FUNCTIONAL SERVICING REPORT

INFRASTRUCTURE ONTARIO

PROVINCIAL LANDS WEST OF TRAFALGAR ROAD, TOWN OF OAKVILLE

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1.0 INTRODUCTION

WalterFedy was retained by Infrastructure Ontario (IO) to prepare the following Functional Servicing Report to review potential servicing constraints and opportunities for a parcel of land located on the western side of Trafalgar Road, south of Highway 407. This report has been prepared in support of a proposed Official Plan Amendment application to add Residential land uses to the mix of uses permitted in the Trafalgar Urban Core Area 1 land use designation in the North Oakville East Secondary Plan applicable to the portions of the Provincial Lands proximate to Trafalgar Road. The subject lands have an area of approximately 18.96 ha and are currently vacant land used for agricultural purposes. See Figure 1.0 for a Site Location Plan.

An illustrated development concept was prepared by GSP Group Inc. The scenario would see the Trafalgar Corridor Lands developed with a mix of residential and commercial developments. No Site Plans or Draft Plan of Subdivision applications have been developed at this time, only conceptual sketches and estimated population/employment densities. See Appendix A for a conceptual figure showing the built-out form of the Subject lands as presented in the GSP documents.

The purpose of this report is to review the existing background information, as well as information that is currently in the design process, and to provide a general overview of the servicing requirements for the subject lands to support the requested Official Plan Amendment to the North Oakville East Secondary Plan. The report has also been updated to coordinate the preliminary servicing and SWM design with the Argo Trafalgar development located west and south of the IO lands. Also, the Region of Halton is currently undertaking a Water, Wastewater, and Transportation Integrated Master Plan to review Regional infrastructure for anticipated future growth targets to the year 2051. It is anticipated that information related to the proposed development concept (population, flow rates) will be taken into consideration by the Region as part of their Master Plan review and assessment.

1.1 Reference Reports

In the preparation of this functional servicing report, the following reports/drawings were referenced:

1. *Functional Servicing & Stormwater Management Report – Argo Trafalgar North Oakville*, Urbantech, May 2024.
2. *North Oakville Creeks Subwatershed Study (NOCSS)*, Town of Oakville, August 2006.
3. *North Oakville Creeks Subwatershed Study Addendum*, Town of Oakville, September 5, 2007.
4. *Official Plan Amendment Number 272, North Oakville East Secondary Plan*, February 2008.
5. *North Oakville East Secondary Plan – Area Servicing Plan, Oakville* Ontario, MMM Group Limited, April 2011.
6. *Trafalgar Road Corridor Improvements EA, Cornwall Road to Highway 407 – Stormwater Management Report*, AECOM, April 2015.
7. *IO Lands West and East of Trafalgar – Illustrative Concept Dwg. A2*, GSP Group, July 2024.
8. *Technical Memorandum – Trafalgar Road (Phase 2) – Hays Boulevard to William Halton Parkway Sanitary Sewer Design*, R.V. Anderson Associates Limited, November 8, 2021.
9. *600mm Sanitary Sewer – Trafalgar Road (Reg. Rd. 3) – Plan Profile Dwgs. 36-42 (Rev.1, 60% Review)*, R.V. Anderson Associates Limited, November 8, 2021.
10. *Green Ginger Subdivision – Stages 1 & 2 – Plan Profile Dwgs for Wheat Boom Drive and Ernest Appelbe Boulevard (As-Constructed)*, DSEL, various dates.
11. Correspondence from DSEL regarding Sanitary Sewer Population, DSEL (late 2021).

12. *Water and Wastewater Linear Design Manual*, Regional Municipality of Halton, April 2019.

2.0 EXISTING SITE CONDITIONS

The subject lands are located on western side of Trafalgar Road, south of Highway 407. The property is bisected by William Halton Parkway and bound by an existing commuter parking lot to the north, Trafalgar Road to the east, agricultural lands to the west, and a Region of Halton water tower to the south. Refer to Figure 1.0 for a Site Location Plan.

2.1 Topography, Soils, and Hydrogeology

The subject lands are in the northwestern headwaters of the Joshua's Creek subwatershed and are predominantly used for agricultural row crops. The property drains in a southeasterly direction at a slope of 1.5% to 2.0% towards roadside ditches on the western side of the Trafalgar Road right-of-way. Four existing culvert crossings convey surface runoff to the eastern side of Trafalgar Road.

A site-specific geotechnical investigation will be completed during the future re-zoning or detailed design stage. However, based on the Ministry of Agriculture, Food and Rural Affairs AgMaps website and the AECOM Trafalgar Road stormwater management (SWM) report, the subsurface soils generally consist of Chinguacousy clay loam and Oneida clay loam. These soils are characteristic of Hydrologic Soil Groups C and D, respectively.

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, the site is not located in a source water protection area. There are no significant natural heritage features within the subject lands.

2.2 Water, Sanitary, and Storm Servicing

Servicing infrastructure information was provided by the Region of Halton, the Town of Oakville, and Conservation Halton. Utilities information was obtained from utility drawings prepared as part of the Trafalgar Road study.

2.2.1 Sanitary Servicing

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

2.2.2 Water Servicing

A 750-mm-diameter watermain is located on Trafalgar Road that runs between Dundas Street and the elevated water tower located south of the western property. A 1200 mm transmission watermain is located on Burnhamthorpe Road, west of Trafalgar Road. See Appendix C for the Area Servicing Plan Report. The subject lands are located wholly within Halton Pressure Zone 4.

2.2.3 Storm Servicing

There are no storm sewers available to service the subject lands. Trafalgar Road is a mix of urbanized and unimproved/rural road cross-sections. Trafalgar Road drains to roadside ditches from Burnhamthorpe Road to south of William Halton Parkway, where it turns into an urbanized cross-section for approximately 230 m north, at which point the road section reverts back to an unimproved/rural cross-section at the commuter parking lot entrance. Within the urbanized cross-section areas, localized storm sewers drain the right-of-way and outlet flows to the eastern side of Trafalgar Road where surface runoff is collected by tributaries of Joshua's Creek. Within the unimproved sections, Trafalgar Road drains southerly in roadside ditches to culvert crossings under Trafalgar Road.

2.2.4 Hydro, Gas, and Other Utilities

Overhead hydro lines are located on the eastern side of Trafalgar Road. Subsurface utility location drawings prepared for the Trafalgar Road study indicate a buried Bell Canada service on the western side of Trafalgar Road, north of Burnhamthorpe Road. No information related to natural gas or other telecommunications is available at this time. The availability of services/utilities in proximity to the subject lands will be confirmed as part of future engineering design works.

3.0 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, 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 Land is located within the jurisdiction of Conservation Halton. It does not appear that the land is 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.

3.4 Ministry of Transportation Ontario (MTO)

The subject Land is located within MTO's Permit Control Area to Highway 407 and will require MTO approval.

4.0 SITE SERVICING AND GRADING

The Town and Region reviewed and provided comments on preliminary reporting for the IO lands (eastern and western sides) as well as the Argo Trafalgar development located on the eastern side of Trafalgar Road between Willian Halton Parkway and Burnhamthorpe Road, abutting the southern side of the IO property. The Town indicated that the servicing and SWM design for both the IO and Argo developments should be coordinated to ensure consistency with grading, servicing and SWM approach. As such, the reporting for the IO lands was updated to provide consistency with the conceptual design prepared for the Argo development. The Urbantech report is included in Appendix A for reference.

4.1 Sanitary Services

Within the subject lands, a local sanitary sewer system will be constructed to service the proposed development area. The Block areas proposed for development are approximately 13.3 ha. The preliminary sanitary sewer layout has been coordinated with the downstream Argo development sanitary requirements as well as the future Trafalgar Road sanitary trunk sewer. Sanitary flows from the subject lands will outlet to a future sanitary sewer on Burnhamthorpe Road and then to the future 750-mm-diameter sanitary trunk sewer at the intersection of Burnhamthorpe and Trafalgar Road, carrying the sanitary flows south to Dundas Street. See Figure 1C in Appendix B showing the overall sanitary servicing plan.

The following design criteria, taken from the Halton Water Wastewater Linear Design Manual and the comments received from the Region of Halton, were used to determine the sanitary flows from the proposed development:

- Per capita sewage flow of 0.275 m^3/persons/day
- Apartment occupancy of 1.703 persons/unit
- Commercial population density of 400 ft^2/employee, per Concept Plan prepared by GSP.
- Institutional population density of 450 ft^2/employee, per Concept Plan prepared by GSP.
- Harmon peaking formula to be applied to residential and commercial flows.
- Infiltration rate of 0.286 L/ha/s

The proposed land use breakdown for the proposed development, including block areas and unit counts, is shown on the Illustrative Concept Plan prepared by GSP, included in Appendix A.

Based on the design criteria above, a sanitary sewer design sheet was prepared to document flows, resultant pipe capacities, and sewer velocities for the proposed sanitary sewer. A preliminary sanitary sewer design sheet is included in Appendix B. The proposed sewage flows for the site are summarized in Table 1 below, which is based on the population estimates in Table 2.

Table 1 – Proposed Sanitary Sewage Flows

Flow Type	Flow (m^3/day)	Flow (L/s)
Peaked Residential and Commercial	761.62	8.82
Infiltration Flow	328.32	3.80
Design Flow	1,089.94	12.62

Table 2 – Population Estimate

Location	Residential Population	# Jobs/Employment
IO West Parcel	9595	2382

Future local sanitary sewers will be designed such that maximum capacity utilized does not exceed 70%, with pipe flow velocities ranging from 0.6 m/s for self-cleansing to a maximum of 3.0 m/s.

The Region of Halton is currently undertaking a Water, Wastewater, and Transportation Integrated Master Plan to review Regional infrastructure for anticipated future growth targets to 2051 that will include a review of wastewater conveyance system requirements and pump station capacities.

4.2 Municipal Water

There are no proposed changes to the Region's water servicing plan. The IO Trafalgar Lands are currently within Oakville Pressure Zone 4 (Zone TWL 236 m). The service pressure for this zone will change in the 2025 ± population projection to a TWL of 224 m as part of the Region's Pressure Boundary Re-alignment project.

The western portion of the IO East Lands will have finished ground elevations ranging between 184 and 186 m. Based on the noted TWL elevations of 236 m and 224 m, the resulting pressure across the western portion of the IO East Lands is 71 psi – 74 psi, and 54 psi – 57 psi, respectively.

The 2011 ASP notes that there will be adequate flow and pressure at all Pressure Zone 4 nodes during the maximum day and peak hour demand scenarios. The report determined that maximum day pressures at nodes within the subject lands could range between 58 psi and 72 psi, which is consistent with the pressures estimated above based on the anticipated TWL elevations. Additionally, the ASP undertook maximum day + fire flow modelling to confirm that the water distribution system 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 Site Plans and development blocks.

The proposed development will require the future 300 mm watermain extension on William Halton Parkway as well as the proposed 400 mm watermain on Burnhamthorpe Road. Future watermains will extend north into the IO East Lands. Depending on the timing of the IO development on the western side of Trafalgar Road, the extension of local watermain from the western side of Trafalgar Road may also provide another water source.

4.2.1 Domestic Demands

An estimate of the domestic water demand for the proposed development scenario is provided in Appendix C. Demands from any of the scenarios will be distributed throughout the proposed development area and if the future water system is sufficiently looped, the additional domestic demand would not be expected to adversely impact the water distribution system.

4.2.2 Fire Flow Demands

Fire flow demands for any future developments will be subject to the methodology outlined in the *Water Supply for Public Fire Protection* document published by Fire Underwriters Survey (FUS, 1999). During the detailed design stage, the Site Plan(s) and architectural building plans will be used to calculate the required FUS fire flows for each building. If the system is able to supply 15,000 l/min (250 l/s) as indicated in the Area Servicing Plan report, then sufficient flow will be available to satisfy the fire flow requirements regardless of the development scenario and ultimate residential/employment land split as the building forms will be similar.

The Region of Halton is currently undertaking a Water, Wastewater, and Transportation Integrated Master Plan to review Regional infrastructure for anticipated future growth targets to 2051. This will include a review of water distribution system capacities and level of service.

4.3 Storm

There is no storm sewer infrastructure to service the subject lands. A proposed storm sewer network for the subject lands is shown on Dwg C301 (Appendix E). The storm sewer alignment and overall drainage areas have been coordinated with the adjacent Argo development storm sewer and SWM design. The proposed storm sewer captures runoff south of William Halton Parkway and outlets to the proposed SWM Pond A at the east side of the property at an elevation of 181.75 m. The facility will outlet east to the Argo development.

To determine preliminary sizing of the proposed storm sewer, catchments within the subject lands were delineated as shown on the Storm Drainage Area Plan (Dwg. C305) included in Appendix E. Using the Rational Method, a runoff coefficient of 0.80, and a minimum time of concentration of 10 minutes, a storm sewer design sheet was prepared to determine approximate storm sewer sizes for the 5-year design storm. The storm sewer design sheet has been included in Appendix D.

4.4 Stormwater Management

The NOCSS and the Secondary Plan (see figure in Appendix A) identified areas to be used for potential SWM facilities. A SWM facility is proposed on the IO lands immediately east of the existing water tower. See Dwg. C305 in Appendix E for the location of the proposed SWM facility on the western side of Trafalgar Road. The SWM facility location, as well as inlet and outlet locations, have been coordinated with the reporting prepared for the Argo development (see Figure 3CB in the Urbantech report). Since the IO study includes hydrologic modeling of the Regional Storm event (discussed later), the SWM facility footprint shown on Dwg. C305 is larger than that depicted in the Argo developments information. The expansion of the facility occurs on IO lands and does not impact adjacent properties. The SWM facility west of Trafalgar Road is constrained by the existing water tower lands and properties owned by others on the western and southern sides. Expansion of this facility would take the form of an overflow/surcharge area located on the northern side of the proposed road (north of the main pond). This overflow area would primarily be utilized for a Regional Storm event and could potentially be used for other passive purposes (park, green space) the majority of the time.

SWM criteria for the subject lands are taken from the NOCSS report and Addendum and the Ministry of the Environment, Conservation and Parks (MECP) guidelines. The SWM 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's Creek; in order to achieve the TP removal criterion, an Enhanced (80% TSS removal) level of protection should be implemented.
    - A dissolved oxygen level of 6 mg/L is required for Joshua's Creek.
    - Chlorides - The Town of Oakville adopted a Salt Management Plan. The requirement for salt management should be reviewed during the detailed design stage.
- Peak Flow Control
    - Post-development peak flows for the 2-year to 100-year storm events and 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 (Appendix D). These targets are based on maintaining existing condition flow rates.
    - Provide infiltration if possible.

The subject lands are located within subcatchments JC7 and JC8 as identified in Figure 7.4.7 of the NOCSS. Surface drainage crosses under Burnhamthorpe Road at culverts JC-B10 and JC-B9, respectively. Drainage from both subcatchments ultimately drains to culvert JC-D1 at Dundas Street. The proposed SWM Facility will service a drainage area of approximately 26.5 ha. Table 3 summarizes the unit area target flow rates and the resulting allowable discharge based on the NOCSS criteria.

Table 3 - Target Unit Flow Rates and Total Allowable Discharge

Storm Event	Target Unit Flow ($m^3/s/ha$)	Target Flow (m^3/s)
2-year	0.007	0.186
5-year	0.011	0.292
10-year	0.013	0.345
25-year	0.017	0.451
50-year	0.019	0.504
100-year	0.021	0.557
Regional	0.052	1.378

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

SWM Pond A outlets to a proposed storm sewer crossing Trafalgar Road that is conveyed internally though the Argo lands, then south to Burnhamthorpe Road and east along Burnhamthorpe Road towards an outlet into the existing watercourse flowing south (see Figure 3CB in the Urbantech report). Although a SWM Facility was not indicated on Figure 7.4.6 in the NOCSS, the implementation of a wet pond is required to meet the SWM criteria stipulated in the NOCSS. The detailed design of the SWM pond and outlet storm sewer will take place during the EIR/FSS stage with water balance made a priority. A preliminary SWM facility design for Pond A was undertaken with additional information provided in Appendix D. The facility was modelled with the SWMHYMO hydrologic modeling program using the Town of Oakville 24-hour Chicago Storm distribution along with the Hurricane Hazel Regional Storm event.

The design of infiltration controls and low impact development measures should be incorporated into the future detailed design of individual site plans. The design of interim ponds and other stormwater management features required to meet water balance and erosion control requirements, are beyond the scope of this assessment for the Official Plan Amendment. However, the design and implementation of these stormwater management features should be considered during the detailed design and construction phasing.

4.5 Other Services

Gas servicing for the site would need to be coordinated with Enbridge during detailed design. Oakville Hydro lines surround the site and could readily provide service. Coordination would be required during detailed design. Coordination with Bell Canada and other telecommunications services would be required during detailed design.

4.6 Surface Grading and Drainage

As indicated previously, the lands drain in a southeasterly direction towards Trafalgar Road. Preliminary road centreline grades indicate runoff north of William Halton Parkway will flow northeast through a proposed storm sewer towards the future SWM facility on the eastern side of Trafalgar Road. Runoff and overland flow south of William Halton Parkway will be conveyed southeast through the proposed storm sewer and outlet into the SWM Pond A on the western side of Trafalgar Road.

4.7 Erosion and Sediment Control

Erosion and sediment controls must be implemented during construction. Mud mats should be provided at any construction entrances and 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 sacks will be installed on all existing and new catchbasins on the Site and within the immediately-adjacent rights-of-way. A sediment control fence will be required around the perimeter of the active work area and to protect the interior wetland. In addition, depending on the size of area stripped for any future works, temporary sediment and erosion control ponds will be constructed.

5.0 CONCLUSIONS

Based on a review of the background information and coordination with the Argo Trafalgar background study, the IO lands on Trafalgar Road can be serviced as follows:

- Sanitary servicing from the property will be provided via a sanitary sewer system and connection to the future sanitary trunk sewer at the intersection of Burnhamthorpe and Trafalgar Road that will convey effluent south along Trafalgar Road.
- A future water distribution system will need to be extended from the watermain on Trafalgar Road and looped through the subject lands to provide domestic and fire water supply for the future developments.
- The NOCSS will require that future developments drain to SWM facilities that will provide the requisite controls. A storm sewer system will service the site, conveying flows from the area south of William Halton Parkway towards the proposed SWM Pond A.
- It is anticipated that future development applications will require detailed servicing studies/plans to identify existing and necessary infrastructure to support future development of the subject lands. These would be subject to review and approval by the Town of Oakville, Region of Halton, and other circulated review agencies.
- The ultimate servicing design for the subject lands will need to be coordinated with the Water, Wastewater, and Transportation Integrated Master Plan that is currently being undertaken by the Region of Halton.

All of which is respectfully submitted,

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FIGURES

APPENDIX A

General Background Information

APPENDIX B

Sanitary Sewer Information

APPENDIX C

Water Servicing Information

APPENDIX D

Storm Drainage and SWM Information

APPENDIX E

Drawings