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

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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 1B** 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 **Figure 3A** showing the potential mixed-use build-out of the subject lands, as presented in the Gerrad Design documents, is provided in **Appendix A**.

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.

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, future Infrastructure Ontario development lands 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 HYDROGEOLOLOGY

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 with 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. 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. 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.Water Servicing

An existing 750 mm ø watermain 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 ø feedermain 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. 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 within the Argo Trafalgar II property. Drainage from west of Trafalgar Road is also currently conveyed via the existing Trafalgar Road culvert through the subject site to the existing watercourse.

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.

Existing drainage conditions and storm infrastructure are shown on **Figure 3C** Preliminary Storm Servicing **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.

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.

4.1. SANITARY SERVICING

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

As per the 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 future 600mm trunk sanitary sewer on William Cutmore Road. 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 Area Servicing Study was completed, it is our understanding that the Region of Halton will be undertaking the Area Servicing Study update for confirmation of the future preferred land uses/intensification, and alternative development servicing scheme along the Trafalgar corridor based on the anticipated sanitary flows from the seweshed and the impacts on the downstream system. Should the study update confirm the available capacity in the existing sanitary trunk within the Green Ginger lands, the Argo Trafalgar lands may also be accommodated in the proposed Trafalgar Road trunk sanitary sewer currently being designed by Region of Halton as part of the Traflagar Road widening project.

Additional studies for the interim and ultimate sanitary servicing for the Argo Trafalgal lands are to be completed under separate cover as part of a future Draft Plan application.

4.2. MUNICIPAL WATER

The Argo Trafalgar lands are situated within Pressure Zone 4. Proposed development servicing is reliant on the Future 400 mm ø watermain located along Burnhamthorpe Road and the future 300 mm ø 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-diameter transmission watermain on Trafalgar Road. The Area Servicing Plan undertook hydraulic modeling of existing and proposed watermains 300 mm in diameter and greater as shown on **Figure 2C1** in **Appenidx C**. In accordance with the Area Servicing Plan, it is proposed to connect 300 mm watermains from the future 400 mm watermain on Burnhamthorpe Road and future 300mm watermain on William Halton Parkway into the subject lands. The Area Servicing Plan modeling determined that there will be adequate flow and pressure at all Pressure Zone 4 nodes 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.

Internal watermain sizing for the subject lands, as well as the analysis for 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 proposed preliminary storm servicing for the subject lands is shown on **Figure 3C**. 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. Future storm sewers will be designed in order 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. As 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, through the subject site to the future channel within the Argo Trafalgar II property.

The existing SWM pond located on the Argo Trafalgar I 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 Burnhmathorpe Road. 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**, 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**, 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 JC9 (23.6 ha), as identified on **Figure 3C**, which includes the Argo Trafalgar II lands (10.6 ha). SWM Pond C is proposed to outlet to the future channel within the Argo Trafalgar II lands, which ultimately discharges to the existing Joshua Creek watercourse south of Burnhamthorpe Road.

SWM criteria for the subject lands is 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 should 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 ($m^3/s/ha$) 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 4.3** below summarizes the required unitary target flow rates from the NOCSS Addendum.

Table 4.3 – 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.

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. Erosion and Sediment Control

Erosion and sediment controls must be implemented during construction. 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 Trafalgal development lands can be serviced as follows:

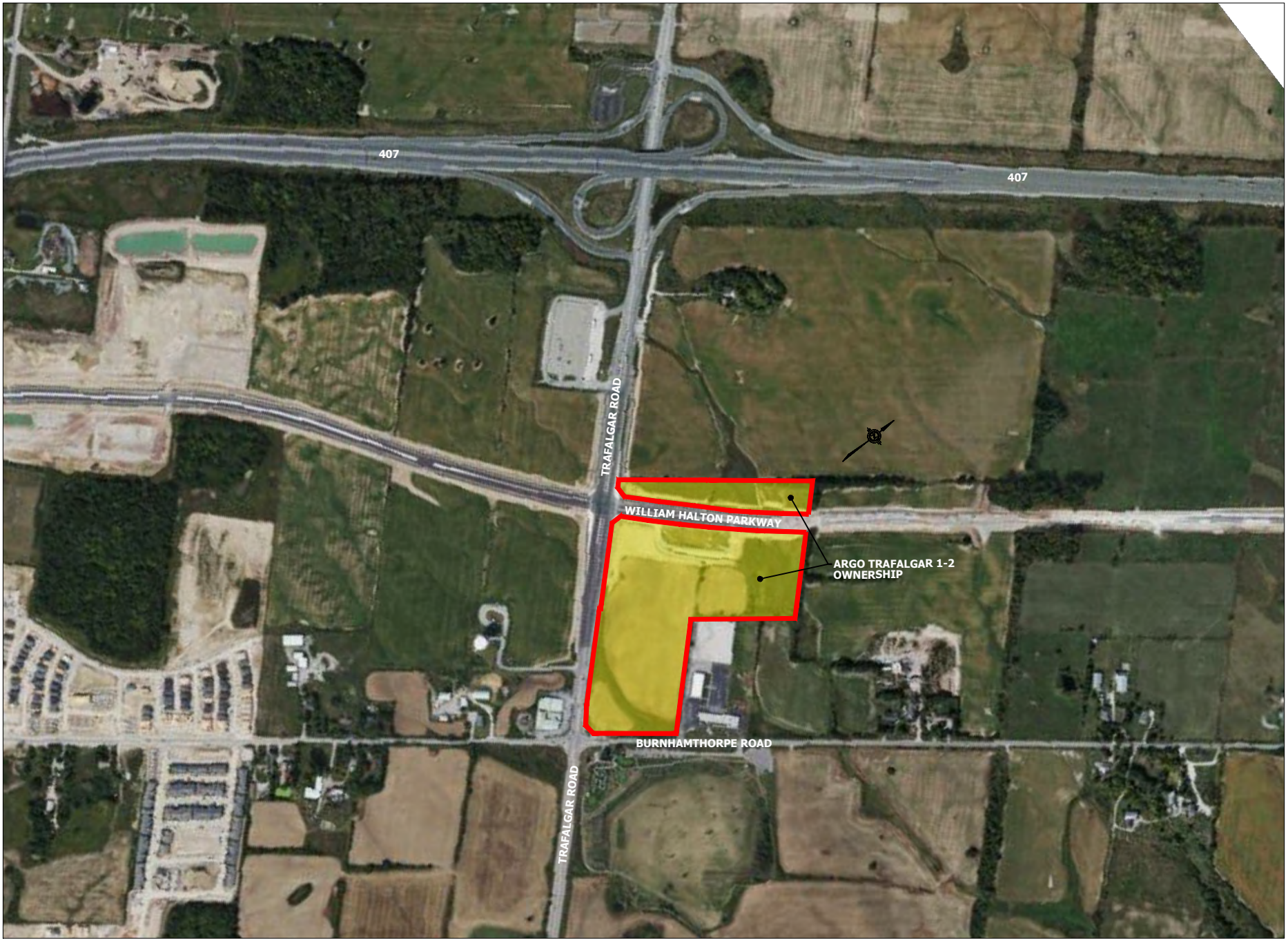
- Sanitary effluent from the Argo Trafalgar lands is proposed to be conveyed via a future trunk sanitary sewer on future William Cutmore Road south of Burnhamthorpe Drive for discharge to the existing pump station at Dundas Street. The external sanitary sewer alignments from the limit of the Argo Trafalgar 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 upcoming Master Wastewater Servicing Study update for the future Trafalgar urban corridor.
- Argo Trafalgar lands are situated within Pressure Zone 4, and their water servicing depends on the extension of external watermains (300mm main along William Halton Parkway and 400mm 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 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

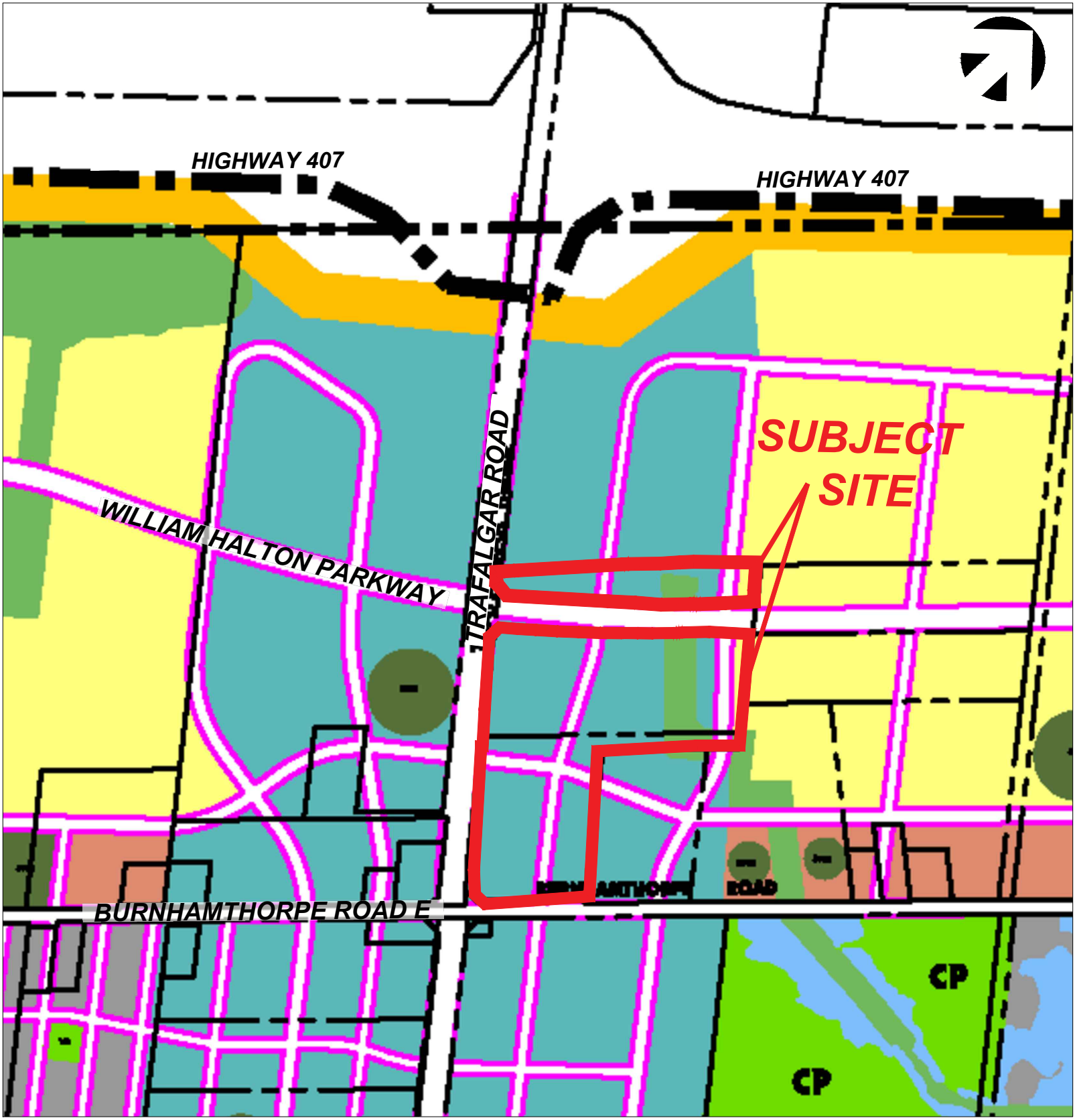
APPENDIX A

INTRODUCTION AND BACKGROUND INFORMATION FIGURES



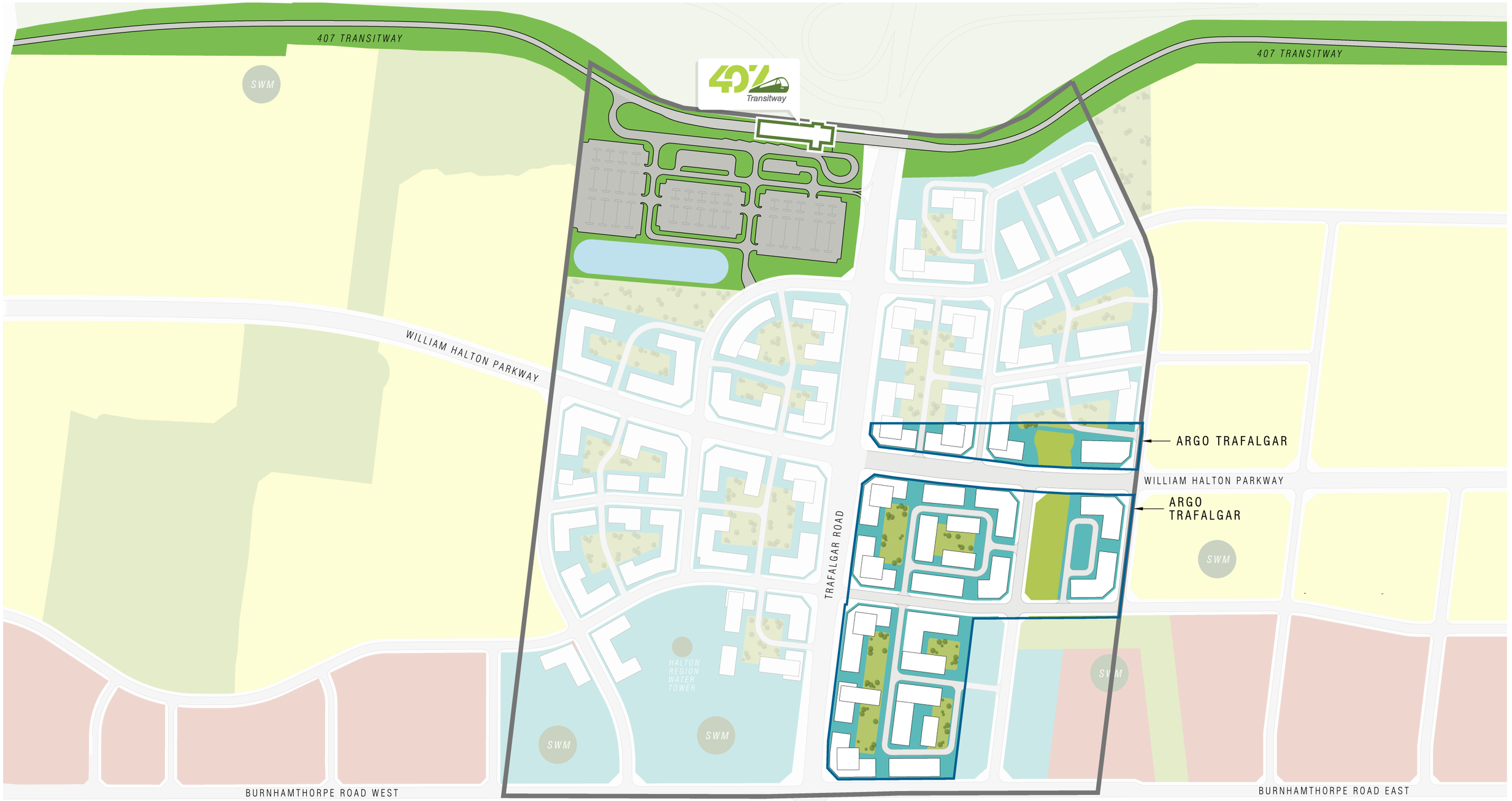
ARGO TRAFALGAR 1-2 NORTH OAKVILLE OPA APPLICATION	OAKVILLE REGIONAL MUNICIPALITY OF HALTON **TOWN OF OAKVILLE**	URBANTECH Urbantech® Consulting A Division of Leighton-Zac Ltd. 3760 14th Avenue, Suite 301, Markham, ON. L3R 3T7 TEL 905.946.9461 • urbantech.com	PROJECT No. 22-709	DATE: JUNE 2022	SCALE: 1:10,000	FIGURE: **1A**

File: P:\Projects\22-709 - Argo Trafalgar 1 - 2 (Argo - Oakville)\Reports\OPA Application\OPA PSR Figures\FIG 1A - Location Map.dwg - Revised by: <DZEC> : Fri, Jun 10 2022 - 9:25am



LEGEND

- SECONDARY PLAN AREA BOUNDARY
- OAKVILLE / MILTON MUNICIPAL BOUNDARY
- TRANSITWAY
- TRAFALGAR ROAD URBAN CORE AREA
- TRANISITIONAL AREA
- EMPLOYMENT AREA
- NATURAL HERITAGE SYSTEM AREA
- STORMWATER MANAGEMENT FACILITY (final location tbd)
- JOSHUA CREEK FLOODPLAIN AREA
- CP — COMMUNITY PARK AREA
- VILLAGE SQUARE/URBAN SQUARE
- GENERAL URBAN AREA



DRAFT

- MIXED USE - RETAIL/OFFICE/RESIDENTIAL
- EMPLOYMENT
- TRANSITIONAL AREA
- PARK / OPEN SPACE (PUBLIC & PRIVATE)
- STUDY AREA
- ARGO LANDS

- 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.
- Aerial Photo: Google Earth

GERRARD DESIGN

TRAFALGAR I & II | Oakville, Ontario

PRELIMINARY BLOCK PLAN CONCEPT

MAR 29, 2022
PROJECT 1912
SCALE 1:5000

APPENDIX B

EXISTING CONDITON FIGURES


ONEIDA CLAY LOAM C
JEDDO CLAY LOAM D
CHINGUACOUSY CLAY LOAM
ONEIDA CLAY LOAM
JEDDO CLAY LOAM D
ONEIDA CLAY LOAM C
CONEIDA CLAY LOAM
CONEIDA CLAY LOAM
CONEIDA CLAY LOAM
ONEIDA CLAY LOAM C
JEDDO CLAY LOAM D
CONEIDA CLAY LOAM
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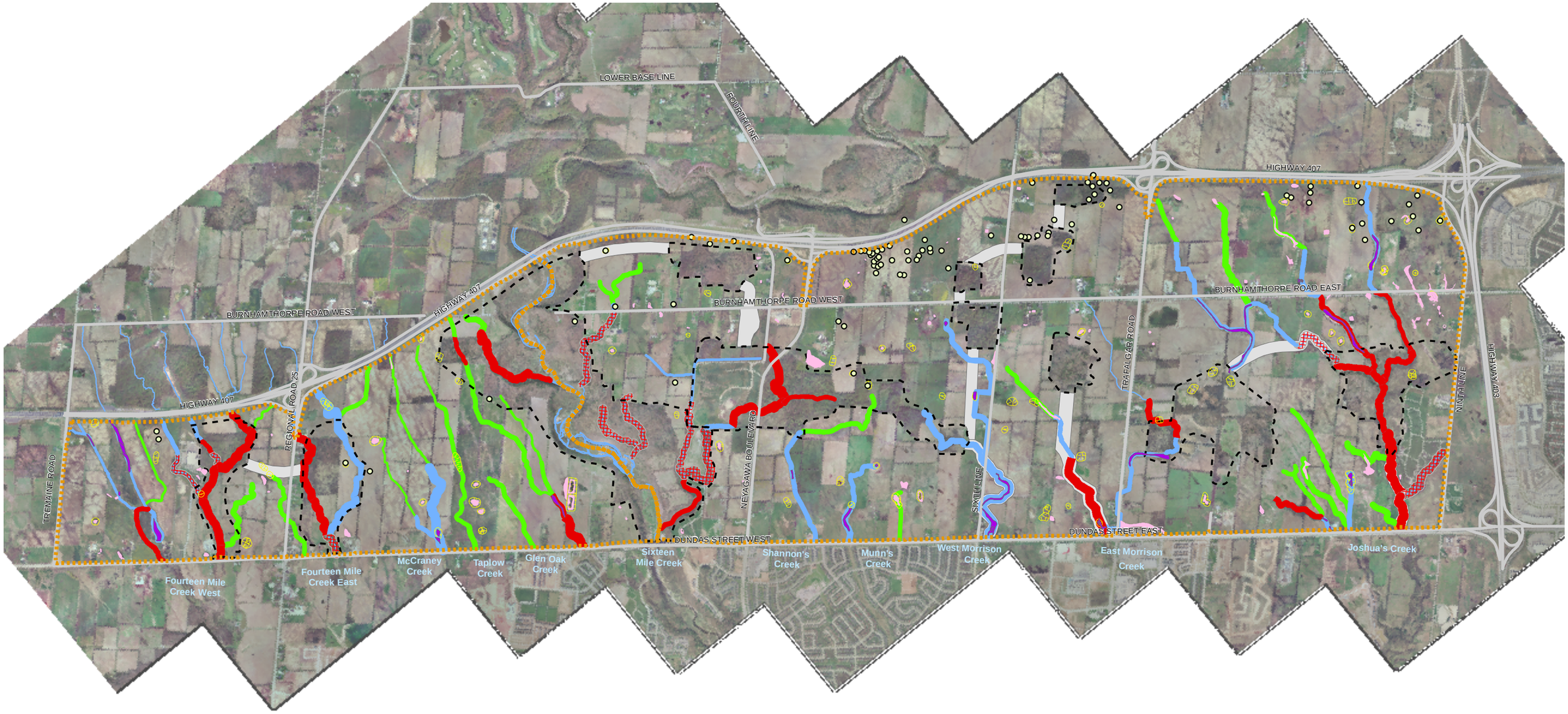
C
ONEIDA CLAY LOAM

NORTH OAKVILLE CREEKS SUBWATERSHED STUDY



TSH engineers architects planners
PARISH geomorphic
Natural Resource Solutions Inc. Aquatic, Terrestrial and Wetland Biologists
Donald G. Weatherbe Associates
Morrison Environmental Limited Groundwater Consultants
EWRG Environmental Water Resources Group Ltd.
OAKVILLE

August 2006

N

0 500 1,000
Meters

- Secondary Plan Boundary
- Core
- Linkage
- Hydrologic Feature 'A'
- Hydrologic Feature 'B'
- Topographic Depressions (with Hydrologic Component)
- Topographic Depressions
- Watercourse

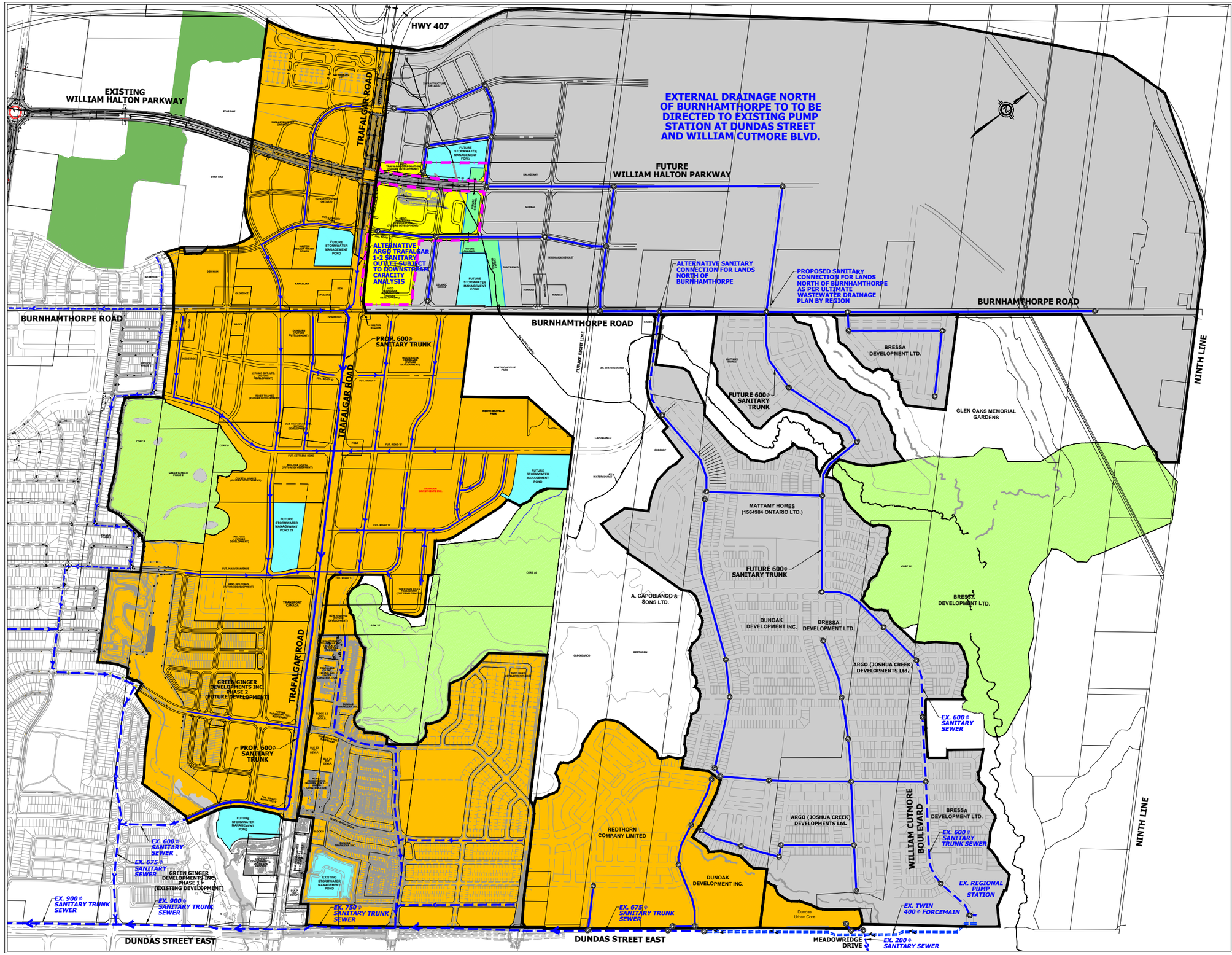
Stream Corridor
- High Constraint
- High Constraint - Requiring Rehabilitation
- Medium Constraint
- Low Constraint

Topographic Depressions with Hydrologic Components

Figure 7.3.1

APPENDIX C

PRELIMINARY SERVICING AND GRADING FIGURES



LEGEND:

- ARGO TRAFALGAR 1-2 PROPERTY BOUNDARY
- EXISTING SANITARY TRUNK SEWER AND FLOW DIRECTION
- SUB-TRUNK SEWER DRAINAGE BOUNDARY TO DUNDAS TRUNK SANITARY
- FUTURE SANITARY SEWER
- FUTURE DRAINAGE BOUNDARY TO EXISTING REGION PUMP STATION AT DUNDAS AND WILLIAM CUTMORE BOULEVARD

SANITARY SERVICING NOTES:

* ARGO TRAFALGAR 1-2 SANITARY DRAINAGE WILL BE ACCOMMODATED WITHIN FUTURE WILLIAM CUTMORE BOULEVARD TRUNK SEWER TO EXISTING PUMP STATION AT DUNDAS STREET. THIS SERVICING PROPOSAL IS CONSISTENT WITH THE NORTH OAKVILLE ULTIMATE WASTEWATER SERVICING PLAN BY REGION.

* EXTERNAL TRUNK SANITARY SEWER ALIGNMENT FOR SERVICING OF THE ARGO TRAFALGAR 1-2 DEVELOPMENT TO BE CONFIRMED AT A LATER DATE BASED ON THE OWNERSHIP OF EXTERNAL PROPERTIES.

* SUBJECT TO THE DOWNSTREAM CAPACITY ANALYSIS OF THE EXISTING TRUNK SANITARY SEWER WITHIN THE GREEN GINGER LANDS, THE ARGO TRAFALGAR 1-2 DEVELOPMENT MAY BE ACCOMMODATED IN THE PROPOSED TRAFALGAR TRUNK SANITARY BY REGION. ADDITIONAL STUDIES FOR INTERIM AND ULTIMATE SERVICING TO BE COMPLETED AS PART OF THE ARGO TRAFALGAR 1-2 DRAFT PLAN APPLICATION.

OAKVILLE

REGIONAL MUNICIPALITY OF HALTON
TOWN OF OAKVILLE

ARGO TRAFALGAR 1-2 NORTH OAKVILLE OPA APPLICATION

URBANTECH®

Urbantech® Consulting
A Division of Leighton-Zec Ltd.
3760 14th Avenue, Suite 301,
Markham, ON. L3R 3T7
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FIGURE 1C
PRELIMINARY SANITARY SERVICING

PROJECT NO.		
22-709	JUNE 2022	SCALE: 1:12,500

File: P:\Projects\22-709 - Argo Trafalgar 1 - 2 (Argo - Oakville)\Reports\OPA Application\OPA PSR Figures\FIG 1C - Argo Trafalgar_SAN.dwg - Revised by <<DTE>> - Fri, Jun 10 2022 - 9:20am

HIGHWAY 407

HIGHWAY 407

NORTH OAKVILLE TRANSPORATION CORRIDOR

SIXTH LINE

TRAFALGAR ROAD

BURNHAMTHORPE ROAD

BURNHAMTHORPE ROAD

FORCEMAIN

HIGHWAY 403

PS

FORCEMAIN (OPTION)

NEYAGAWA BLVD.

NORTH OAKVILLE TRANSPORATION CORRIDOR

FORCEMAIN

LOCAL PS

PS

NINTH LINE

PS

DUNDAS STREET

FORCEMAIN

1200Ø

2x750Ø WWFM

1050Ø

975Ø

825Ø

600Ø

2x400Ø WWFM

Approximate Location of Subject Site

PROUDFOOT TRAIL

NEYAGAWA BLVD.

TOWNE BLVD.

HARMAN GATE

SIXTH LINE

OAK PARK BLVD.

TRAFALGAR ROAD

EIGHTH LINE

PRINCE MICHAEL DRIVE

MEADOW RIDGE DRIVE

500 300 100 750 metres

400 200 0

LEGEND

- DUNDAS STREET TRUNK SEWER
- DUNDAS STREET FORCEMAIN
- SUB-TRUNK SEWER
- SUB-TRUNK FORCEMAIN
- PS — 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

MMM GROUP

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

PRINTED ON: FILE NAME: H:\10-02076\MUN\general\PH1-Ultimate.dwg_ULTIMATE

LEGENDA

- ARGO TRAFALGAR 1-2 PROPERTY BOUNDARY
- EXISTING TRUNK WATERMAIN
- EXISTING 300ø WATERMAIN
- EXISTING LOCAL WATERMAIN
- PROPOSED 300ø WATERMAIN
- PROPOSED LOCAL WATERMAIN

WATER SERVICING NOTES:

* ARGO TRAFALGAR 1-2 LANDS ARE SITUATED WITHIN PRESSURE ZONE 4. PROPOSED DEVELOPMENT SERVICING IS RELIANT ON THE FUTURE 400ø WATERMAIN ALONG BURNHAMTHORPE AND FUTURE 300ø WATERMAIN EXTENSION ON WILLIAM HALTON PARKWAY.
* INTERNAL ARGO TRAFALGAR 1-2 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

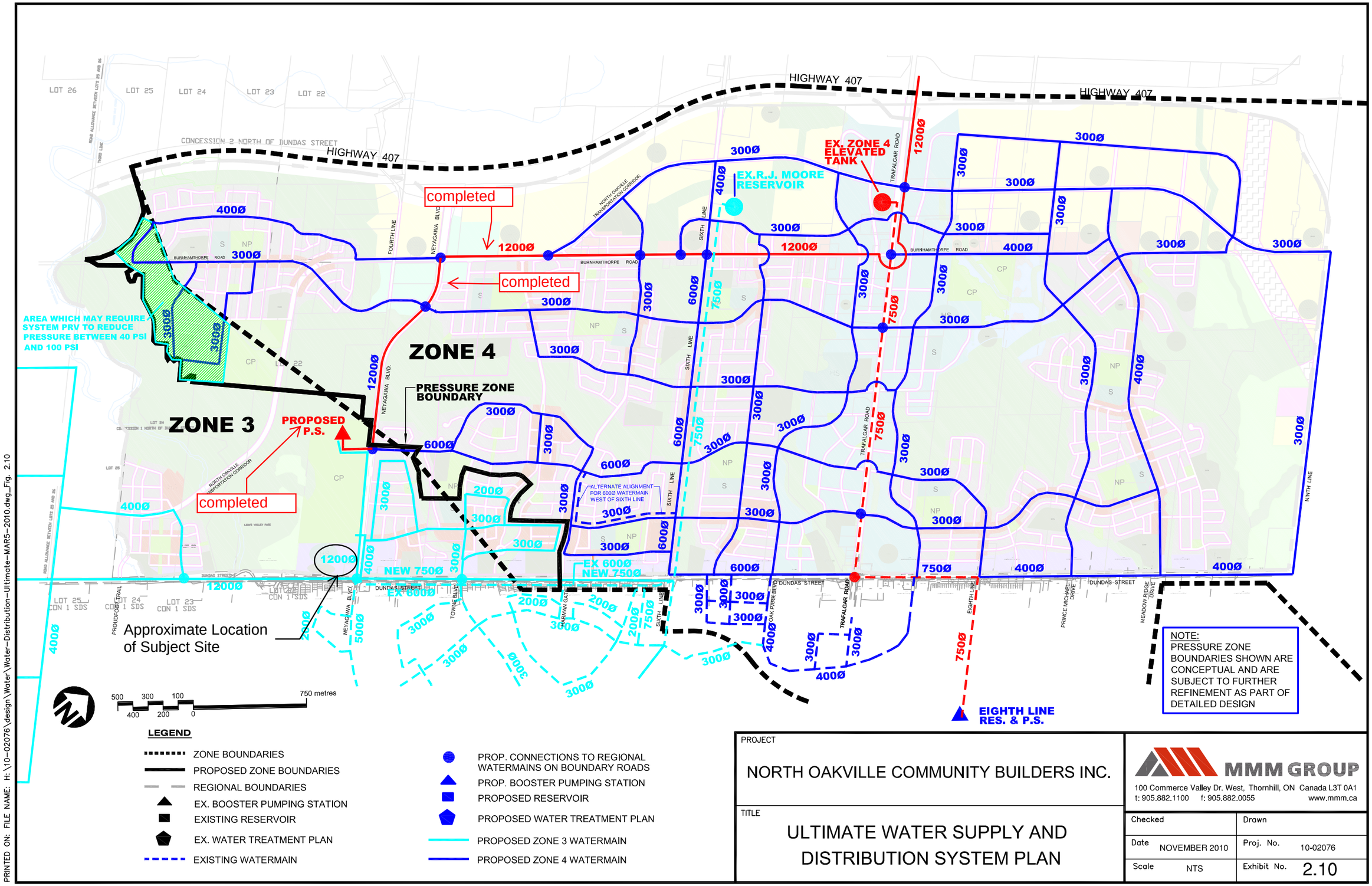
ARGO TRAFALGAR 1-2
NORTH OAKVILLE
OPA APPLICATION

URBANTECH®
Urbantech® Consulting
A Division of Leighton-Zec Ltd.
3760 14th Avenue, Suite 301,
Markham, ON. L3R 3T7
TEL 905.946.9461 - urbantech.com

FIGURE 2C
PRELIMINARY WATER SERVICING

PROJECT NO.		SCALE:
22-709	JUNE 2022	1:6,000

File: P:\Projects\22-709 - Argo Trafalgar 1 - 2 (Argo - Oakville)\Reports\OPA Application\OPA FSR Figures\FIG 2C - Argo Trafalgar_XH.dwg - Revised by <DZC> - Fri, Jun 10 2022 - 9:18am



PROJECT

NORTH OAKVILLE COMMUNITY BUILDERS INC.

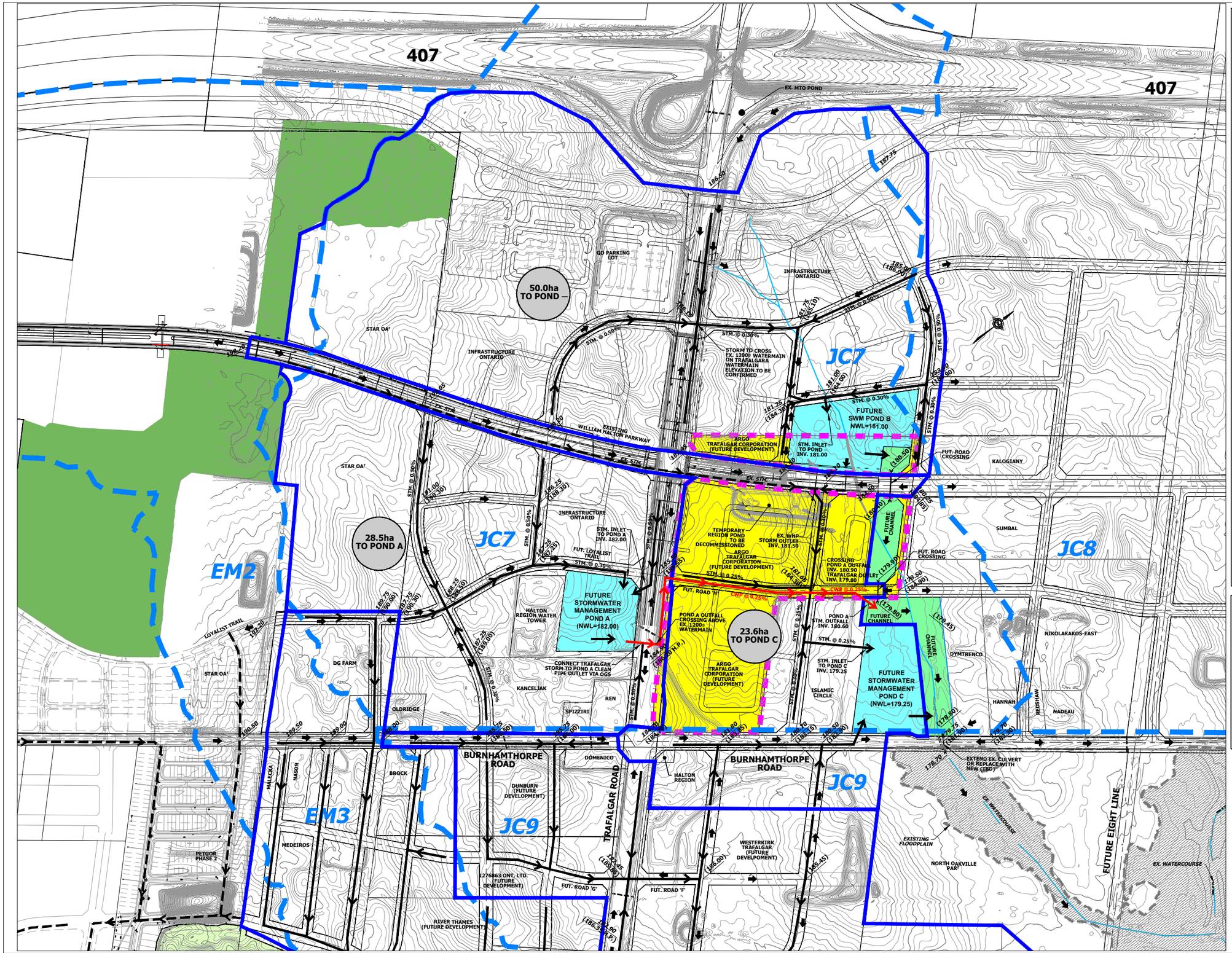
TITLE

ULTIMATE WATER SUPPLY AND DISTRIBUTION SYSTEM PLAN

MMM GROUP
100 Commerce Valley Dr. West, Thornhill, ON Canada L3T 0A1
t: 905.882.1100 f: 905.882.0055 www.mmm.ca

Checked	Drawn
Date NOVEMBER 2010	Proj. No. 10-02076
Scale NTS	Exhibit No. 2.10

PRINTED ON: FILE NAME: H:\10-02076\design\Water\Water-Distribution-Ultimate-MAR5-2010.dwg_Fig. 2.10



LEGENDA

- ARGO TRAFALGAR 1-2 PROPERTY BOUNDARY
- PROPOSED BLUE STREAM REALIGNMENT
- PROPOSED SWM POND
- JC7 — EXISTING SUBCATCHMENT BOUNDARY AND SUBCATCHMENT ID
- EXISTING CONTOUR
- EXISTING STORM SEWER AND FLOW DIRECTION
- PROPOSED STORM DRAINAGE BOUNDARY
- 28.5ha TO POND A — PROPOSED STORM DRAINAGE AREA IN HECTARES
- PROPOSED STORM SEWER AND FLOW DIRECTION
- PROPOSED OVERLAND FLOW DRAINAGE DIRECTION
- PROPOSED CLEAN WATER PIPE AND FLOW DIRECTION
- 179.75 (180.80) — EXISTING ROAD ELEVATION FUTURE ROAD ELEVATION

STORM SERVICING NOTES:

* ARGO TRAFALGAR 1-2 LANDS ARE SITUATED WITHIN EXISTING DRAINAGE SUBCATCHMENT JC7 AS PER NOCSS FIGURE 7.4.2.
* 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 CREEK CONSTRAINTS.

OAKVILLE

REGIONAL MUNICIPALITY OF HALTON
TOWN OF OAKVILLE

ARGO TRAFALGAR 1-2 NORTH OAKVILLE OPA APPLICATION

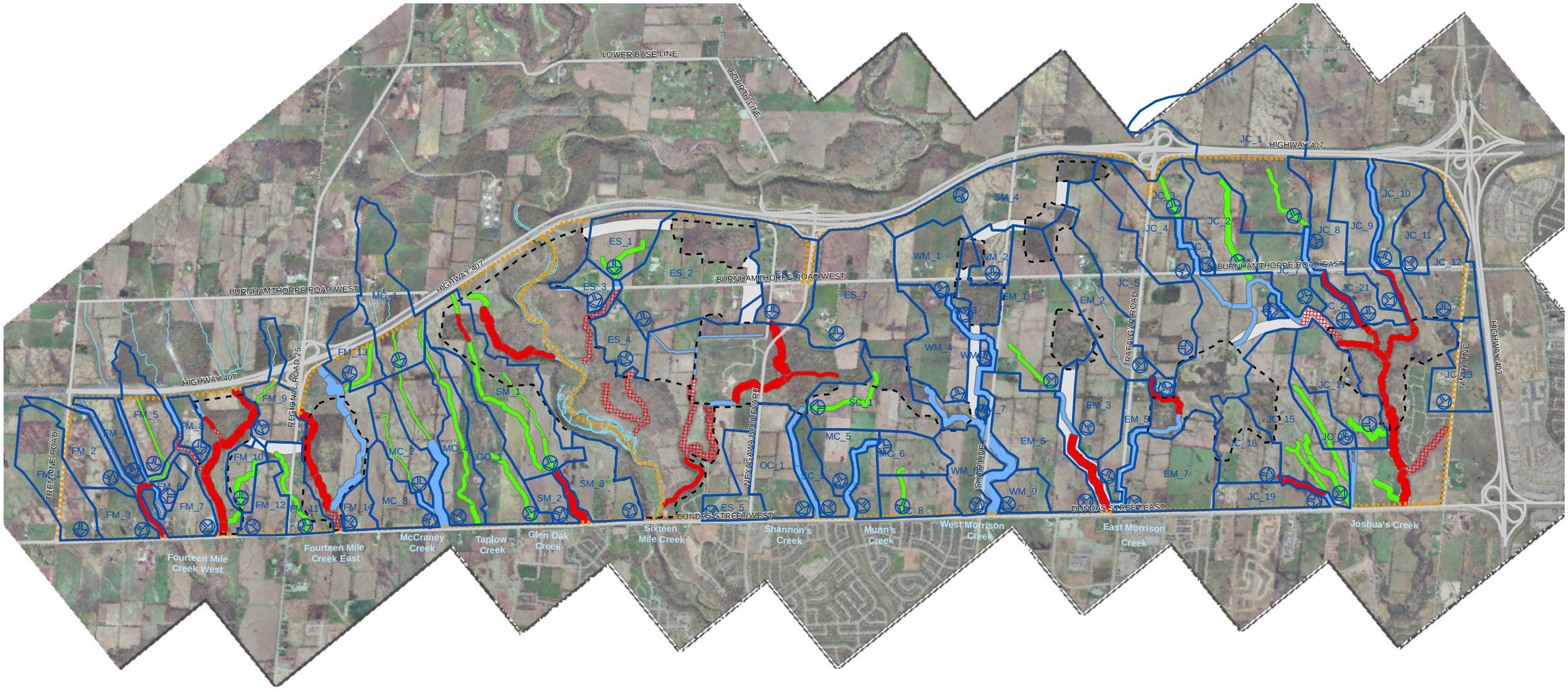
URBANTECH®

Urbantech® Consulting
A Division of Leighton-Zec Ltd.
3760 14th Avenue, Suite 301,
Markham, ON. L3R 3T7
TEL 905.946.9461 • urbantech.com

FIGURE 3C
PRELIMINARY STORM SERVICING

PROJECT NO.		SCALE:
22-709	JUNE 2022	1:6,000

File: P:\Projects\22-709 - Argo Trafalgar 1 - 2 (Argo - Oakville)\Reports\OPA Application\OPA PSR Figures\FIG 2 - Argo Trafalgar_STM.dwg - Revised by <DZEC> : Tue, May 24 2022 - 4:46pm



NORTH OAKVILLE CREEKS SUBWATERSHED STUDY

engineers architects planners
PARISH geomorphic
Natural Resource Solutions Inc. Aquatic, Terrestrial and Wetland Biologists
Donald G. Weatherbe Associates
Morrison Environmental Limited Groundwater Consultants
Environmental Water Resources Group Ltd.
OAKVILLE

August 2006

0 500 1,000
Meters

Legend

- 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