URBANTECH®

FUNCTIONAL SERVICING REPORT & STORMWATER MANAGEMENT STUDY

420 – 468 South Service Road East
GE Lands

Town of Oakville

REGION OF HALTON

PREPARED FOR
South Service Holding Corp.

Urbantech File No.: 23-307

1st SUBMISSION – November 2024
2nd Submission – October 2025

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1 INTRODUCTION

This report provides functional servicing design and stormwater management information in support of Official Plan Amendment (OPA) for the 420-468 South Service Road East property (GE Lands) in the Town of Oakville (Town), Region of Halton (Region). When approved, the OPA will establish a planning framework for the property, including a multi-block mixed use development, new public roads, and park space.

The servicing and development concepts presented in this report are based on the site plan prepared by Graziani and Corazza Architects (architectural plan and site statistics are available in **Appendix A)**, with input from the following reference reports:

- Preliminary Geotechnical Investigation Report (EXP, August 2025)
- Hydrogeological Investigation Report (September EXP, 2025)
- Conservation Halton Spill Flood Hazard Policies: Technical Guide (Conservation Halton, April 2025)
- Town of Oakville Flood Mitigation Opportunities Study Lower Morrison and Lower Wedgewood Creeks (Town of Oakville, June 2024 Draft Report)
- Liveable Oakville Plan / Town of Oakville Official Plan (Town of Oakville, 2021 Consolidation)
- Midtown Oakville Class Environmental Assessment Study (Town of Oakville, 2014)
- Midtown Oakville Stormwater Management Report (Cole Engineering, 2014)
- Midtown Oakville Official Plan Amendment (Town of Oakville, February 2025)
- Midtown Implementation Program Public Information Centre – Transportation Master Plan and Stormwater Master Plan Presentation (Town of Oakville / Jacobs, June 2025)
- Sustainable Halton Water and Wastewater Master Plan (AECOM, 2011)
- Region of Halton 2022 Development Charges Update Water/Wastewater Technical Report (GM BluePlan, September 2021)
- Water and Wastewater Area Servicing Plan for Midtown Oakville – Addendum (GM BluePlan, January 2021)
- Region of Halton Integrated Master Plan Public Information Centre Presentation (Region of Halton / GEI, April 2025)
- Region of Halton PR-3447/3547 Sanitary Sewer Replacement on Trafalgar Road, 60% Design Drawings (Region of Halton / Jacobs, March 2025)

Design information considers the following guidelines:

- Town of Oakville Development Engineering Procedures and Guidelines (2023)
- Town of Oakville Consolidated Linear Infrastructure Environmental Compliance Approvals (CLI ECA)
- Regional Municipality of Halton Water and Wastewater Linear Design Manual (2024)

This report demonstrates the feasibility of site servicing for the proposed development, including water, sanitary, stormwater management, preliminary site grading and erosion & sediment control. The servicing strategy includes recommendations for both interim (Phase 1) and ultimate conditions, with an approach that utilizes existing infrastructure for near-term development while broader Midtown Oakville planning continues. In accordance with Conservation Halton's updated spill policies (April 2025), hydraulic modelling of Morrison Creek has been completed and is included in this submission (refer to **Appendix D**). The modelling addresses potential post-development spill hazards and identifies preliminary options for mitigation.

Supporting drawings are available in **Appendix C.** Drawings do not provide design information pertaining to the internal servicing of the proposed buildings. As part of the civil engineering design, a set of storm, sanitary, and water connections will be provided for the proposed residential development, beyond which it will be the responsibility of the building mechanical engineer to design the internal servicing concept, in conformance with the servicing and grading design.

1.1. Subject Site

The GE Lands are located in the Town of Oakville and Region of Halton. The lands are bound by the Queen Elizabeth Way (QEW) highway and South Service Road to the north. The CN Railway Line is to the south. The lands to the east and west are currently used for employment (office space, light industrial and hospitality).

The site is approximately 27 acres and was previously used for industrial purposes. The property is currently vacant, save for one structure (the GE Lamp Plant former office building, registered as a Heritage Property). The remaining land is previously disturbed, with concrete slabs and parking areas covering most of the site. There are some naturalized areas along the east, west, and south property boundaries, but no Conservation Halton regulated areas or areas identified as Natural Heritage.

The proposed development includes four (4) blocks of mixed residential and commercial towers (identified as Block 1, Block 2, Block 3, and Block 4 in the Architectural Plans attached in **Appendix A**), intermixed with strata parks and open space. There are two (2) public park blocks at the south limit of Block 3 and Block 4. The proposed road network includes a local road to the west of Block 1 and Block 3 (Street A), an east-west collector road (Davis Road extension), and two arterial roads (the Cross Road extension along the south boundary of the property and a new north-south arterial running through the middle of the site).

From a servicing perspective, it is important to note that the Midtown Transportation Plan currently shows the north-south arterial road including a fly-over across the QEW to the north and an underpass across the CN Rail Line to the south. This results in a significant grade change across the site plan, which impacts grading, servicing and spill mitigation (discussed further in the sections that follow).

1.2. Midtown Oakville Background

As outlined in the Liveable Oakville Plan (Town of Oakville Official Plan, 2021 Consolidation) the Town identifies Midtown Oakville as a key growth and redevelopment area, intended to be developed as a high density, mixed-use, transit supportive neighbourhood. The Midtown Oakville Class Environmental Assessment Study (Class EA), completed in 2014, provides guidance and direction on the proposed future road network and stormwater management requirements.

The development application for the GE Lands conforms with the current Liveable Oakville OP and generally aligns with Council Adopted OPA-70 and the 2014 technical work for Midtown. Urbantech has considered other on-going work (as discussed in the sections that follow), where available and appropriate.

1.2.1. Town of Oakville

We acknowledge Town Council adoption of the Midtown Oakville Official Plan Amendment (OPA) in February 2025 and the on-going Midtown Oakville Program Implementation Project, led by Jacobs.

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This work is, ultimately, intended to create a detailed implementation framework for Midtown Oakville. From an infrastructure perspective, deliverables will include:

- Transportation Master Plan
- Stormwater Master Plan
- Municipal Infrastructure and Servicing Plan (Water / Wastewater)
- Utilities Infrastructure Plan
- Roadway Functional Design
- Phasing and Implementation Strategy
- Funding / Financing Strategy

This technical work is on-going. The Town hosted a Public Information Centre (PIC) in June 2025, presenting preliminary work on the Transportation Master Plan and the Stormwater Master Plan. Final reports for both studies are anticipated in November 2025. Urbantech has incorporated guidance provided to-date regarding the approach to stormwater management for Midtown as presented through the PICs, but final design criteria have not been provided at this time. Per discussions with Town Staff, stormwater targets are taken from the 2014 Stormwater Class EA Study. Calculations can be refined as additional information becomes available.

To-date there has been no water or sanitary information circulated. The Municipal Infrastructure and Servicing Plan is on-going, but no information has been provided publicly. The ultimate servicing solution for Midtown will be determined through this study, in consultation with Halton Region. It is anticipated that the local servicing strategy recommended through this report will be consolidated into the broader study.

The Town has also recently completed the Flood Mitigation Opportunities Study Lower Morrison and Lower Wedgewood Creeks Municipal Class Environmental Assessment (MCEA) Study. The study was carried out to identify the existing level of flood risk associated with Lower Morrison and Lower Wedgewood Creeks and to develop flood mitigation actions to be implemented. The report also provides new guidance for future development areas (including Midtown Oakville) to improve stormwater management planning practices. It is important to note that:

- The GE Lands are within the Lower Morrison Creek sub-catchment. Floodplain mapping from the MCEA Study shows no floodlines or flooding risk within the GE Lands site (100-Year Storm Floodlines).
- While the MCEA Study does include new proposed stormwater management design criteria for Midtown Oakville, the Town's direction has been to maintain the interim (i.e., 2014) SWM criteria for the purposes of this application. The Town does note that updates may be required as planning proceeds.

1.2.2. Region of Halton

The Region of Halton is currently updating their Water and Wastewater Master Plan. The previous Master Plan was completed in 2011 with a planning horizon to 2031. The new Master Plan will review infrastructure needs to 2051. The Region is working with the Town of Oakville to ensure growth projections for Midtown Oakville are properly identified and considered. Future infrastructure improvements and phasing will be determined through the Master Plan process and integrated into the Midtown Oakville Municipal Infrastructure and Servicing Plan. The Midtown Oakville Municipal Infrastructure and Servicing Plan will supersede the existing Midtown Oakville Area Servicing Plan (GM BluePlan, 2021). The Region is anticipated to complete the Master Plan in late 2025.

The Region is also advancing the detailed design for a new 1200 mm diameter trunk sanitary sewer along the Trafalgar Road corridor from Argus Road to Lawson Street (PR-3447/3547). At the time of writing, the Region is working towards 90% design, with construction tender planned in 2026. This capital project (identified most recently in the Region's 2022 Development Charges Technical Update Report, GM BluePlan, 2021 and financed through the 2023 Allocation Program), will alleviate existing sanitary capacity constraints in the Midtown Oakville area. Region Staff have shared the 60% design drawings with Urbantech for coordination. Sanitary servicing drawings (**Appendix C**) incorporate the 60% design of the trunk sewer.

1.2.3. Conservation Halton – Spill Modelling

Conservation Halton (CH) issued its *Spill Flood Hazard Policies: Technical Guid*e in April 2025. The document provides clear direction for evaluating and managing new development within areas affected by spill flood hazards. According to CH, a spill occurs when floodwaters leave a watercourse, valley, or floodplain and flow overland in multiple directions before rejoining the same watercourse downstream or entering another watershed. Such spill flows can extend into areas not typically associated with riverine flooding and often exhibit complex flow patterns.

CH's flood mapping identifies a spill area north of the GE Midtown site, generally along the QEW corridor. Detailed hydraulic modeling has been completed by CH, which confirms the specific characteristics of the spill and its downstream influence.

As part of the functional servicing work for GE Midtown, Urbantech obtained the CH regional 2D spill model, prepared for the Morrison Creek / Midtown Oakville / Sixteen Mile Creek system. The model was used to evaluate the spill condition on the GE Midtown site during a Regional Storm event, under existing and post-development conditions. A supporting memorandum is included in **Appendix D**, summarizing the analysis, model results, and potential mitigation measures.

Modelling indicates that, assuming barriers along the QEW are removed, spill flows would enter the GE Midtown site under post-development Regional Storm conditions. These flows can be managed through proposed swales within the 14 m MTO setback (adjacent to South Service Road) and through strategic grading of the strata park to capture and direct flows toward the storm sewer system and Davis Road right-of-way. This approach protects proposed buildings, access routes, underground parking, and adjacent properties, with ultimate flow conveyance to Trafalgar Road.

Despite on-site mitigation, modelling results show that the proposed underpass along the new north-south arterial will function as a primary spill outlet, regardless of local grading or flow management measures. Pumping may be insufficient to maintain passable conditions. This represents a broader Midtown Oakville issue that will require coordination with CH, the Town of Oakville and the development community to address, including consideration of underpass operation, emergency access, and long-term flood management strategies.

Please refer to **Appendix D** for full details.

2 EXISTING CONDITIONS & SITE GRADING DESIGN

2.1. Existing Soil Conditions

A preliminary geotechnical investigation was completed by EXP Services Inc. (August 2025 – available under separate cover) for the proposed site. The study included twenty-one boreholes advanced to depths of up to 15 m, most terminating in Georgian Bay Shale bedrock.

The subsurface profile generally consists of variable fill and reworked native soils (silty clay to sandy fill) overlying stiff to hard silty clay till, underlain by shallow shale bedrock at depths ranging from about 1.5 m to 4.0 m below grade. Groundwater levels were measured between approximately 1.4 m and 6.0 m below grade, with expected seasonal fluctuations.

Underground parking excavations up to 13–14 m below grade are expected to extend through fill, till, and shale. Re-use of on-site fill is limited and imported OPSS Granular A/B materials are recommended for backfill and roadway construction.

Overall, the site is considered geotechnically suitable for the proposed development (favourable for high-rise construction) but challenging for implementation of LIDs and groundwater infiltration.

2.2. Existing Groundwater Conditions

A hydrogeological investigation was undertaken by EXP Services Inc. (September 2025 – available under separate cover) for the proposed site. The study evaluated groundwater, hydrostratigraphy, and preliminary dewatering requirements for the planned towers and underground parking structures.

Groundwater levels measured across multiple monitoring wells ranged from 1.1 m to 6.4 m below grade, with flow generally directed southwest toward Morrison Creek. Hydraulic testing confirmed low permeability conditions and low hydraulic conductivity across the site. These results combined with the proposed building geometries, suggest both temporary and permanent de-watering may be required. Rates will be estimated and refined as planning continues. It is acknowledged that the Town of Oakville does not support permanent (long-term) groundwater discharge to the stormwater system as uncontrolled flow. Full waterproofing of building foundations is carried in the current plans, although further discussion with Town Staff would be helpful on this matter, considering the extent of proposed high-density development across Midtown. An alternate approach to waterproofing such as overcontrol of stormwater tank discharge, etc., could be explored for the broader area.

Groundwater quality sampling showed no exceedances of Town of Oakville storm sewer criteria, and only manganese exceeded Halton sanitary sewer limits. Temporary treatment (e.g., filtration or sedimentation) is recommended during construction dewatering to control suspended solids and metals prior to discharge.

Overall, the report concludes that the site's hydrogeological conditions are suitable for the proposed deep foundation and parking structures. Dewatering can be managed, with limited environmental impact expected on nearby wells or surface water features such as Morrison Creek or Sixteen Mile Creek. A comprehensive Water Taking and Discharge Plan, incorporating the hydrogeological findings, EASR registration, and geotechnical review of settlement potential, will be completed prior to construction.

It is important to note that the high groundwater table and geotechnical characteristics of the site may require subsurface drainage (edge drains, collector drains, etc.) integrated into road designs to control and manage groundwater. This will be further reviewed at site plan.

2.3. Site Grading Design

The existing site ranges in elevation between approximately 105 masl (meters above sea level) and 101 masl, sloping generally from north to south (towards the CN Rail Line). For the purposes of the OPA, road grading outside of the property limits was advanced to understand boundary grades of the Blocks, as well as stormwater management and sanitary infrastructure requirements (alignment, cover, etc.).

In general, site grading design (as shown on **Drawing GRD-1** in **Appendix C**) considers the following requirements and constraints:

- Conformance to the Town of Oakville's grading criteria.
- Minimizing cut to fill operations and work towards a balanced site.
- Matching existing boundary grading conditions.
- Maintaining required drainage boundaries.
- Providing minimum cover on proposed servicing.
- Managing road grades and servicing requirements considering the flyover and underpass associated with the new north-south arterial road.

Preliminary site grading is constrained by the overpass and underpass along the mid-block north-south arterial road and associated impacts to the Cross Avenue extension. Architecturally, there is a significant drop in grade in Block 3 and Block 4 (park space) to accommodate the road transition. Further grading coordination will be required as design proceeds to ensure infrastructure (road design, sanitary and stormwater management) is designed to accommodate the grade requirements. As an example, 100-year capture is proposed for ROWs in part to avoid overland flow directed to the underpass. Detailed block grading will be completed at the site plan stage.

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3 WATER SERVICING

3.1. Existing Conditions - Water

3.1.1. Existing Water Infrastructure

Midtown Oakville (including the GE Lands site) is located within Water Pressure Zone O2 (Oakville Zone 2), serviced by the Region's lake-based water treatment plants. Existing water distribution infrastructure immediately adjacent to the property includes:

- 300 mm Zone O2 watermain on Davis Road (immediately west of the site).
- 900 mm / 750 mm Zone O2 transmission main on South Service Road (immediately north of the site), originating from the Davis Road Booster Pumping Station (west of the site, near Trafalgar Road).
- 300 mm Zone O2 watermain on South Service Road (at the northeast corner of the site).

Refer to **Drawing WM-1** in **Appendix C** for additional information.

Water is supplied to Zone O2 via the Davis Road Booster Pumping Station (BPS), located west of the subject site at Davis Road and Trafalgar Road. Floating storage for Zone O2 is supplied by the Eighth Line Reservoir. Of note, there is an on-going state-of-good-repair (renewal) construction project at the Davis Road BPS which, when completed, will increase capacity from approximately 65 MLD to its rated capacity of 100 MLD.

3.1.2. Existing Water Demand

There is no current water demand associated with the GE Lands site.

3.2. Proposed Conditions - Water

3.2.1. Proposed Water Servicing Strategy (Phase 1 – Interim Condition)

As identified in **Appendix A** (Site Plan), the southwest corner of Block 1 (Tower C) is proposed to advance as Phase 1 of development, equivalent to roughly 489 units (or 750 people). Subsequent phases will progress logically as additional infrastructure becomes available. The Phase 1 location provides access to existing infrastructure and is not reliant on the new north-south arterial road or the Cross Road extension to move forward. Street A will be constructed to provide a connection between Davis Road and South Service Road and Davis Road will be extended easterly to facilitate access.

From a water servicing perspective, Tower C is proposed to connect to the existing 300 mm watermain, located in Davis Road (west of the property). On an interim basis, a single watermain connection is expected to be sufficient to service one tower, supported by flushing hydrants and internal looping measures (if required) to maintain water quality. Further discussion with Halton Region is anticipated to confirm the final design parameters. Hydraulic modelling is recommended at the site plan stage to validate system performance. Given the proximity of the GE Midtown site to the Davis Road Booster Station and the relatively low flow demands associated with Tower C, the existing system is expected to provide adequate flow and pressure for interim servicing needs. See **Section 3.2.4** for additional information regarding system capacity.

In the long-term, Tower C would be treated as an existing user within the system and would transition to the ultimate water servicing infrastructure supporting the broader Midtown area when available.

3.2.2. Proposed Water Servicing Strategy (Ultimate Build-Out)

As shown in **Drawing WM-1**, new watermain infrastructure along Davis Road and Cross Avenue establishes the primary servicing framework for the GE Midtown plan area. These new mains connect to the existing 300 mm pipes on Davis Road and South Service Road (Zone O2), creating a looped network for reliability and security of supply. Additional 300 mm watermains are proposed along the new north-south arterial (south of Davis Road) and on future Street B to further strengthen system resiliency and provide servicing continuity to adjacent properties.

The strategy proposed is consistent with recommendations in the Midtown Oakville Area Servicing Plan (ASP) (GM BluePlan 2021). The ASP proposes 300 mm watermains along the Davis Road and Cross Avenue extensions (east / west corridors), with north / south watermain connections in several locations for looping. We have moved a north / south 300 mm watermain (shown in the ASP along the mid-block arterial) east to Street B to avoid services within the highway overpass.

Final servicing details will be confirmed through the on-going Midtown Municipal Infrastructure and Servicing Plan (Jacobs), which will address water servicing across the broader Midtown area. It is anticipated that the information and watermain alignments identified herein will be incorporated into that study when complete. Comprehensive hydraulic modelling will be undertaken as part of the Servicing Plan, and therefore, site-specific hydraulic modelling for GE Midtown is not recommended until the Site Plan stage, when updated regional model data is available.

In addition to the above, please note that:

- Watermains will provide all domestic flow and fire protection to the GE Lands development.
- Per Region of Halton guidelines, a 200 mm diameter fire service and 150 mm diameter domestic (residential) service will be required for each block. A second 200 mm fire service may be required but will be confirmed at site plan with the mechanical engineer. The mechanical consultant will also be responsible for the design of all the internal water services.
- The final location of the fire department connection (siamese connection) for the buildings will need to be located within 80 m of a municipal fire hydrant. Fire hydrant location will be determined at detailed design but will meet Region of Halton criteria for location and spacing.

Refer to **Drawing WM-1** in **Appendix C** for additional information.

3.2.3. Proposed Water System Demands

Proposed domestic water demand for the GE Lands site has been calculated using the following information:

- Site Statistics (available in **Appendix A**).
- Region of Halton Water and Wastewater Linear Design Criteria (per capita usage, max day / peak hour factors), per the 2024 Linear Design Manual.
- Region of Halton Built Boundary Housing Occupancy Rates and Employment Rates (per the 2022 DC Background Study, Table A-4 and Table A-8)

The domestic water usage projected for the site is as follows, with supporting calculations available in **Appendix B:**

Phase 1 (Tower C):

- Population: 756 people, 21 jobs
- Avg. Day Usage: 265 L/person/day, 225 L/employee/day
- Average Day Demand: 2.37 L/s
- Max Day Demand: 5.34 L/s
- Max Hour Demand: 9.40 L/s

Ultimate Build-Out:

- Population: 10,735 people, 244 jobs
- Avg. Day Usage: 265 L/person/day, 225 L/employee/day
- Average Day Demand: 33.56 L/s
- Max Day Demand: 75.51 L/s
- Max Hour Demand: 133.12 L/s

Fire flow will be estimated at the site plan stage using the Fire Underwriters Survey (2020) methodology when additional information is available regarding built-form, construction type, building use, sprinkler installation, and protection for vertical openings. Per Regional criteria, the water system will be designed for the higher of Max Hour or Max Day + Fire.

3.2.4. Water System Capacity Analysis

The ability of the Regional water system to support short-term growth (i.e., to 2031) and long-term growth (i.e., to build-out) in Midtown Oakville area was evaluated as part of the 2021 Area Servicing Plan (ASP) by GM BluePlan. While population projections for Midtown continue to evolve through the Town and Region's on-going studies, the 2021 ASP assumptions (i.e., 11,300 people and 2,559 jobs to 2031) are similar to the Town of Oakville's growth projections (per August 10, 2023 Council Report) of 11,071 people and 1917 jobs (also to 2031).

The GM BluePlan ASP concludes that:

- There is sufficient pumping capacity at the Davis Road Booster Pump Station and sufficient storage capacity at the Eighth Line Reservoir to support growth in Midtown Oakville (Zone O2) to beyond 2031. Pump station and reservoir upgrades may be required to support longer term growth (i.e., full build-out).

- The existing 300 mm watermains on Davis Road and South Service Road provide sufficient flow and pressure to support growth projections to 2031 and build-out (i.e., there are no recommendations to replace the existing services on these corridors). The broader local water system will be augmented with additional cross-connections on future north/south road alignments.

- Domestic flow / pressure and fire flow / pressure were within acceptable ranges under proposed 2031 and build-out scenarios (in accordance with Region of Halton level of service requirements), with the existing infrastructure in place.

The existing system is robust, with good distribution and looping. The south Halton water system is highly integrated; water treatment capacity is not dependent on a single plant. Midtown Oakville receives water predominantly from the Oakville WTP and Burloak WTP. An expansion is currently proceeding at the Burloak WTP (from 55 MLD to 165 MLD). The Region has indicated through their recent infrastructure review as part of the 2023 Allocation Program that capacity exists in the treatment and transmission main system to meet the Town of Oakville's housing pledge of 33,000 units by 2031, without major upgrades to treatment plants. The Town will rely on both greenfield and built-boundary growth (in key nodes like Midtown Oakville) to meet their 2031 housing goals.

Given work done to-date, water system capacity is not expected to be a limiting factor for development of the GE Lands. As planning proceeds, water distribution pressure and fire flow requirements for the site can be reviewed in more detail. Water hydraulic modelling will be undertaken at the next stage when additional information is available regarding neighbouring developments and long-term plans for Midtown Oakville.

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4 SANITARY SERVICING

4.1. Existing Conditions – Wastewater

4.1.1. Existing Wastewater Infrastructure

The majority of Midtown Oakville (including the GE Lands) is located within the Oakville Southwest Wastewater Treatment Plant (WWTP) catchment area. Wastewater drains to an existing trunk sewer along Trafalgar Road which flows south to Rebecca Street and then west to the WWTP. The Region of Halton has advised that part of the trunk sewer on Trafalgar Road (between Cross Avenue and Cornwall Road) is undersized and currently does not have capacity to accommodate new growth in Midtown. An upgrade project is ongoing by the Region to increase the size of the trunk sewer on Trafalgar Road to 1200 mm, which will alleviate this constraint. The Region is nearing 90% detailed design with construction anticipated to commence in 2026.

The eastern boundary of Midtown, extending from east of the GE Lands to Chartwell Road, drains away from Trafalgar Road to the Ninth Line Wastewater Pump Station (WWPS) and the Oakville Southeast WWTP via an existing 750 mm trunk sewer on Chartwell Road.

Existing wastewater distribution infrastructure immediately adjacent to the GE Lands property includes:

- 300 mm sanitary sewer on Davis Road (immediately west of the site), draining west to the existing Trafalgar Road sanitary trunk system.
- 300 mm sanitary sewer on South Service Road (at the northeast corner of the site), draining east to the Chartwell Road sanitary trunk sewer.

Refer to **Drawing SER-1** in **Appendix C** for additional information.

4.1.2. Existing Wastewater Demands

There is no current wastewater demand associated with the GE Lands site.

4.2. Proposed Conditions – Wastewater (Sanitary)

4.2.1. Proposed Sanitary Servicing Strategy (Phase 1 – Interim Condition)

As outlined in **Section 3.2.1** and illustrated in **Appendix A** (Site Plan), the southwest corner of Block 1 (Tower C) is proposed to advance as Phase 1 of development, representing roughly 489 units (or 750 people).

Phase 1 of the GE Midtown site is proposed to connect to the existing 300 mm sanitary sewer on Davis Road, with flows directed westward to the new 1200 mm Trafalgar Road trunk sewer. The sanitary design sheets (including in **Appendix B**) confirm that sufficient capacity is available in the existing Davis Road sewer to accommodate the Tower C development, in addition to existing users. The following key considerations are important to the Phase 1 servicing strategy:

- The existing 300 mm Davis Road sanitary sewer, originally constructed in 1945 using vitrified clay, was identified in 2003 CCTV inspections as being in poor condition. However, records confirm that the sewer was re-lined with RFP in the 2011 timeframe, significantly improving its

long-term functionality. Updated CCTV inspections in March 2025 show the pipe to be clean and functional, and therefore suitable for interim use to accommodate Phase 1 flows.

- The Region has been clear that downstream capacity constraints exist in the existing Midtown Oakville sanitary system, which has resulted in a temporary hold on all new development in the area until the new 1200 mm Trafalgar Road trunk sewer is constructed and operational. The Region has advanced this project to approximately 90% detailed design, with construction anticipated to commence next year. The interim servicing strategy for Phase 1 assumes this new trunk sewer will be in place, allowing the Davis Road sewer to be re-routed to the new system via a manhole connection at Argus Road and Trafalgar Road. The Region has provided the 60% design drawings of the Trafalgar sewer, which have been incorporated into the **Appendix C** drawing package.

Under ultimate conditions, the existing 300 mm pipe on Davis Road will likely be decommissioned, and Tower C will be connected to the permanent infrastructure designed to service the full Midtown area.

Refer to **Drawing SAN-1A** and **Drawing SAN-2A** in **Appendix C** for the proposed interim sanitary servicing plan for Tower C.

4.2.2. Proposed Sanitary Servicing Strategy (Ultimate Build-Out)

The proposed sanitary servicing strategy for the GE Midtown site is shown in **Drawing SAN-1** and **Drawing SAN-2** in **Appendix C**. All wastewater generated from the site is proposed to be directed west to the new 1200 mm Trafalgar Road Trunk Sewer, currently in detailed design. The 60% design drawings for the trunk sewer (provided to Urbantech by the Region) show a fully micro-tunnelled, deep sanitary sewer along Trafalgar Road, with manholes only at Argus Road and Cornwall Road (there is no connection is proposed at future Cross Ave). As such, the sanitary servicing strategy proposed for GE Midtown under ultimate conditions is to direct flow from all Blocks to a collection sewer on Davis Road, flowing west towards Trafalgar Road. The Davis Road sewer would provide a connection for Cross Avenue drainage as well (east of Trafalgar). The combined flow from Davis Road and Cross Ave would be directed to the new Trafalgar Road Trunk Sewer via the proposed manhole at Argus Road and Trafalgar Road. This strategy avoids a connection at Cross Ave and consolidates all flow at a single connection point.

It is important to note that:

- Preliminary sewer inverts show that sewers proposed on Davis Road and Cross Avenue can be conveyed by gravity to the planned Trafalgar Road Trunk Sewer (connecting invert at Argus Road is at an appropriate depth).

- The sewer on Davis Road is projected to be 525 mm in diameter (see sanitary design sheets in **Appendix B**). This assumes similar high-density build-out for neighbouring blocks long-term in addition to the GE Midtown site. At this size, the Davis Road sewer would be classified as DC eligible infrastructure in accordance with the Region's Local Service Guidelines.

- The Region should consider adding a 600 mm stub connection to the Trafalgar Road Trunk Sewer at Argus Road and Trafalgar Road as part of the 90% detailed design package, to facilitate this future connection. The new trunk sewer will be too deep to add manholes and future connections without significant disruption to and already congested Trafalgar Road corridor.

The proposed wastewater servicing strategy for the GE Midtown site does not align with recommendations of the Midtown Oakville Area Servicing Plan (ASP) (GM BluePlan 2021). The ASP outlines new east-west sanitary services along the Davis Road and Cross Ave extensions, and a drainage divide at the boundary of the GE Lands. A Cross Avenue connection is not practical considering the current design of the Trafalgar Road Trunk Sewer.

Final servicing details will be confirmed through the on-going Midtown Municipal Infrastructure and Servicing Plan (Jacobs), which will address wastewater servicing across the broader Midtown area. It is anticipated that the information identified herein will be incorporated into that study when complete. Comprehensive hydraulic modelling will be undertaken as part of the Servicing Plan, and therefore, site-specific hydraulic modelling for GE Midtown is not recommended until the Site Plan stage, when updated regional model data is available

In addition to the above, please note that:

- **Drawing SAN-1** includes an alternative sanitary servicing option for Blocks 2 and 4, with connections draining east towards the existing sewer on Chartwell. This alternative option is shown to provide servicing flexibility and potential capacity relief to the Trafalgar system and the downstream Southwest WWTP, if required. Hydraulic modelling would be required to confirm downstream capacities in the Chartwell system. This can be further discussed with Halton Region and Town Staff as planning proceeds.

4.2.3. Proposed Wastewater Generation

The future wastewater (sanitary) generation rate for the GE Lands site has been calculated using the following information:

- Site Statistics (available in **Appendix A**), including unit counts and unit types.
- Region of Halton Water and Wastewater Linear Design Criteria (per capita generation rate, average day demand, peaking factor, and inflow / infiltration rate).
- Region of Halton Built Boundary Housing Occupancy Rates and Employment Rates (per the 2022 DC Background Study, Table A-4 and Table A-8).

The wastewater generation rates projected for the site is as follows, with supporting calculations available in **Appendix B**.

Phase 1 – Tower C:

- Population: 756 people, 21 jobs
- Avg. Day Usage: 215 L/person/day, 185 L/employee/day
- Avg. Dry Weather Flow: 1.93 L/s
- Peaking Factor (Modified Harmon): 3.87
- Inflow / Infiltration: 0.69 L/s (2.4 ha area)
- Peak Wet Weather Flow: 8.14 L/s

Ultimate Build-Out:

- Population: 10,735 people, 244 jobs
- Avg. Day Usage: 215 L/person/day, 185 L/employee/day
- Avg. Dry Weather Flow: 27.23 L/s
- Peaking Factor (Modified Harmon): 2.91
- Inflow / Infiltration: 3.1 L/s (10.9 ha area)
- Peak Wet Weather Flow: 82.49 L/s

4.2.4. Wastewater System Capacity

As noted in **Section 4.1.1** the Region is moving forward with a sewer upgrade project on Trafalgar Road, which will provide long-term capacity to accommodate growth in Midtown. The Region has previously completed upgrades to the downstream trunk sewer system on Trafalgar Road, Rebecca Street and Lakeshore Road, up to the Oakville Southwest WWTP.

Similar to the water system, the ability of the Regional sanitary system to support short-term growth (to 2031) and long-term growth (to build-out) in Midtown was evaluated through the 2021 GM BluePlan ASP. The ASP concludes that:

- There is sufficient capacity at the Oakville Southwest WWTP to support near-term growth in Midtown. A plant expansion may be required to accommodate growth post 2031. The need and timing for the future expansion is currently being evaluated as part of the on-going Water and Wastewater Master Plan. A future expansion should not preclude initial development in Midtown.
- There are no sanitary pump stations between Midtown Oakville and the Oakville Southwest WWTP. There are no wastewater pump station capacity considerations or concerns.

As such, once the Region has completed the trunk sewer upgrades on Trafalgar Road (2026 timeframe), sanitary trunk sewer capacity is not expected to be a limiting factor for development of the GE Lands. Calculations show that the existing Davis Road sewer can accommodate Phase 1 sanitary flow from the GE Lands (see **Appendix B**), which will allow for initial development to proceed. Other Blocks will rely on future local infrastructure as the Midtown area builds-out. As planning proceeds, wastewater hydraulic modelling can be undertaken, when additional information is available regarding neighbouring developments and long-term plans for Midtown Oakville.

5 STORM DRAINAGE & STORMWATER MANAGEMENT

5.1. Existing Storm Drainage

Under existing conditions, the majority of the site drainage is conveyed in a southeasterly direction towards an existing ditch, which runs along the southeast boundary of the subject lands. The existing ditch flows from north to south.

Existing drainage conditions are illustrated on **Drawing STM-1**, provided in **Appendix C**. Several external drainage catchments are conveyed through the subject lands under existing conditions:

- EXT1 & EXT4: boulevard drainage from South Service Road East;
- EXT2 & EXT3: drainage from the existing property to the southwest;
- EXT5: drainage from the existing property to the east; and
- EXT6 & EXT7: drainage from the existing property to the east.

A portion of the existing drainage (catchments EX1 and EXT1) is captured and conveyed to the existing 600 mm ø storm sewer on Davis Drive, as shown on **Drawing STM-1,** provided in **Appendix C**. The existing storm drainage outlets are described in **Table 5-1**.

Table 5-1: Existing Storm Outlets

Location	Catchments	Total Drainage Area (ha)	Outlet MH ID	Storm Connection / Outlet
Davis Road	EXT1 & EX1	2.965	EX.STM.MH 13	Ex. 600 mm ø storm sewer
CNR crossing	EXT2, EXT3, EX2, EXT4, EXT5, EXT6 & EXT7	9.740	N/A	Morrison Creek

As illustrated in **Appendix A** (Site Plan), the southwest corner of Block 1 (Tower C) is proposed to advance as Phase 1 of development.

Phase 1 of the GE Midtown site is proposed to connect to the existing 600 mm storm sewer on Davis Road, with flows directed westward. Street A stormwater management will also be required to support the Phase 1 development.

5.2. Proposed Ultimate Storm Drainage Plan

The subject site drains to four proposed outlets under post-development conditions. The post-development drainage plan is shown on **Drawing STM-2**, provided in **Appendix C**. The proposed storm drainage outlets are described in **Table 5-2**.

Table 5-2: Proposed Storm Outlets

Location	Catchments	Total Drainage Area (ha)	Outlet MH ID	Storm Connection / Outlet
Davis Road	BLK1, 8, 9, 11 & EXT3	3.61	EX.STM.MH 13	Ex. 600 mm ø
Future Cross Avenue (West)	BLK2, BLK3, BLK4, 4, 5, 6 & 10	6.33	STM.MH 1	Fut. 1200x1800 mm Box Pipe

Location	Catchments	Total Drainage Area (ha)	Outlet MH ID	Storm Connection / Outlet
Underpass at Cross Avenue	1, 2 & 3	1.50	STM.FUT 14	Drains to Pumped Underpass; Ultimate Outlet by Others
Future Cross Avenue (East)	7 & EXT4	0.94	N/A	Morrison Creek

A storm sewer system is proposed throughout the subject site to convey flows from the 10-year return period storm event, as per Town of Oakville standards. The storm sewers have been sized using the Rational Method and Town of Oakville intensity-duration-frequency (IDF) parameters and runoff coefficients.

The proposed minor system storm sewer plan is illustrated on **Drawing STM-2**, provided in **Appendix A**. Storm sewer design calculations are also included in **Appendix C**.

5.3. Stormwater Management

In accordance with the Town of Oakville requirements for stormwater management, as outlined in the Midtown Oakville EA Study (June 2014), the design criteria for the subject site are as follows:

Stormwater Quantity Control (Peak Flow Control)

The proposed development is planned to drain to Lower Morrison Creek. As noted in the Midtown Oakville EA Study (June 2014), the target flows applied to Lower Morrison Creek are from the *Lower Morrison/Wedgewood Creeks – Flood, Erosion and Master Drainage Plan Study*, prepared by R.V. Anderson Associates Ltd. (January 1993). In order to meet the target flows from the R.V. Anderson study, the minimum storage requirement for Lower Morrison Creek identified in the Midtown EA is 280.9 m^3/ha.

It is acknowledged that the Town's Stormwater Master Plan is currently in the process of being updated, and that SWM quantity control criteria may change as part of that study. Once the updated Stormwater Master Plan and respective hydrologic modelling is available, the model will be updated during the detailed design stage at site plan approval in order to confirm that the downstream target flows in Lower Morrison Creek are still met with the applied unit storage rate to the subject development.

Stormwater Runoff Volume Reduction (Water Balance)

Any proposed development within the Midtown Oakville study area shall consider water balance by providing retention of 25 mm over the entire area of the proposed development, in accordance with the Town's Stormwater Master Plan and the Town's CLI ECA.

Stormwater Quality Control

Achieve Enhanced Level 1 Protection, as per the Ministry of Environment's Stormwater Management Planning and Design Manual (March 2003).

5.3.1. Stormwater Quantity Control (Peak Flow Control)

As noted in **Section 5.3**, the minimum storage requirement for Lower Morrison Creek identified in the Midtown EA is 280.9 m^3/ha.

Quantity control storage for the site plan blocks (Block 1, Block 2, and Block 4) and park block (Block 3) is to be provided by underground storage tanks. Runoff from these site plan blocks will be collected through proposed roof drains, trench drains and surface area drains and conveyed to the underground stormwater tanks. An emergency overland flow route is to be provided from each underground stormwater tank to the proposed right-of-way (ROW). More details on the emergency flow route will be provided at the detailed design stage (with coordination from the mechanical engineer).

Quantity control storage for the road ROW catchments will be provided by superpipes, integrated with the proposed storm servicing plan. ROW Runoff from the 100-year storm is to be captured by proposed catchbasins to the storm sewer system, where the proposed superpipes will provide the required storage attenuation.

The proposed quantity control measures for the subject lands are aligned with the SWM recommendations from the June 2025 PIC which proposes on-site quantity control within private properties and superpipes within the ROWs.

The proposed stormwater management plan is shown on **Drawing STM-2**, provided in **Appendix C. Table 5-2** summarizes the proposed storage for the subject development in order to meet the quantity control requirements, as per the Midtown EA study. It is acknowledged that the Town's Stormwater Master Plan is currently in the process of being updated, and that SWM quantity control criteria may change as part of that study.

Table 5-3: Quantity Control – Required Storage

Catchment Area IDs	Total Area (ha)	Unit Storage Volume (m^3/ha)	Storage Volume Required (m^3)	Storage Type Proposed
BLK1	2.42	280.9	680	Storage tank within proposed building; configuration to be confirmed at detailed design
BLK2	1.46		410	Storage tank within proposed building; configuration to be confirmed at detailed design
BLK3	1.64		461	Storage tank within proposed building; configuration to be confirmed at detailed design
BLK4	1.46		410	Storage tank within proposed building; configuration to be confirmed at detailed design
1	0.57		160	134.3m-900x1800 mm Superpipe within Cross Avenue ROW (From STM-FUT11 to STM.FUT10)
2	0.56		157	99.3m-900x1800 mm Superpipe within Cross Avenue

Catchment Area IDs	Total Area (ha)	Unit Storage Volume (m^3/ha)	Storage Volume Required (m^3)	Storage Type Proposed
				ROW (From STM-FUT13 to STM.FUT10)
3	0.37		104	103.5m-900x1800 mm Superpipe within North-South Road ROW (From STM-FUT12 to STM.FUT10)
4, 5, 6 & 10	1.77		497	147.9m-1200x2400 mm Superpipe within Street "A" ROW (From STM.MH3to STM.MH1)
7	0.52		146	144.4m-900x1800 mm Superpipe within the Future Cross Avenue ROW (From STM-FUT8 to the creek outlet)
8, 9 & 11	1.06		298	194.5m-900x1800 mm Superpipe within Street "A" ROW (From STM.MH13 to EX.STM.MH13)
Total	**11.83**	**280.9**	**3,323**	**-**

5.3.2. Stormwater Runoff Volume Reduction

As noted in **Section 5.3**, 25 mm of retention is to be provided over the entire area of the subject site, in accordance with the Town's Stormwater Master Plan. Based on the total development area of 11.83 ha, including the site plan blocks, park block and proposed ROWs, a total retention volume of 2,958 m^3 is required for the proposed development.

As shown on **Drawing STM-2**, two infiltrations galleries are proposed on the east side of site within the park areas of Block 3 and Block 4. The total retention volume provided in the parks is 1,253 m^3. As per the Midtown EA Study, the remainder of the water balance retention volume can be achieved by a combination of Low Impact Development (LID) measures including, but not limited to:

- Rainwater harvesting;
- Green roofs;
- Infiltration trenches and soakaway pits;
- Bioretention;
- Permeable pavement; and
- Perforated pipe systems.

The detailed LID and water balance mitigation plan will be provided through detailed design at the site plan approval stage. Site constraints such as clearance to the seasonally high groundwater level will be considered in the selection, implementation, and location of the proposed LID measures. As noted in **Section 2.1**, the existing bedrock conditions may limit the implementation of LID measures.

As such the soil/bedrock conditions are also to be considered at the detailed design stage as part of the overall water balance mitigation plan.

The runoff volume control measures for the subject lands are aligned with the SWM recommendations from the June 2025 PIC which proposes underground storage and green infrastructure within parks.

5.3.3. Stormwater Quality Control

As required by the Town of Oakville, MECP Enhanced Level 1 protection for the removal of >80% of total suspended solids (TSS) is to be provided for the subject site. Enhanced Level quality control is to be provided for the proposed development by either filtration (via Jellyfish units, or approved equivalent), or a treatment train approach combining treatment via oil/grit separator (OGS) units and LIDs.

Adequate maintenance will need to be undertaken for all proposed water quality treatment measures, to provide a minimum 80% TSS removal. The detailed design phase will provide further details on any maintenance requirements, proposed sizing, and proposed specifications for all proposed water quality measures.

It should be noted that additional quality control will be provided by the proposed infiltration facilities, as discussed in **Section 5.3.2**.

The proposed quality control measures for the subject lands are aligned with the SWM recommendations from the June 2025 PIC which proposes on-site quality control within private properties, manufactured treatment devices within the ROW and underground storage/green infrastructure within parks.

5.3.4. Spill Mitigation

Conservation Halton's *Spill Flood Hazard Policies: Technical Guide* (April 2025) outlines requirements for assessing development in areas impacted by spill flood hazards. CH mapping identifies a spill area north of the GE Midtown site along the QEW, confirmed through detailed hydraulic modelling. Urbantech applied CH's regional 2D spill model for the Morrison Creek / Midtown Oakville / Sixteen Mile Creek system to evaluate existing and post-development Regional Storm conditions. Results indicate that, if QEW barriers are removed, spill flows would enter the GE Midtown site but can be managed through swales within the 14 m MTO setback and strategic grading of the strata park to safely direct flows to the storm system and Davis Road, protecting buildings and access routes. However, the planned north–south arterial underpass is expected to act as the main spill outlet, with pumping potentially unable to maintain safe conditions—an issue requiring broader coordination with CH, the Town, and developers to establish long-term flood management solutions.

Additional information is included in **Section 1.2.3**, with the full memo in **Appendix D**.

6 EROSION & SEDIMENT CONTROL

Erosion and sediment controls for the subject lands will be designed in conformance with the Town of Oakville and Conservation Halton guidelines. Erosion and sediment controls will be implemented during all site construction works including but not limited to topsoil stripping, bulk earthworks, foundation excavation, site servicing and stockpiling of materials and will conform to ESC guidelines (2019). The following erosion and sediment control measures are proposed to be implemented during construction:

- Installing heavy duty silt control fencing along the perimeter of the site at strategic locations.
- Installing a temporary mud mat at the construction site entrance.
- Wrapping the tops of all inlet structures with filter fabric and using install silt sacks.
- Tree preservation fencing in accordance with the tree preservation plan, if required.
- Gravel mud mat at the construction vehicle access point to minimize off-site tracking of sediments.
- Inspecting all sediment and erosion control controls to maintain them in good repair until such time as the Engineer or the Town approves their removal.

If required, site-specific measures will be determined during the detailed design / site alteration application stage. A detailed Erosion & Sediment Control Plan will be provided in the future through the detailed design stage.

7 CONCLUSIONS

This report confirms the feasibility of full municipal servicing, supporting the proposed mixed-use redevelopment of the GE Midtown site. The proposed servicing strategy accommodates both interim (Phase 1) and ultimate build-out conditions, aligning with the Town's Midtown Oakville growth vision and ongoing Regional infrastructure planning. Servicing concepts have been developed in consideration of the Town's and Region's latest design criteria, current master planning initiatives, and Conservation Halton's updated spill policies.

From a water servicing perspective, the development can be adequately serviced from existing Zone O2 infrastructure via Davis Road, supported by the Davis Road Booster Pumping Station and Eighth Line Reservoir. Interim servicing for Phase 1 (Tower C) is proposed to proceed using existing 300 mm watermains, with sufficient flow and pressure anticipated for both domestic and fire protection demands. The ultimate build-out strategy provides a looped watermain network along Davis Road, Cross Avenue, and new internal roadways.

For sanitary servicing, the initial phase can be supported by the existing 300 mm sanitary sewer on Davis Road, which has been structurally relined and verified for capacity through recent CCTV inspection. Ultimate flows from the full development are proposed to discharge west to the new 1200 mm Trafalgar Road Trunk Sewer currently under detailed design by Halton Region, via Davis Road. The Trafalgar Road Trunk Sewer provide both interim and long-term sewer capacity to accommodate Midtown growth. An alternative sanitary outlet to the Chartwell Road system is also identified for future consideration, offering flexibility to the Trafalgar system if required.

The stormwater management strategy meets Town and Conservation Halton requirements for quantity, quality, and water balance control. Runoff will be managed through a combination of underground storage tanks within the development blocks, superpipes within the municipal rights-of-way, and infiltration galleries within park blocks. The plan provides on-site control of peak flows to the Lower Morrison Creek system, achieves enhanced (Level 1) water quality treatment, and satisfies the Town's water balance target of 25 mm retention.

Spill analysis using Conservation Halton's regional 2D model confirms that spills entering the GE Midtown site across the QEW can be safely managed through on-site grading and conveyance measures. The modelling, included in Appendix D, identifies the proposed north–south arterial underpass as a key regional outlet for spill flows, however, highlighting the need for broader coordination between CH, the Town, and developers to establish long-term flood mitigation solutions for Midtown Oakville.

In conclusion, the proposed servicing, stormwater management, and spill mitigation strategies collectively demonstrate that the GE Lands can be developed in a safe, sustainable, and coordinated manner consistent with current Town, Region, and Conservation Halton requirements. The proposed approach supports early phases of development while remaining adaptable to future infrastructure improvements and policy updates arising from ongoing master planning for Midtown Oakville.

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Report Prepared by:

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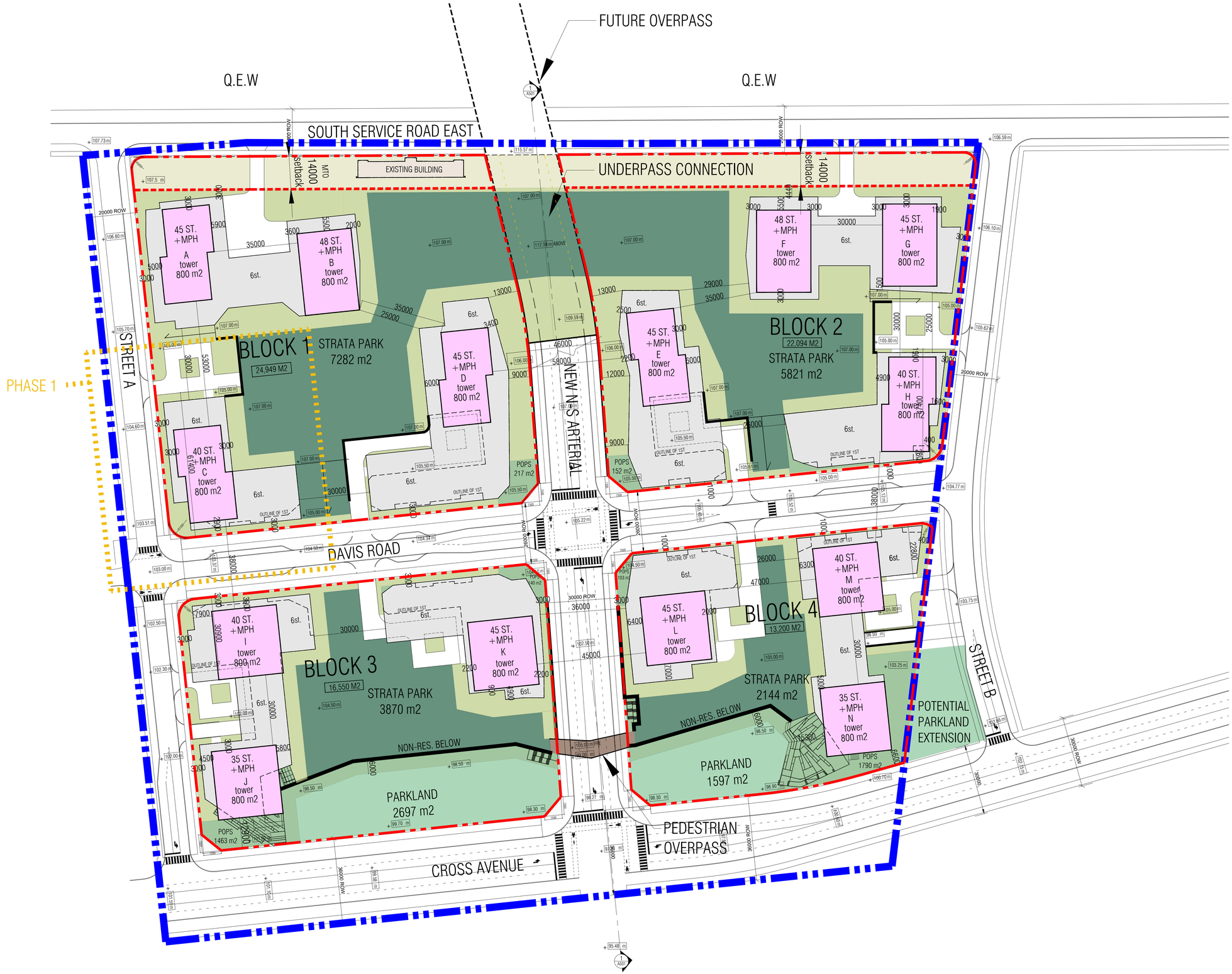
APPENDIX A:
Background Information and Site Statistics



1.	SEP.12.2024	ISSUED TO CITY FOR PAC MEETING	J. CHI.
2.	NOV.01.2024	ISSUED TO CITY FOR OPA	J. CHI.
3.	OCT.22.2025	ISSUED TO CITY FOR OPA	J. CHI.

LEGEND

- PROPERTY LINE
- PHASE 1 LIMIT
- RETAINING WALL
- POPS
- PRIVATE OPEN SPACE
- STRATA PARK
- PARKLAND
- MTO SETBACK
- PEDESTRIAN OVERPASS
- EXISTING BUILDING

ISSUED FOR REVISIONS

GRAZIANI + CORAZZA ARCHITECTS
ONTARIO ASSOCIATION OF ARCHITECTS
JOHNNY CHIMIENTI LICENCE 6299
8400 JANE STREET, BUILDING D-SUITE 300 CONCORD, ONTARIO L4K 4L8
T.905.795.2601 F.905.795.2644 WWW.GC-ARCHITECTS.COM

PROPOSED MIXED-USE DEVELOPMENT

SOUTH SERVICE ROAD

THE ROSE CORPORATION

OAKVILLE ONTARIO

PROJECT ARCHITECT:	J.C.
ASSISTANT DESIGNER:	B.D / J.L.
DRAWN BY:	B.D / C.R. / S.H. / J.L.
CHECKED BY:	D.B. / G.C.
PLOT DATE:	OCT.15.2025
JOB #	2127.23

SITE PLAN

1:750

A102

TITLEBLOCK SIZE: 610 x 900

JOB No: 2127.23
DATE: OCT.15.2025

BLOCK 1

SITE AREA GROSS		**32915 m2**
SITE AREA NET	67%	**22092 m2**

LAND USE AREAS (m2)
% based on gross site area

STRATA PARK	22.1%	7282
PARKLAND	0.0%	0
POPS	0.7%	217
MTO	6.4%	2109
ROADS / R.O.W.	26.5%	8715
DEVELOPABLE LANDS	44.3%	14593
TOTAL	100%	32915

AREAS & UNIT COUNTS

	Non-Res. GCA (m2) **	%	Residential GCA (m2) **	%	Unit Count ***
BLDG A			**41574**	**100%**	**554**
BLDG B			**43974**	**100%**	**549**
BLDG C	**804**	**2.1%**	**37819**	**97.9%**	**489**
BLDG D	**699**	**1.4%**	**48525**	**98.6%**	**628**
TOTAL	**1502.5**	**0.9%**	**171893**	**99.1%**	**2220**
			173395		

LOT COVERAGE	**22%**
FSI GROSS	**5.27 X**
FSI NET	**7.85 X**

UNITS BREAKDOWN

3.8.2.1 (4)
NOT LESS THAN 15% OF ALL RESIDENTIAL SUITES SHALL BE PROVIDED WITH A BARRIER-FREE PATH OF TRAVEL FROM THE SUITE ENTRANCE DOOR TO,
(a) AT LEAST ONE BEDROOM AT THE SAME LEVEL, AND
(b) AT LEAST ONE BATHROOM
(i) HAVING AN AREA NOT LESS THAN 4.5m2 AT THE SAME LEVEL, AND
(ii) CONFORMING TO SENTENCE 9.6.3.3.(1)

UNIT TYPE	PERCENTAGE %	UNIT COUNT ***
1 BEDROOM	60%	**1332**
2 BEDROOM	30%	**666**
3 BEDROOM	10%	**222**
TOTAL	100%	**2220**

REQUIRED B.F. 2220 X 15% = **333** PROVIDED B.F. **333**

AMENITY

		INDOOR	OUTDOOR
PROVIDED AMENITY PER LEVEL (m2)	GROUND	1603	
	7TH	2810	5362
	TOTAL	**4413**	**5362**
RATIO / UNIT (m2)		1.99	2.42

PARKING

	LEVEL	RESIDENT	RESIDENT VISITOR	NON-RESIDENT
TARGET RATIO / UNIT		0.50/unit	0.15/unit	1.08/100m2 GFA
TARGET PARKING SPACES		1110	333	16
TARGET TOTAL		1459		
PHASE 1 TARGET PARKING SPACES		245	73	8
PROVIDED PARKING PER LEVEL	P1		287	16
	P2	528	46	
	P3	574		
	PARTIAL P4	8		
TOTAL		**1110**	**333**	**16**
COMBINED TOTAL			**1459**	

BARRIER FREE PARKING SPACES
PER 201 TO 1000 TOTAL PARKING SPACES ON THE LOT,
MUST PROVIDE 2, PLUS 2% OF THE TOTAL NUMBER OF SPACES AS BARRIER FREE

	PARKING SUPPLY (RES.VISITOR + NON-RES.)	PARKING RATE	TOTAL
REQUIRED B.F.	349	X 2% + 2 =	9
PROPOSED B.F.	349	X 2% + 2 =	**9**
			4 TYPE A
			5 TYPE B

BIKE STORAGE

	RESIDENT LONG-TERM	RESIDENT SHORT-TERM	RETAIL
REQUIRED RATIO / UNIT	In no circumstances shall the number of minimum bicycle parking spaces required on a lot be greater than 30		GREATER OF 2 OR 1 SPACE / 1000M2 GFA
REQUIRED SPACES		30 PER BUILDING	2
TOTAL REQUIRED SPACES		122	
PROVIDED RATIO / UNIT	0.5	0.1	GREATER OF 2 OR 1 SPACE / 1000M2 GFA
PROVIDED SPACES	1110	222	2
TOTAL PROVIDED SPACES		**1334**	

BUILDING HEIGHT

	GROUND FLOOR F.F.E.	STOREYS	HEIGHT+MECH. ****
BLDG A	107.00 m	45	171 m max.
BLDG B	107.00 m	48	171 m max.
BLDG C	107.00 m	40	171 m max.
BLDG D	107.00 m	45	171 m max.

BUILDING SETBACKS

NORTH	3.0 m + 14.0m MTO Setback
EAST	9.0 m
SOUTH	3.0 m
WEST	3.0 m

BLOCK 2

SITE AREA GROSS		**26556 m2**
SITE AREA NET	71%	**18833 m2**

LAND USE AREAS (m2)
% based on gross site area

STRATA PARK	21.9%	5821
PARKLAND	0.0%	0
POPS	0.6%	152
MTO	9.2%	2442
ROADS / R.O.W.	19.9%	5281
DEVELOPABLE LANDS	48.4%	12860
TOTAL	100%	26556

AREAS & UNITS BREAKDOWN

	Non-Res. GCA (m2) **	%	Residential GCA (m2) **	%	Unit Count ***
BLDG E	**378**	**0.8%**	**45412**	**99.2%**	**600**
BLDG F			**42950**		**536**
BLDG G			**40550**		**503**
BLDG H	**1136**	**2.9%**	**38290**	**97.1%**	**518**
TOTAL	**1514.1**	**0.9%**	**167203**	**99.1%**	**2156**
			168717		

LOT COVERAGE	**27%**
FSI GROSS	**6.35 X**
FSI NET	**8.96 X**

UNITS BREAKDOWN

3.8.2.1 (4)
NOT LESS THAN 15% OF ALL RESIDENTIAL SUITES SHALL BE PROVIDED WITH A BARRIER-FREE PATH OF TRAVEL FROM THE SUITE ENTRANCE DOOR TO,
(a) AT LEAST ONE BEDROOM AT THE SAME LEVEL, AND
(b) AT LEAST ONE BATHROOM
(i) HAVING AN AREA NOT LESS THAN 4.5m2 AT THE SAME LEVEL, AND
(ii) CONFORMING TO SENTENCE 9.6.3.3.(1)

UNIT TYPE	PERCENTAGE %	UNIT COUNT ***
1 BEDROOM	60%	**1294**
2 BEDROOM	30%	**647**
3 BEDROOM	10%	**216**
TOTAL	100%	**2156**

REQUIRED B.F. 2156 X 15% = **323** PROVIDED B.F. **323**

AMENITY

		INDOOR	OUTDOOR
PROVIDED AMENITY PER LEVEL (m2)	GROUND	1480	
	7TH	2810	4398
	TOTAL	**4290**	**4398**
RATIO / UNIT (m2)		1.99	2.04

PARKING

	LEVEL	RESIDENT	RESIDENT VISITOR	NON-RESIDENT
TARGET RATIO / UNIT		0.50/unit	0.15/unit	1.08/100m2 GFA
TARGET PARKING SPACES		1078	324	17
TARGET TOTAL		1419		
PROVIDED PARKING PER LEVEL	P1		240	17
	P2	418	84	
	P3	502		
	PARTIAL P4	158		
TOTAL		**1078**	**324**	**17**
COMBINED TOTAL			**1419**	

BARRIER FREE PARKING SPACES
PER 201 TO 1000 TOTAL PARKING SPACES ON THE LOT,
MUST PROVIDE 2, PLUS 2% OF THE TOTAL NUMBER OF SPACES AS BARRIER FREE

	PARKING SUPPLY (RES.VISITOR + NON-RES.)	PARKING RATE	TOTAL
REQUIRED B.F.	341	X 2% + 2 =	9
PROPOSED B.F.	341	X 2% + 2 =	**9**
			4 TYPE A
			5 TYPE B

BIKE STORAGE

	RESIDENT LONG-TERM	RESIDENT SHORT-TERM	RETAIL
REQUIRED RATIO / UNIT	In no circumstances shall the number of minimum bicycle parking spaces required on a lot be greater than 30		GREATER OF 2 OR 1 SPACE / 1000M2 GFA
REQUIRED SPACES		30 PER BUILDING	2
TOTAL REQUIRED SPACES		122	
PROPOSED RATIO / UNIT	0.5	0.1	GREATER OF 2 OR 1 SPACE / 1000M2 GFA
PROPOSED SPACES	1078	216	2
TOTAL PROPOSED SPACES		**1296**	

BUILDING HEIGHT

	GROUND FLOOR F.F.E.	STOREYS	HEIGHT+MECH. ****
BLDG E	107.00 m	45	171 m max.
BLDG F	107.00 m	48	171 m max.
BLDG G	107.00 m	45	171 m max.
BLDG H	107.00 m	40	171 m max.

BUILDING SETBACKS

NORTH	3.0 m + 14.0m MTO Setback
EAST	3.0 m
SOUTH	3.0 m
WEST	9.0 m

BLOCK 3

SITE AREA GROSS		**29273 m2**
SITE AREA NET	56%	**16431 m2**

LAND USE AREAS (m2)
% based on gross site area

STRATA PARK	13.2%	3870
PARKLAND	9.2%	2697
POPS	5.5%	1603
MTO	0.0%	0
ROADS / R.O.W.	43.9%	12842
DEVELOPABLE LANDS	28.2%	8261
TOTAL	100%	29273

AREAS & UNITS BREAKDOWN

	Non-Res. GCA (m2) **	%	Residential GCA (m2) **	%	Unit Count ***
BLDG I	**616**	**1.7%**	**35891**	**98.3%**	**420**
BLDG J			**31891**	**100%**	**370**
BLDG K	**653**	**1.5%**	**44100**	**98.5%**	**515**
NON RES.	**2024**	**100%**			
TOTAL	**3292.6**	**2.9%**	**111881.5**	**97.1%**	**1305**
			115174.1		

LOT COVERAGE	**16%**
FSI GROSS	**3.93 X**
FSI NET	**7.01 X**

UNITS BREAKDOWN

3.8.2.1 (4)
NOT LESS THAN 15% OF ALL RESIDENTIAL SUITES SHALL BE PROVIDED WITH A BARRIER-FREE PATH OF TRAVEL FROM THE SUITE ENTRANCE DOOR TO,
(a) AT LEAST ONE BEDROOM AT THE SAME LEVEL, AND
(b) AT LEAST ONE BATHROOM
(i) HAVING AN AREA NOT LESS THAN 4.5m2 AT THE SAME LEVEL, AND
(ii) CONFORMING TO SENTENCE 9.6.3.3.(1)

UNIT TYPE	PERCENTAGE %	UNIT COUNT ***
1 BEDROOM	60%	**783**
2 BEDROOM	30%	**392**
3 BEDROOM	10%	**131**
TOTAL	100%	**1305**

REQUIRED B.F. 1305 X 15% = **196** PROVIDED B.F. **196**

AMENITY

		INDOOR	OUTDOOR
PROVIDED AMENITY PER LEVEL (m2)	GROUND	0	
	7TH	2237	2999
	TOTAL	**2237**	**2999**
RATIO / UNIT (m2)		1.71	2.30

PARKING

	LEVEL	RESIDENT	RESIDENT VISITOR	NON-RESIDENT
TARGET RATIO / UNIT		0.50/unit	0.15/unit	1.08/100m2 GFA
TARGET PARKING SPACES		653	196	36
TARGET TOTAL		885		
PROVIDED PARKING PER LEVEL	P1	145	36	
	P2	46	160	36
	P3	397		
	PARTIAL P4	65		
TOTAL		**653**	**196**	**36**
COMBINED TOTAL			**885.0**	

BARRIER FREE PARKING SPACES
PER 201 TO 1000 TOTAL PARKING SPACES ON THE LOT,
MUST PROVIDE 2, PLUS 2% OF THE TOTAL NUMBER OF SPACES AS BARRIER FREE

	PARKING SUPPLY (RES.VISITOR + NON-RES.)	PARKING RATE	TOTAL
REQUIRED B.F.	232	X 2% + 2 =	7
PROPOSED B.F.	232	X 2% + 2 =	**7**
			3 TYPE A
			4 TYPE B

BIKE STORAGE

	RESIDENT LONG-TERM	RESIDENT SHORT-TERM	RETAIL
REQUIRED RATIO / UNIT	In no circumstances shall the number of minimum bicycle parking spaces required on a lot be greater than 30		GREATER OF 2 OR 1 SPACE / 1000M2 GFA
REQUIRED SPACES		30 PER BUILDING	4
TOTAL REQUIRED SPACES		94	
PROPOSED RATIO / UNIT	0.5	0.1	GREATER OF 2 OR 1 SPACE / 1000M2 GFA
PROPOSED SPACES	653	131	4
TOTAL PROPOSED SPACES		**787**	

BUILDING HEIGHT

	GROUND FLOOR F.F.E.	STOREYS	HEIGHT+MECH. ****
BLDG I	104.50 m	40	162 m max.
BLDG J	104.50 m	35	162 m max.
BLDG K	104.50 m	45	162 m max.

BUILDING SETBACKS

NORTH	3.0 m
EAST	3.0 m
SOUTH	12.0 m
WEST	3.0 m

BLOCK 4

SITE AREA GROSS		**21744 m2**
SITE AREA NET	61%	**13200 m2**

LAND USE AREAS (m2)
% based on gross site area

STRATA PARK	9.9%	2144
PARKLAND	7.3%	1597
POPS	8.7%	1893
MTO	0.0%	0
ROADS / R.O.W.	39.3%	8544
DEVELOPABLE LANDS	34.8%	7566
TOTAL	100%	21744

AREAS & UNITS BREAKDOWN

	Non-Res. GCA (m2) **	%	Residential GCA (m2) **	%	Unit Count ***
BLDG L	**560**	**1.3%**	**43322**	**98.7%**	**484**
BLDG M	**738**	**2.0%**	**35304**	**98.0%**	**415**
BLDG N			**31304**	**100%**	**365**
NON RES.	**1510**	**100%**			
TOTAL	**2808**	**2.5%**	**109930**	**97.5%**	**1264**
			112738		

LOT COVERAGE	**22%**
FSI GROSS	**5.18 X**
FSI NET	**8.54 X**

UNITS BREAKDOWN

3.8.2.1 (4)
NOT LESS THAN 15% OF ALL RESIDENTIAL SUITES SHALL BE PROVIDED WITH A BARRIER-FREE PATH OF TRAVEL FROM THE SUITE ENTRANCE DOOR TO,
(a) AT LEAST ONE BEDROOM AT THE SAME LEVEL, AND
(b) AT LEAST ONE BATHROOM
(i) HAVING AN AREA NOT LESS THAN 4.5m2 AT THE SAME LEVEL, AND
(ii) CONFORMING TO SENTENCE 9.6.3.3.(1)

UNIT TYPE	PERCENTAGE %	UNIT COUNT ***
1 BEDROOM	60%	**758**
2 BEDROOM	30%	**379**
3 BEDROOM	10%	**126**
TOTAL	100%	**1264**

REQUIRED B.F. 1264 X 15% = **190** PROVIDED B.F. **190**

AMENITY

		INDOOR	OUTDOOR
PROVIDED AMENITY PER LEVEL (m2)	GROUND	0	
	7TH	2237	2508
	TOTAL	**2237**	**2508**
RATIO / UNIT (m2)		1.77	1.98

PARKING

	LEVEL	RESIDENT	RESIDENT VISITOR	NON-RESIDENT
TARGET RATIO / UNIT		0.50/unit	0.15/unit	1.08/100m2 GFA
TARGET PARKING SPACES		632	190	31
TARGET TOTAL		853		
PROVIDED PARKING PER LEVEL	P1	83	49	
	P2		141	31
	P3	313		
	PARTIAL P4	236		
TOTAL		**632**	**190**	**31**
COMBINED TOTAL			**853**	

BARRIER FREE PARKING SPACES
PER 201 TO 1000 TOTAL PARKING SPACES ON THE LOT,
MUST PROVIDE 2, PLUS 2% OF THE TOTAL NUMBER OF SPACES AS BARRIER FREE

	PARKING SUPPLY (RES.VISITOR + NON-RES.)	PARKING RATE	TOTAL
REQUIRED B.F.	221	X 2% + 2 =	7
PROPOSED B.F.	221	X 2% + 2 =	**7**
			3 TYPE A
			4 TYPE B

BIKE STORAGE

	RESIDENT LONG-TERM	RESIDENT SHORT-TERM	RETAIL
REQUIRED RATIO / UNIT	In no circumstances shall the number of minimum bicycle parking spaces required on a lot be greater than 30		GREATER OF 2 OR 1 SPACE / 1000M2 GFA
REQUIRED SPACES		30 PER BUILDING	3
TOTAL REQUIRED SPACES		93	
PROPOSED RATIO / UNIT	0.5	0.1	GREATER OF 2 OR 1 SPACE / 1000M2 GFA
PROPOSED SPACES	632	126	3
TOTAL PROPOSED SPACES		**761**	

BUILDING HEIGHT

	GROUND FLOOR F.F.E.	STOREYS	HEIGHT+MECH. ****
BLDG L	105.00 m	45	162 m max.
BLDG M	105.00 m	40	162 m max.
BLDG N	105.00 m	35	162 m max.

BUILDING SETBACKS

NORTH	3.0 m
EAST	3.0 m
SOUTH	6.0 m
WEST	3.0 m

TOTAL SITE

SITE AREA GROSS		**110488 m2**
SITE AREA NET		**70555 m2**

LAND USE AREAS (m2)
% based on gross site area

STRATA PARK	17.3%	19117
PARKLAND	3.9%	4294
POPS	3.5%	3865
MTO	4.1%	4551
ROADS / R.O.W.	32.0%	35382
DEVELOPABLE LANDS	39.2%	43279
TOTAL	100%	110488

AREAS & UNITS BREAKDOWN

	Non-Res. GCA (m2) **	%	Residential GCA (m2) **	%	Unit Count ***
TOTAL	**9117.2**	**1.6%**	**560907**	**98.4%**	**6945**
			570024.25		

LOT COVERAGE	**21%**
FSI GROSS	**5.16 X**
FSI NET	**8.08 X**

UNITS BREAKDOWN

3.8.2.1 (4)
NOT LESS THAN 15% OF ALL RESIDENTIAL SUITES SHALL BE PROVIDED WITH A BARRIER-FREE PATH OF TRAVEL FROM THE SUITE ENTRANCE DOOR TO,
(a) AT LEAST ONE BEDROOM AT THE SAME LEVEL, AND
(b) AT LEAST ONE BATHROOM
(i) HAVING AN AREA NOT LESS THAN 4.5m2 AT THE SAME LEVEL, AND
(ii) CONFORMING TO SENTENCE 9.6.3.3.(1)

UNIT TYPE	PERCENTAGE %	UNIT COUNT ***
1 BEDROOM	60%	**4167**
2 BEDROOM	30%	**2084**
3 BEDROOM	10%	**695**
TOTAL	100%	**6945**

REQUIRED B.F. 6945 X 15% = **1042** PROVIDED B.F. **1042**

AMENITY

		INDOOR	OUTDOOR
	TOTAL	**13177**	**15267**
RATIO / UNIT (m2)		1.90	2.20

PARKING

	RESIDENT	RESIDENT VISITOR	NON-RESIDENT
TARGET RATIO / UNIT	0.50/unit	0.15/unit	1.08/100m2 GFA
TOTAL TARGET PARKING SPACES	3473	1043	100
TARGET TOTAL		4616	
TOTAL	**3473**	**1043**	**100**
COMBINED TOTAL		**4616**	

BARRIER FREE PARKING SPACES

	TOTAL
REQUIRED B.F.	32
PROPOSED B.F.	**32**
	14 TYPE A
	18 TYPE B

BIKE STORAGE

	RESIDENT LONG-TERM	RESIDENT SHORT-TERM	RETAIL
REQUIRED RATIO / UNIT	In no circumstances shall the number of minimum bicycle parking spaces required on a lot be greater than 30		GREATER OF 2 OR 1 SPACE / 1000M2 GFA
REQUIRED SPACES		30 PER BUILDING	11
TOTAL REQUIRED SPACES		431	
PROPOSED RATIO / UNIT	0.5	0.1	GREATER OF 2 OR 1 SPACE / 1000M2 GFA
PROPOSED SPACES	3473	695	11
TOTAL PROPOSED SPACES		**4178**	

Notes:
* Setbacks to main building face
** GCA does not include above and below grade parking
*** Actual unit count may vary depending on market demand

LIST OF DRAWINGS

1.	SEP.12.2024	ISSUED TO CITY FOR PAC MEETING	J. CHI.
2.	NOV.01.2024	ISSUED TO CITY FOR OPA	J. CHI.
3.	OCT.22.2025	ISSUED TO CITY FOR OPA	J. CHI.

ISSUED FOR REVISIONS

GRAZIANI + CORAZZA ARCHITECTS
ONTARIO ASSOCIATION OF ARCHITECTS
JOHNNY CHIMIENTI LICENCE 6299
8400 JANE STREET, BUILDING D SUITE 300 CONCORD, ONTARIO L4K 4L8
T 905.795.2601 F 905.795.2844 WWW.GC-ARCHITECTS.COM

PROPOSED MIXED-USE DEVELOPMENT

SOUTH SERVICE ROAD

THE ROSE CORPORATION
OAKVILLE ONTARIO

PROJECT ARCHITECT:	J.C.
ASSISTANT DESIGNER:	B.D / J.L.
DRAWN BY:	B.D / C.R. / S.H. / J.L.
CHECKED BY:	D.B. / G.C.
PLOT DATE:	OCT.15.2025
JOB #	2127.23

STATISTICS & NOTES

A101

TITLEBLOCK SIZE: 610 x 900

APPENDIX B:
Design Information and Calculations

URBANTECH®

STORM SEWER DESIGN SHEET

10 year capture (Cross Ave)

420 SOUTH SERVICE ROAD

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 23-307
Date: 23-Oct-25
Designed by: SR
Checked by: RM

DESIGN CRITERIA

Min. Diameter =	300	mm	Rainfall Intensity =	A / (Tc+B)^c
Mannings 'n'=	0.013			
Starting Tc =	10	min	A =	1400
			B =	5.8
Factor of Safety =	5	%	c =	0.848

Pumped system under Rail

NOMINAL PIPE SIZE USED

	STREET	FROM MH	TO MH	AREA (ha)	RUNOFF COEFFICIENT "R"	'AR'	ACCUM. 'AR'	RAINFALL INTENSITY (mm/hr)	FLOW (m3/s)	CONSTANT FLOW (m3/s)	ACCUM. CONSTANT FLOW (m3/s)	TOTAL FLOW (m3/s)	LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)	INITIAL Tc (min)	TIME OF CONCENTRATION (min)	ACC. TIME OF CONCENTRATION (min)	PERCENT FULL (%)
BLK 4	DAVIS ROAD	BLK4	5	1.46	0.90	1.31	1.31	134.8	0.492			0.492	11.5	0.50	675	0.594	1.66	10.00	0.12	10.12	83%
BLK 2	DAVIS ROAD	BLK2	5	1.46	0.90	1.31	1.31	134.8	0.492			0.492	14.5	0.50	675	0.594	1.66	10.00	0.15	10.15	83%
6	DAVIS ROAD	5	4	0.39	0.90	0.35	2.98	133.7	1.107	0.391	0.391	1.497	148.3	0.50	975	1.585	2.12	10.15	1.16	11.31	94%
5	N-S ROAD	6	4	0.62	0.90	0.56	0.56	134.8	0.209	0.325	0.325	0.534	42.7	0.50	675	0.594	1.66	10.00	0.43	10.43	90%
4	DAVIS ROAD	4	3	0.44	0.90	0.40	3.93	126.0	1.376	0.376	1.092	2.468	157.4	0.50	1200	2.757	2.44	11.31	1.08	12.39	90%
	STREET A	3	2				3.93	119.6	1.307		1.092	2.399	27.9	0.50	1200x3000 (BOX)	11.131	3.09	12.39	0.15	12.54	22%
BLK 3	STREETA	BLK3	2	1.64	0.90	1.48	1.48	134.8	0.553			0.553	4.1	0.50	675	0.594	1.66	10.00	0.04	10.04	93%
10	STREET A	2	1	0.32	0.90	0.29	5.70	118.8	1.880		1.092	2.972	120.0	0.25	1200x3000 (BOX)	7.871	2.19	12.54	0.91	13.45	38%
EXT 2	FUT. CROSS AVENUE	EXT 2	1	2.62	0.90	2.36	2.36	315.3	2.065			2.065									
	FUT. CROSS AVENUE	1	10	0.90	0.90	0.81	8.87	114.0	2.807	0.245	1.337	4.144	260.8	0.25	1200x1800 (BOX)	4.204	1.95	13.45	2.23	15.68	99%
	SOUTH SERVICE ROAD E.	10	36				8.87	103.9	2.558		1.337	3.895	81.1	0.25	1200x1800 (BOX)	4.204	1.95	15.68	0.69	16.38	93%
1	CROSS AVENUE	FUT.11	FUT.10	0.57	0.90	0.51	0.51	134.8	0.192	0.339	0.339	0.531	134.3	0.50	900x1800 (BOX)	3.949	2.44	10.00	0.92	10.92	13%
2	CROSS AVENUE	FUT.13	FUT.10	0.56	0.90	0.50	0.50	134.8	0.189	0.342	0.342	0.531	99.3	0.50	900x1800 (BOX)	3.949	2.44	10.00	0.68	10.68	13%
3	N-S ROAD	FUT.12	FUT.10	0.37	0.90	0.33	0.33	134.8	0.125	0.396	0.396	0.521	103.5	5.00	900x1800 (BOX)	12.487	7.71	10.00	0.22	10.22	4%
	N-S ROAD	FUT.10	FUT.14				1.35	128.5	0.482		1.078	1.560	16.6	7.00	900x1800 (BOX)	14.775	9.12	10.92	0.03	10.95	11%
7	FUT. STREET B	FUT.9	FUT.8	0.52	0.90	0.47	0.47	134.8	0.175	0.354	0.354	0.529	267.4	0.50	675	0.594	1.66	10.00	2.68	12.68	89%
EXT 4	FUT. CROSS AVENUE	FUT.8	CREEK OUTLET	0.42	0.90	0.38	0.85	118.0	0.277	0.382	0.736	1.013	144.4	0.25	900x1800 (BOX)	2.792	1.72	12.68	1.40	14.08	36%

Urbantech Consulting, A Division of Leighton-Zec Ltd.
3760 14th Avenue, Suite 301 Markham, Ontario L3R 3T7
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www.urbantech.com

URBANTECH®

STORM SEWER DESIGN SHEET

100 year capture (Cross Ave)

420 SOUTH SERVICE ROAD

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 23-307
Date: 23-Oct-25
Designed by: SR
Checked by: RM

DESIGN CRITERIA

Min. Diameter =	300	mm	Rainfall Intensity =	A / (Tc+B)^c
Mannings 'n'=	0.013			
Starting Tc =	10	min	A =	2150
			B =	5.7
Factor of Safety =	5	%	c =	0.861

Pumped system under Rail

NOMINAL PIPE SIZE USED

	STREET	FROM MH	TO MH	AREA (ha)	RUNOFF COEFFICIENT "R"	'AR'	ACCUM. 'AR'	RAINFALL INTENSITY (mm/hr)	FLOW (m3/s)	CONSTANT FLOW (m3/s)	ACCUM. CONSTANT FLOW (m3/s)	TOTAL FLOW (m3/s)	LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)	INITIAL Tc (min)	TIME OF CONCENTRATION (min)	ACC. TIME OF CONCENTRATION (min)	PERCENT FULL (%)
BLK 4	DAVIS ROAD	BLK4	5	1.46	0.90	1.31	1.31	200.8	0.733			0.733	11.5	0.50	675	0.594	1.66	10.00	0.12	10.12	123%
BLK 2	DAVIS ROAD	BLK2	5	1.46	0.90	1.31	1.31	200.8	0.733			0.733	14.5	0.50	675	0.594	1.66	10.00	0.15	10.15	123%
6	DAVIS ROAD	5	4	0.39	0.90	0.35	2.98	199.2	1.648	0.391	0.391	2.039	148.3	0.50	975	1.585	2.12	10.15	1.16	11.31	129%
5	N-S ROAD	6	4	0.62	0.90	0.56	0.56	200.8	0.311	0.325	0.325	0.636	42.7	0.50	675	0.594	1.66	10.00	0.43	10.43	107%
4	DAVIS ROAD	4	3	0.44	0.90	0.40	3.93	187.4	2.047	0.376	1.092	3.139	157.4	0.50	1200	2.757	2.44	11.31	1.08	12.39	114%
	STREET A	3	2				3.93	177.8	1.942		1.092	3.034	27.9	0.50	1200x3000 (BOX)	11.131	3.09	12.39	0.15	12.54	27%
BLK 3	STREETA	BLK3	2	1.64	0.90	1.48	1.48	200.8	0.823			0.823	4.1	0.50	675	0.594	1.66	10.00	0.04	10.04	139%
10	STREET A	2	1	0.32	0.90	0.29	5.70	176.5	2.793		1.092	3.885	120.0	0.25	1200x3000 (BOX)	7.871	2.19	12.54	0.91	13.45	49%
EXT 2	FUT. CROSS AVENUE	EXT 2	1	2.62	0.90	2.36	2.36	480.4	3.147			3.147									
	FUT. CROSS AVENUE	1	10	0.90	0.90	0.81	8.87	169.2	4.167	0.245	1.337	5.504	260.8	0.25	1200x1800 (BOX)	4.204	1.95	13.45	2.23	15.68	131%
	SOUTH SERVICE ROAD E.	10	36				8.87	153.9	3.790		1.337	5.127	81.1	0.25	1200x1800 (BOX)	4.204	1.95	15.68	0.69	16.38	122%
1	CROSS AVENUE	FUT.11	FUT.10	0.57	0.90	0.51	0.51	200.8	0.286	0.339	0.339	0.625	134.3	0.50	900x1800 (BOX)	3.949	2.44	10.00	0.92	10.92	16%
2	CROSS AVENUE	FUT.13	FUT.10	0.56	0.90	0.50	0.50	200.8	0.281	0.342	0.342	0.623	99.3	0.50	900x1800 (BOX)	3.949	2.44	10.00	0.68	10.68	16%
3	N-S ROAD	FUT.12	FUT.10	0.37	0.90	0.33	0.33	200.8	0.186	0.396	0.396	0.582	103.5	5.00	900x1800 (BOX)	12.487	7.71	10.00	0.22	10.22	5%
	N-S ROAD	FUT.10	FUT.14				1.35	191.2	0.717		1.078	1.795	16.6	7.00	900x1800 (BOX)	14.775	9.12	10.92	0.03	10.95	12%
7	FUT. STREET B	FUT.9	FUT.8	0.52	0.90	0.47	0.47	200.8	0.261	0.354	0.354	0.615	267.4	0.50	675	0.594	1.66	10.00	2.68	12.68	103%
EXT 4	FUT. CROSS AVENUE	FUT.8	CREEK OUTLET	0.42	0.90	0.38	0.85	175.3	0.412	0.382	0.736	1.148	144.4	0.25	900x1800 (BOX)	2.792	1.72	12.68	1.40	14.08	41%

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URBANTECH®

STORM SEWER DESIGN SHEET

10 year capture (Davis)

420 SOUTH SERVICE ROAD

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 23-307
Date: 23-Oct-25
Designed by: SR
Checked by: RM

DESIGN CRITERIA

Min. Diameter =	300	mm	Rainfall Intensity =	A / (Tc+B)^c
Mannings 'n'=	0.013			
Starting Tc =	10	min	A =	1400
			B =	5.8
Factor of Safety =	5	%	c =	0.848

NOMINAL PIPE SIZE USED

	STREET	FROM MH	TO MH	AREA (ha)	RUNOFF COEFFICIENT "R"	'AR'	ACCUM. 'AR'	RAINFALL INTENSITY (mm/hr)	FLOW (m3/s)	CONSTANT FLOW (m3/s)	ACCUM. CONSTANT FLOW (m3/s)	TOTAL FLOW (m3/s)	LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)	INITIAL Tc (min)	TIME OF CONCENTRATION (min)	ACC. TIME OF CONCENTRATION (min)	PERCENT FULL (%)
9	SOUTH SERVICE ROAD	15	13	0.70	0.90	0.63	0.63	134.8	0.236	0.302	0.302	0.538	381.2	0.50	675	0.594	1.66	10.00	3.82	13.82	91%
EXT 3	STREET A	EXT 3	13	0.13	0.90	0.12	0.12	315.3	0.102			0.102									
BLK 1	STREET A	BLK1	13	2.42	0.90	2.18	2.18	134.8	0.815			0.815	11.4	0.50	825	1.015	1.90	10.00	0.10	10.10	80%
8	STREET A	13	11	0.35	0.90	0.32	3.24	112.2	1.009	0.502	0.804	1.814	174.4	0.25	900x1800 (BOX)	2.792	1.72	13.82	1.69	15.51	65%
11	STREET A	11	EX13	0.01	0.90	0.01	3.25	104.6	0.944		0.804	1.748	20.1	0.25	900x1800 (BOX)	2.792	1.72	15.51	0.19	15.71	63%

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URBANTECH®

STORM SEWER DESIGN SHEET

100 year capture (Davis)

420 SOUTH SERVICE ROAD

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 23-307
Date: 23-Oct-25
Designed by: SR
Checked by: RM

DESIGN CRITERIA

Min. Diameter =	300	mm	Rainfall Intensity =	A / (Tc+B)^c
Mannings 'n'=	0.013			
Starting Tc =	10	min	A =	2150
			B =	5.7
Factor of Safety =	5	%	c =	0.861

NOMINAL PIPE SIZE USED

	STREET	FROM MH	TO MH	AREA (ha)	RUNOFF COEFFICIENT "R"	'AR'	ACCUM. 'AR'	RAINFALL INTENSITY (mm/hr)	FLOW (m3/s)	CONSTANT FLOW (m3/s)	ACCUM. CONSTANT FLOW (m3/s)	TOTAL FLOW (m3/s)	LENGTH (m)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (m3/s)	FULL FLOW VELOCITY (m/s)	INITIAL Tc (min)	TIME OF CONCENTRATION (min)	ACC. TIME OF CONCENTRATION (min)	PERCENT FULL (%)
9	SOUTH SERVICE ROAD	15	13	0.70	0.90	0.63	0.63	200.8	0.351	0.302	0.302	0.654	381.2	0.50	675	0.594	1.66	10.00	3.82	13.82	110%
EXT 3	STREET A	EXT 3	13	0.13	0.90	0.12	0.12	480.4	0.156			0.156									
BLK 1	STREET A	BLK1	13	2.42	0.90	2.18	2.18	200.8	1.215			1.215	11.4	0.50	825	1.015	1.90	10.00	0.10	10.10	120%
8	STREET A	13	11	0.35	0.90	0.32	3.24	166.4	1.498	0.502	0.804	2.302	174.4	0.25	900x1800 (BOX)	2.792	1.72	13.82	1.69	15.51	82%
11	STREET A	11	EX13	0.01	0.90	0.01	3.25	155.0	1.399		0.804	2.203	20.1	0.25	900x1800 (BOX)	2.792	1.72	15.51	0.19	15.71	79%

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APPENDIX B2: SANITARY DEMAND CALCULATIONS AND SANITARY DESIGN SHEETS (PHASE 1 AND ULTIMATE)

URBANTECH®

SANITARY SEWER DESIGN SHEET

Phase 1

420 SOUTH SERVICE ROAD

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 23-307
Date: 23-Oct-25
Designed by: SR
Checked by: RM

DESIGN CRITERIA

Min Diameter =	200	mm	Avg. Domestic Flow =	275.0	l/c/d
Mannings 'n'=	0.013		Infiltration =	0.286	l/s/ha
Min. Velocity =	0.6	m/s	Max. Peaking Factor =	4.50	
Max. Velocity =	3.0	m/s	Min. Peaking Factor=	2.00	
Factor of Safety =	20	%			

NOMINAL PIPE SIZE USED

RESIDENTIAL										COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
STREET	FROM MH	TO MH	AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (p/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
STREET A	BLK1A	8A	0.52	0.52				756	756							0.1	756	3.88	9.3			9.5	1.00	250	59.5	1.2	0.9	16%
STREET A	8A	7A	0.08	0.60					756							0.2	756	3.88	9.3			9.5	3.00	300	167.5	2.4	1.3	6%
DAVIS ROAD	7A	EX.5		0.60					756							0.2	756	3.88	9.3			9.5	0.30	300	53.0	0.7	0.6	18%
DAVIS ROAD	EX.5	EX.12	4.15	4.75		125		519	1275							1.4	1275	3.73	15.1			16.5	0.67	300	79.2	1.1	0.9	21%
DAVIS ROAD	EX.12	EX.17	1.96	6.71		125		245	1520							1.9	1520	3.68	17.8			19.7	0.29	300	52.1	0.7	0.7	38%
DAVIS ROAD	EX.17	10A	0.45	7.16		125		57	1577							2.0	1577	3.66	18.4			20.4	0.48	300	67.0	0.9	0.8	31%
DAVIS ROAD	10A	9A		7.16					1577							2.0	1577	3.66	18.4			20.4	1.00	300	96.7	1.4	1.1	21%
DAVIS ROAD	9A	5		7.16					1577							2.0	1577	3.66	18.4			20.4	0.50	525	304.1	1.4	0.8	7%

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URBANTECH®

SANITARY SEWER DESIGN SHEET

420 SOUTH SERVICE ROAD

REGIONAL MUNICIPALITY OF HALTON

PROJECT DETAILS

Project No: 23-307
Date: 23-Oct-25
Designed by: SR
Checked by: RM

DESIGN CRITERIA

Min Diameter =	200	mm	Avg. Domestic Flow =	275.0	l/c/d
Mannings 'n'=	0.013		Infiltration =	0.286	l/s/ha
Min. Velocity =	0.6	m/s	Max. Peaking Factor =	4.50	
Max. Velocity =	3.0	m/s	Min. Peaking Factor=	2.00	
Factor of Safety =	20	%			

NOMINAL PIPE SIZE USED

			RESIDENTIAL							COMMERCIAL/INDUSTRIAL/INSTITUTIONAL						FLOW CALCULATIONS							PIPE DATA					
STREET	FROM MH	TO MH	AREA (ha)	ACC. AREA (ha)	UNITS (#)	DENSITY (P/ha)	DENSITY (P/unit)	POP	ACCUM. RES. POP.	AREA (ha)	ACC. AREA (ha)	EQUIV. POP. (p/ha)	FLOW RATE (l/s/ha)	EQUIV. POP.	ACCUM. EQUIV. POP.	INFILTRATION (l/s)	TOTAL ACCUM. POP.	PEAKING FACTOR	RES. FLOW (l/s)	COMM. FLOW (l/s)	ACCUM. COMM. FLOW (l/s)	TOTAL FLOW (l/s)	SLOPE (%)	PIPE DIAMETER (mm)	FULL FLOW CAPACITY (l/s)	FULL FLOW VELOCITY (m/s)	ACTUAL VELOCITY (m/s)	PERCENT FULL (%)
STREET A	BLK1A	8A	2.42	2.42				3431	3431							0.7	3431	3.39	37.0			37.7	1.00	250	59.5	1.2	1.3	63%
STREET A	8A	7A	0.08	2.50					3431							0.7	3431	3.39	37.0			37.8	3.00	300	167.5	2.4	1.9	23%
DAVIS ROAD	7A	FUT.3A		2.50					3431							0.7	3431	3.39	37.0			37.8	0.30	300	53.0	0.7	0.8	71%
DAVIS ROAD	FUT.BLK4A	FUT.5A	1.46	1.46				1954	1954							0.4	1954	3.59	22.3			22.8	1.00	250	59.5	1.2	1.1	38%
DAVIS ROAD	FUT.BLK2A	FUT.5A	2.13	2.13				3332	3332							0.6	3332	3.40	36.1			36.7	1.00	250	59.5	1.2	1.3	62%
DAVIS ROAD	FUT.5A	FUT.4A	0.08	3.67					5286							1.0	5286	3.22	54.2			55.3	0.50	375	124.0	1.1	1.1	45%
DAVIS ROAD	FUT.BLK3A	FUT.4A	1.64	1.64				2017	2017							0.5	2017	3.58	23.0			23.5	1.00	200	32.8	1.0	1.1	72%
DAVIS ROAD	FUT.4A	FUT.3A	0.44	5.75					7303							1.6	7303	3.09	71.8			73.4	0.50	375	124.0	1.1	1.1	59%
DAVIS ROAD	FUT.3A	FUT.89	6.11	14.36		2000		12220	22954							4.1	22954	2.59	189.4			193.5	0.50	525	304.1	1.4	1.5	64%
FUT. CROSS AVENUE	FUT.93	FUT.92	0.94	0.94												0.3						0.3	0.30	200	18.0	0.6	0.2	1%
SOUTH SERVICE ROAD E	FUT.92	FUT.91		0.94												0.3						0.3	0.30	200	18.0	0.6	0.2	1%
SOUTH SERVICE ROAD E	FUT.91	FUT.90		0.94												0.3						0.3	0.30	200	18.0	0.6	0.2	1%
SOUTH SERVICE ROAD E	FUT.90	FUT.89		0.94												0.3						0.3	0.30	200	18.0	0.6	0.2	1%
DAVIS ROAD	FUT.89	9A		15.30					22954							4.4	22954	2.59	189.4			193.8	0.50	525	304.1	1.4	1.5	64%
DAVIS ROAD	10A	9A	0.45	0.45		2000		900	900							0.1	900	3.83	11.0			11.1	1.00	300	96.7	1.4	0.9	11%
DAVIS ROAD	9A	FUT.5		15.75					23854							4.5	23854	2.58	195.6			200.1	0.50	525	304.1	1.4	1.5	66%

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WASTEWATER GENERATION - PHASE 1 - POPULATION ESTIMATE

Project Name: GE Lands (420 South Service Rd)
Municipality: Town of Oakville
Project No.: 23-307

Prepared by: PS
Checked by: KC
Date: 16-Oct-25

Persons Per Unit (Note 2)

Apartments - Less Than 2-Bed	1.355	persons per unit
Apartments - Greater Than 2-Bed	1.831	persons per unit

Retail (Note 3)

Square Foot per Employee	403	sq. ft. / employee
	37	sq. m / employee

Site Population Estimate

	1-Bed Units	2+ Bed Units	Total Units	Population Residential	Non-Res GCA (m^2)
Total Plan Area					
Block 1 Tower C	293	196	489	756	804
TOTAL	**293**	**196**	**489**	**756**	**804**

Notes:

1. Proposed Unit Count (by Block) by Graziani and Corazza Architects (Oct 15, 2025 drawing set)
2. Persons Per Unit from Halton Region 2022 DC Background Study Table A-4 (Housing Occupancy Rates) - Built Boundary
3. Square foot per employee (Commercial) from Halton Region 2022 DC Background Study Table A-8 (Employment - Total Floor Area Forecast)

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WASTEWATER GENERATION CALCULATIONS - PHASE 1

Project Name: GE Lands (420 South Service Rd)
Municipality: Town of Oakville
Project No.: 23-307

Prepared by: PS
Checked by: KC
Date: 16-Oct-25

Sanitary Flow Calculations

Average Dry Weather Flow

Population =	756	persons, from Site Statistics
Per Capita WW Generation Rate (Res) =	215	L/person/day
Average Dry Weather Flow =	1.88	L/s
Employment =	21	employees, from Site Statistics
Per Capita WW Generation Rate (Emp) =	185	L/employee/day
Average Dry Weather Flow =	0.05	L/s
Total Average Dry Weather Flow =	1.93	L/s

Peaking Factor (Modified Harmon)

Kav =	1.0	
Peaking Factor =	3.87	

Inflow /Infiltration

Factor =	0.286	L/ha/s
Area =	2.400	ha
I/I =	0.686	L/s

Design Flow = 8.14 L/s

Notes:
1. Wastewater generation per Region of Halton Water and Wastwater Linear Design Manual (2024)

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WASTEWATER GENERATION - ULTIMATE CONDITIONS - POPULATION ESTIMATE

Project Name: GE Lands (420 South Service Rd)
Municipality: Town of Oakville
Project No.: 23-307

Prepared by: PS
Checked by: KC
Date: 16-Oct-25

Persons Per Unit (Note 2)

Apartments - Less Than 2-Bed	1.355	persons per unit
Apartments - Greater Than 2-Bed	1.831	persons per unit

Retail (Note 3)

Square Foot per Employee	403	sq. ft. / employee
	37	sq. m / employee

Site Population Estimate

	1-Bed Units	2+ Bed Units	Total Units	Population Residential	Non-Res GCA (m^2)
Total Plan Area					
Block 1	1332	888	2220	3431	1503
Block 2	1294	863	2157	3334	1514
Block 3	783	523	1306	2019	3293
Block 4	758	505	1263	1952	2808
TOTAL	**4,167**	**2,779**	**6,946**	**10,735**	**9,117**

Notes:
1. Proposed Unit Count (by Block) by Graziani and Corazza Architects (Oct 15, 2025 drawing set)
2. Persons Per Unit from Halton Region 2022 DC Background Study Table A-4 (Housing Occupancy Rates) - Built Boundary
3. Square foot per employee (Commercial) from Halton Region 2022 DC Background Study Table A-8 (Employment - Total Floor Area Forecast)

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WASTEWATER GENERATION CALCULATIONS - ULTIMATE CONDITIONS

Project Name: GE Lands (420 South Service Rd)
Municipality: Town of Oakville
Project No.: 23-307

Prepared by: PS
Checked by: KC
Date: 16-Oct-25

Sanitary Flow Calculations

Average Dry Weather Flow

Population =	10735	persons, from Site Statistics
Per Capita WW Generation Rate (Res) =	215	L/person/day
Average Dry Weather Flow =	26.71	L/s
Employment =	244	employees, from Site Statistics
Per Capita WW Generation Rate (Emp) =	185	L/employee/day
Average Dry Weather Flow =	0.52	L/s
Total Average Dry Weather Flow =	27.23	L/s

Peaking Factor (Modified Harmon)

Kav =	1.0	
Peaking Factor =	2.91	

Inflow /Infiltration

Factor =	0.286	L/ha/s
Area =	10.900	ha
I/I =	3.117	L/s

Design Flow = 82.49 L/s

Notes:
1. Wastewater generation per Region of Halton Water and Wastwater Linear Design Manual (2024)

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APPENDIX B3: DOMESTIC WATER DEMAND CALCULATIONS

WATER DEMAND - PHASE 1 - POPULATION ESTIMATE

Project Name: GE Lands (420 South Service Road)
Municipality: Town of Oakville
Project No.: 23-307

Prepared by: PS
Checked by: KC
Date: 16-Oct-25

Persons Per Unit (Note 2)

Apartments - Less Than 2-Bed	1.355	persons per unit
Apartments - Greater Than 2-Bed	1.831	persons per unit

Retail (Note 3)

Square Foot per Employee	403	sq. ft. / employee
	37	sq. m / employee

Site Population Estimate

	1-Bed Units	2-Bed Units	Total Units	Population Residential	Non-Res GCA (m^2)
Total Plan Area					
Block 1 - Tower C	293	196	489	756	804
TOTAL	**293**	**196**	**489**	**756**	**804**

Notes:
1. Proposed Unit Count (by Block) by Graziani and Corazza Architects (Oct 15, 2025 drawing set)
2. Persons Per Unit from Halton Region 2022 DC Background Study Table A-4 (Housing Occupancy Rates) - Built Boundary
3. Square foot per employee (Commercial) from Halton Region 2022 DC Background Study Table A-8 (Employment - Total Floor Area Forecast)

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WATER DEMAND CALCULATIONS - PHASE 1

Project Name: GE Lands (420 South Service Road)
Municipality: Town of Oakville
Project No.: 23-307

Prepared by: PS
Checked by: KC
Date: 16-Oct-25

Domestic Flow Calculations

Average Day Demand

Population =	756	persons, from Site Statistics
Per Capital Water Demand (Res) =	265	L/person/day
Average Water Demand =	2.32	L/s
Employment =	21	employees, from Site Statistics
Per Capital Water Demand (Emp) =	225	L/employee/day
Average Water Demand =	0.06	L/s
Total Average Day Water Demand =	2.37	L/s

Max Day Demand

Max Day Factor (Residential) =	2.25	peaking factor
Max Day Demand (Residential) =	5.22	L/s
Max Day Factor (Employment) =	2.25	peaking factor
Max Day Demand (Employment) =	0.13	L/s
Total Max Day Water Demand =	5.34	L/s

Max Hour Demand

Peak Hour Factor (Residential) =	4.0	residential peaking factor
Peak Hour Demand (Residential) =	9.27	L/s
Peak Hour Factor (Employment) =	2.25	employment peaking factor
Peak Hour Demand (Employment) =	0.13	L/s
Total Peak Hour Water Demand =	9.40	L/s

Notes:
1. Water usage per Region of Halton Water and Wastwater Linear Design Manual (2024)

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WATER DEMAND - ULTIMATE CONDITIONS - POPULATION ESTIMATE

Project Name: GE Lands (420 South Service Road)
Municipality: Town of Oakville
Project No.: 23-307

Prepared by: PS
Checked by: KC
Date: 16-Oct-25

Persons Per Unit (Note 2)

Apartments - Less Than 2-Bed	1.355	persons per unit
Apartments - Greater Than 2-Bed	1.831	persons per unit

Retail (Note 3)

Square Foot per Employee	403	sq. ft. / employee
	37	sq. m / employee

Site Population Estimate

	1-Bed Units	2-Bed Units	Total Units	Population Residential	Non-Res GCA (m^2)
Total Plan Area					
Block 1	1332	888	2220	3431	1503
Block 2	1294	863	2157	3334	1514
Block 3	783	523	1306	2019	3293
Block 4	758	505	1263	1952	2808
TOTAL	**4,167**	**2,779**	**6,946**	**10,735**	**9,117**

Notes:
1. Proposed Unit Count (by Block) by Graziani and Corazza Architects (Oct 15, 2025 drawing set)
2. Persons Per Unit from Halton Region 2022 DC Background Study Table A-4 (Housing Occupancy Rates) - Built Boundary
3. Square foot per employee (Commercial) from Halton Region 2022 DC Background Study Table A-8 (Employment - Total Floor Area Forecast)

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WATER DEMAND CALCULATIONS - ULTIMATE CONDITION

Project Name: GE Lands (420 South Service Road)
Municipality: Town of Oakville
Project No.: 23-307

Prepared by: PS
Checked by: KC
Date: 16-Oct-25

Domestic Flow Calculations

Average Day Demand

Population =	10735	persons, from Site Statistics
Per Capital Water Demand (Res) =	265	L/person/day
Average Water Demand =	32.92	L/s
Employment =	244	employees, from Site Statistics
Per Capital Water Demand (Emp) =	225	L/employee/day
Average Water Demand =	0.63	L/s
Total Average Day Water Demand =	33.56	L/s

Max Day Demand

Max Day Factor (Residential) =	2.25	peaking factor
Max Day Demand (Residential) =	74.08	L/s
Max Day Factor (Employment) =	2.25	peaking factor
Max Day Demand (Employment) =	1.43	L/s
Total Max Day Water Demand =	75.51	L/s

Max Hour Demand

Peak Hour Factor (Residential) =	4.0	residential peaking factor
Peak Hour Demand (Residential) =	131.70	L/s
Peak Hour Factor (Employment) =	2.25	employment peaking factor
Peak Hour Demand (Employment) =	1.43	L/s
Total Peak Hour Water Demand =	133.12	L/s

Notes:
1. Water usage per Region of Halton Water and Wastwater Linear Design Manual (2024)

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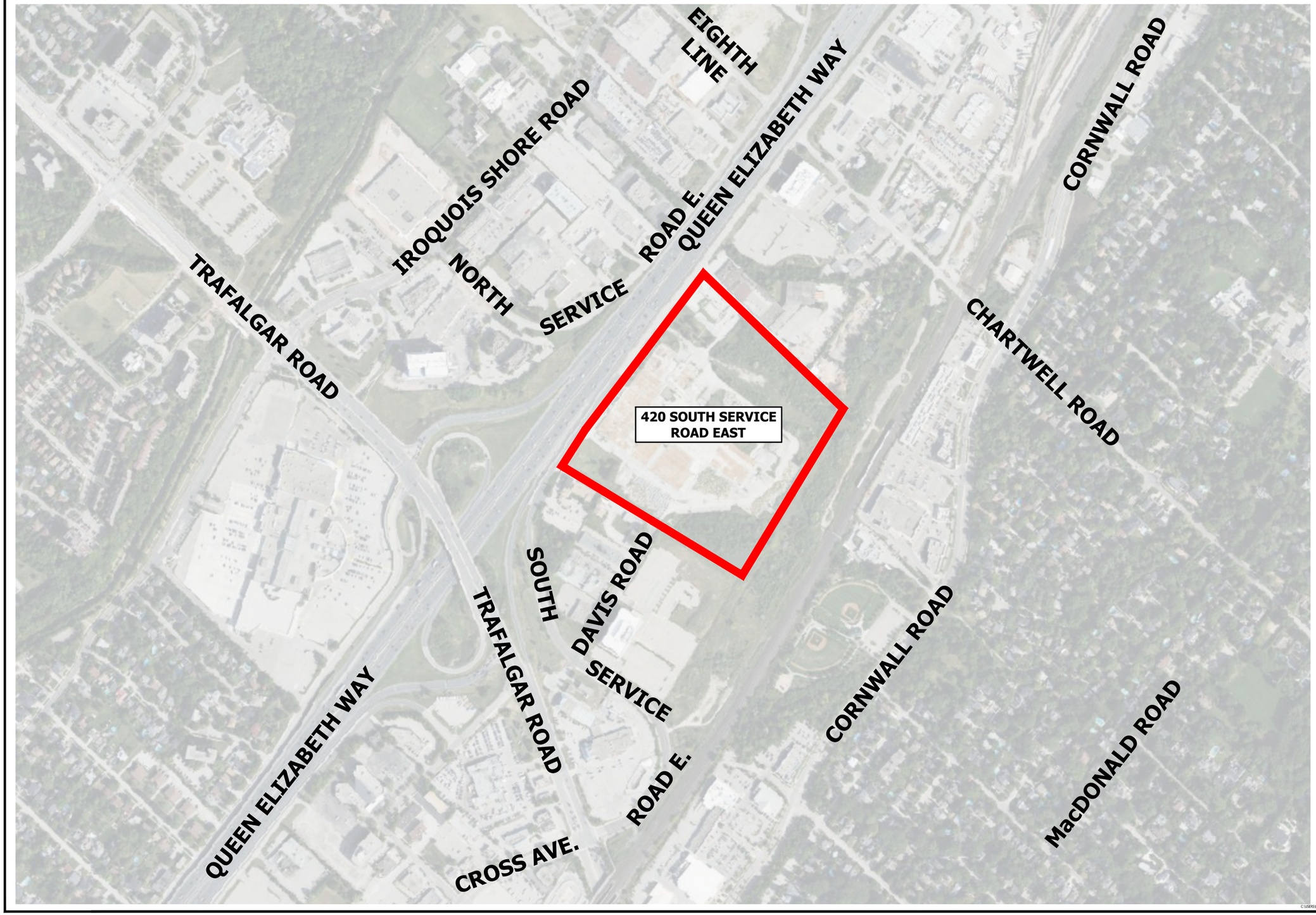
APPENDIX C:
Drawings and Figures



N

LEGEND

LIMIT OF DEVELOPMENT

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
00820208149	606389.733	4812958.951	111.672
00820208150	606731.198	4813293.073	107.023

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420 SOUTH SERVICE ROAD EAST
TOWN OF OAKVILLE

SITE LOCATION PLAN

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:6000	**SLP-1**

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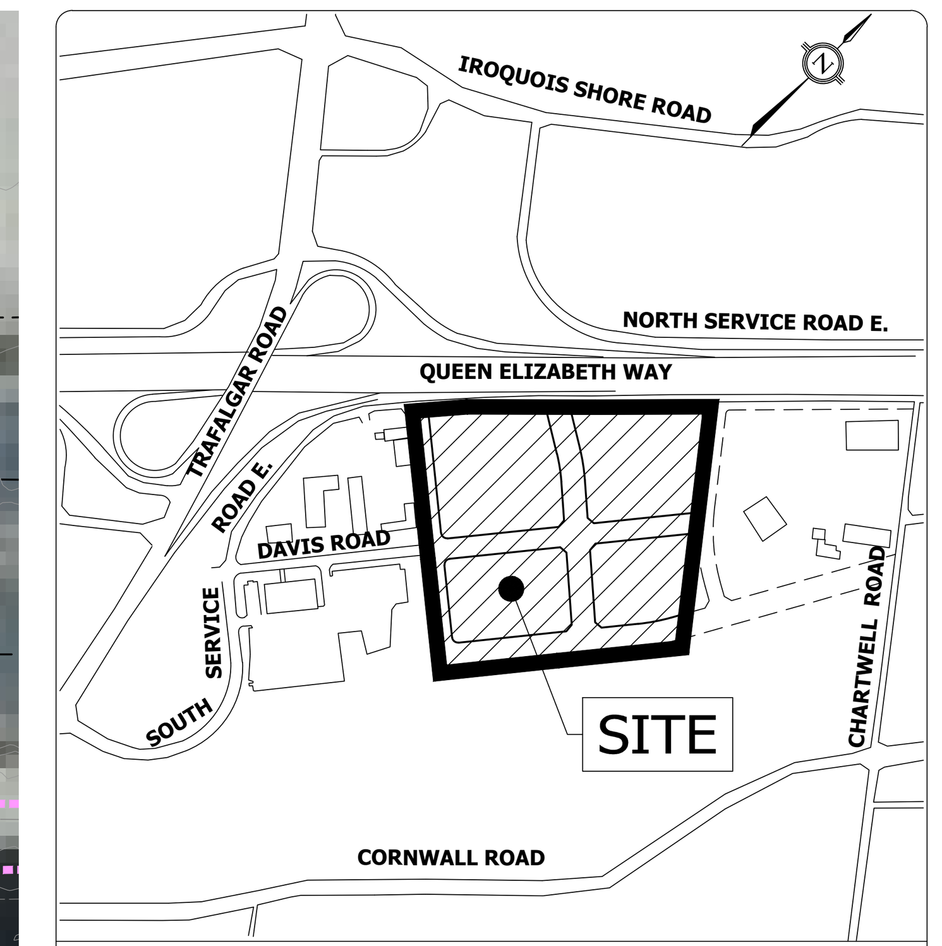

KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- EXISTING STORM MANHOLE ID / EXISTING GROUND ELEVATION / EXISTING SEWER INVERTS
- EXISTING SANITARY MANHOLE ID / EXISTING GROUND ELEVATION / EXISTING SEWER INVERTS
- EXISTING CONTOUR & ELEVATION
- EXISTING OVERLAND FLOW ROUTE
- EXISTING WATERCOURSE
- EXISTING CATCH BASIN
- EXISTING TREES
- FUTURE / EXISTING DEVELOPMENT LANDS

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
00820208149	606389.733	4812958.951	111.672
00820208150	606731.198	4813293.073	107.023

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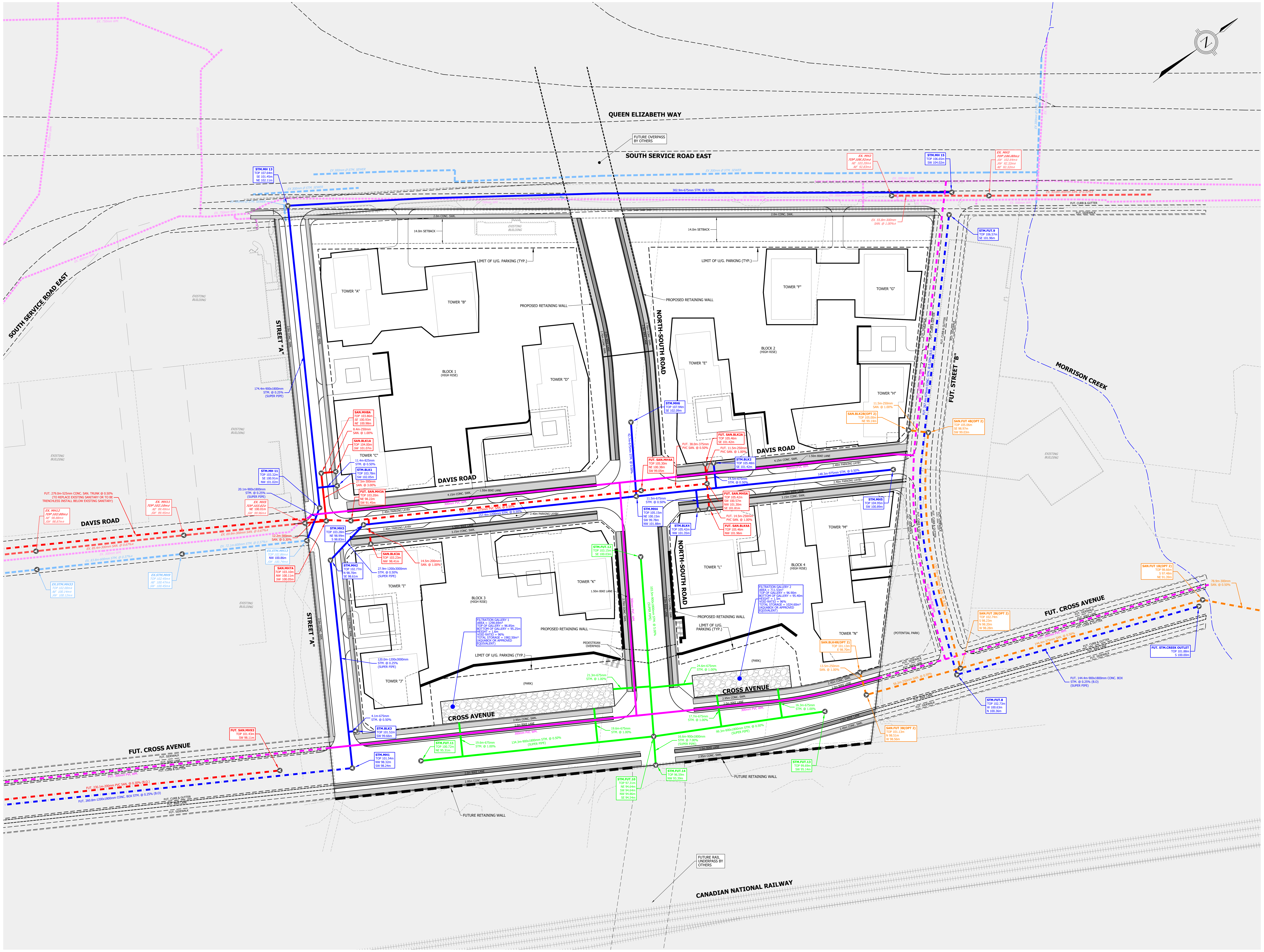
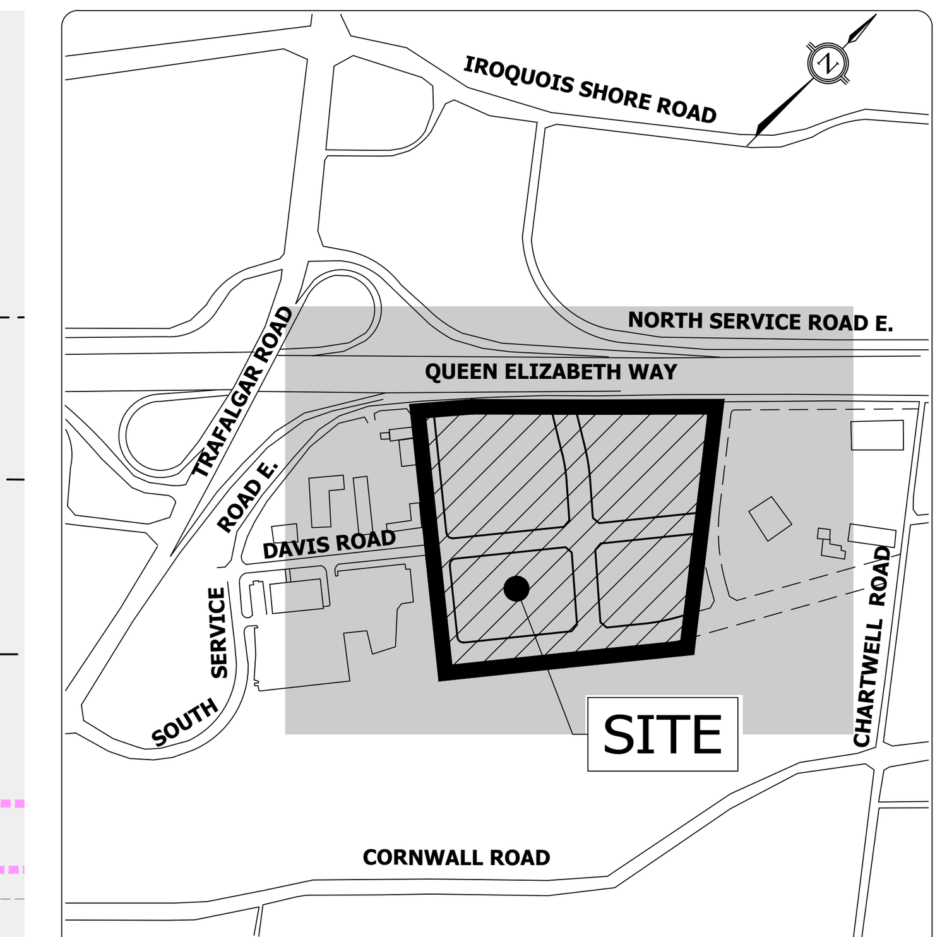
420 SOUTH SERVICE ROAD EAST
TOWN OF OAKVILLE

EXISTING CONDITIONS PLAN

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	EXC-1





KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- PROPOSED STORM SEWER
- PROPOSED PUMPED STORM SYSTEM
- PROPOSED SANITARY SEWER
- PROPOSED WATERMAIN
- ALTERNATIVE SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- FUTURE STORM SEWER
- FUTURE SANITARY SEWER
- FUTURE WATERMAIN
- EXISTING CATCH BASIN
- MANHOLE ID / GROUND ELEVATION / SEWER INVERTS
- MANHOLE ID / GROUND ELEVATION / SEWER INVERTS
- MANHOLE ID / GROUND ELEVATION / SEWER INVERTS
- FUTURE / EXISTING DEVELOPMENT LANDS

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
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00820208150	606731.198	4813293.073	107.023

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TOWN OF OAKVILLE

SERVICING PLAN
(PART 1 OF 2)

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	**SER-1**

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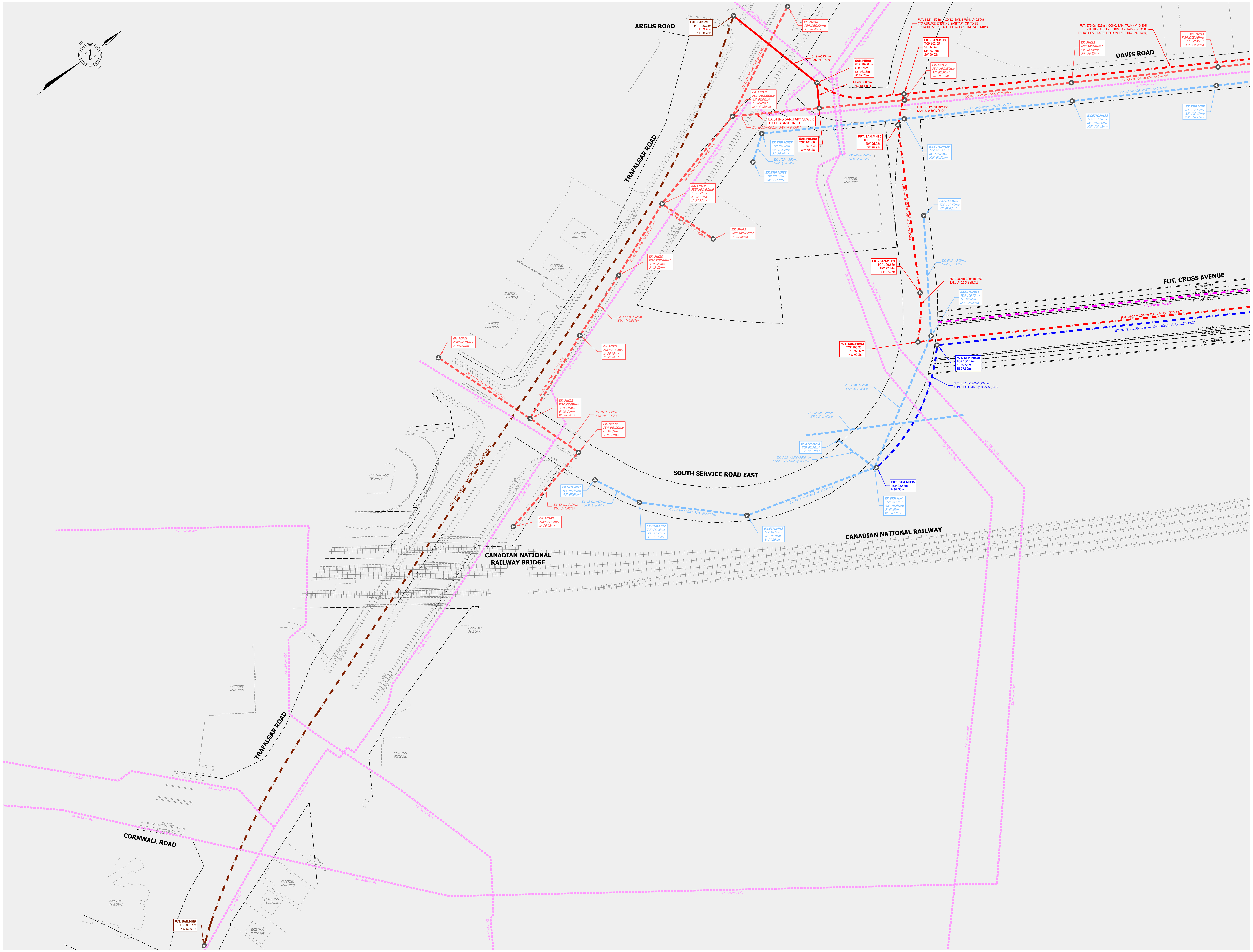

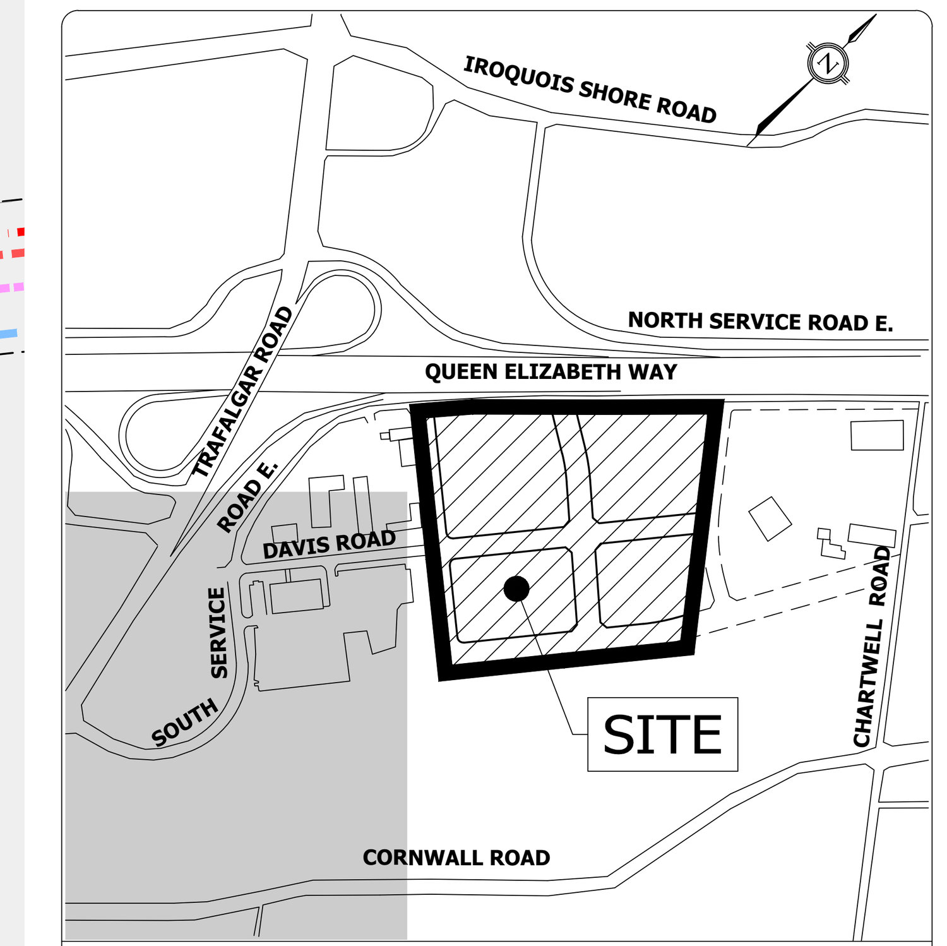

KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- PROPOSED STORM SEWER
- PROPOSED PUMPED STORM SYSTEM
- PROPOSED SANITARY SEWER
- PROPOSED WATERMAIN
- ALTERNATIVE SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- FUTURE STORM SEWER
- FUTURE SANITARY SEWER
- FUTURE WATERMAIN
- EXISTING CATCH BASIN
- STM.MH2 / TOP 102.77m / N 98.79m / SE 98.60m — MANHOLE ID, GROUND ELEVATION, SEWER INVERTS
- SAN.MH7A / TOP 103.10m / NW 100.10m / SW 100.05m — MANHOLE ID, GROUND ELEVATION, SEWER INVERTS
- SAN.MH5A(OPT 2) / TOP 105.42m / SW 100.57m / NW 101.30m / SE 101.85m — MANHOLE ID, GROUND ELEVATION, SEWER INVERTS
- FUTURE / EXISTING DEVELOPMENT LANDS

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
00820208149	606389.733	4812958.951	111.672
00820208150	606731.198	4813293.073	107.023

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SERVICING PLAN

(PART 2 OF 2)

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	SER-2

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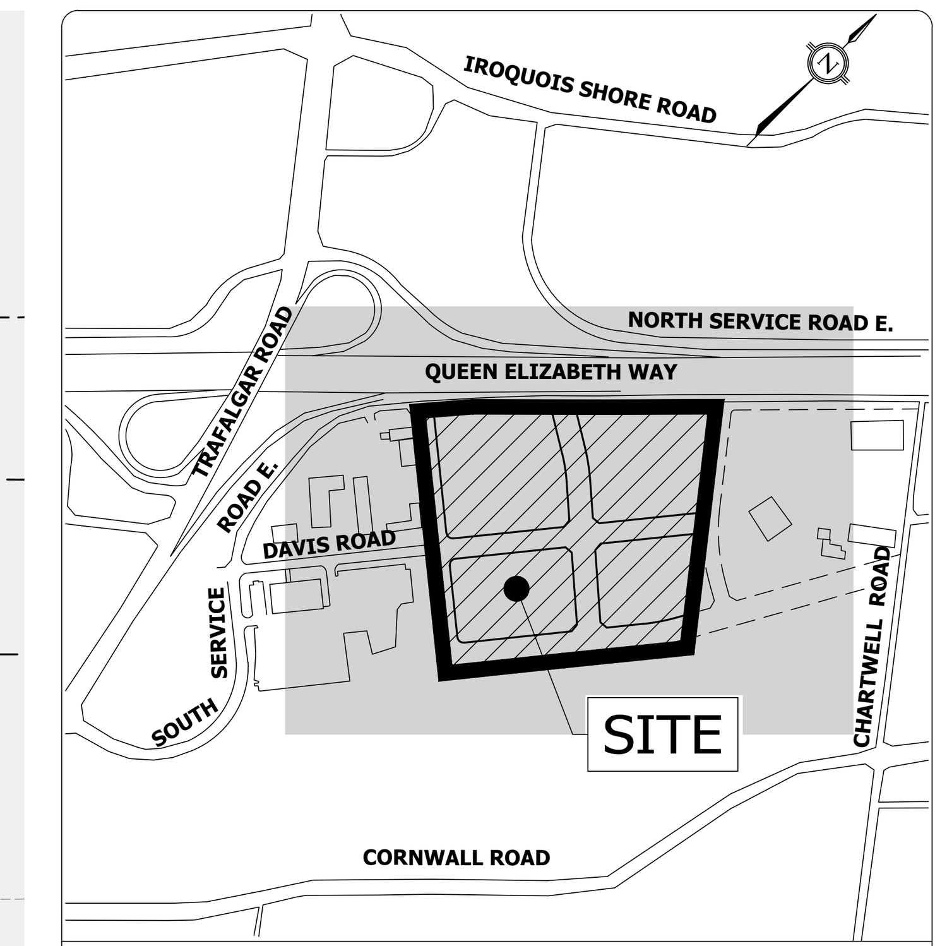

KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- FUTURE SANITARY SEWER
- FUTURE SANITARY TRUNK SEWER
- ALTERNATIVE SANITARY SEWER
- MANHOLE ID / GROUND ELEVATION / SEWER INVERTS
- MANHOLE ID / GROUND ELEVATION / SEWER INVERTS
- BLK 1 / 2.42ha / 4511 — DRAINAGE AREA ID / DRAINAGE AREA (Ha.) / POPULATION
- EXT2 / 4.59ha / 9180 — EXISTING DRAINAGE AREA ID / EXISTING DRAINAGE AREA (Ha.) / EXISTING POPULATION
- SANITARY DRAINAGE BOUNDARY
- EXISTING SANITARY DRAINAGE BOUNDARY
- FUTURE PHASED DEVELOPMENT FOR SUBJECT LANDS
- FUTURE / EXISTING DEVELOPMENT LANDS

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
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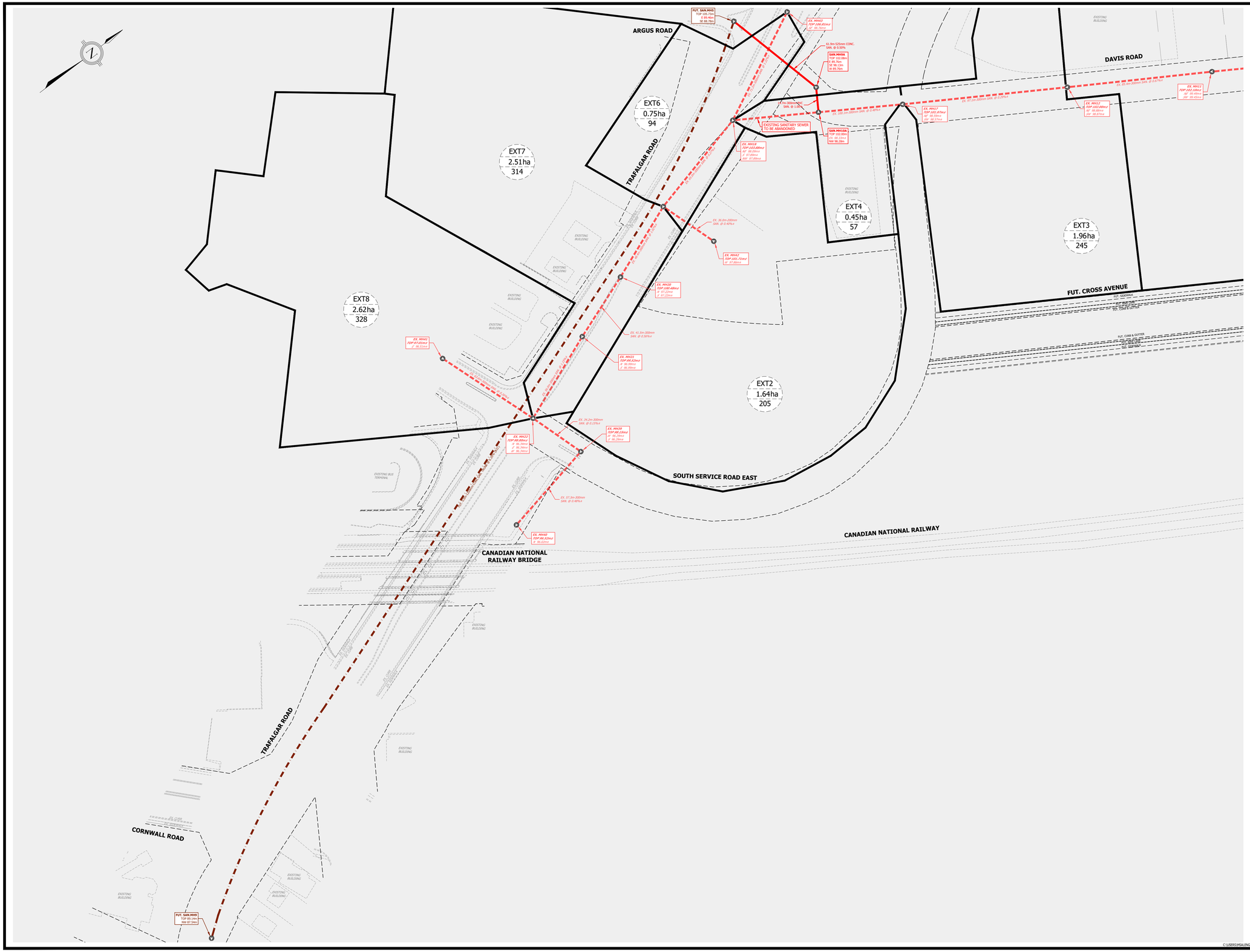
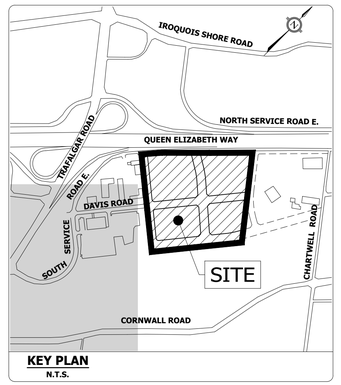
SANITARY DRAINAGE PLAN (PHASE 1)

(PART 1 OF 2)

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	SAN-1A





KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- FUTURE SANITARY SEWER
- FUTURE SANITARY TRUNK SEWER
- ALTERNATIVE SANITARY SEWER
- SAN.MH7A — MANHOLE ID; GROUND ELEVATION; SEWER INVERTS
- SAN.MH5A(OPT 1) — MANHOLE ID; GROUND ELEVATION; SEWER INVERTS
- BLK 1 / 2.42ha / 4511 — DRAINAGE AREA ID; DRAINAGE AREA (Ha.); POPULATION
- EXT2 / 4.59ha / 9180 — EXISTING DRAINAGE AREA ID; EXISTING DRAINAGE AREA (Ha.); EXISTING POPULATION
- SANITARY DRAINAGE BOUNDARY
- EXISTING SANITARY DRAINAGE BOUNDARY
- FUTURE PHASED DEVELOPMENT FOR SUBJECT LANDS
- FUTURE / EXISTING DEVELOPMENT LANDS

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
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00820208150	606731.198	4813293.073	107.023

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SANITARY DRAINAGE PLAN (PHASE 1)

(PART 2 OF 2)

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	SAN-2A

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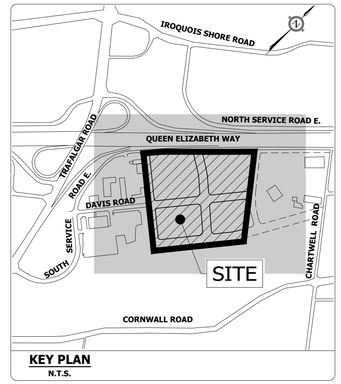

KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- FUTURE SANITARY SEWER
- FUTURE SANITARY TRUNK SEWER
- ALTERNATIVE SANITARY SEWER
- SAN.MH7A — MANHOLE ID; TOP 103.10m; NW 100.13m; SW 100.03m — GROUND ELEVATION; SEWER INVERTS
- SAN.MH5A(OPT 2) — MANHOLE ID; TOP 105.42m; NW 100.57m; SW 100.45m; NE 101.05m — GROUND ELEVATION; SEWER INVERTS
- BLK 1 / 2.42ha / 4511 — DRAINAGE AREA ID; DRAINAGE AREA (Ha.); POPULATION
- EXT2 / 4.59ha / 9180 — EXISTING DRAINAGE AREA ID; EXISTING DRAINAGE AREA (Ha.); EXISTING POPULATION
- SANITARY DRAINAGE BOUNDARY
- EXISTING SANITARY DRAINAGE BOUNDARY
- FUTURE PHASED DEVELOPMENT FOR SUBJECT LANDS
- FUTURE / EXISTING DEVELOPMENT LANDS

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

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SANITARY DRAINAGE PLAN (ULTIMATE)

(PART 1 OF 2)

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	**SAN-1**

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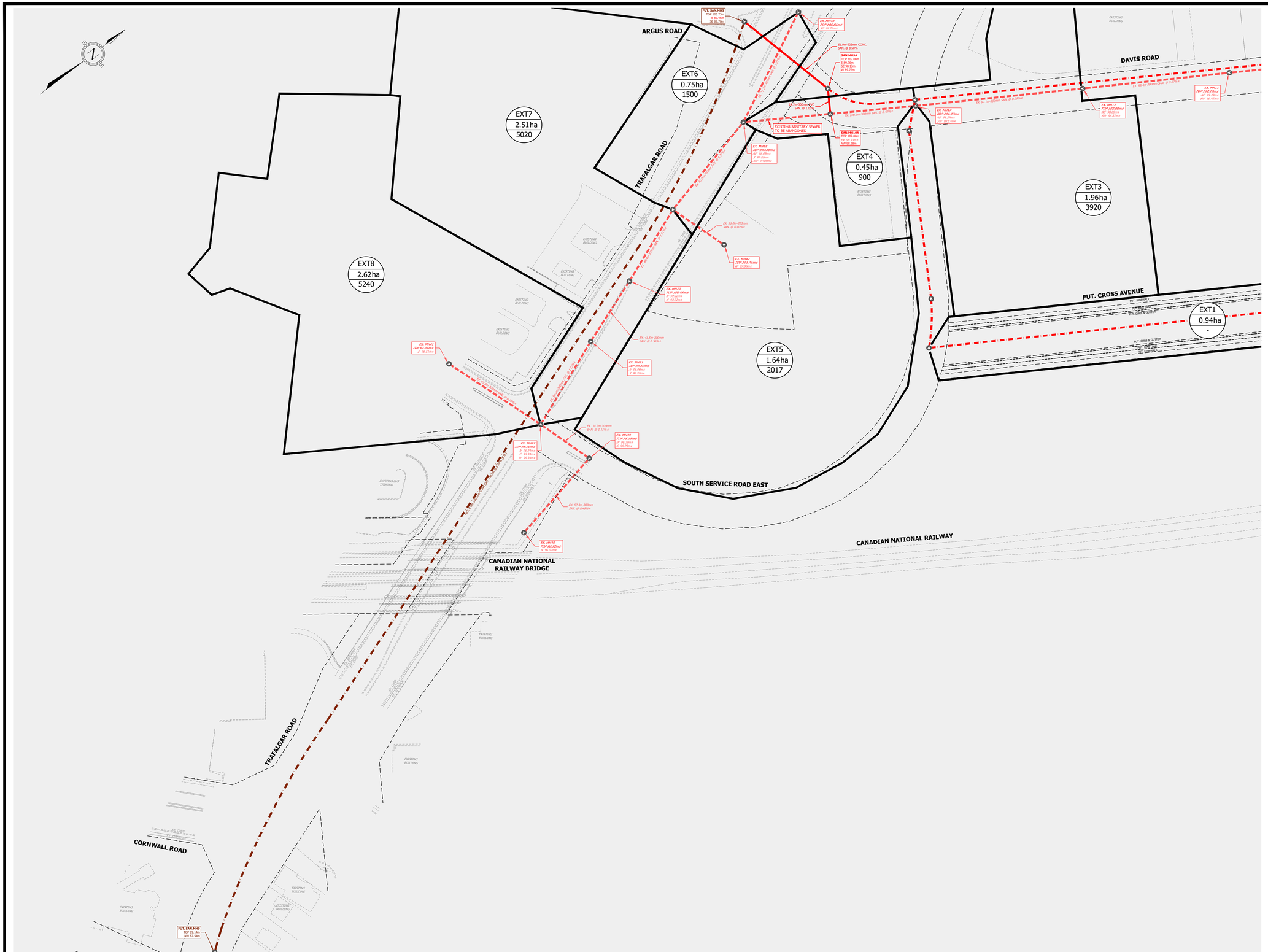

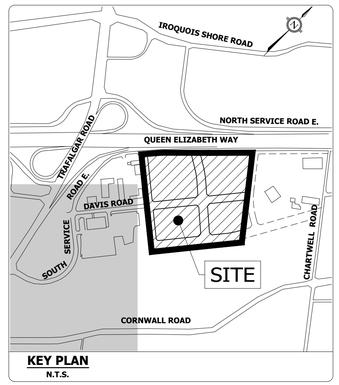

KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- FUTURE SANITARY SEWER
- FUTURE SANITARY TRUNK SEWER
- ALTERNATIVE SANITARY SEWER
- SAN.MH7A — MANHOLE ID; GROUND ELEVATION; SEWER INVERTS
- SAN.MH5A(OPT 1) — MANHOLE ID; GROUND ELEVATION; SEWER INVERTS
- BLK 1 / 2.42ha / 4511 — DRAINAGE AREA ID; DRAINAGE AREA (Ha.); POPULATION
- EXT2 / 4.59ha / 9180 — EXISTING DRAINAGE AREA ID; EXISTING DRAINAGE AREA (Ha.); EXISTING POPULATION
- SANITARY DRAINAGE BOUNDARY
- EXISTING SANITARY DRAINAGE BOUNDARY
- FUTURE PHASED DEVELOPMENT FOR SUBJECT LANDS
- FUTURE / EXISTING DEVELOPMENT LANDS

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
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00820208150	606731.198	4813293.073	107.023

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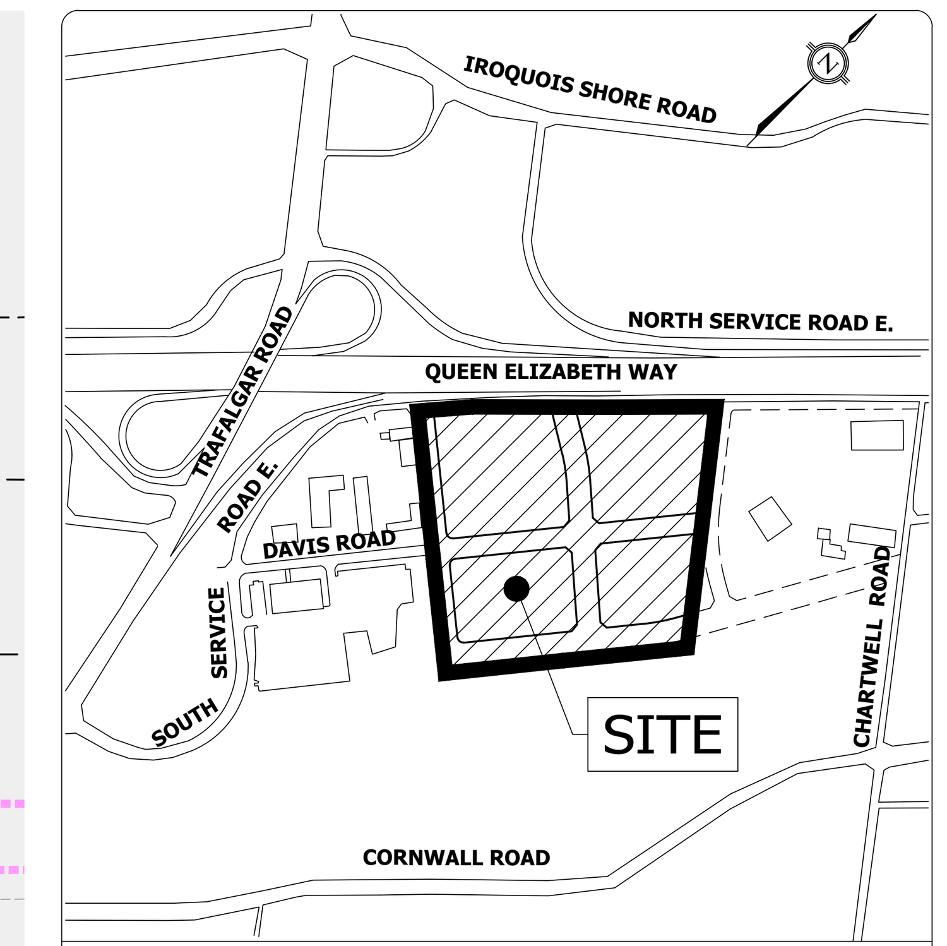
SANITARY DRAINAGE PLAN (ULTIMATE)
(PART 2 OF 2)

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	**SAN-2**



KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- PROPOSED WATERMAIN
- EXISTING WATERMAIN
- FUTURE WATERMAIN
- PHASE 1 DEVELOPMENT
- FUTURE / EXISTING DEVELOPMENT LANDS

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
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00820208150	606731.198	4813293.073	107.023

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WATERMAIN DISTRIBUTION PLAN

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	**WM-1**

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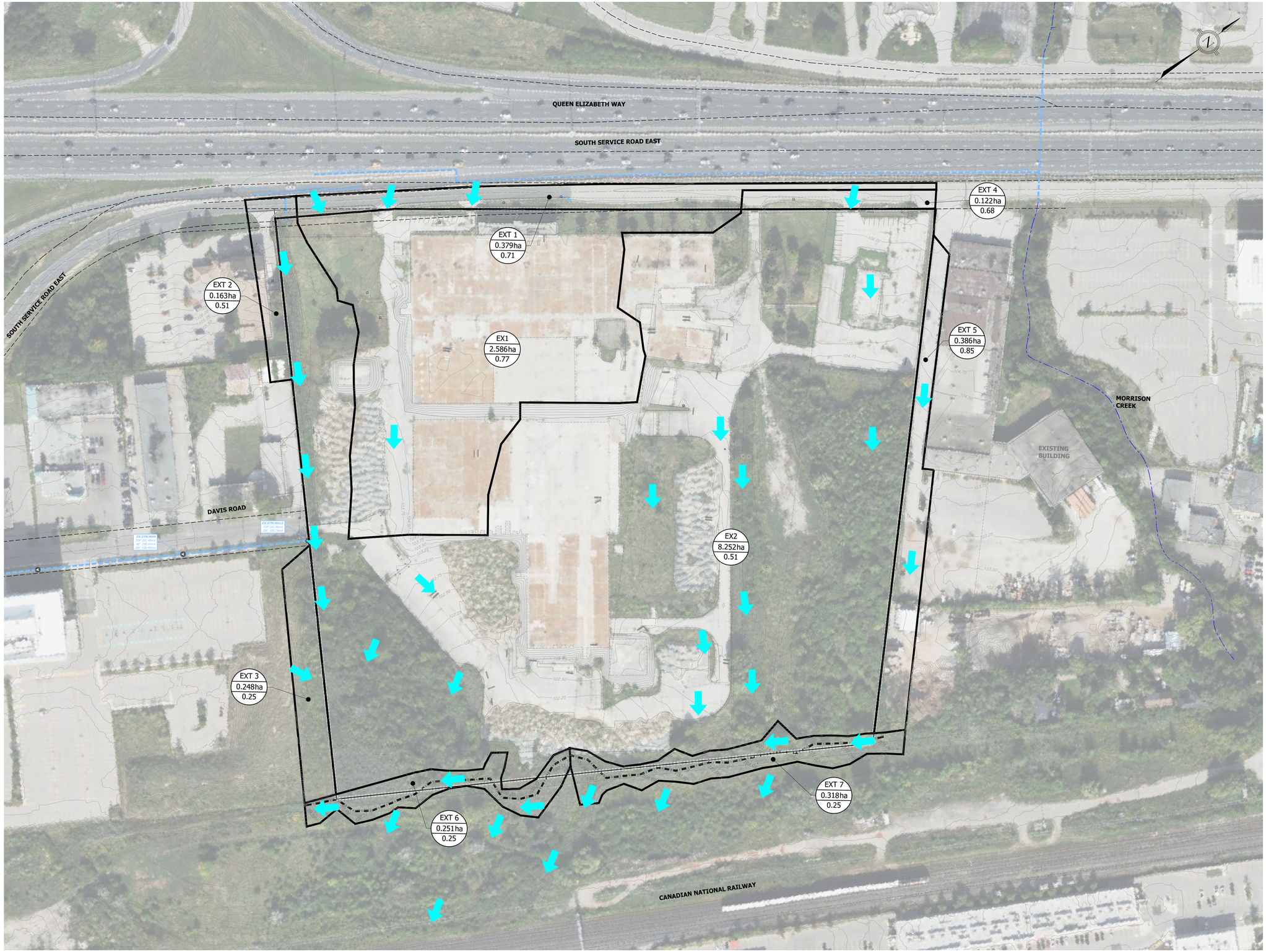

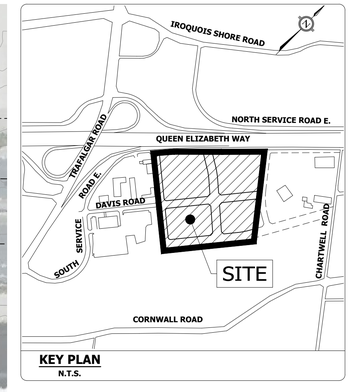

KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- EXISTING STORM SEWER
- EXISTING STORM MANHOLE ID
- EXISTING GROUND ELEVATION
- EXISTING SEWER INVERTS
- EXISTING AREA ID
- EXISTING DRAINAGE AREA (Ha.)
- EXISTING RUNOFF COEFFICIENT
- EXISTING CONTOUR & ELEVATION
- EXISTING OVERLAND FLOW ROUTE
- EXISTING CATCH BASIN
- EXISTING STORM DRAINAGE BOUNDARY
- EXISTING WATERCOURSE
- FUTURE / EXISTING DEVELOPMENT LANDS

BENCHMARK
ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
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PRE-DEVELOPMENT STORM DRAINAGE PLAN

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	**STM-1**

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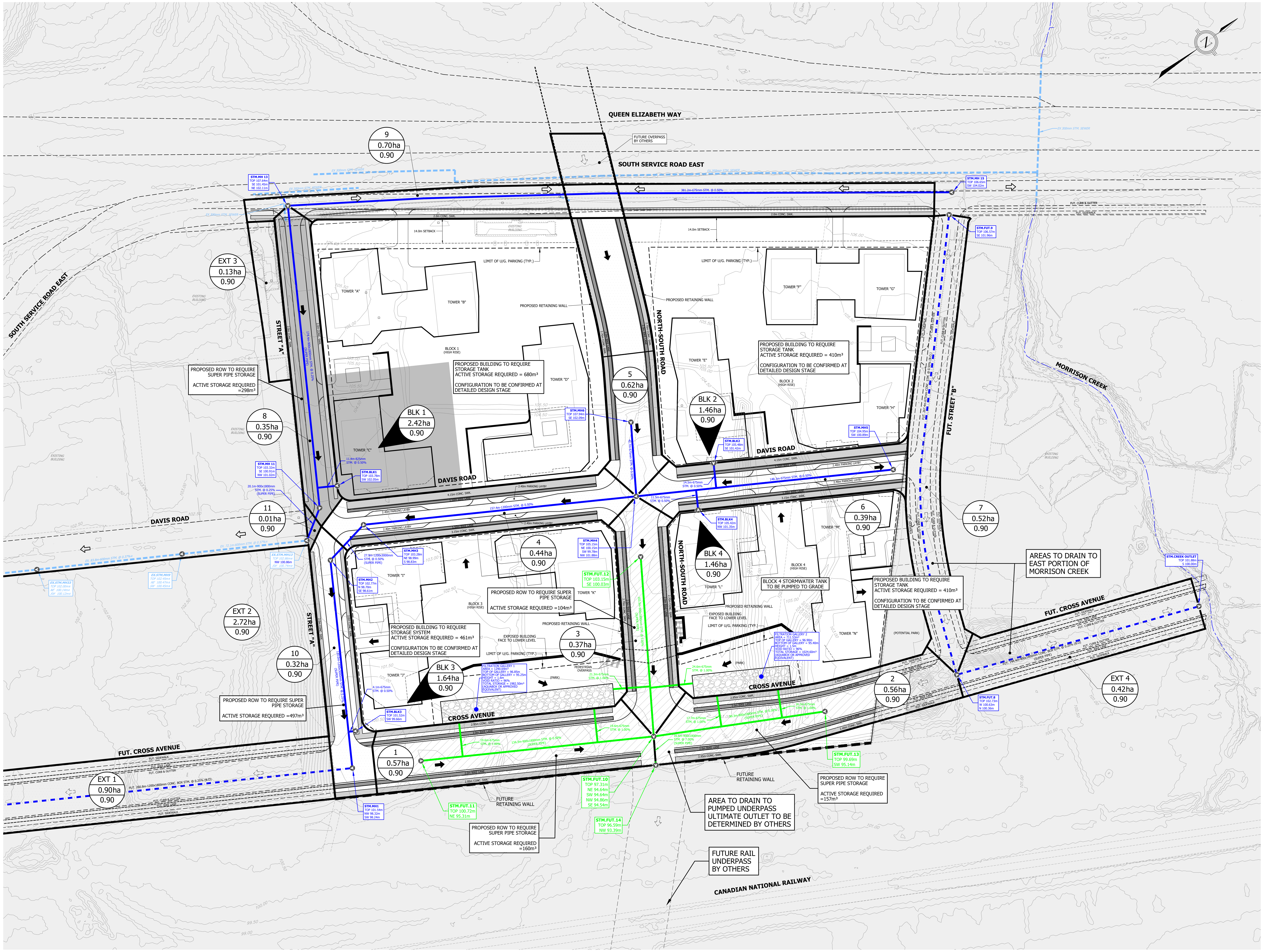

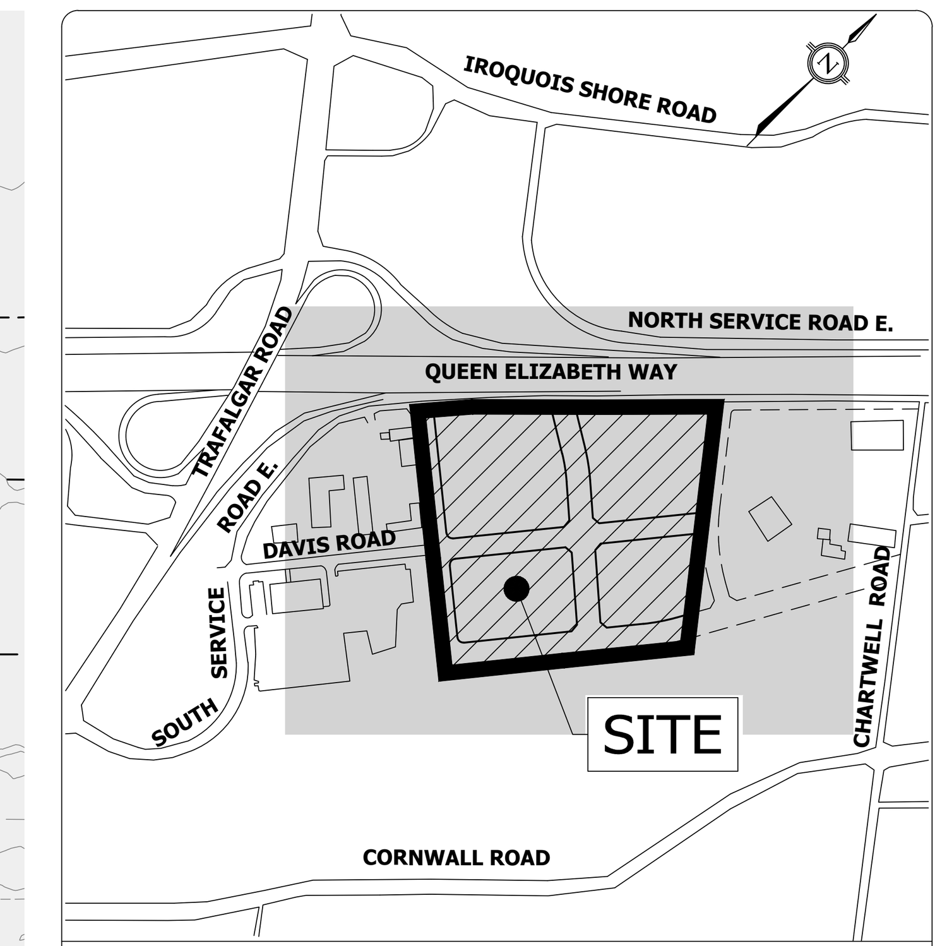

KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- PROPOSED STORM SEWER
- PROPOSED PUMPED STORM SYSTEM
- EXISTING STORM SEWER
- FUTURE STORM SEWER
- MANHOLE ID
- GROUND ELEVATION
- SEWER INVERTS
- PROPOSED AREA I.D.
- PROPOSED DRAINAGE AREA (Ha.)
- PROPOSED RUNOFF COEFFICIENT
- EXISTING CONTOUR & ELEVATION
- PROPOSED OVERLAND FLOW ROUTE
- EXISTING OVERLAND FLOW ROUTE
- PROPOSED STORM DRAINAGE BOUNDARY
- EXISTING STORM DRAINAGE BOUNDARY
- EXISTING WATERCOURSE
- PHASE 1 DEVELOPMENT
- FUTURE / EXISTING DEVELOPMENT LANDS
- 100 YR CAPTURE AREA
- PUMPED AREA

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

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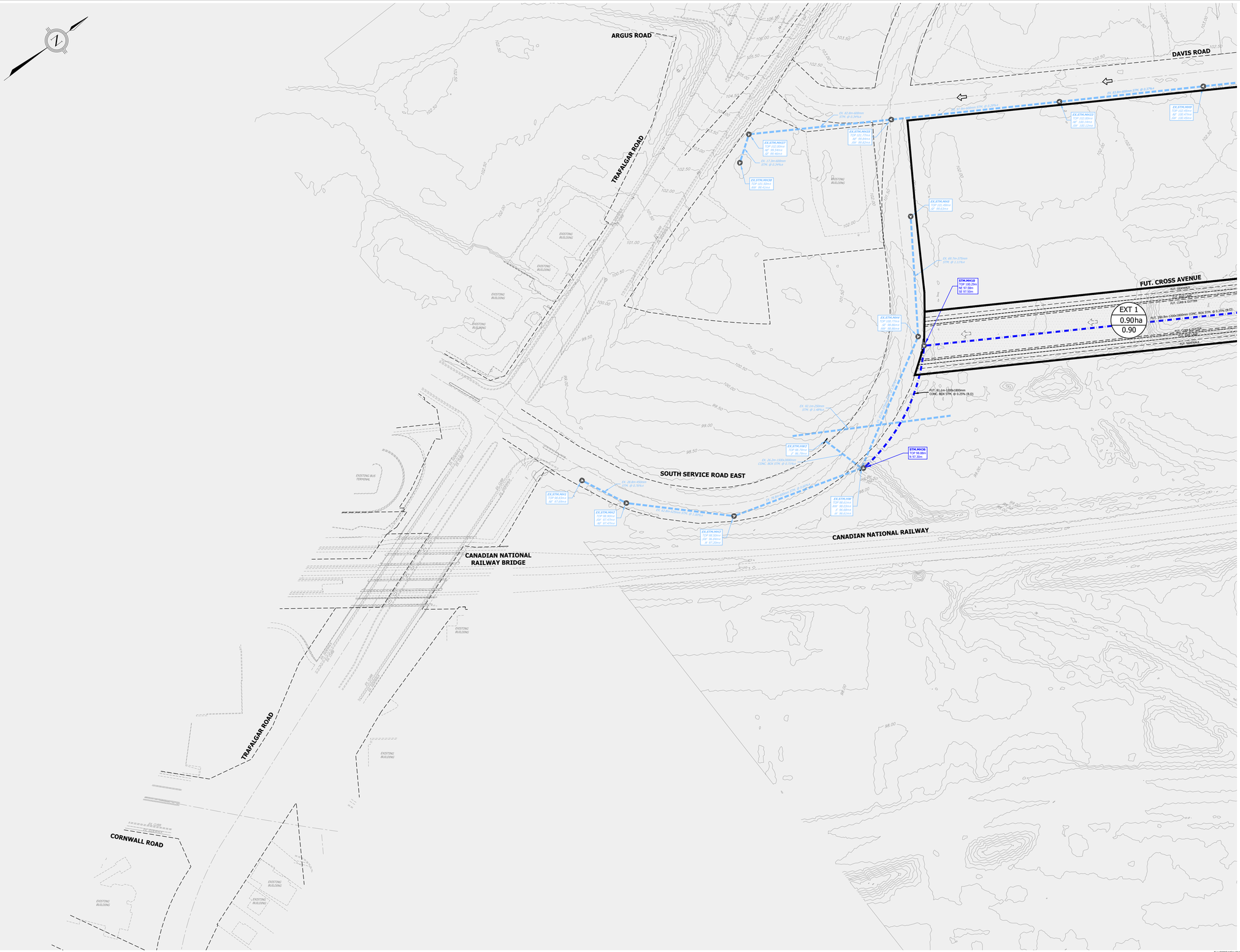
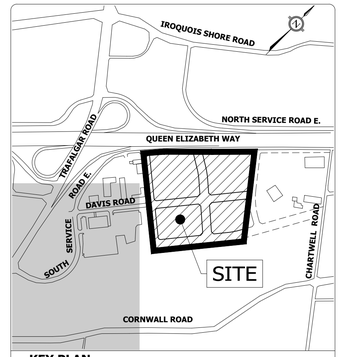
POST-STORM DRAINAGE PLAN

(PART 1 OF 2)

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	STM-2





KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- PROPOSED STORM SEWER
- PROPOSED PUMPED STORM SYSTEM
- EXISTING STORM SEWER
- FUTURE STORM SEWER
- MANHOLE ID / GROUND ELEVATION / SEWER INVERTS (STM.MH2 TOP 102.77m N 96.70m SE 96.60m)
- PROPOSED AREA I.D. / PROPOSED DRAINAGE AREA (Ha.) / PROPOSED RUNOFF COEFFICIENT (1 / 0.57Ha / 0.90)
- EXISTING CONTOUR & ELEVATION
- PROPOSED OVERLAND FLOW ROUTE
- EXISTING OVERLAND FLOW ROUTE
- PROPOSED STORM DRAINAGE BOUNDARY
- EXISTING STORM DRAINAGE BOUNDARY
- EXISTING WATERCOURSE
- PHASE 1 DEVELOPMENT
- FUTURE / EXISTING DEVELOPMENT LANDS
- 100 YR CAPTURE AREA
- PUMPED AREA

BENCHMARK
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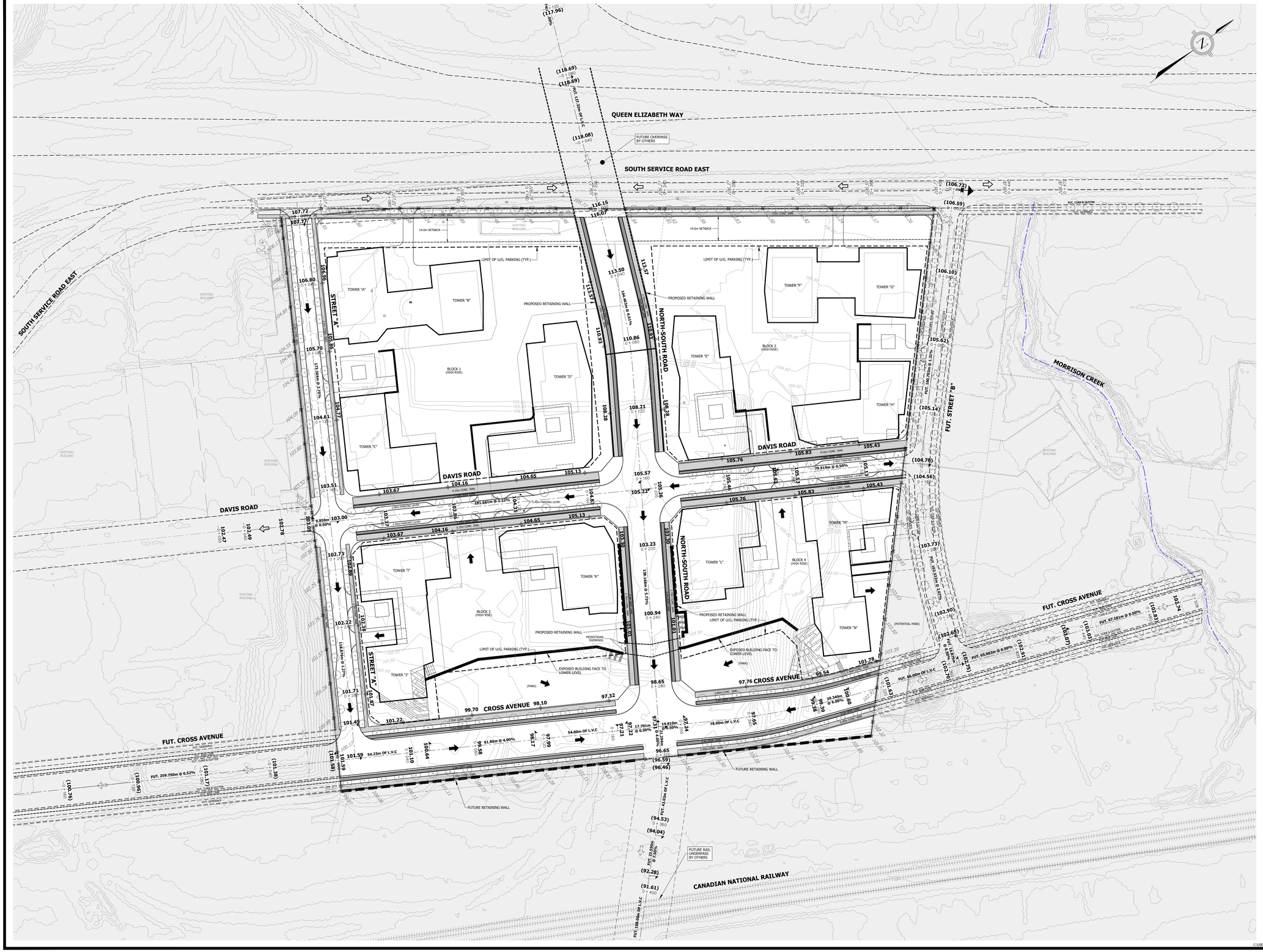
420 SOUTH SERVICE ROAD EAST
TOWN OF OAKVILLE

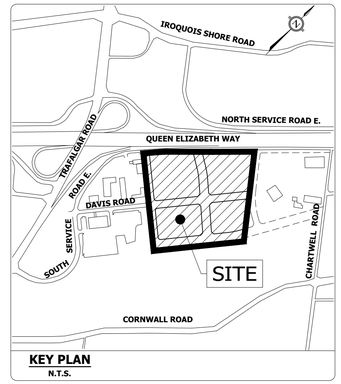
POST-STORM DRAINAGE PLAN

(PART 2 OF 2)

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	**STM-3**

C:\USERS\MSALENGA\DC\ACCDOCS\URBANTECH\23-307 GE LANDS\PROJECT FILES\PRELIMINARY ENGINEERING & FIGURES\STM-3_POST STORM DRAINAGE PLAN.DWG





KEY PLAN
N.T.S.

LEGEND

- LIMIT OF DEVELOPMENT
- 105.50 PROPOSED ELEVATION
- 105.50 EXISTING ELEVATION
- MAXIMUM 3:1 (UNLESS OTHERWISE NOTED)
- EXISTING CONTOUR & ELEVATION
- PROPOSED OVERLAND FLOW ROUTE
- EXISTING OVERLAND FLOW ROUTE
- FUTURE OVERLAND FLOW ROUTE
- PROPOSED SWALE
- EXISTING WATERCOURSE
- FUTURE / EXISTING DEVELOPMENT LANDS

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
00820208149	606389.733	4812958.951	111.672
00820208150	606731.198	4813293.073	107.023

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420 SOUTH SERVICE ROAD EAST
TOWN OF OAKVILLE

GRADING PLAN

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:1000	**GRD-1**

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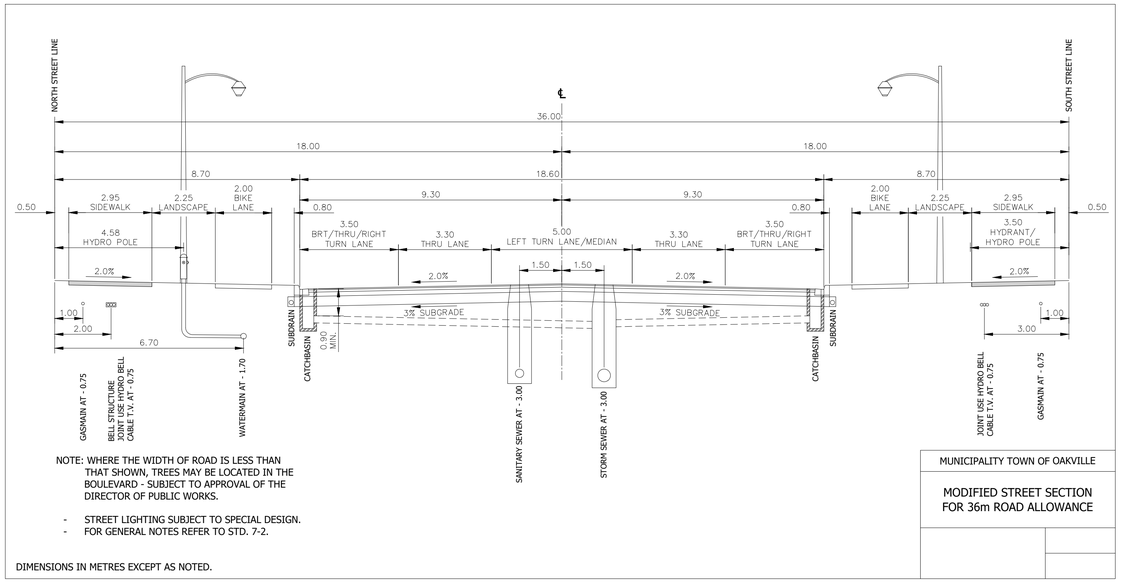


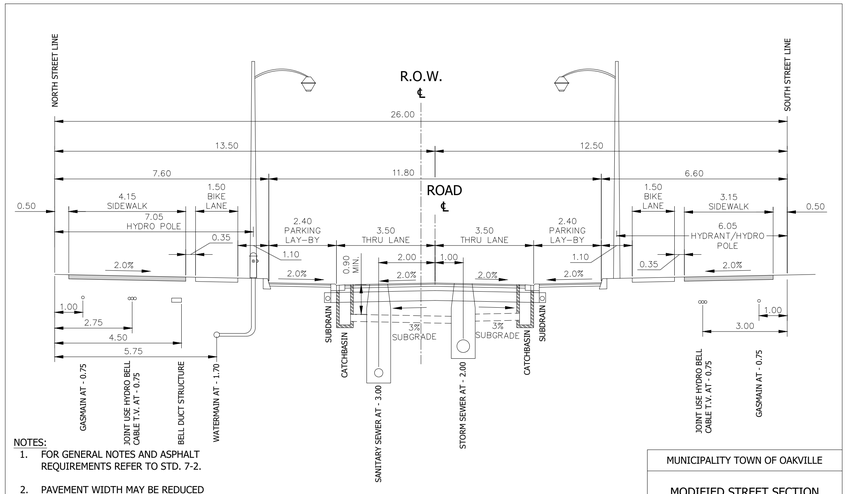
NOTE: WHERE THE WIDTH OF ROAD IS LESS THAN THAT SHOWN, TREES MAY BE LOCATED IN THE BOULEVARD - SUBJECT TO APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.

- STREET LIGHTING SUBJECT TO SPECIAL DESIGN.
- FOR GENERAL NOTES REFER TO STD. 7-2.

DIMENSIONS IN METRES EXCEPT AS NOTED.

MUNICIPALITY TOWN OF OAKVILLE
MODIFIED STREET SECTION FOR 36m ROAD ALLOWANCE

CROSS AVENUE WEST OF NORTH-SOUTH ROAD



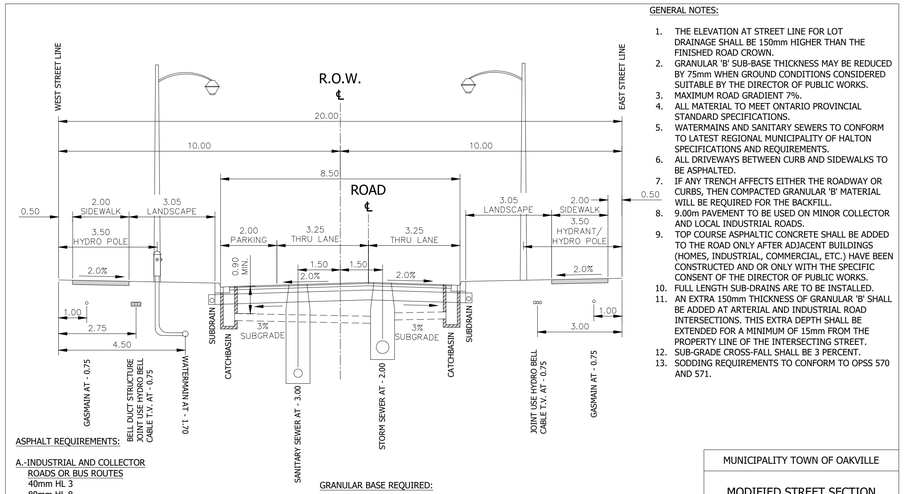
NOTES:

1. FOR GENERAL NOTES AND ASPHALT REQUIREMENTS REFER TO STD. 7-2.
2. PAVEMENT WIDTH MAY BE REDUCED TO 12.50m FOR INDUSTRIAL ARTERIALS AND TO 10.00m FOR INDUSTRIAL COLLECTORS SUBJECT TO DIRECTOR OF PUBLIC WORKS APPROVAL. IN THESE CASES BOULEVARD WIDTHS WILL VARY.

DIMENSIONS IN METRES EXCEPT AS NOTED.

MUNICIPALITY TOWN OF OAKVILLE	
MODIFIED STREET SECTION FOR 26m ROAD ALLOWANCE	
	STD. 7-3

DAVIS ROAD



GENERAL NOTES:

1. THE ELEVATION AT STREET LINE FOR LOT DRAINAGE SHALL BE 150mm HIGHER THAN THE FINISHED ROAD CROWN.
2. GRANULAR 'B' SUB-BASE THICKNESS MAY BE REDUCED BY 75mm WHEN GROUND CONDITIONS CONSIDERED SUITABLE BY THE DIRECTOR OF PUBLIC WORKS.
3. MAXIMUM ROAD GRADIENT 7%.
4. ALL MATERIAL TO MEET ONTARIO PROVINCIAL STANDARD SPECIFICATIONS.
5. WATERMAINS AND SANITARY SEWERS TO CONFORM TO LATEST REGIONAL MUNICIPALITY OF HALTON SPECIFICATIONS AND REQUIREMENTS.
6. ALL DRIVEWAYS BETWEEN CURB AND SIDEWALKS TO BE ASPHALTED.
7. IF ANY TRENCH AFFECTS EITHER THE ROADWAY OR CURBS, THEN COMPACTED GRANULAR 'B' MATERIAL WILL BE REQUIRED FOR THE BACKFILL.
8. 9.00m PAVEMENT TO BE USED ON MINOR COLLECTOR AND LOCAL INDUSTRIAL ROADS.
9. TOP COURSE ASPHALTIC CONCRETE SHALL BE ADDED TO THE ROAD ONLY AFTER ADJACENT BUILDINGS (HOMES, INDUSTRIAL, COMMERCIAL, ETC.) HAVE BEEN CONSTRUCTED AND OR ONLY WITH THE SPECIFIC CONSENT OF THE DIRECTOR OF PUBLIC WORKS.
10. FULL LENGTH SUB-DRAINS ARE TO BE INSTALLED.
11. AN EXTRA 150mm THICKNESS OF GRANULAR 'B' SHALL BE ADDED AT ARTERIAL AND INDUSTRIAL ROAD INTERSECTIONS. THIS EXTRA DEPTH SHALL BE EXTENDED FOR A MINIMUM OF 15mm FROM THE PROPERTY LINE OF THE INTERSECTING STREET.
12. SUB-GRADE CROSS-FALL SHALL BE 3 PERCENT.
13. SODDING REQUIREMENTS TO CONFORM TO OPSS 570 AND 571.

ASPHALT REQUIREMENTS:

A.-INDUSTRIAL AND COLLECTOR ROADS OR BUS ROUTES
40mm HL 3
80mm HL 8
B.-RESIDENTIAL ROADS (NO BUSES)
40mm HL 3
50mm HL 8
C.-DRIVEWAYS
50mm DRIVEWAYS MIX ASPHALT (HL-3A)

GRANULAR BASE REQUIRED:

A.-ALL ROADS
150mm OF GRANULAR 'A' MATERIAL HL 3
350mm OF GRANULAR 'B' SUB-BASE (SEE NOTE 2)
B.-DRIVEWAYS
150mm OF 19mm CRUSHER RUN STONE

DIMENSIONS IN METRES EXCEPT AS NOTED.

MUNICIPALITY TOWN OF OAKVILLE	
MODIFIED STREET SECTION FOR 20m ROAD ALLOWANCE	
	STD. 7-2

STREET "A" & FUT. STREET "B"

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
00820208149	606389.733	4812958.951	111.672
00820208150	606731.198	4813293.073	107.023

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420 SOUTH SERVICE ROAD EAST
TOWN OF OAKVILLE

TYPICAL ROAD CROSS SECTIONS

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:100	**RXS-1**

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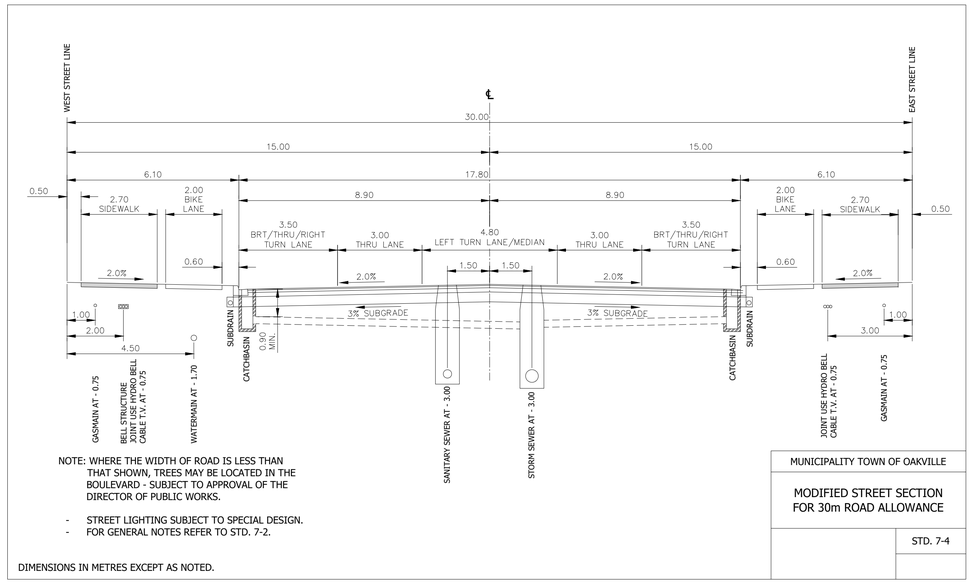


NOTE: WHERE THE WIDTH OF ROAD IS LESS THAN THAT SHOWN, TREES MAY BE LOCATED IN THE BOULEVARD - SUBJECT TO APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.

- STREET LIGHTING SUBJECT TO SPECIAL DESIGN.
- FOR GENERAL NOTES REFER TO STD. 7-2.

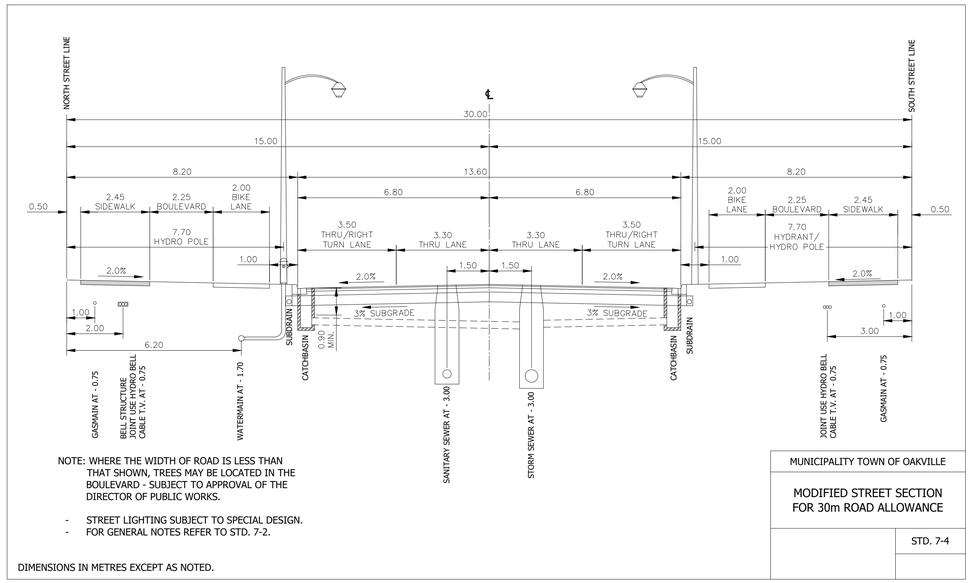
DIMENSIONS IN METRES EXCEPT AS NOTED.

MUNICIPALITY TOWN OF OAKVILLE

MODIFIED STREET SECTION FOR 30m ROAD ALLOWANCE

STD. 7-4

NORTH-SOUTH ROAD



NOTE: WHERE THE WIDTH OF ROAD IS LESS THAN THAT SHOWN, TREES MAY BE LOCATED IN THE BOULEVARD - SUBJECT TO APPROVAL OF THE DIRECTOR OF PUBLIC WORKS.

- STREET LIGHTING SUBJECT TO SPECIAL DESIGN.
- FOR GENERAL NOTES REFER TO STD. 7-2.

DIMENSIONS IN METRES EXCEPT AS NOTED.

MUNICIPALITY TOWN OF OAKVILLE

MODIFIED STREET SECTION FOR 30m ROAD ALLOWANCE

STD. 7-4

FUT. CROSS AVENUE EAST OF NORTH-SOUTH ROAD

BENCHMARK

ELEVATIONS SHOWN ON THIS PLAN ARE RELATED TO GEODETIC DATUM (CGVD28 :78) AND ARE DERIVED FROM MINISTRY OF TRANSPORTATION CONTROLS No. 00820208149 AND 00820208150

CONTROL ID	EASTING	NORTHING	ELEVATION
00820208149	606389.733	4812958.951	111.672
00820208150	606731.198	4813293.073	107.023

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420 SOUTH SERVICE ROAD EAST
TOWN OF OAKVILLE

TYPICAL ROAD CROSS SECTIONS

PROJECT No.	DATE	SCALE	DWG No.
23-307	OCT. 2025	1:100	**RXS-2**

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APPENDIX D:
2D Flood / Spill Assessment Memo

Memorandum

To:	Alex Lenarduzzi	**Date:**	October 6, 2025
Cc:			
From:	Andrew Fata	**Project #:**	**23-307**
Re:	2D Flood/Spill Assessment – Existing and Proposed Conditions, Mitigation Options, and CH Spill Policy Context		

1. Purpose & Scope

This memo documents the two-dimensional (2D) flood/spill modelling completed for the 420 South Service Road (Rose Corp. / former GE Lands) using Conservation Halton's (CH) regional 2D model prepared for the Morrison Creek / Midtown Oakville / Sixteen Mile Creek to Lower Morrison system.

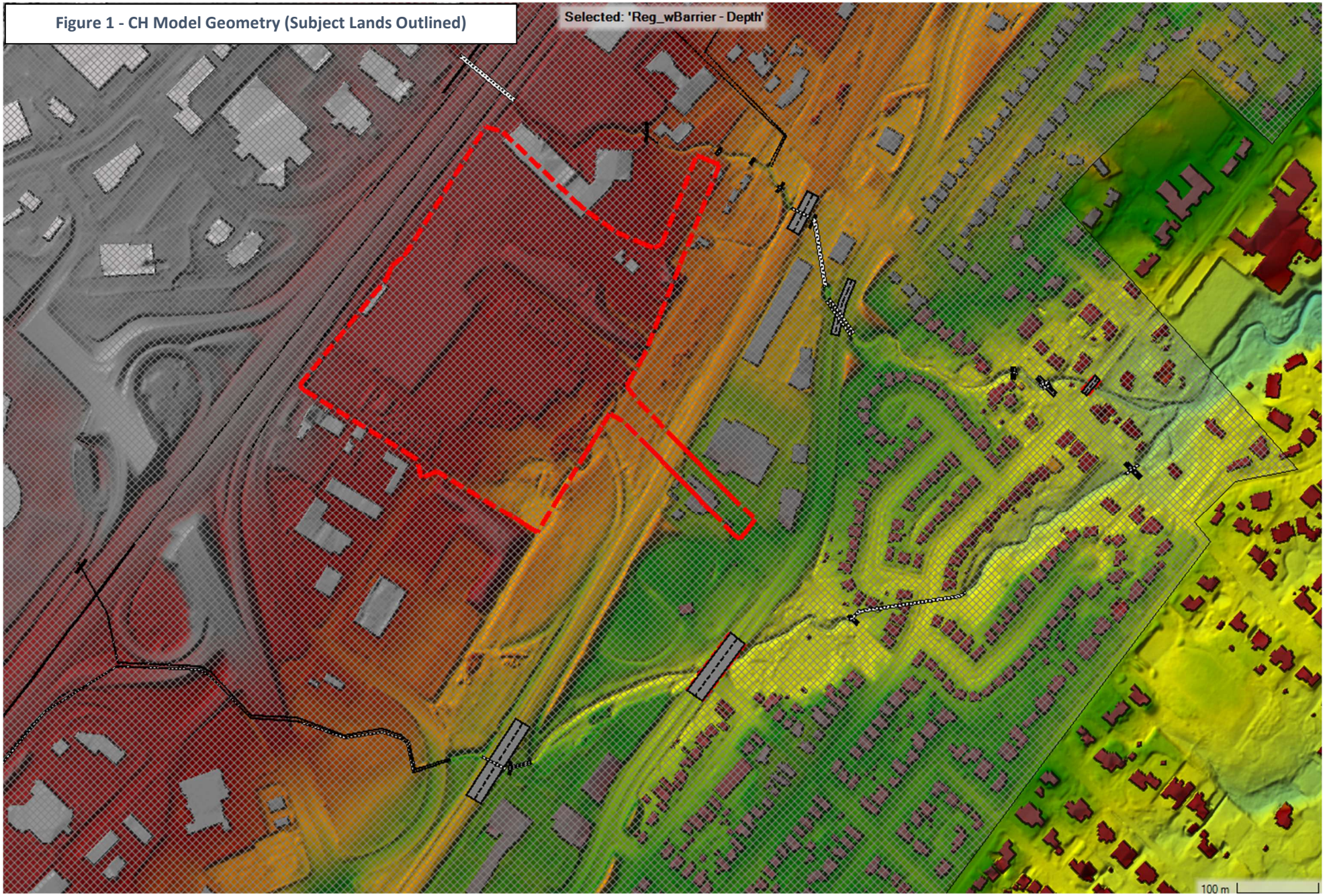
Results are summarized for existing and proposed conditions and are interpreted in the context of CH's recently approved Spill Flood Hazard Policies and Technical Guide (April 17, 2025).

2. Modelling Framework

- **Base Model Geometry:** CH's 2D hydraulic model for Midtown Oakville (Sixteen Mile Creek to Lower Morrison Creek Flood Hazard Mapping model) was obtained through a Data Licencing Agreement from Conservation Halton. The model was dated February 2025.
- No changes to the existing conditions models (with and without barriers) were made.
- **Flows:** Flows were based on the CH 2D model – no changes to flows were made. Only the Regional flows were simulated for this evaluation.
- **Terrain** – 2023 LiDAR (source: Conservation Halton 2D model; CGVD 2023) – no changes to the existing terrain were made.

Figure 1 illustrates the site location and geometry including the culverts and mesh elements (10m grid; 2m grid along QEW and subject lands) in the model.

Figure 1 - CH Model Geometry (Subject Lands Outlined)



- **Model Scenarios Evaluated:**

The following scenarios were simulated using the baseline models provided by CH.

  - (i) Existing with QEW barriers as per CH model, no changes
  - (ii) Existing without QEW barriers as per CH model, no changes
  - (iii) Proposed site grading with mitigation measures

- **Model output evaluated:**

The following results were extracted from the model results:

  - Maximum Depth / floodplain extent
  - Depth x velocity mapping
  - Hydrograph results at key comparison locations.

- **Flow locations evaluated:**

To evaluate the impact to flows downstream of the subject lands, hydrograph results were extracted at the following locations, which are represented on **Figure 2**:

  - north, west, south and east property lines, to evaluate the flow in and out of the subject lands;
  - east, middle, and west sections along rail corridor, to evaluate the changes in flows resulting from the underpass and proposed flow diversions;
  - existing / proposed drainage outlet at south west outlet to Lower Morrison Creek, which represents the proposed outlet of the minor system from the subject lands;
  - Cornwall Road, east of Trafalgar Road, to evaluate flows leaving the Lower Morrison Creek system and discharging into the Sixteen Mile Creek system
  - Trafalgar Road, at South Service Road, to evaluate overall flow changes to Sixteen Mile Creek

3. Results – Existing Conditions

(i) With QEW Barriers: The model indicates no spill on the subject lands; flows remain contained north of the highway due to the existing barriers along the centerline of the road.

The following figures E1A, E2A, and E3A illustrate the extent of the existing depths, the depth x velocity graphs, and flow direction based on particle trace, respectively.

Flow time series were extracted at the locations noted in the preceding section and are compared to the “without barrier” scenario results.

Figure 2 - Flow Comparison Profile Locations

Figure E1A – Existing Regional Flood Depth

(With QEW Barriers)

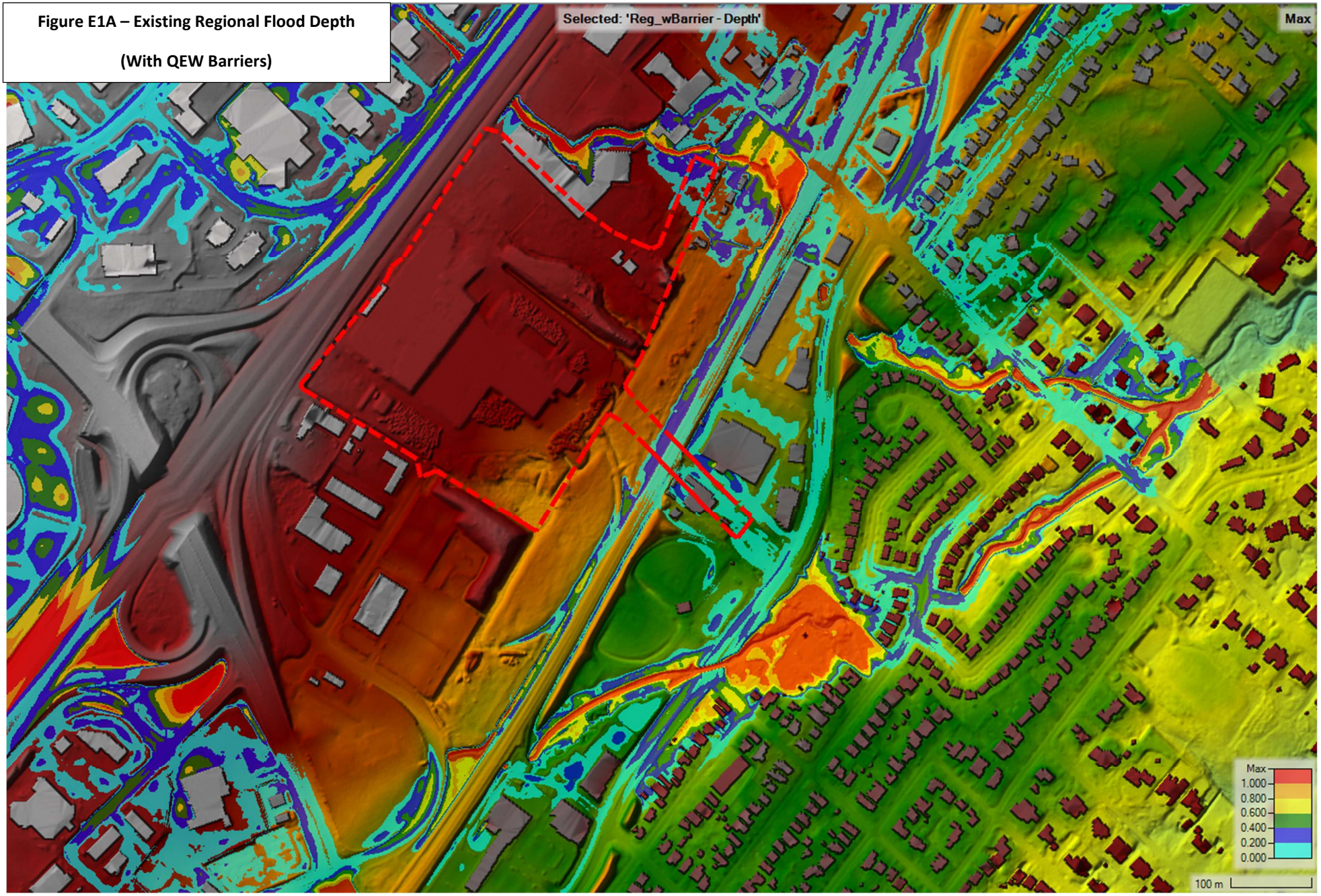


Figure E2A – Existing Regional Depth x Velocity

(With QEW Barriers)

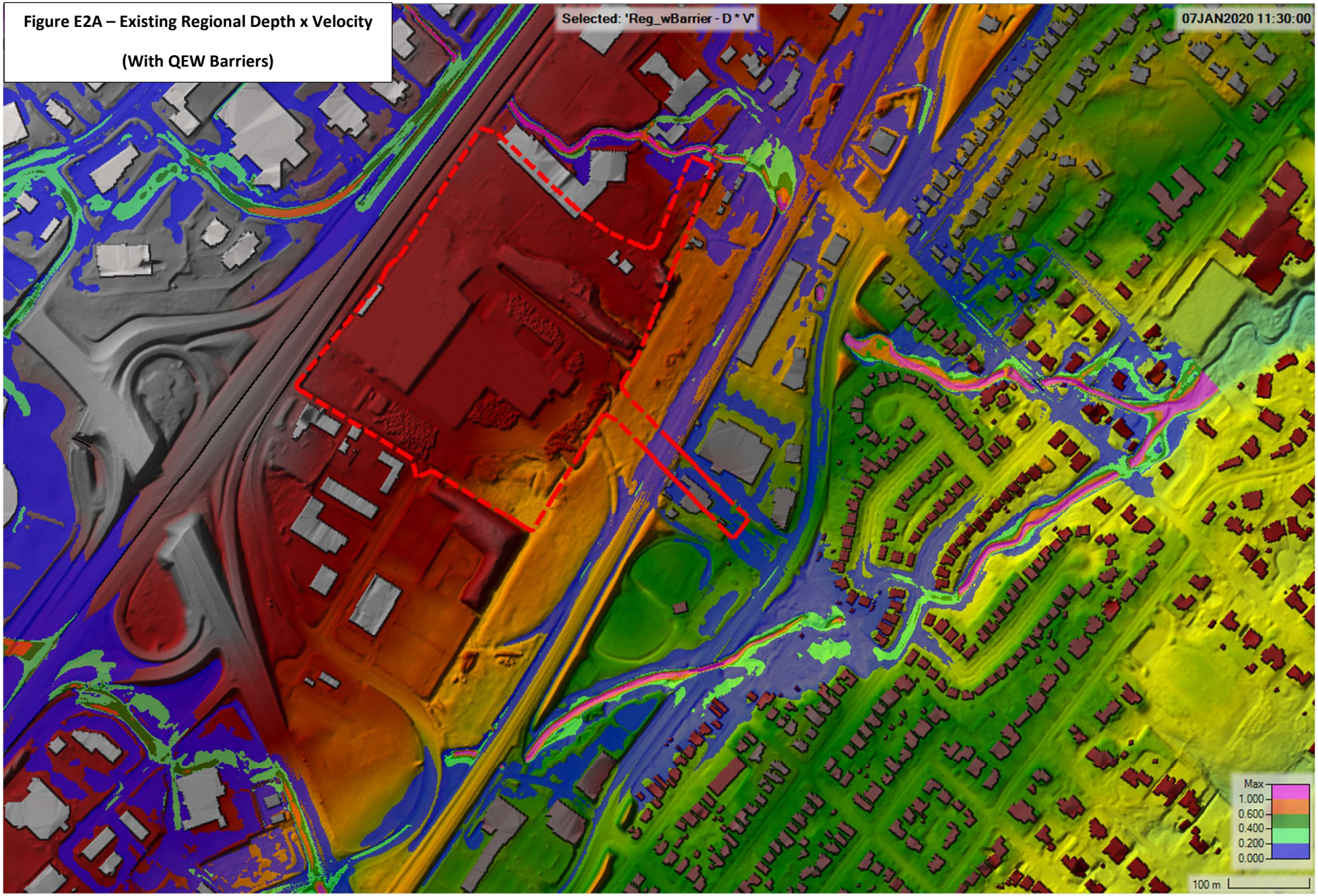
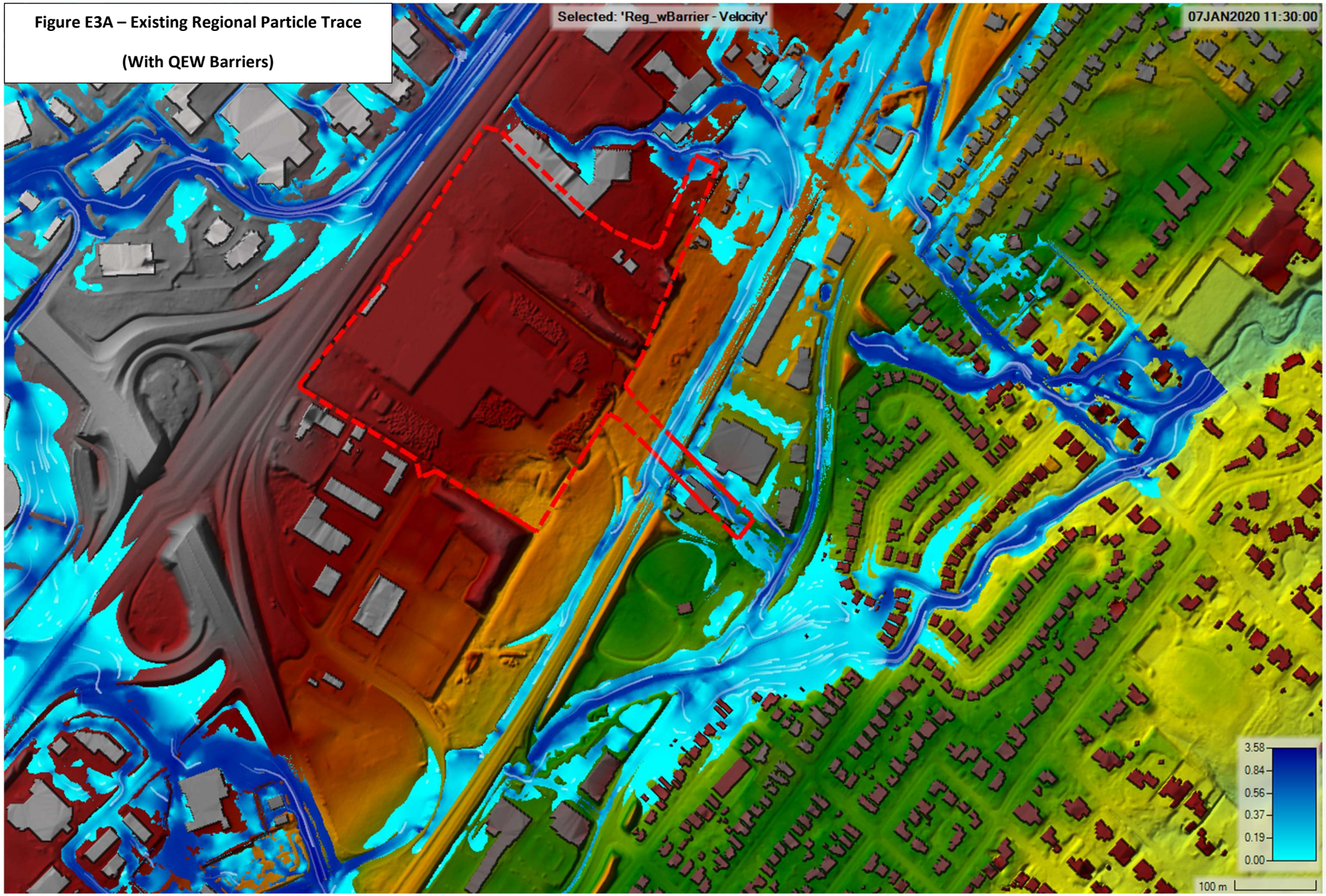


Figure E3A – Existing Regional Particle Trace

(With QEW Barriers)



(ii) Without QEW Barriers: A spill of approximately 5 m^3/s overtops south of the QEW, traverses the subject property, and discharges primarily to the south/south-west. At the railway berm, flow spreads laterally west and eastward. Additional spill areas east of the site drain toward the existing rail culvert, which lacks adequate capacity; overflow is redirected west along the north side of the rail embankment.

Flow depths and extents, as well as Depth x Velocity on the subject lands are provided on the following figures, and a comparison of the with and without barriers hydrographs at the key locations defined on Figure 2 are also included.

In general, depths throughout the subject lands are less than 0.3m, with isolated areas of increased depth where ponding areas / depressions existing. The depth of flow on South Service Road generally less than 0.3m. Refer to Figure E1B for the depth results.

Depth x Velocity is also minimal within the subject lands (Figure E2B).

In terms of existing flows, the “without barrier” scenario allows the spill of ~5m^3/s (“North” flow comparison location) to enter the subject lands and increase the flows at the various locations identified on Figure 2. While approximately 0.5m^3/s leaves from the “west” site boundary, and another 0.5m^3/s from the east side boundary, the majority of the spill through the subject lands discharges to the south, following the topography of the subject lands. From this point, flows accumulate along the rail corridor and drain from east to west, approaching the “south west” outlet. The additional spill flow through the subject lands does not significantly impact the flow at the south west outlet, possibly due to capacity limitations in the culvert beneath the rail corridor, and due to a spill towards Cornwall Road / Trafalgar Road from east to west, north of the rail corridor. Figure E3B illustrates the approximate flow paths that the spill follows.

The following hydrographs at each of the flow comparison locations in Figure 2 illustrate the changes in flows from the “with barrier” scenario (blue lines) when the spill across the QEW is considered (“without barrier” – orange lines). Of particular interest is the flow difference in flows

Figure E1B – Existing Regional Depth

(No Barriers)

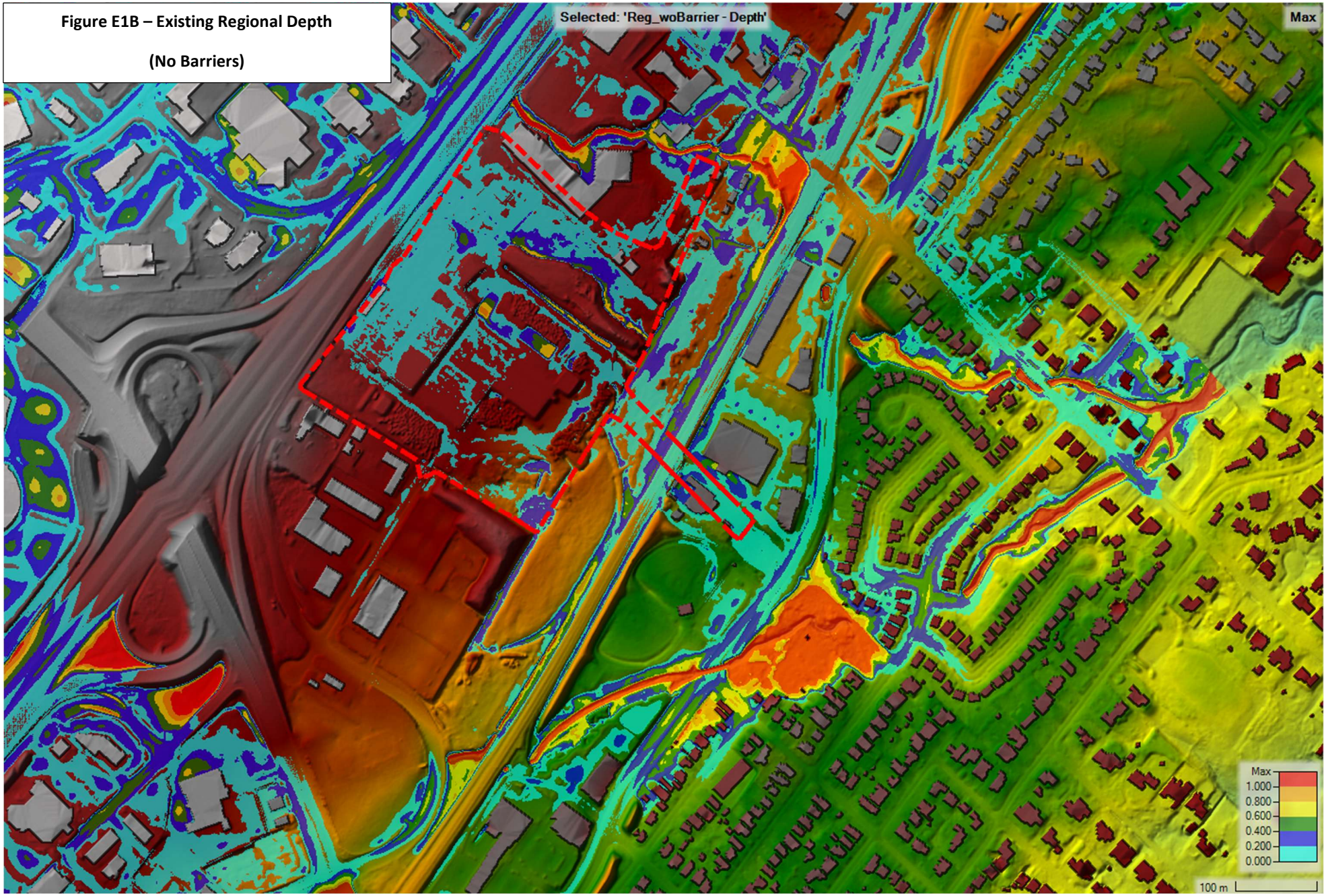


Figure E2B – Existing Regional Depth x Velocity

(No Barriers)

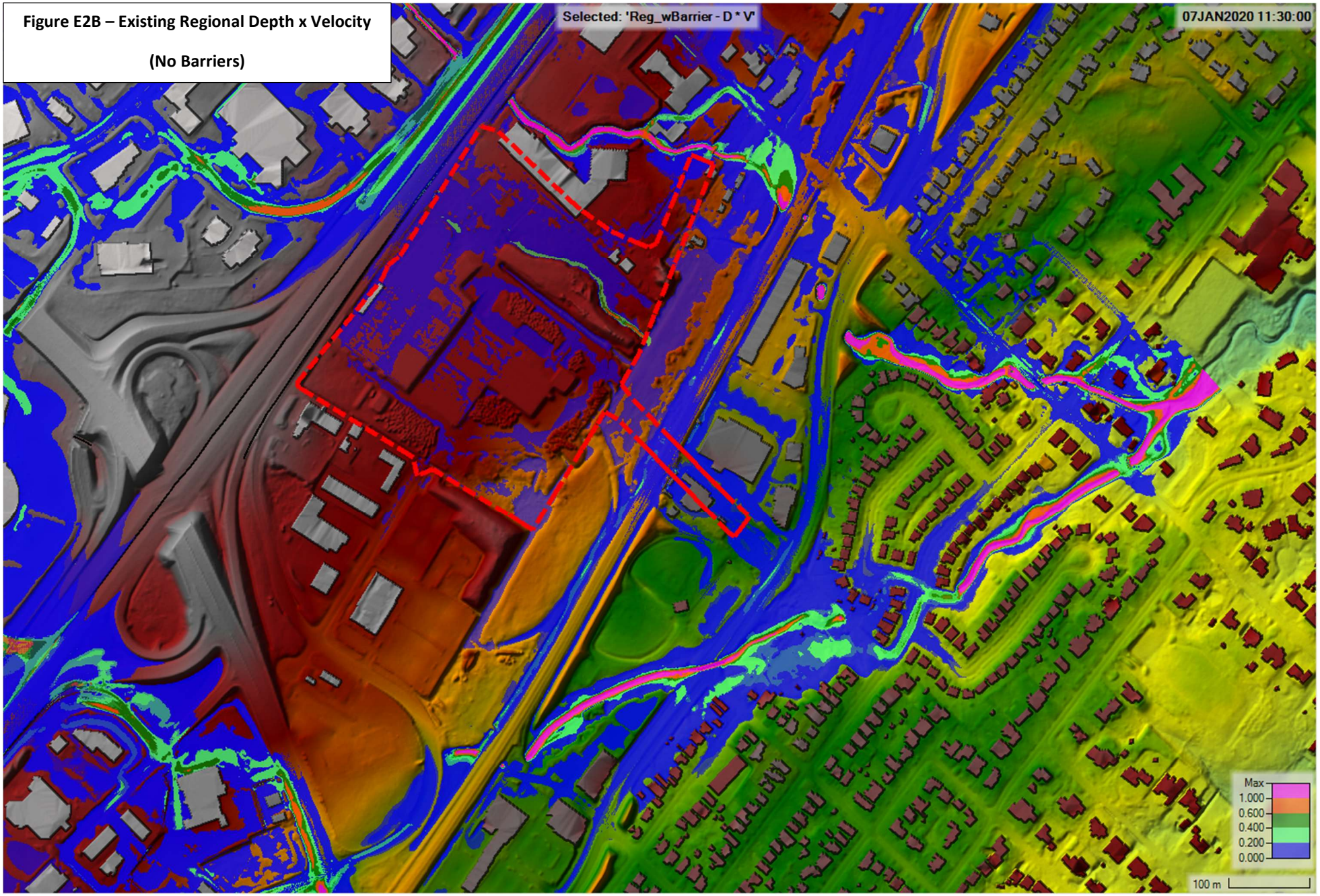
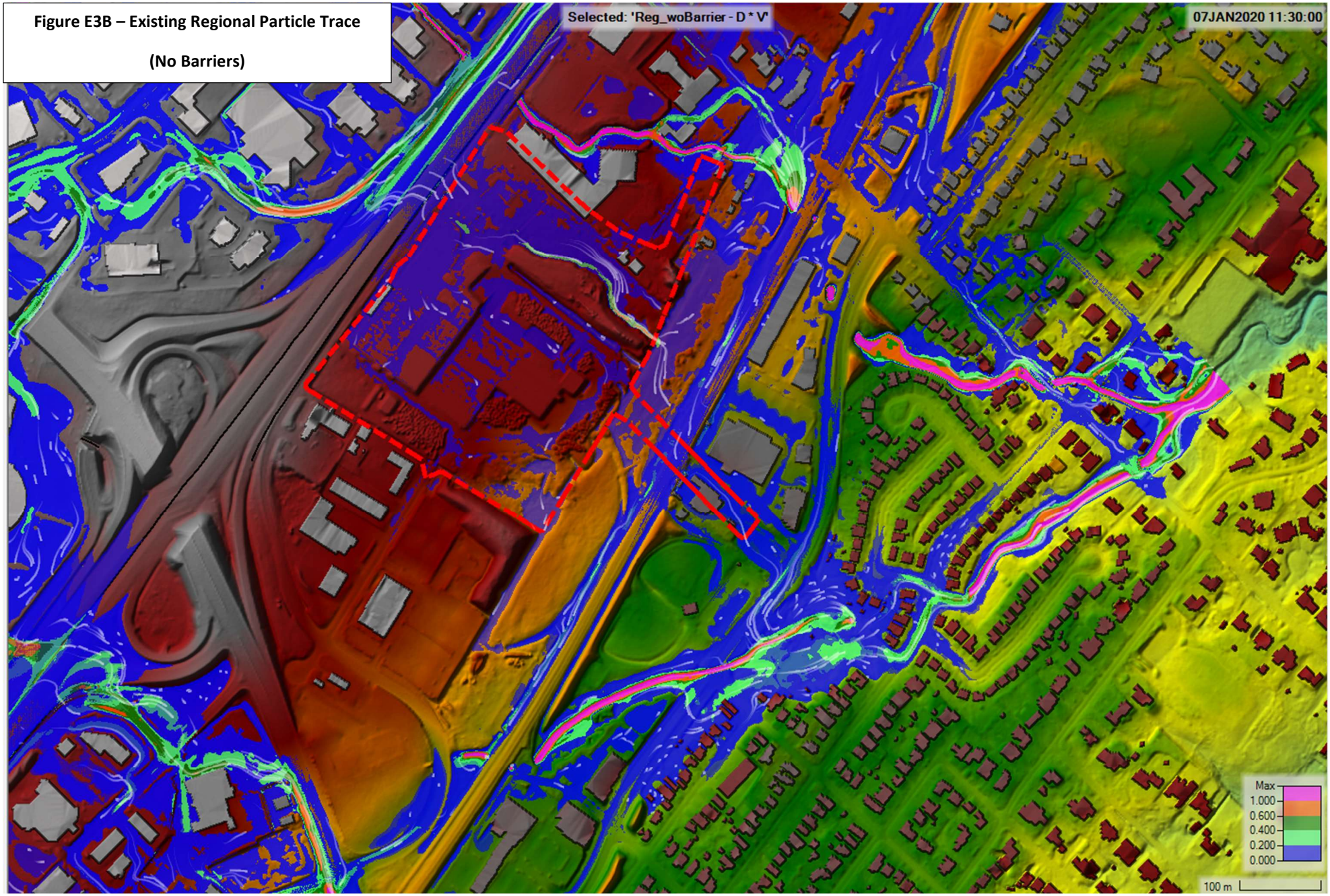
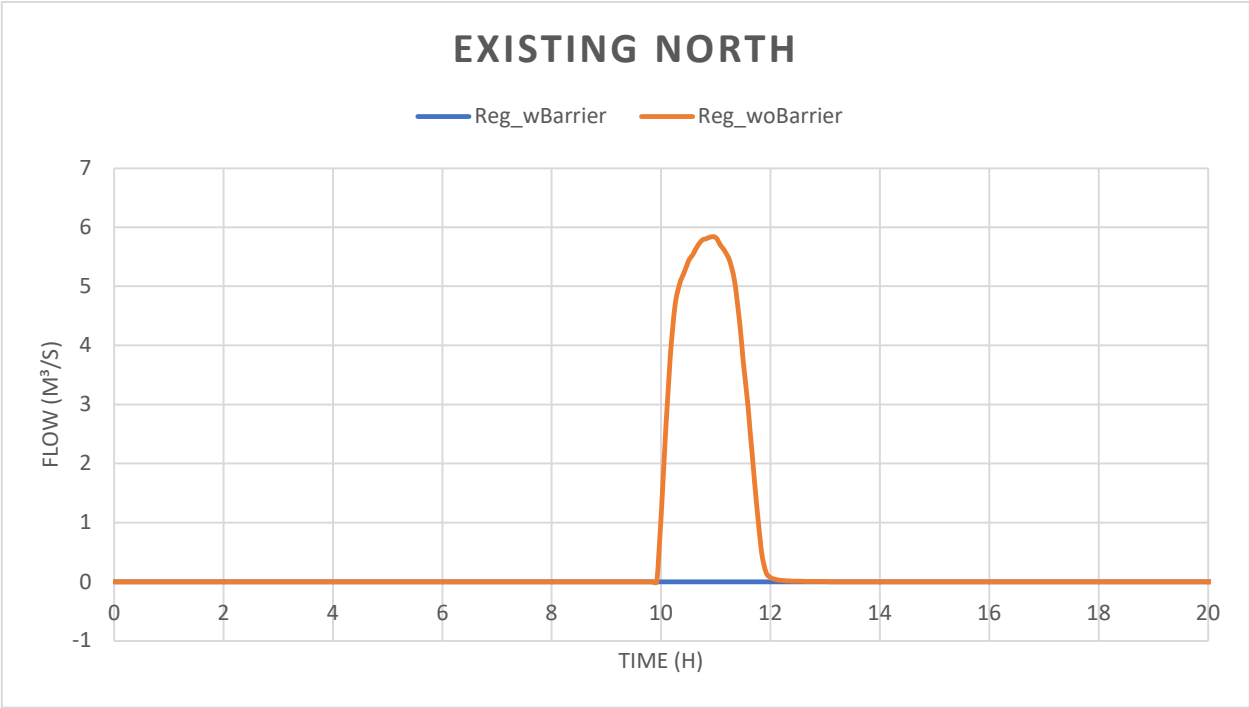
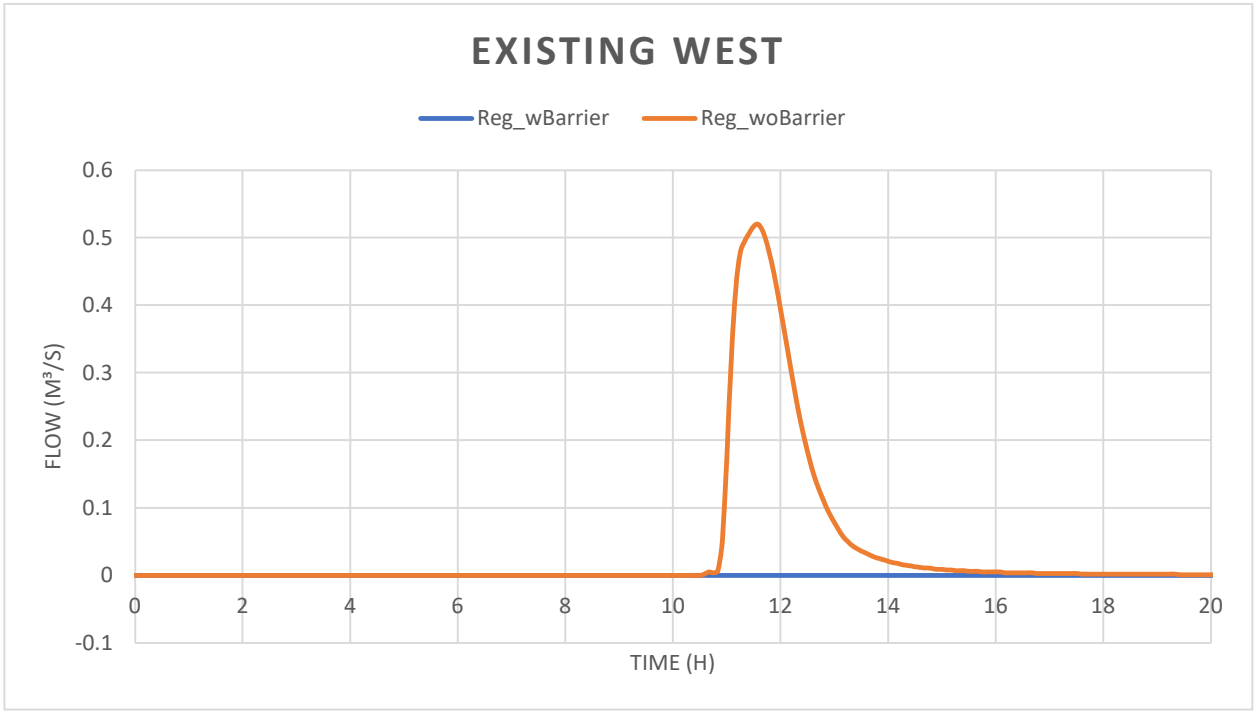


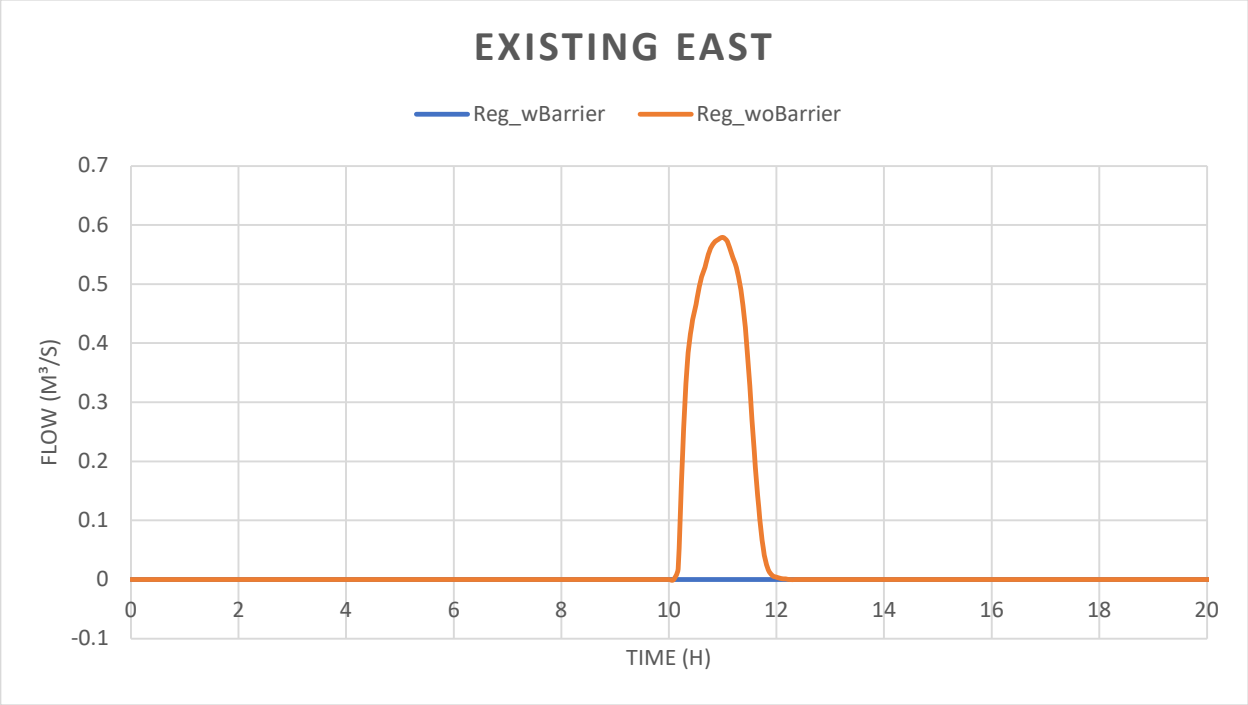
Figure E3B – Existing Regional Particle Trace

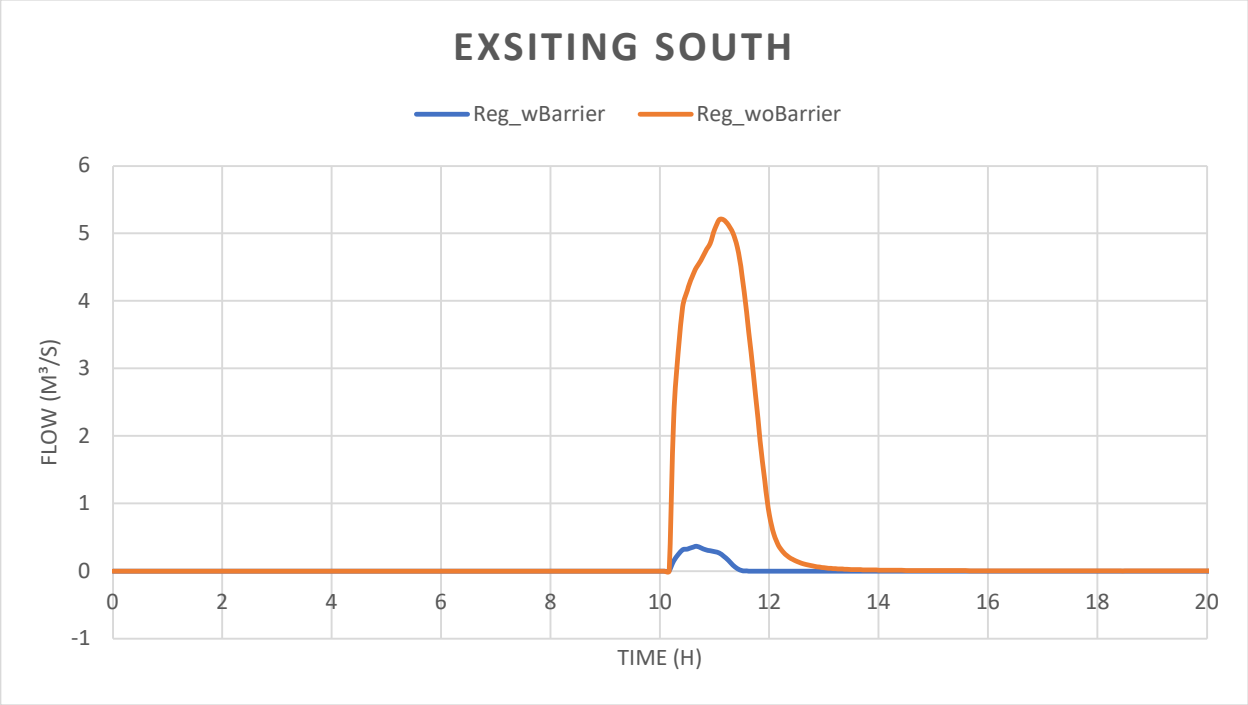
(No Barriers)

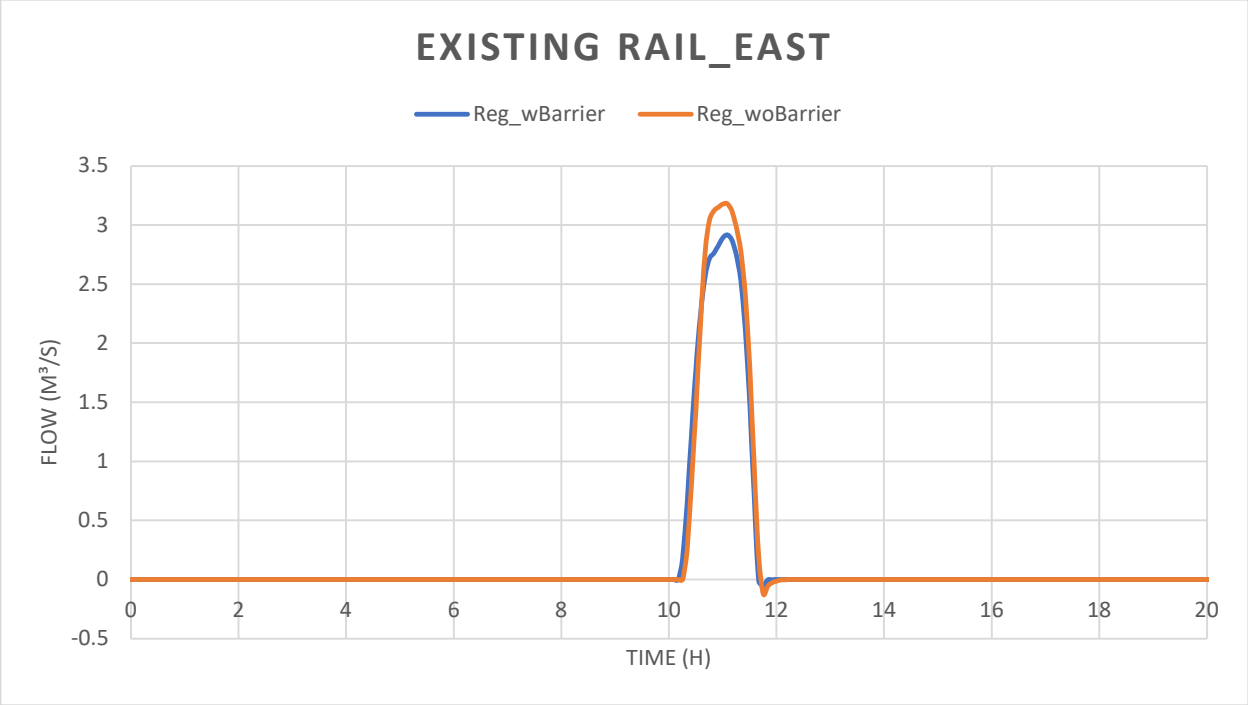


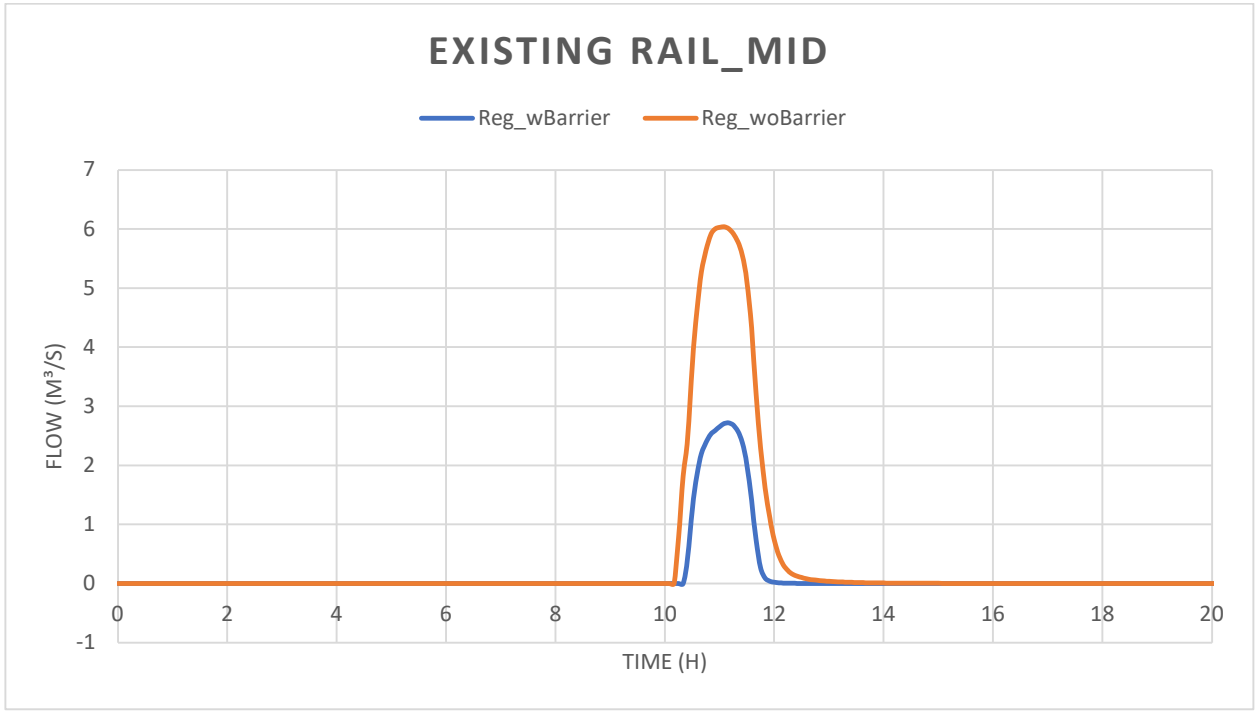

EXISTING NORTH
Reg_wBarrier
Reg_woBarrier
FLOW (M³/S)
7
6
5
4
3
2
1
0
-1
0
2
4
6
8
10
12
14
16
18
20
TIME (H)

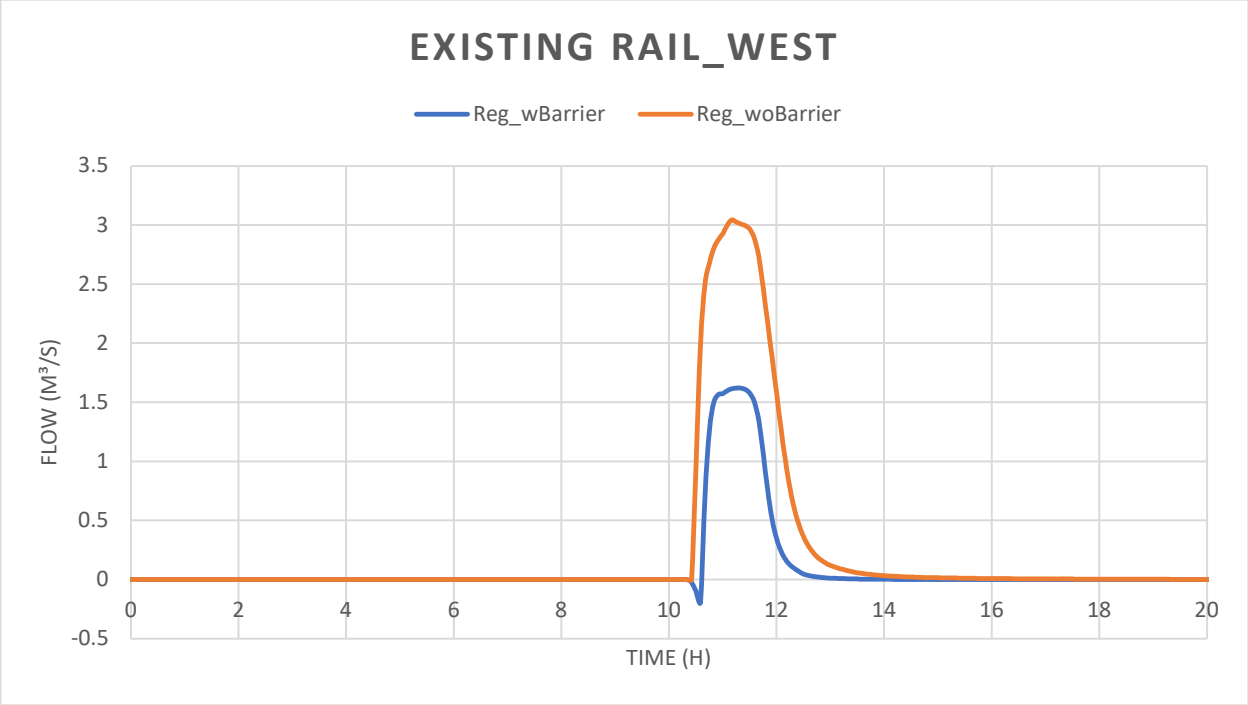

EXISTING WEST
Reg_wBarrier
Reg_woBarrier
FLOW (M³/S)
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
0
2
4
6
8
10
12
14
16
18
20
TIME (H)

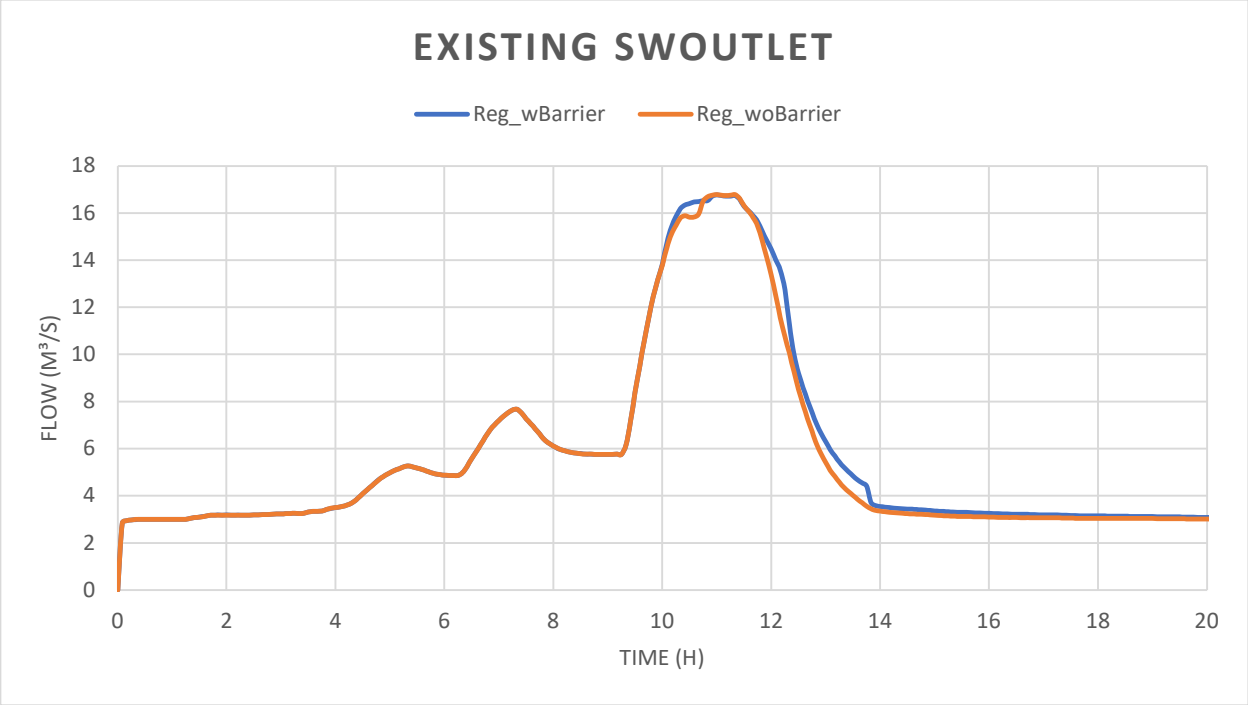

EXISTING EAST
Reg_wBarrier
Reg_woBarrier
FLOW (M³/S)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
0
2
4
6
8
10
12
14
16
18
20
TIME (H)

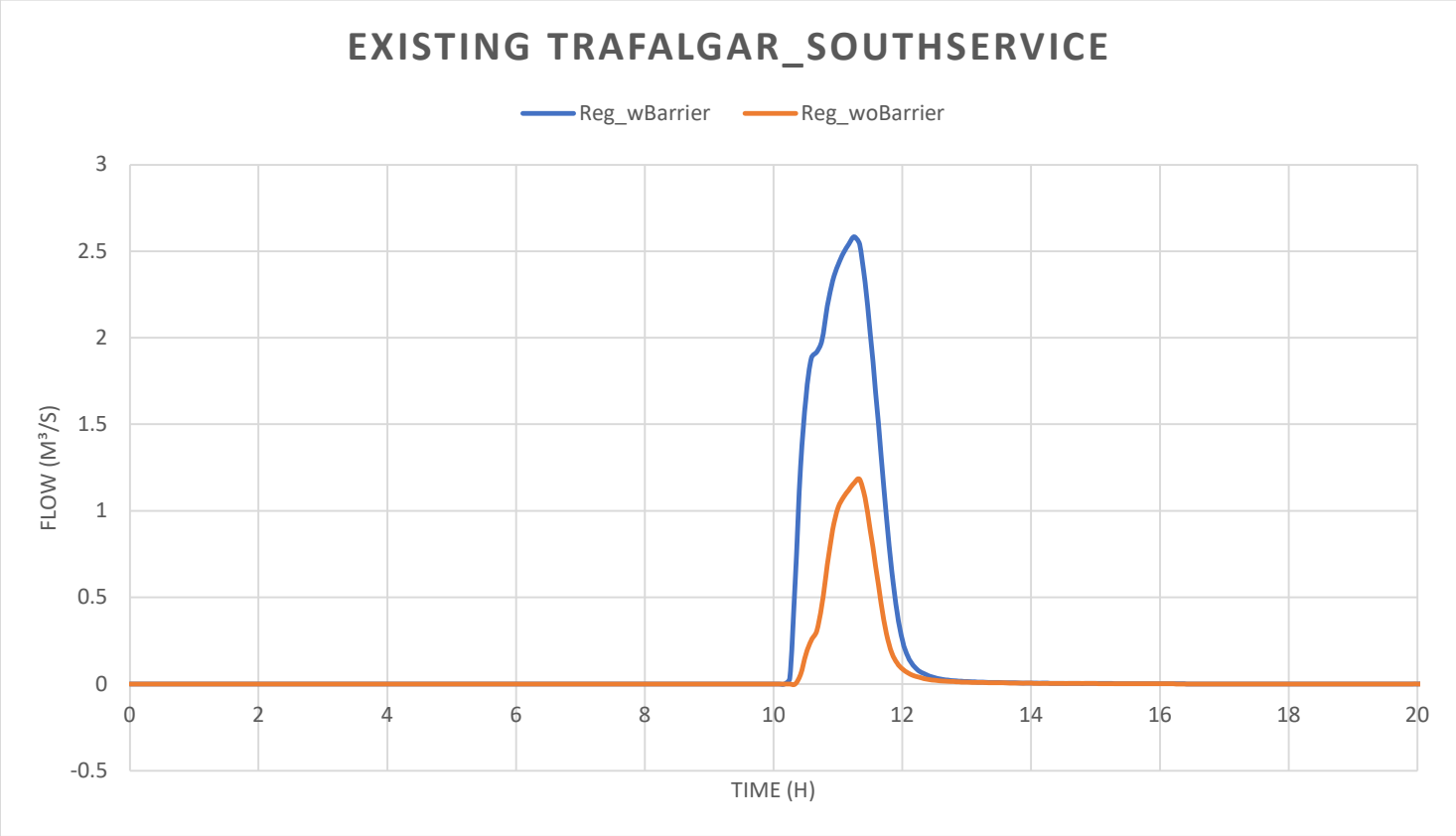

EXSITING SOUTH
Reg_wBarrier
Reg_woBarrier
FLOW (M³/S)
6
5
4
3
2
1
0
-1
0
2
4
6
8
10
12
14
16
18
20
TIME (H)


EXISTING RAIL_EAST
Reg_wBarrier
Reg_woBarrier
FLOW (M³/S)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
2
4
6
8
10
12
14
16
18
20
TIME (H)


EXISTING RAIL_MID
Reg_wBarrier
Reg_woBarrier
FLOW (M³/S)
7
6
5
4
3
2
1
0
-1
0
2
4
6
8
10
12
14
16
18
20
TIME (H)


EXISTING RAIL_WEST
Reg_wBarrier
Reg_woBarrier
FLOW (M³/S)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
2
4
6
8
10
12
14
16
18
20
TIME (H)


EXISTING SWOUTLET
Reg_wBarrier
Reg_woBarrier
FLOW (M³/S)
TIME (H)
0
2
4
6
8
10
12
14
16
18
20


EXISTING TRAFALGAR_SOUTHSERVICE
Reg_wBarrier
Reg_woBarrier
FLOW (M³/S)
TIME (H)
3
2.5
2
1.5
1
0.5
0
-0.5
0
2
4
6
8
10
12
14
16
18
20


EXISTING CORNWALL_RD
Reg_wBarrier
Reg_woBarrier
25
20
15
10
5
0
-5
FLOW (M³/S)
0
2
4
6
8
10
12
14
16
18
20
TIME (H)

4. Results – Proposed Development of the Subject Lands

To simulate the proposed development, the CH 2D model surface and mesh were updated with the proposed (preliminary) site grading(2m grid was used for the subject lands) for the subject property as well as the future road extensions anticipated for Midtown Oakville in the vicinity of the subject lands, including the future overpass over the QEW and the proposed underpass beneath the rail corridor. Under the “with QEW Barriers”, there is no impact to the site, compared to the existing “with QEW Barriers” scenario. This future scenario with barriers was not modelled as Scenario (i) demonstrated the same conclusions.

The no-barrier condition was simulated, which shows how the spill of ~5m^3/s impacts the subject lands based on the future grading scenario. The spill approaches the north frontage similar to existing conditions.

To mitigate the impact of the spill on the proposed building locations, the following strategy is proposed:

- A swale (depth varies) along the north frontage (within the 14 m MTO setback) running east to west will intercept a portion of the spill and convey it to the proposed storm sewer (1.8m wide by 0.9m high box) along Street A at South Service Road.

- A portion of the flows will spill from the swale and will continue to drain through the subject lands, within the internal strata parks, which are graded below adjacent building entrances. It is assumed that ventilation shafts and other openings into the underground parking would have to be situated outside of the strata park areas, or otherwise placed above the anticipated spill water level to prevent the spill from discharging into the underground parking structure.

- Flows through the internal park area are then directed to Street A via the Davis Road extension. A portion of the flows will continue to drain to the south, but the flows to the east will be effectively eliminated.

- This routing directs a portion of the spill directly to the proposed south-west outlet. Flows at all outlets are summarized in the following section / hydrographs.

- Flows are introduced onto municipal roads where no spills / flows currently occur, but this alleviates the impact along the rail corridor.

- A slight time shift and flow increase is noted in the flows leaving the “west” outlet, as flow from the north is routed to the west.

- It is likely that increasing the capacity in the proposed pipe discharging to the south west outlet would further reduce the surface spill and drainage to the east and south, at the expense of pipe cost and increases in flow at the south west outlet (but decrease in surface flow elsewhere). The pipe size was conservatively set at the minimum proposed size, i.e. 1.8m wide x 0.9m high box. The actual pipe size will increase to a 2.4m x 1.2m box

- Despite the increases discharged directly to the west, the flows at the south west outlet do not change, again likely due to the limited capacity of the existing culvert crossing. Ponding upstream of the rail corridor in this location increases by approximately 10cm.

- Flows at the outlet pipe location do overtop south service road and spill towards Trafalgar Road under all scenarios. Under the proposed conditions, the peak flow increases slightly above the existing (with/without barriers) flows as demonstrated by the Cornwall Road hydrograph, but there are no significant depth changes resulting from the flow change as demonstrated on the Trafalgar Road profile (Figure P6).

- Flows at the underpass were assumed to accumulate – no pumping or surface outlet was simulated at this time due to lack of information. This does not impact the proposed mitigation measures for the subject lands.

- Berming along the north property line to fully exclude spill from the site was also investigated. While effective at isolating the parcel, this created >1.0 m of ponding on South Service Road, which would likely raise concerns regarding public safety and access.

Figure P4 compares the change in depth (proposed depth minus existing depth) to visualize the impacts / improvements to the system. Light colors represent minimal changes – within 1 to 2 cm, whereas darker colors represent more significant changes. Green represents improvements / reductions in depth, and red represents increases in depth. The white shading implies no change / less than 1cm of change in depth.

Figure P5 indicates the overall flows / “flow balancing: at various locations and how they change between the existing (with barriers), existing (no barriers), and proposed (no barriers) scenarios. Further discussions with CH staff are required, as some interesting findings resulted from this analysis. Namely, consideration of the spill (no barriers) has minimal impact on the flows downstream approaching Trafalgar Road, but rather reduces flows directed into the Lower Morrison Creek channel east of the subject lands (while increasing flows discharged to the surface). Under proposed conditions, the south west outlet does not receive any additional flow – excess flow will spill into the Sixteen Mile Creek system via Trafalgar / South Service Road during spill conditions. Under regular (e.g. 2-year to 100-year events and Regional with barriers), the southwest outlet will be the primary stormwater outlet for the subject lands.

Figure P6 represents the Trafalgar Road profile and the resulting depths from each scenario – there is no significant difference at this location in terms of depth change, despite the increased flows discharged towards Trafalgar Road.

Figure P7 (appended to this report) shows the modelled flood depths based on the preliminary grading surface (blue lines), and the anticipated refinements resulting from detailed site grading (purple). The proposed (purple) lines are the objective for future modelling refinements based on the detailed grading plan.

Figure P1 – Proposed Regional Depth

(No Barriers)

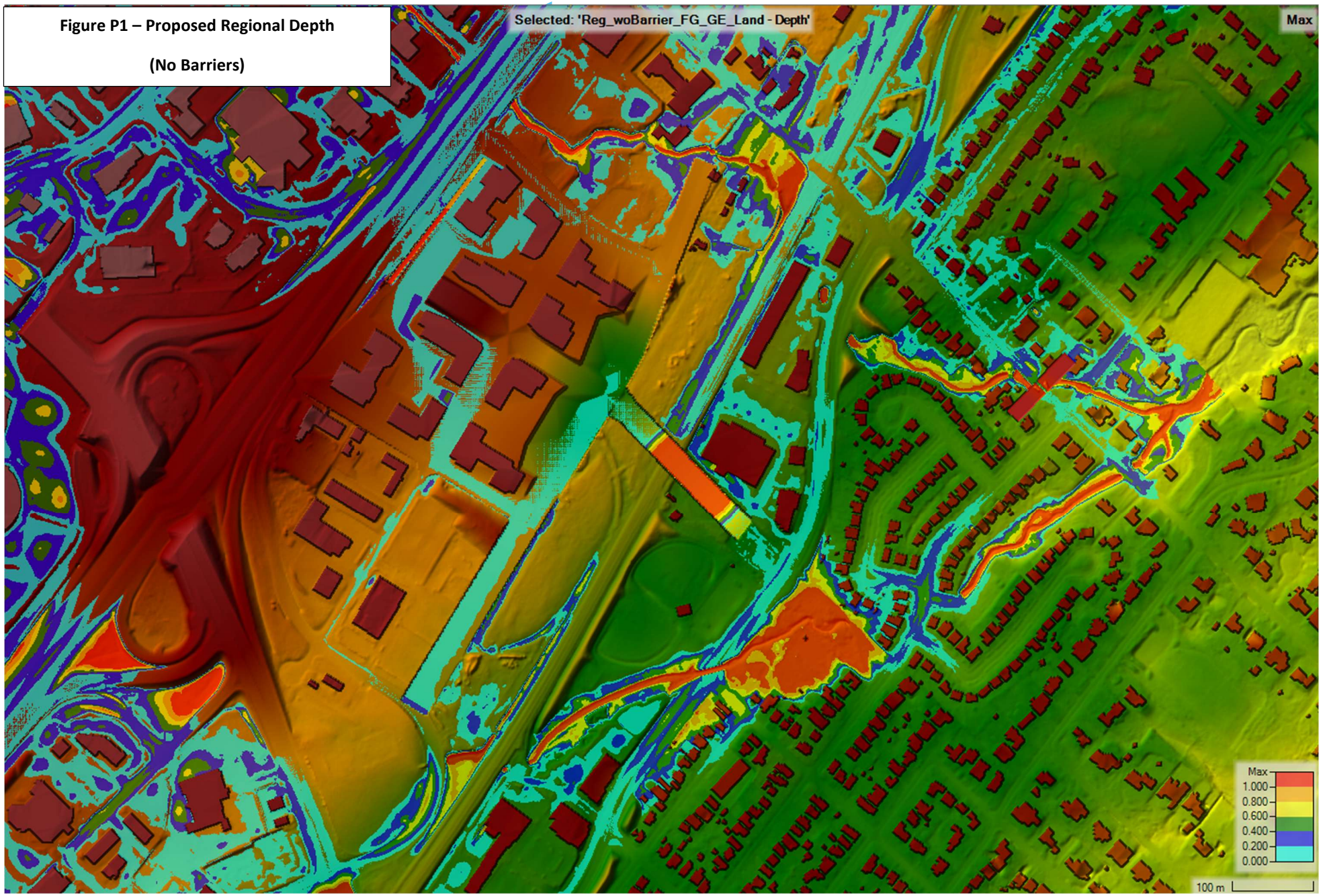


Figure P2 – Proposed Regional Depth x Velocity

(No Barriers)

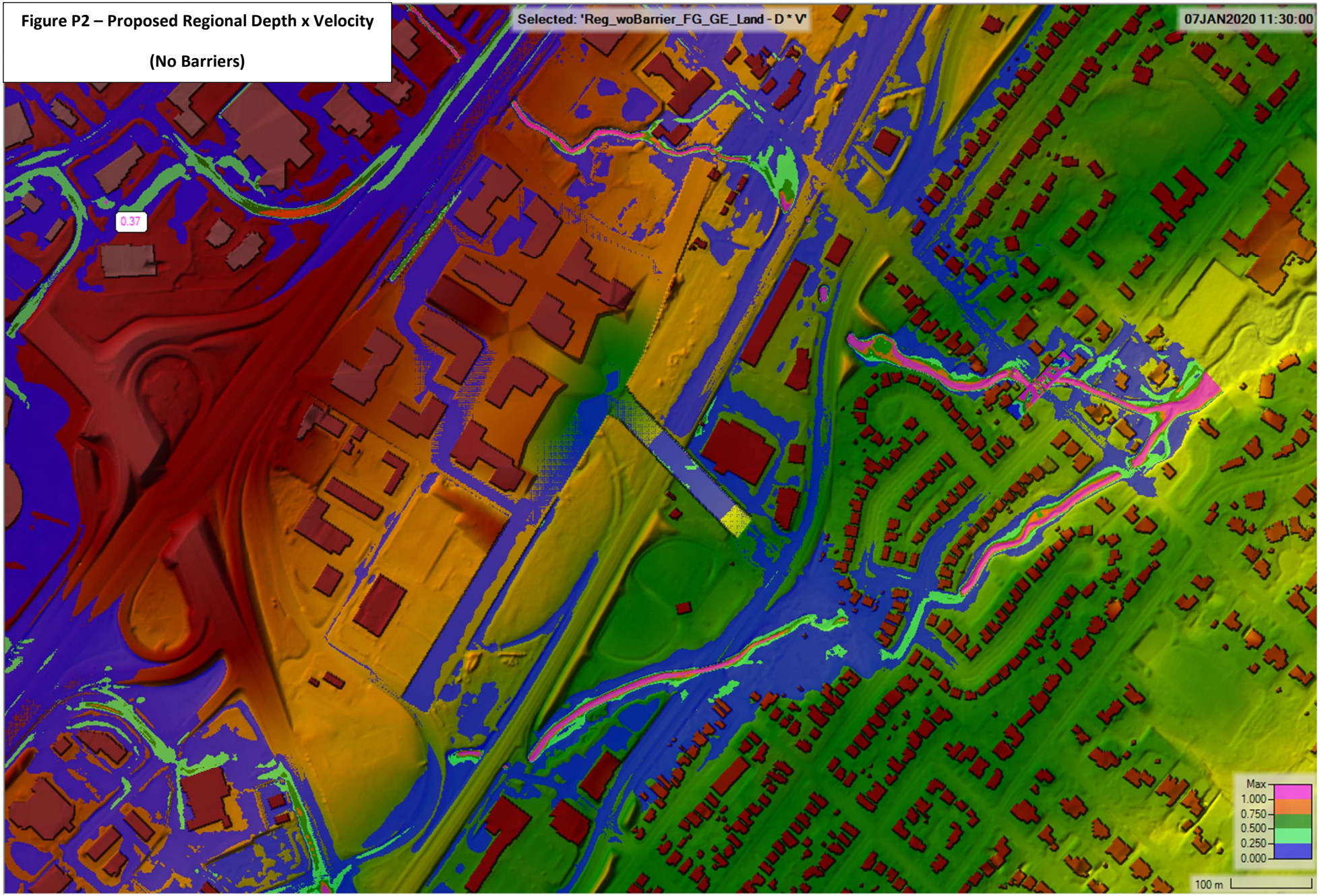


Figure P3 – Proposed Regional Particle Trace

(No Barriers)

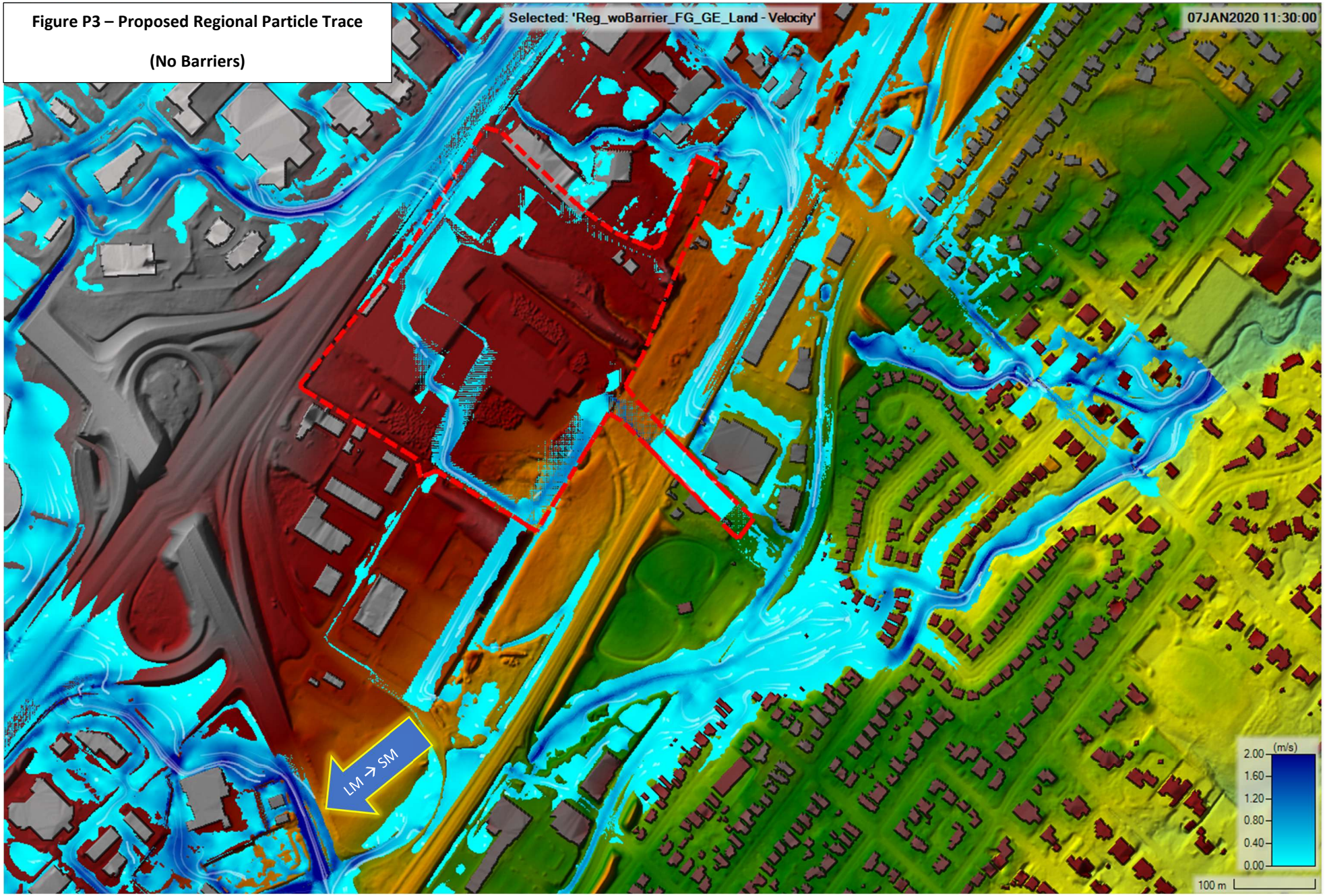
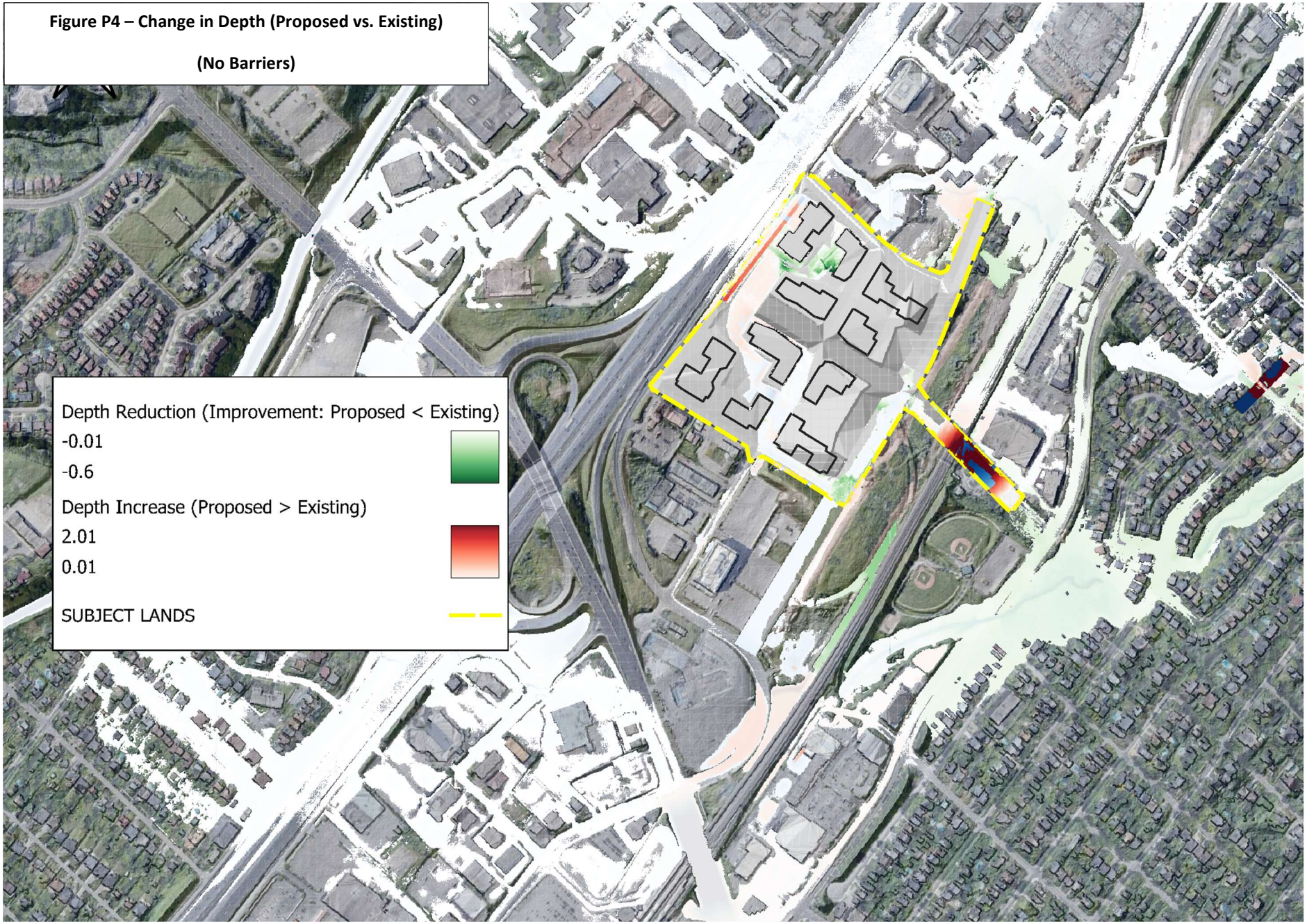
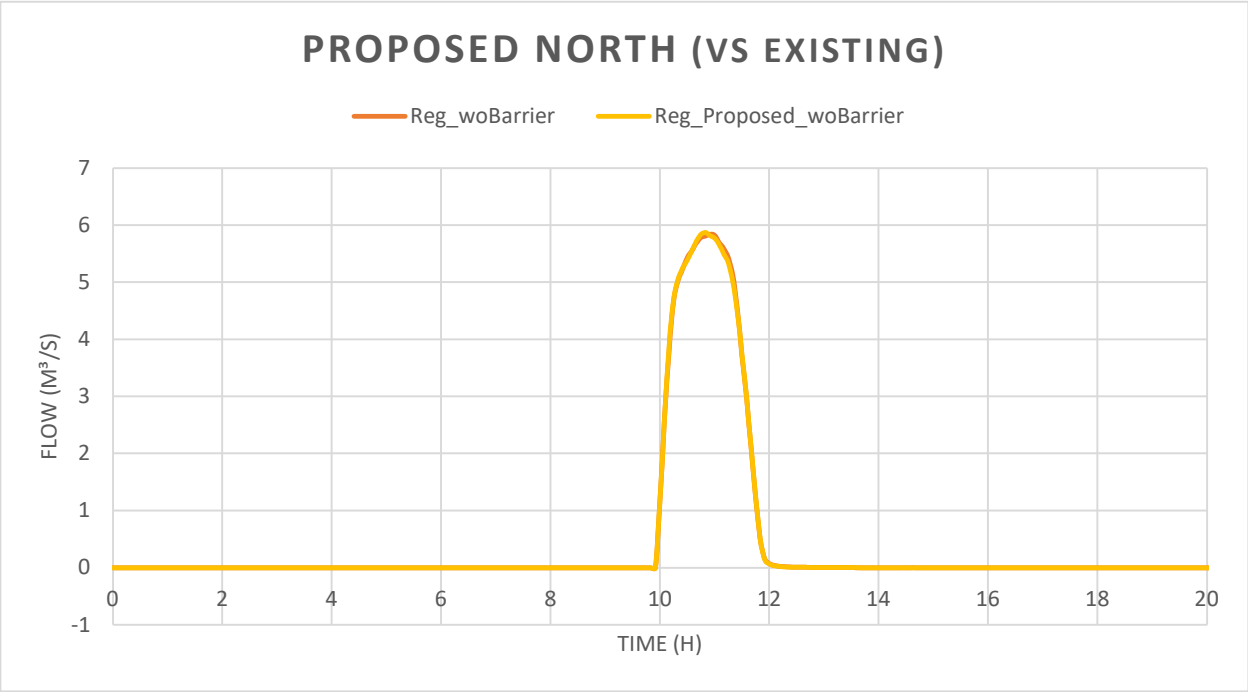
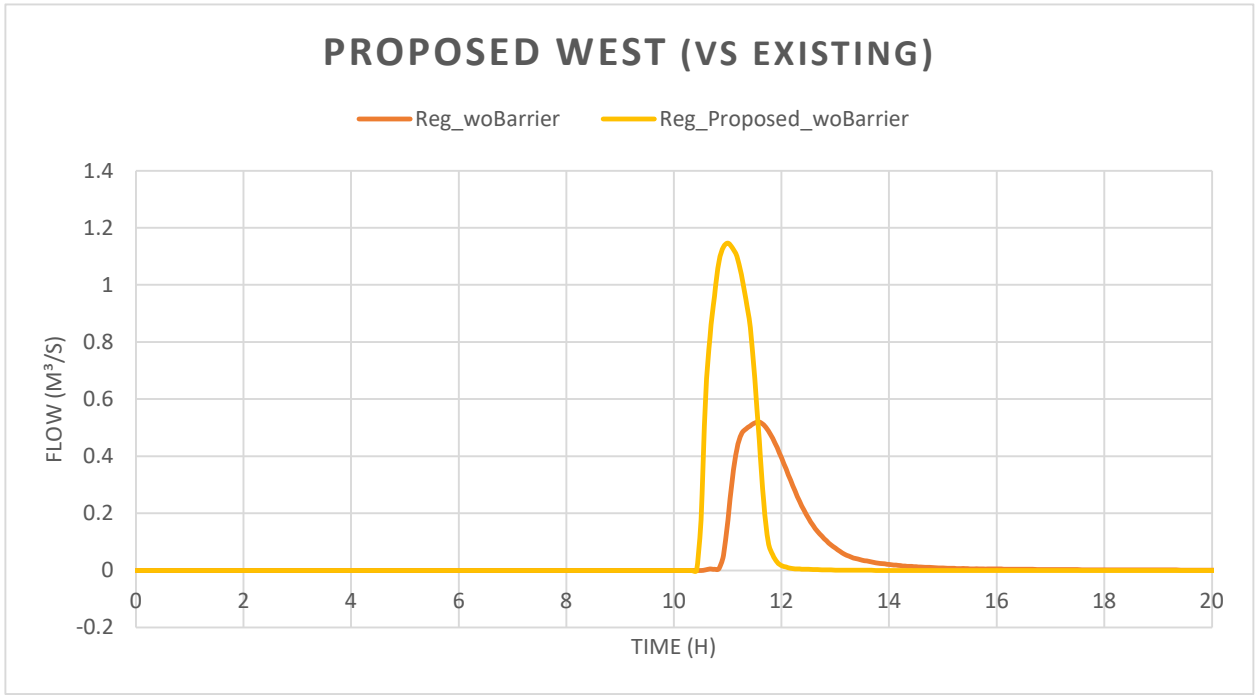


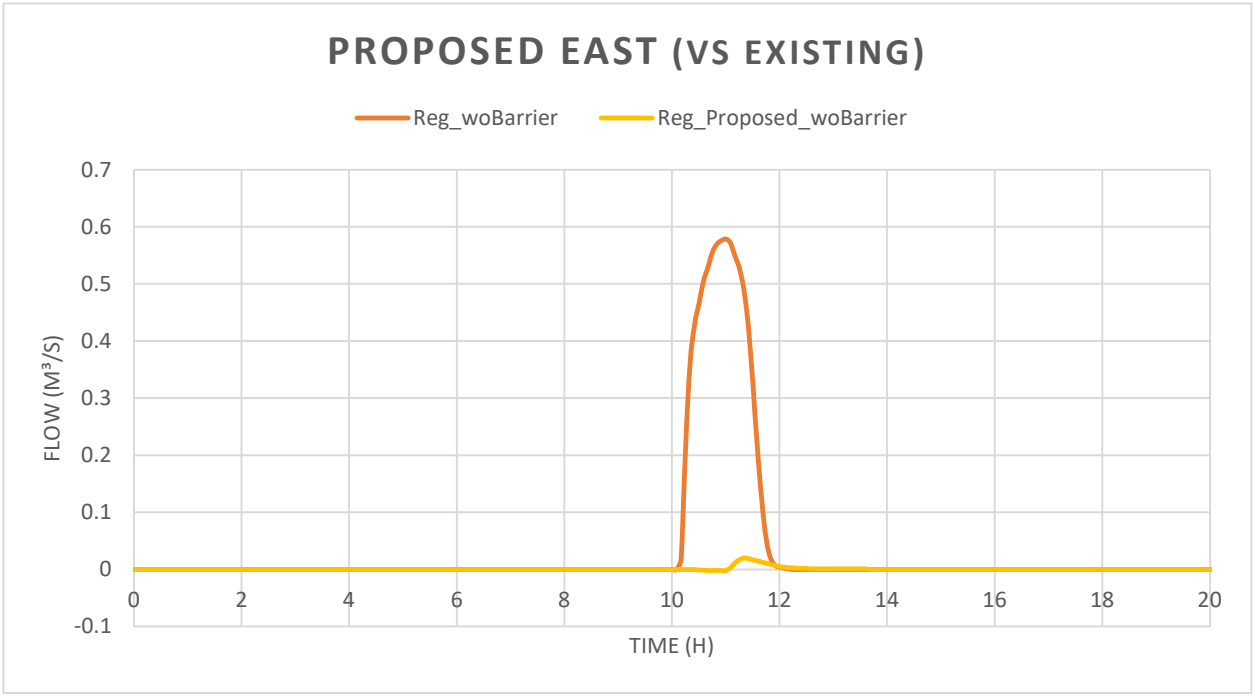
Figure P4 – Change in Depth (Proposed vs. Existing)

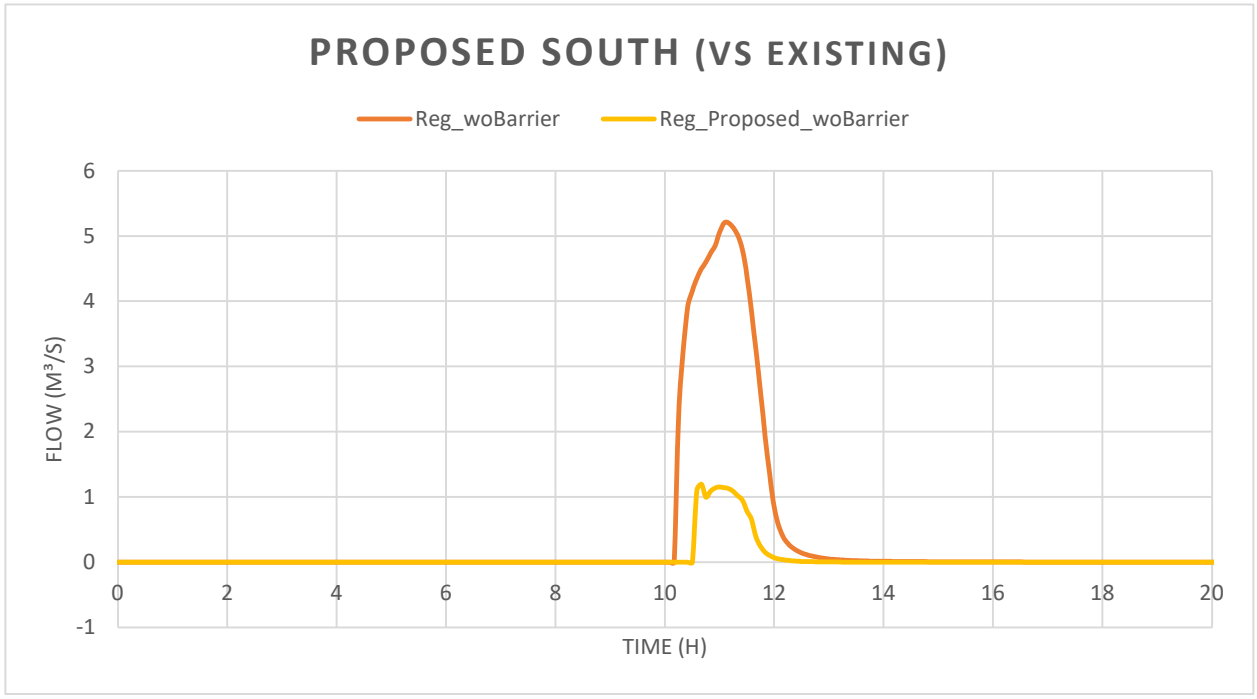
(No Barriers)

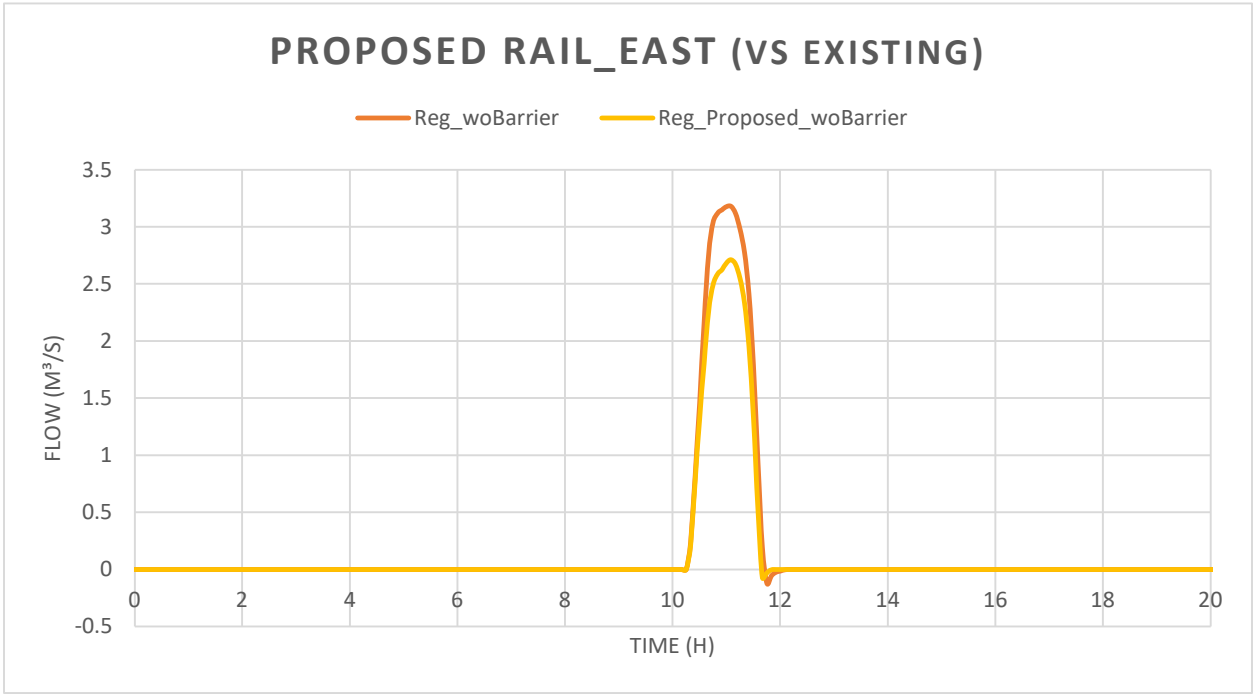


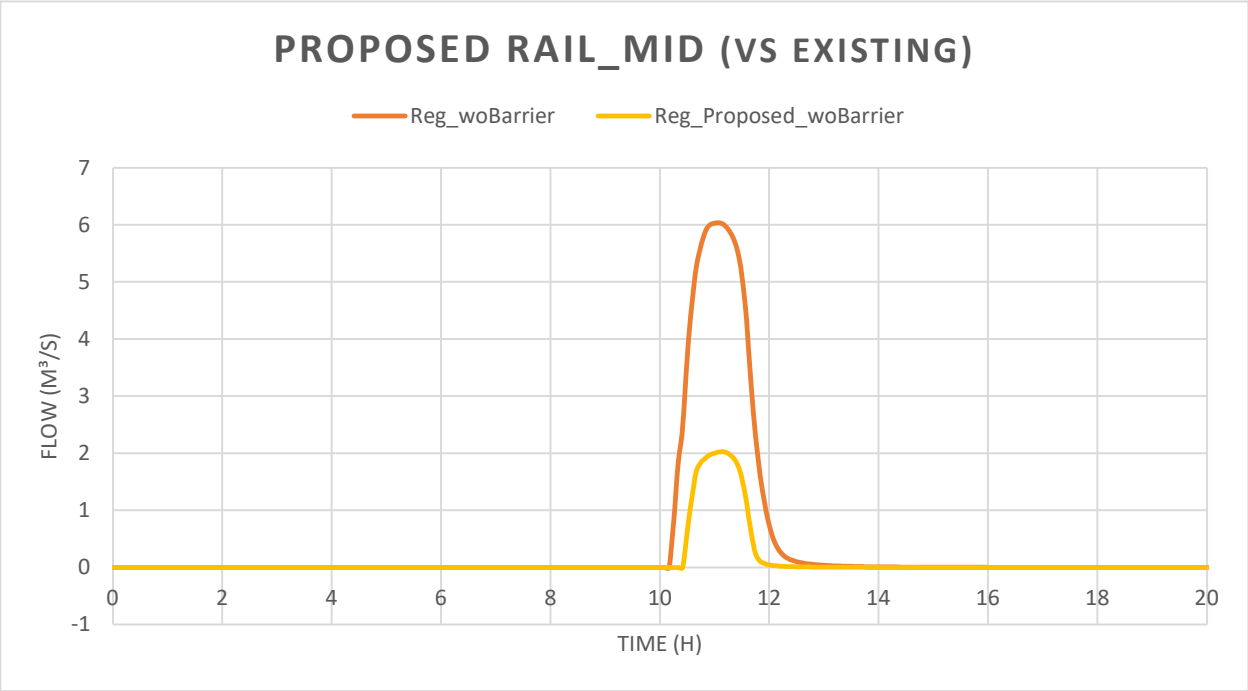

PROPOSED NORTH (VS EXISTING)
Reg_woBarrier
Reg_Proposed_woBarrier
FLOW (M³/S)
7
6
5
4
3
2
1
0
-1
0
2
4
6
8
10
12
14
16
18
20
TIME (H)

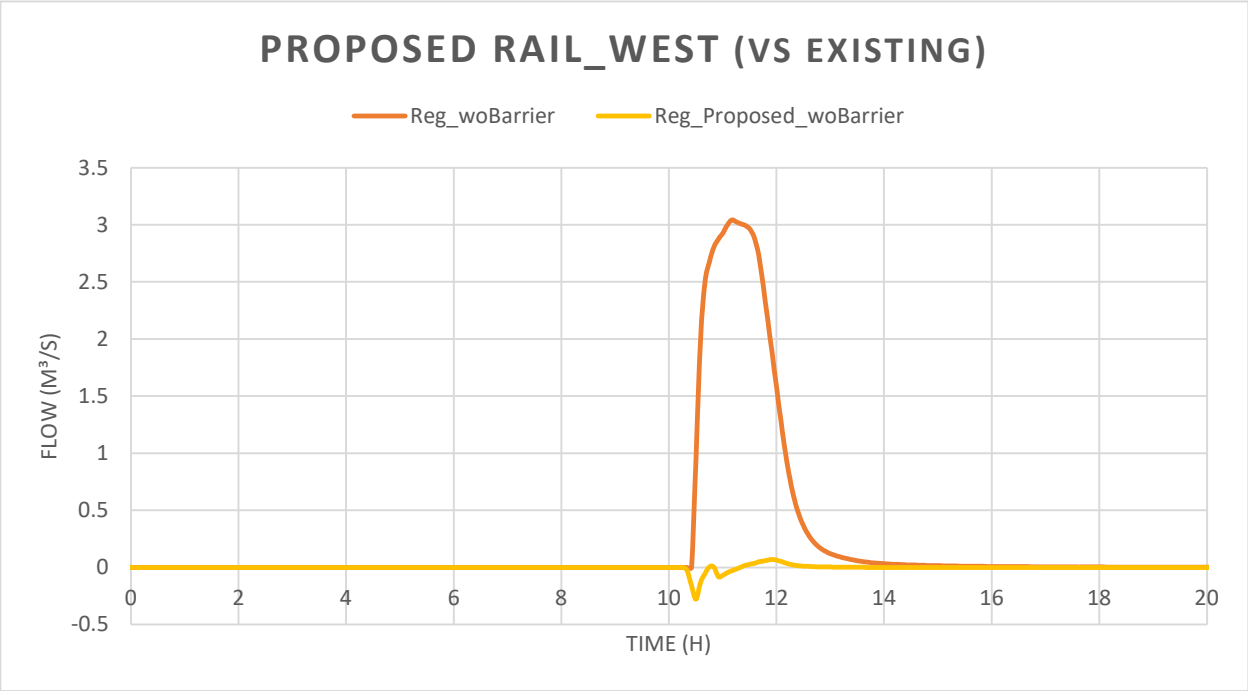

PROPOSED WEST (VS EXISTING)
Reg_woBarrier
Reg_Proposed_woBarrier
FLOW (M³/S)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
0
2
4
6
8
10
12
14
16
18
20
TIME (H)

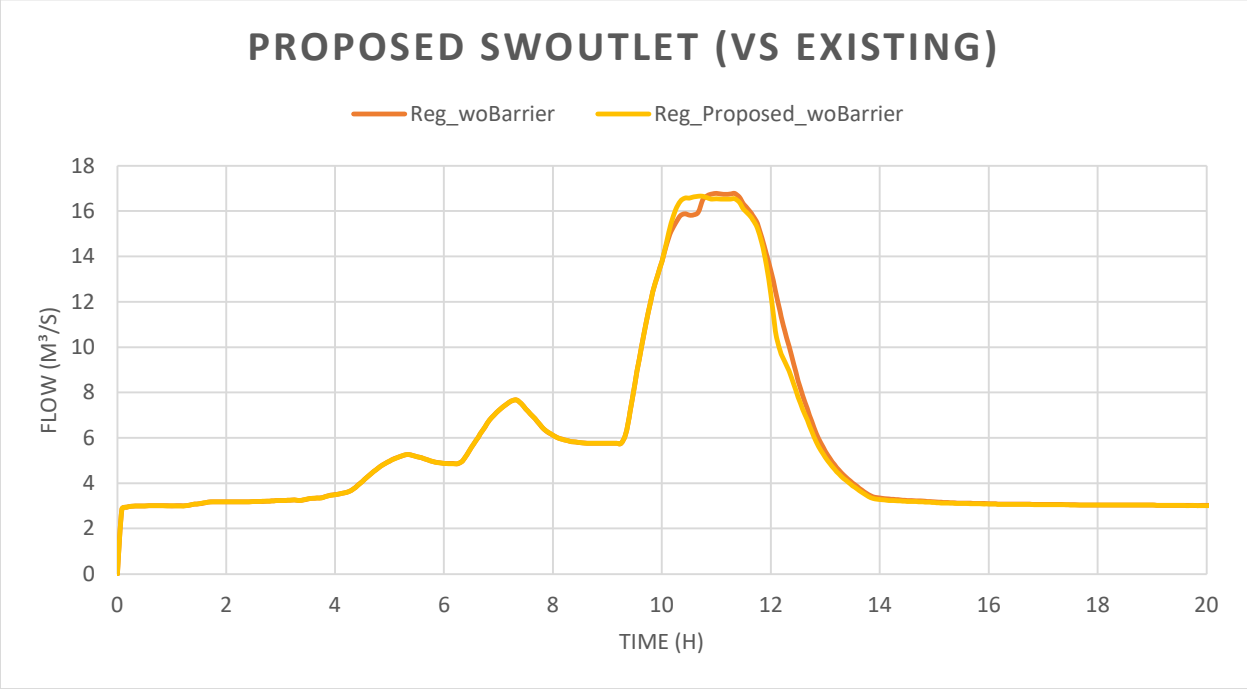

PROPOSED EAST (VS EXISTING)
Reg_woBarrier
Reg_Proposed_woBarrier
FLOW (M³/S)
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
-0.1
0
2
4
6
8
10
12
14
16
18
20
TIME (H)

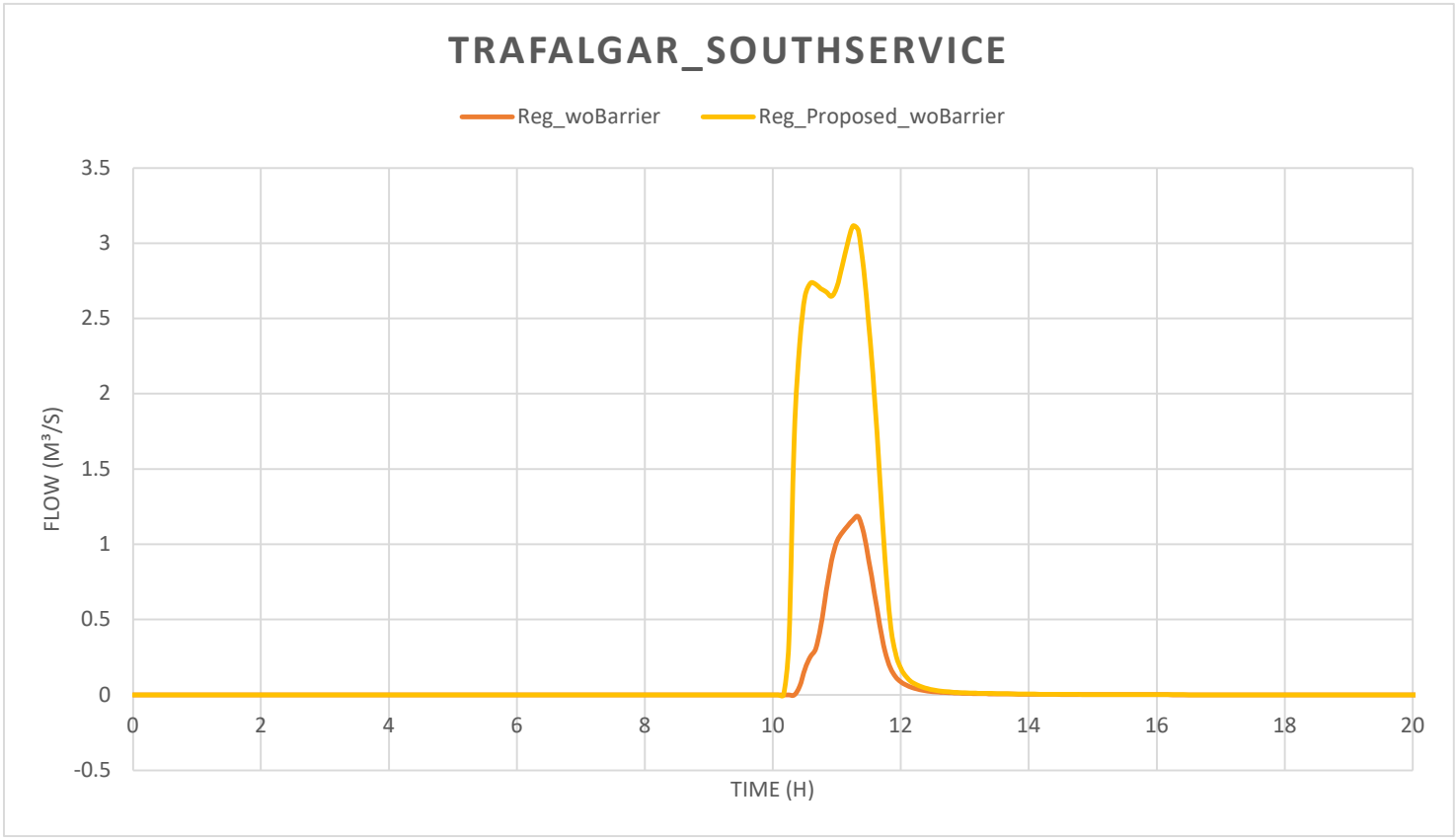

PROPOSED SOUTH (VS EXISTING)
Reg_woBarrier
Reg_Proposed_woBarrier
FLOW (M³/S)
6
5
4
3
2
1
0
-1
0
2
4
6
8
10
12
14
16
18
20
TIME (H)


PROPOSED RAIL_EAST (VS EXISTING)
Reg_woBarrier
Reg_Proposed_woBarrier
FLOW (M³/S)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
2
4
6
8
10
12
14
16
18
20
TIME (H)


PROPOSED RAIL_MID (VS EXISTING)
Reg_woBarrier
Reg_Proposed_woBarrier
FLOW (M³/S)
7
6
5
4
3
2
1
0
-1
0
2
4
6
8
10
12
14
16
18
20
TIME (H)


PROPOSED RAIL_WEST (VS EXISTING)
Reg_woBarrier
Reg_Proposed_woBarrier
FLOW (M³/S)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
2
4
6
8
10
12
14
16
18
20
TIME (H)


PROPOSED SWOUTLET (VS EXISTING)
Reg_woBarrier
Reg_Proposed_woBarrier
FLOW (M³/S)
TIME (H)
0
2
4
6
8
10
12
14
16
18
20


TRAFALGAR_SOUTHSERVICE
Reg_woBarrier
Reg_Proposed_woBarrier
FLOW (M³/S)
TIME (H)
3.5
3
2.5
2
1.5
1
0.5
0
-0.5
0
2
4
6
8
10
12
14
16
18
20

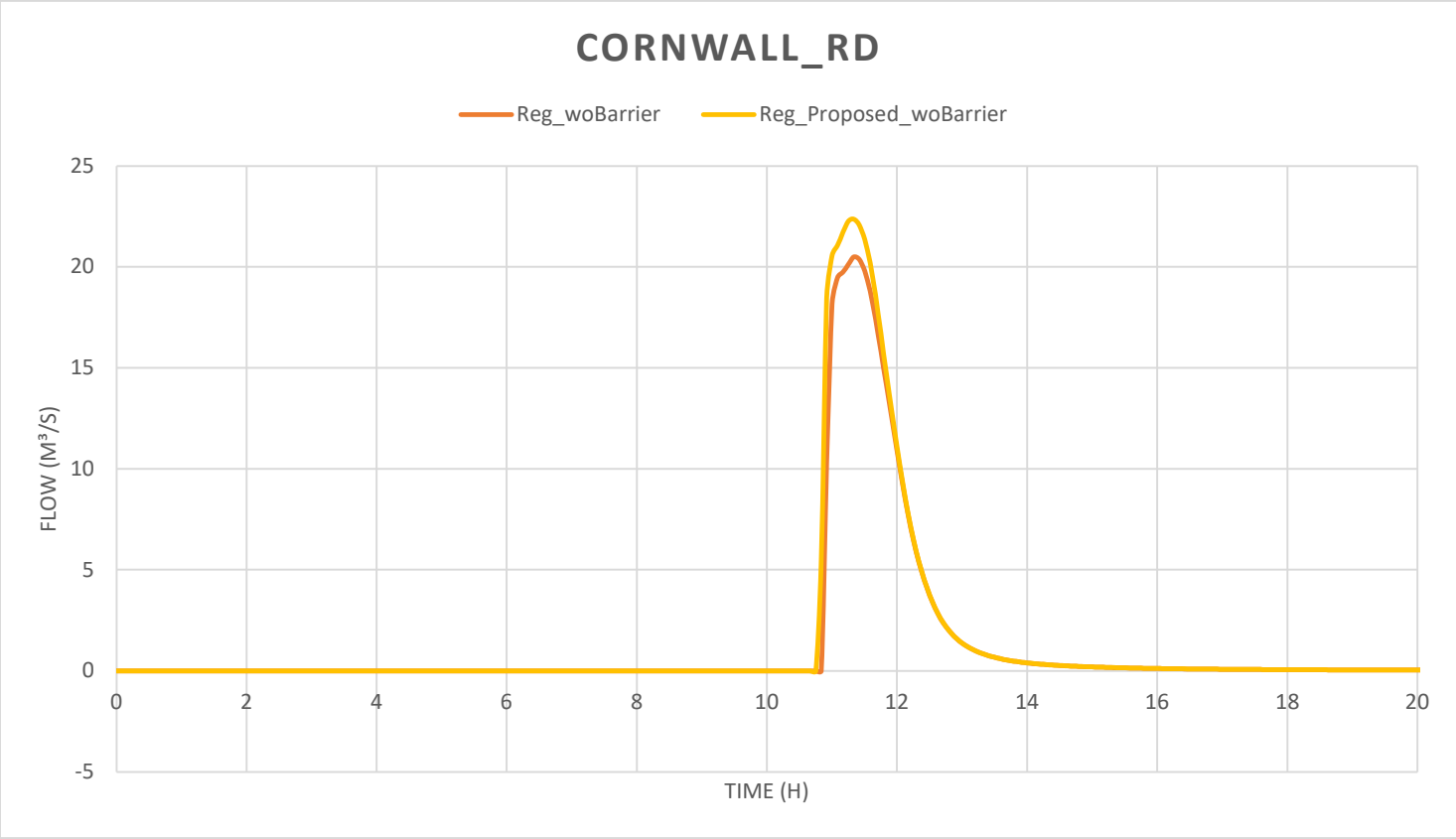

CORNWALL_RD
Reg_woBarrier
Reg_Proposed_woBarrier
25
20
15
10
5
0
-5
FLOW (M³/S)
0
2
4
6
8
10
12
14
16
18
20
TIME (H)

Figure P5 – Regional Flow Balancing

(All Scenarios)

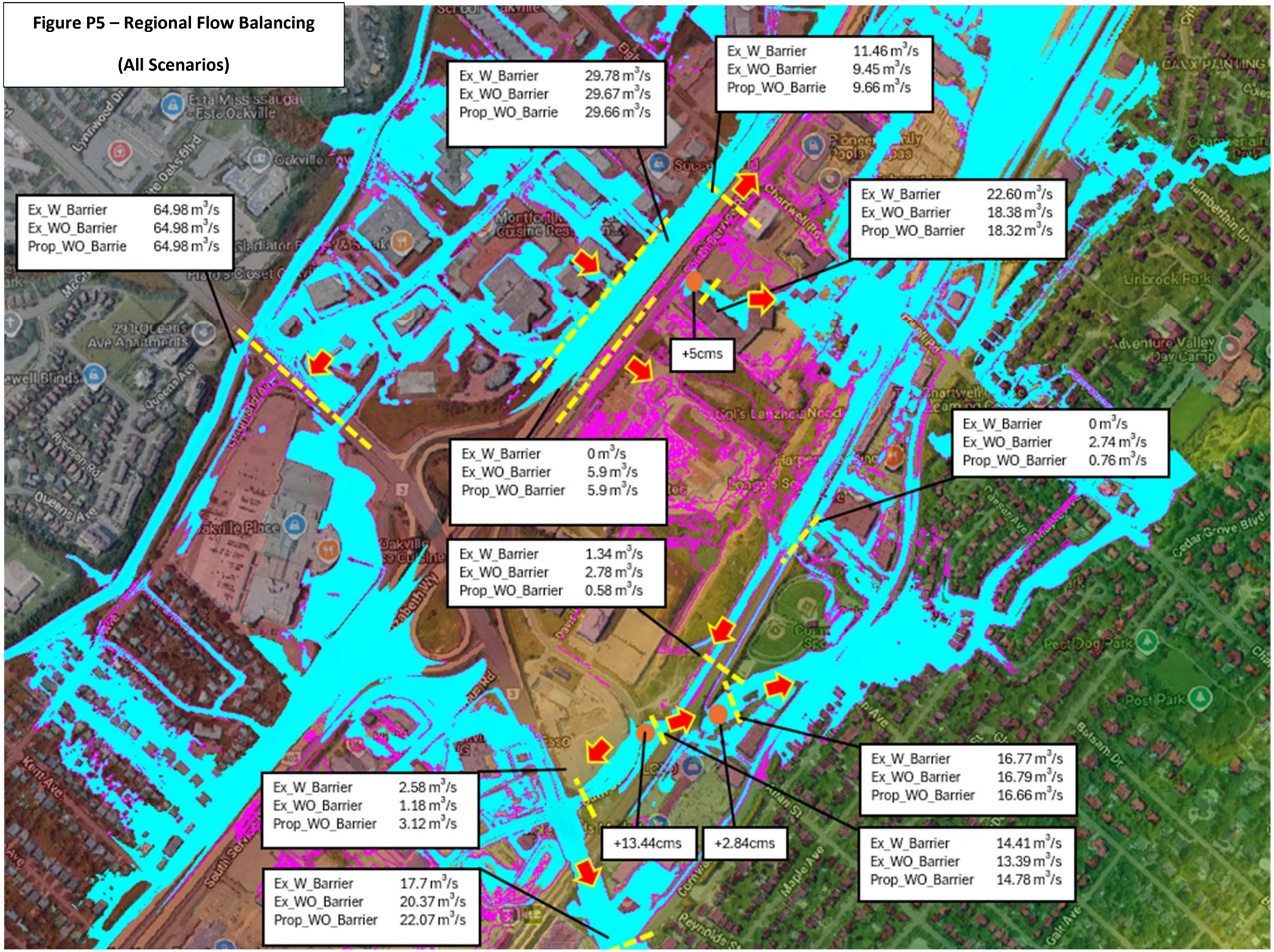
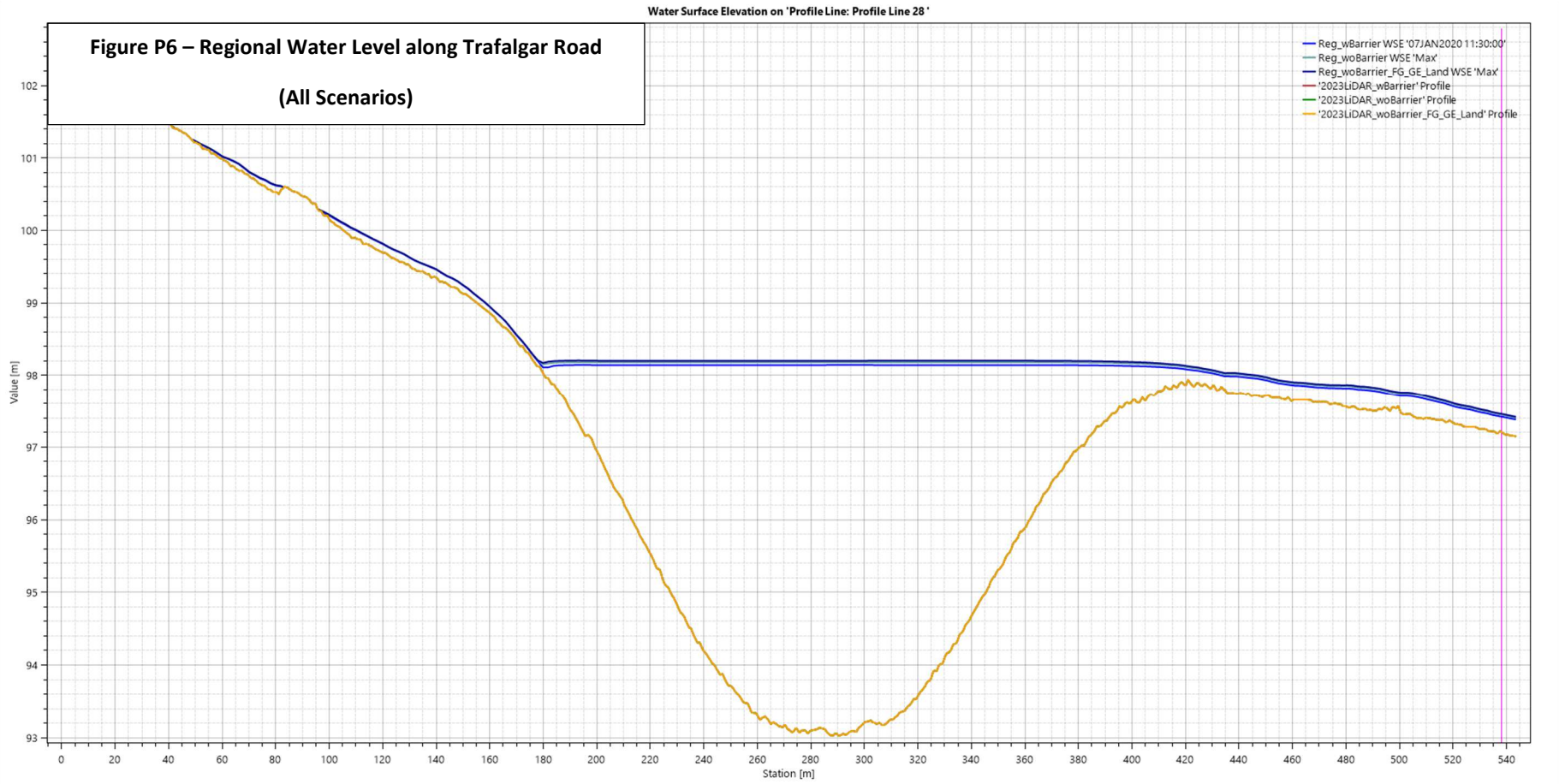


Figure P6 – Regional Water Level along Trafalgar Road

(All Scenarios)



Rail Underpass Considerations (Off-Site Constraint):

Regardless of on-site mitigation, modelling indicates the proposed underpass beneath the railway functions as a major spill outlet for flows originating at/near the culvert east of the subject lands, regardless of how the subject lands are graded or otherwise manages the spill. Under extreme events the underpass becomes inundated; pumping may be insufficient to maintain passable conditions. These findings should inform downstream/agency coordination regarding underpass operational planning and emergency access.

7. Key Assumptions & Limitations

2D Model: Terrain, structures, and hydraulic controls are as per CH's 2D model and are relied on for accuracy (correct flows, culvert information, model parameters, etc.). Preliminary grading for the subject lands is high level and will be refined through subsequent submissions.

Operational constraints off-site: Underpass performance depends on future design (by others); no allowance for pumping has been assumed in the inundation depths or flows reported in this study.

8. Conclusions

The following scenarios and their high-level conclusions are summarized below:

- **Existing / Proposed (barriers in place):** No spill impact to subject lands.
- **Existing (no barriers):** ~5 m^3/s spill traverses the site to the south/south-west, interacts with the rail berm, and is partially redirected east, with capacity exceedance at the existing culvert and secondary westward routing along the rail corridor / spill towards Trafalgar Road.
- **Proposed (no barriers):** A swale plus depressed strata parks and storm sewer capture effectively intercepts/reroutes spill to the south-west, protects buildings/access/UG parking, and results in a downstream flow increase at Trafalgar Road, which does not impact major system depths or the extent of flooding.

Additional coordination / input from CH is required to review the proposed strategy and comment on the flow changes and depth changes in the study area and beyond.

Regards,
Urbantech® Consulting

Andrew Fata, M.Sc.Eng., P.Eng.
Senior Associate, Water Resources

Attachments: Digital Model Files
Figure P7 – Proposed Floodplain Refinements

Figure P7 - Proposed Floodplain Refinements