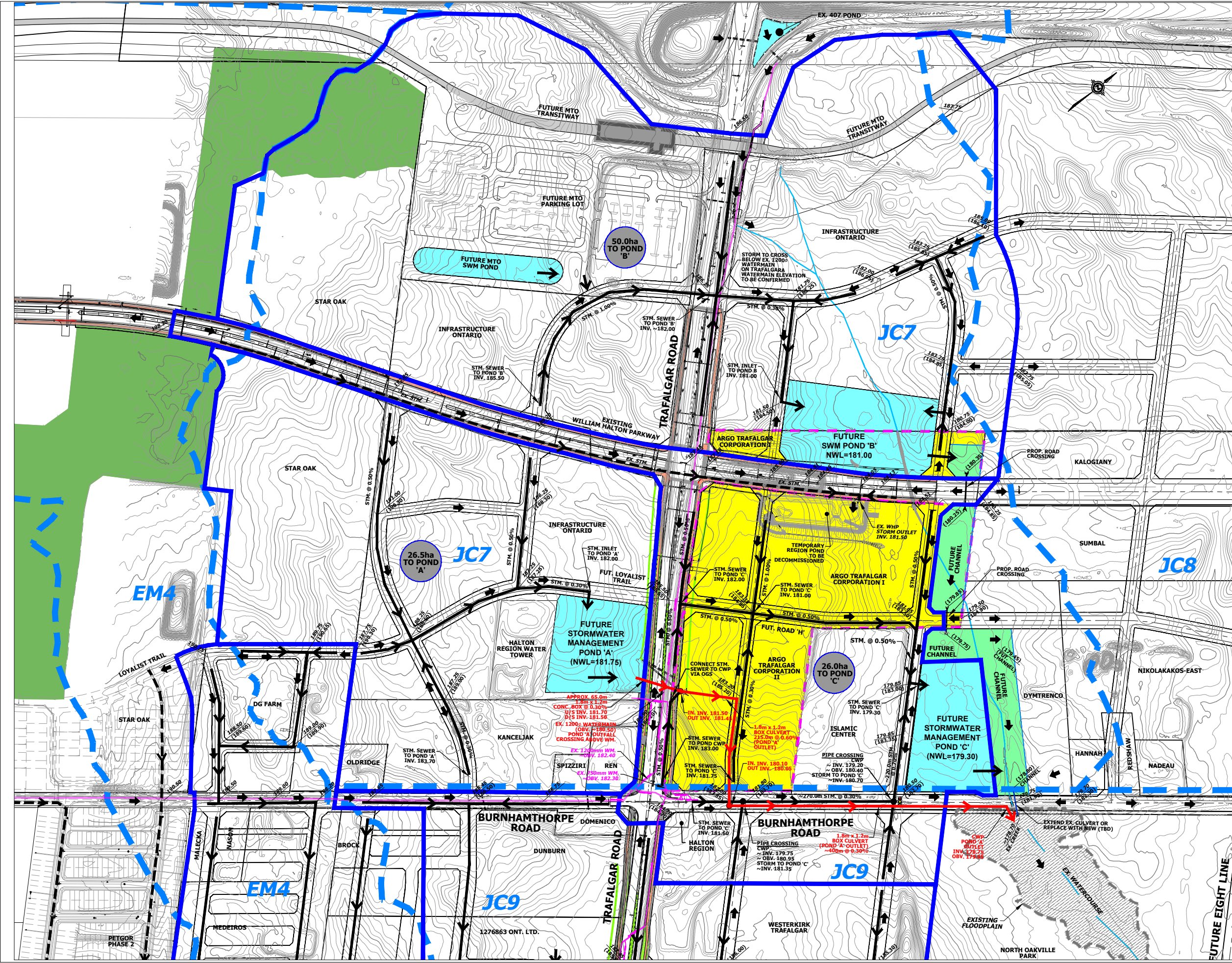
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FIGURE 3C-A
PRE-DEVELOPMENT
STORM DRAINAGE

PROJECT NO. 22-709	JUNE 2023	SCALE: 1:6,000
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LEGENDA

- ARGO TRAFALGAR I & II PROPERTY BOUNDARY
- PROPOSED BLUE STREAM REALIGNMENT
- PROPOSED SWM POND
- EXISTING SUBCATCHMENT BOUNDARY AND SUBCATCHMENT ID
- EXISTING CONTOUR
- EXISTING STORM SEWER AND FLOW DIRECTION
- EXISTING ELEVATION
 PROPOSED ELEVATION
- PROPOSED STORM DRAINAGE BOUNDARY
- 26.5ha TO POND 'A'
- PROPOSED STORM SEWER AND FLOW DIRECTION
- PROPOSED OVERLAND FLOW DRAINAGE DIRECTION
- PROPOSED CLEAN WATER PIPE AND FLOW DIRECTION

STORM SERVICING NOTES

* ARGO TRAFALGAR I & II LANDS ARE SITUATED WITHIN EXISTING DRAINAGE SUBCATCHMENT JC7 AS PER NOCSS FIGURE 7.4.2.

* REFER TO FIGURE 3C-A FOR PRE-DEVELOPMENT DRAINAGE.

* EXISTING BLUE STREAM WITHIN SUBJECT LANDS IS PROPOSED FOR REALIGNMENT AS PER NOCSS FIGURE 5.4.3. REFER TO NOCSS FIGURE FOR 6.3.13 FOR THE EXISTING STREAM CLASSIFICATION.

* FUTURE BOUNDARY ROAD GRADES ALONG TRAFALGAR AND BURNHAMTHORPE TO BE COORDINATED WITH THE HALTON REGION AND TOWN OF OAKVILLE. EXISTING ROAD CENTERLINE GRADES TO BE RAISED TO ACCOMMODATE FUTURE SERVICING BASED ON THE DOWNSTREAM SERVICING CONSTRAINTS.

* INTERIM ARGO TRAFALGAR SERVICING, BASED ON THE STATUS OF THE ADJACENT HOLDOUT PROPERTIES, WILL BE EXPLORED IN THE FUTURE JC9 EIR.

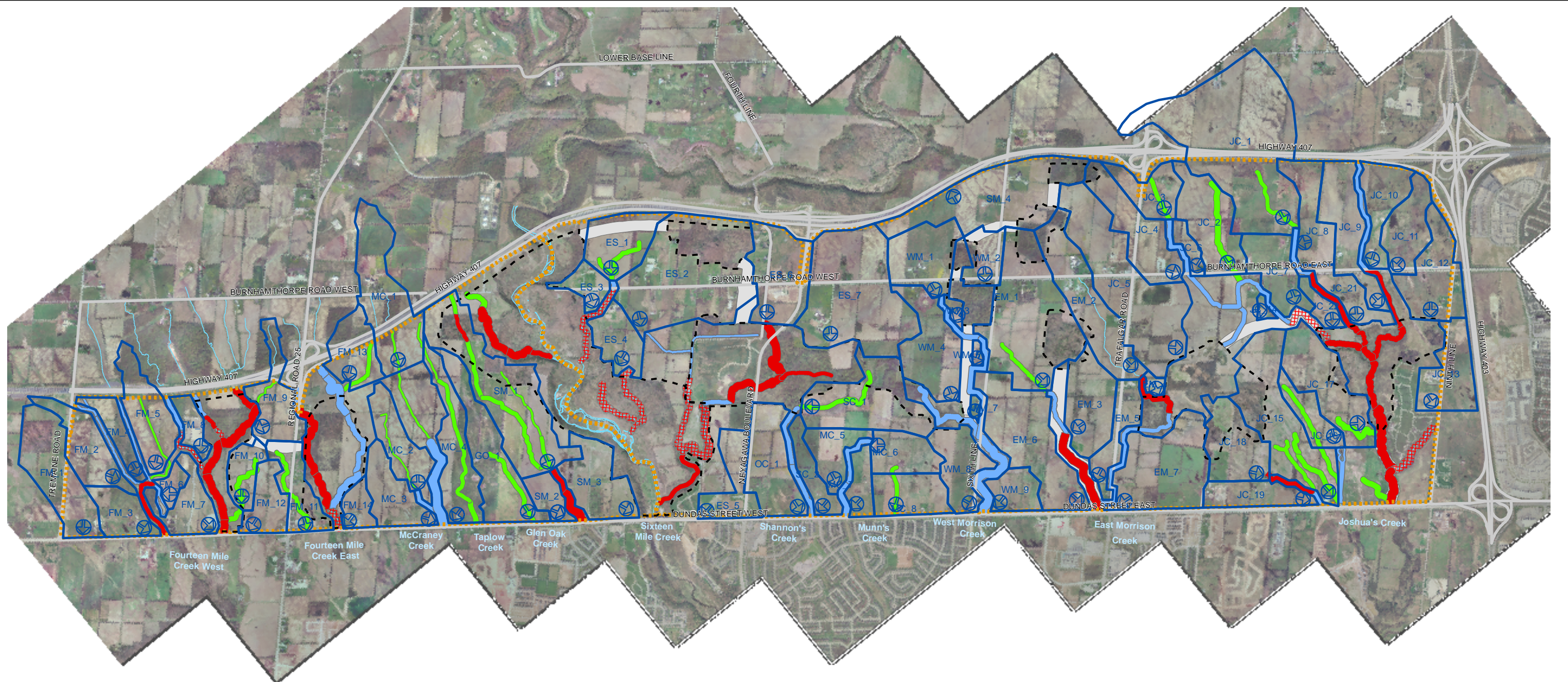
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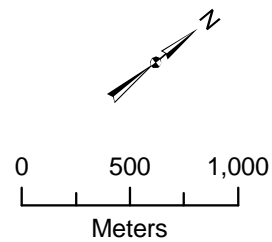
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**FIGURE 3C-B—
PRELIMINARY POST-DEVELOPMENT
STORM SERVICING**

PROJECT NO. 22-709	JUNE 2023	SCALE: 1:5,000
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NORTH OAKVILLE CREEKS SUBWATERSHED STUDY



Legend

- Core
- Secondary Plan Boundary
- Road
- Watercourse
- SWM Pond (Approximate Location)
- SWM Pond Drainage Area

- Core
- Linkage
- Stream Corridor**
- High Constraint
- High Constraint - Requiring Rehabilitation
- Medium Constraint
- Low Constraint
- SWM Pond Drainage Area
- Approximate SWM Pond Locations

Approximate Stormwater Facility Locations

Figure 7.4.6

APPENDIX D
SWM INFORMATION

SWM Targets from NOCSS Addendum

TABLE 7.4.1 TARGET UNIT AREA PEAK FLOW RATES EXISTING LAND USE										
Location	Culvert No.	Drainage Area	Regional Storm	100 year storm	50 year storm	25 year storm	10 year storm	5 year storm	2 year storm	
		ha.	m ³ /s	m ³ /s	m ³ /s	m ³ /s	m ³ /s	m ³ /s	m ³ /s	
14 Mile Creek										
Dundas St. W.	FM-D2	46.56	2.50	1.04	0.92	0.80	0.62	0.51	0.31	
	Flow rate / Area (m ³ /s/ha)		0.054	0.022	0.020	0.017	0.013	0.011	0.007	
	FM-D3	11.71	0.76	0.36	0.32	0.28	0.23	0.19	0.12	
	Flow rate / Area (m ³ /s/ha)		0.065	0.031	0.027	0.024	0.020	0.016	0.010	
	FM-D4	423.70	20.96	8.39	7.42	6.49	5.09	4.17	2.62	
	Flow rate / Area (m ³ /s/ha)		0.049	0.020	0.018	0.015	0.012	0.010	0.006	
	FM-D5	339.99	18.73	7.56	6.60	5.68	4.35	3.43	2.01	
	Flow rate / Area (m ³ /s/ha)		0.055	0.022	0.019	0.017	0.013	0.010	0.006	
	FM-D6	16.91	0.88	0.36	0.32	0.28	0.23	0.19	0.12	
	Flow rate / Area (m ³ /s/ha)		0.052	0.021	0.019	0.017	0.014	0.011	0.007	
	FM-D6a	26.23	1.38	0.57	0.50	0.44	0.34	0.28	0.18	
	Flow rate / Area (m ³ /s/ha)		0.053	0.022	0.019	0.017	0.013	0.011	0.007	
	FM-D7	247.92	11.96	4.63	4.07	3.54	2.75	2.23	1.36	
	Flow rate / Area (m ³ /s/ha)		0.048	0.019	0.016	0.014	0.011	0.009	0.005	
	FM-D8	8.45	0.66	0.37	0.33	0.29	0.23	0.19	0.12	
	Flow rate / Area (m ³ /s/ha)		0.078	0.044	0.039	0.034	0.027	0.022	0.014	
	FM-D9	18.58	1.47	0.86	0.76	0.67	0.54	0.44	0.28	
	Flow rate / Area (m ³ /s/ha)		0.079	0.046	0.041	0.036	0.029	0.024	0.015	
McCraney Creek										
Dundas St. W.	MC-D1	126.46	6.43	2.60	2.31	2.02	1.59	1.31	0.83	
Flow rate / Area (m ³ /s/ha)		0.051	0.021	0.018	0.016	0.013	0.010	0.007		
Taplow Creek										
Dundas St. W.	TC-D1	33.61	1.64	0.64	0.57	0.50	0.39	0.32	0.21	
Flow rate / Area (m ³ /s/ha)		0.049	0.019	0.017	0.015	0.012	0.010	0.006		
Glen Oak Creek										
Dundas St. W.	GO-D1	47.16	2.34	0.93	0.83	0.73	0.58	0.48	0.31	
Flow rate / Area (m ³ /s/ha)		0.050	0.020	0.018	0.015	0.012	0.010	0.007		
West 16 Mile Creek Tribs.										
Dundas St. W.	SM-D1	87.97	3.58	1.24	1.09	0.95	0.73	0.59	0.36	
	Flow rate / Area (m ³ /s/ha)		0.041	0.014	0.012	0.011	0.008	0.007	0.004	
	SM-D1a	12.53	0.81	0.38	0.34	0.30	0.24	0.20	0.13	
	Flow rate / Area (m ³ /s/ha)		0.065	0.030	0.027	0.024	0.019	0.016	0.010	
	SM-D2	8.01	0.52	0.24	0.22	0.19	0.15	0.13	0.08	
Flow rate / Area (m ³ /s/ha)		0.065	0.030	0.027	0.024	0.019	0.016	0.010		
East 16 Mile Creek Tribs.										
Sixteen Mile Creek	----	383.10	16.86	6.28	5.48	4.70	3.58	2.82	1.64	
Flow rate / Area (m ³ /s/ha)		0.044	0.016	0.014	0.012	0.009	0.007	0.004		
Osenego Creek										
Dundas St. W.	OC-D1	43.93	2.63	1.20	1.06	0.94	0.74	0.62	0.40	
Flow rate / Area (m ³ /s/ha)		0.060	0.027	0.024	0.021	0.017	0.014	0.009		
Shannon's Creek										
Dundas St. W.	SC-D1	84.37	3.81	1.39	1.23	1.06	0.82	0.66	0.40	
Flow rate / Area (m ³ /s/ha)		0.045	0.016	0.015	0.013	0.010	0.008	0.005		

TABLE 7.4.1 TARGET UNIT AREA PEAK FLOW RATES EXISTING LAND USE										
Location	Culvert No.	Drainage Area	Regional Storm	100 year storm	50 year storm	25 year storm	10 year storm	5 year storm	2 year storm	
		ha.	m ³ /s	m ³ /s	m ³ /s	m ³ /s	m ³ /s	m ³ /s	m ³ /s	
Munn's Creek										
Dundas St. W.	MC-D1	29.99	2.01	0.99	0.88	0.77	0.62	0.51	0.33	
	Flow rate / Area (m ³ /s/ha)		0.067	0.033	0.029	0.026	0.021	0.017	0.011	
	MC-D4	59.61	3.19	1.31	1.16	1.02	0.80	0.67	0.43	
Flow rate / Area (m ³ /s/ha)		0.054	0.022	0.019	0.017	0.013	0.011	0.007		
West Morrison Creek										
Dundas St. E.	MW-D3	226.38	10.93	4.26	3.77	3.30	2.59	2.13	1.35	
Flow rate / Area (m ³ /s/ha)		0.048	0.019	0.017	0.015	0.011	0.009	0.006		
East Morrison Creek										
Dundas St. E.	ME-D2	313.94	13.67	5.18	4.58	4.00	3.14	2.57	1.62	
Flow rate / Area (m ³ /s/ha)		0.044	0.016	0.015	0.013	0.010	0.008	0.005		
Joshua's Creek										
Dundas St. E.	JC-D1	962.74	50.06	20.58	18.18	16.02	12.57	10.35	6.53	
	Flow rate / Area (m ³ /s/ha)		0.052	0.021	0.019	0.017	0.013	0.011	0.007	
	JC-D2	111.80	5.68	2.21	1.95	1.69	1.31	1.07	0.65	
Flow rate / Area (m ³ /s/ha)		0.051	0.020	0.017	0.015	0.012	0.010	0.006		

Unit flow rates for upstream subcatchments draining to Dundas Street culvert JC-D1