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500 & 508 Edgeworth Avenue
Ottawa, ON

Site Servicing & Stormwater Management Report

500 & 508 EDGEWORTH AVENUE

SITE SERVICING AND STORMWATER MANAGEMENT REPORT

Prepared for:

Edgeworth Development Lands Corporation
451 Daly Avenue, 2nd Floor
Ottawa, Ontario
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Prepared By:

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March 24, 2026
Revised: May 11, 2026

Novatech File: 121109
Ref: R-2025-93

NOVATECH
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May 11, 2026

FOTENN
420 O'Connor Street
Ottawa, ON K2P 1W4

Attention: **Gillian Henderson, M.USP**
Planner

Reference: **500 & 508 Edgeworth Avenue**
Site Servicing and Stormwater Management Report
Novatech File No.: 121109

Novatech has prepared this Site Servicing and Stormwater Management Report of behalf of Edgeworth Development Lands Corporation for 500 & 508 Edgeworth Avenue.

This report provides an analysis of sewer capacity (sanitary, storm), water distribution, and stormwater management for the proposed development site.

Contact the undersigned with any question or comments.

Yours truly,

NOVATECH

Lucas Wilson, P. Eng.
Project Engineer | Land Development

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1.0 INTRODUCTION

1.1 Background

This report addresses the approach to site servicing and stormwater management for the development at 500 and 508 Edgeworth Avenue (Subject Site), which is being proposed by Edgeworth Development Lands Corporation (Developer).

The Subject Site is located approximately 100 m north of the Edgeworth Avenue and Carling Avenue intersection, as shown on **Figure 1-1** – Key Plan / Existing Conditions. The site is bound to the north by existing residential lands, to the west by NCC lands (LRT corridor), to the south by an existing residential apartment building and Carling Avenue, and to the east by Edgeworth Avenue and existing residential lands.

The existing land usage consists of private dwellings, as shown on **Figure 1-1**. The Subject Site slopes to the west and drains overland to NCC property.

1.2 Proposed Development

A 24-storey residential tower is proposed on the 0.28 ha development site. The building has a total of 262 units, consisting of 7 townhome units and 255 apartment units (33 studio units, 8 1-bedroom units, 106 1-bedroom + den units, 89 2-bedroom units, 10 2-bedroom + den units and 9 3-bedroom units) as shown in **Table 1.1**. The development will include two levels of underground parking that encompass the majority of the site, with access off Edgeworth Avenue. The proposed development is shown on **Figure 1-2** – Concept Plan.

Table 1.1: Development Land Use Breakdown

Building Type	**Number of Units**	
	Townhome	**Apartment**
24 Storey Residential Building	7	255
Population Estimate	**478 (262 Units)**	

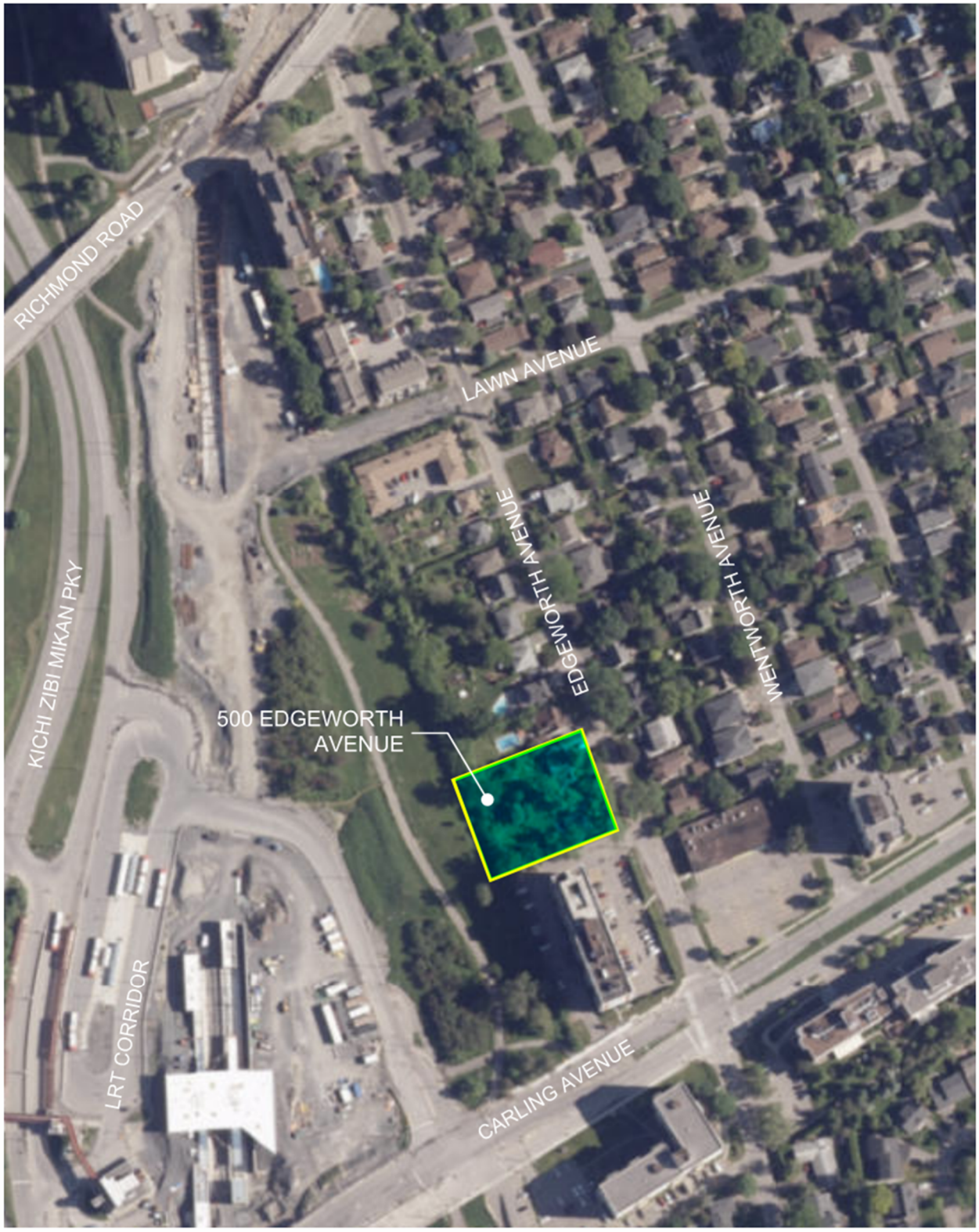

Figure 1-1: Key Plan / Existing Conditions

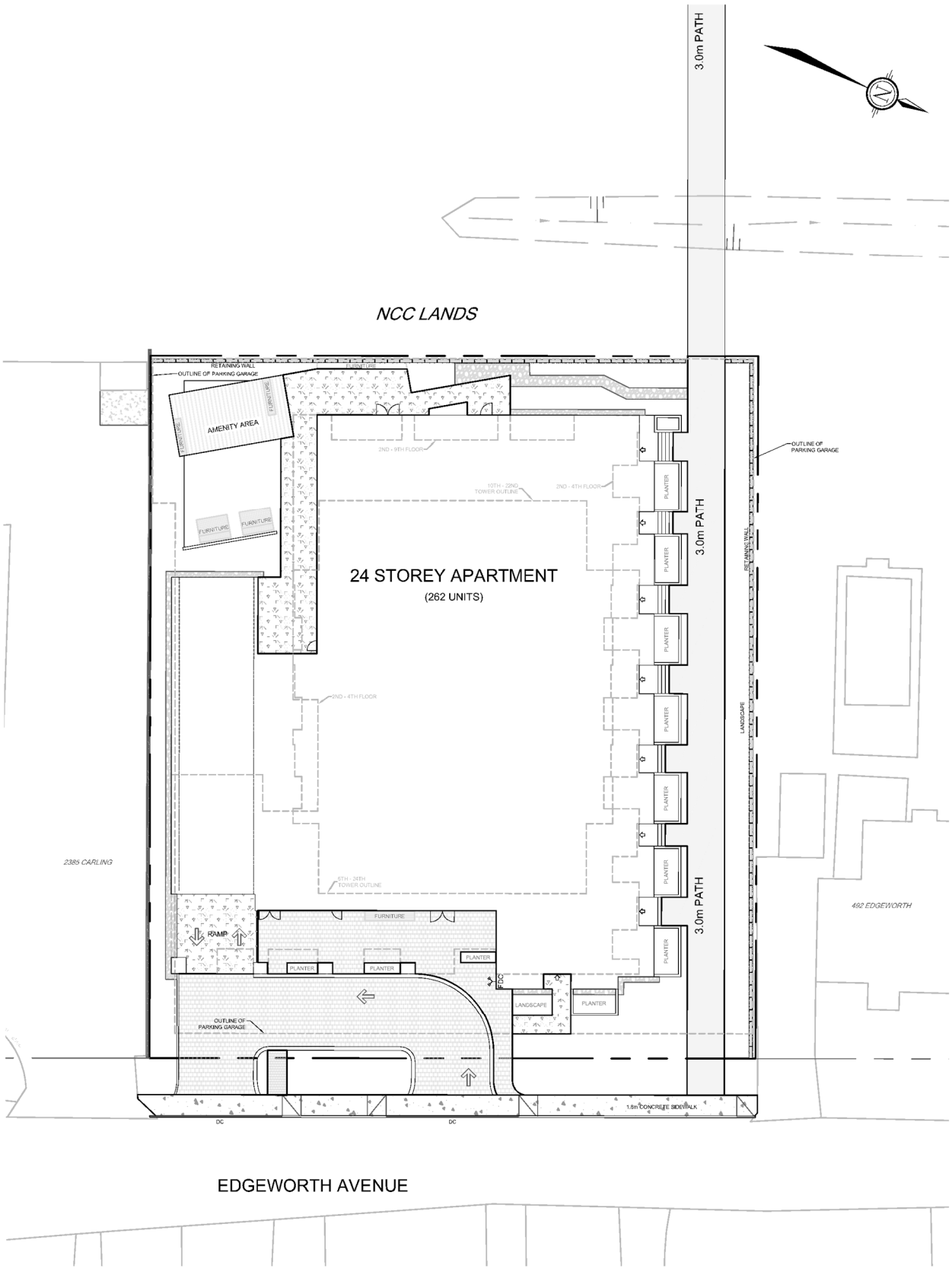

Figure 1-2: Concept Plan

2.0 GEOTECHNICAL

EXP Services Inc. (EXP) prepared a geotechnical investigation in support of the proposed residential development:

Geotechnical Investigation Report – Proposed Residential Development, 500 and 508 Edgeworth Avenue, Ottawa, Ontario; Report No. OTT-23002437-B0, EXP Services Inc., August 26, 2025.

Based on the geotechnical study, it is not anticipated that there will be any significant geotechnical concerns with respect to servicing and developing the site. A summary of the geotechnical report findings is provided in **Table 2.1** below.

Table 2.1: Geotechnical Summary

Parameter	Summary
Sub-Grade	Fill, buried topsoil layer, very loose to very dense glacial till, bedrock
Grade Raise Restriction	N/A
Groundwater	Groundwater level (1.5m to 3.4m depths). It is anticipated that groundwater infiltration into the excavations will occur and be controllable using pumping from sumps.
Bedrock	Shale bedrock with frequent limestone seams and layers encountered in BH 25-04 (5.1m depth) Line drilling of the perimeter in conjunction with controlled rock blasting and/or hoe ramming expected.
Pipe Bedding & Backfill	Pipe Bedding 150 mm Granular A Pipe Cover 300 mm Granular A Backfill Imported Material

3.0 STORM SEWER AND STORMWATER MANAGEMENT

3.1 Storm Servicing

There is an existing 250 mm diameter ditched pipe system within the boulevard on the west side of Edgeworth Avenue. The ditched pipe system outlets to an existing 1050 mm trunk storm sewer within Lawn Avenue.

A cistern is proposed to capture site drainage and will discharge via a 75 mm forcemain connected to CBMH1 located on-site. The upper portion of the ditched pipe system will be removed (approximately 81 m) and replaced at a lower elevation and extended to the proposed CBMH1.

Refer to **Figure 3-1** – Proposed Servicing Layout Plan for an illustration of the proposed storm service, and existing storm sewers.

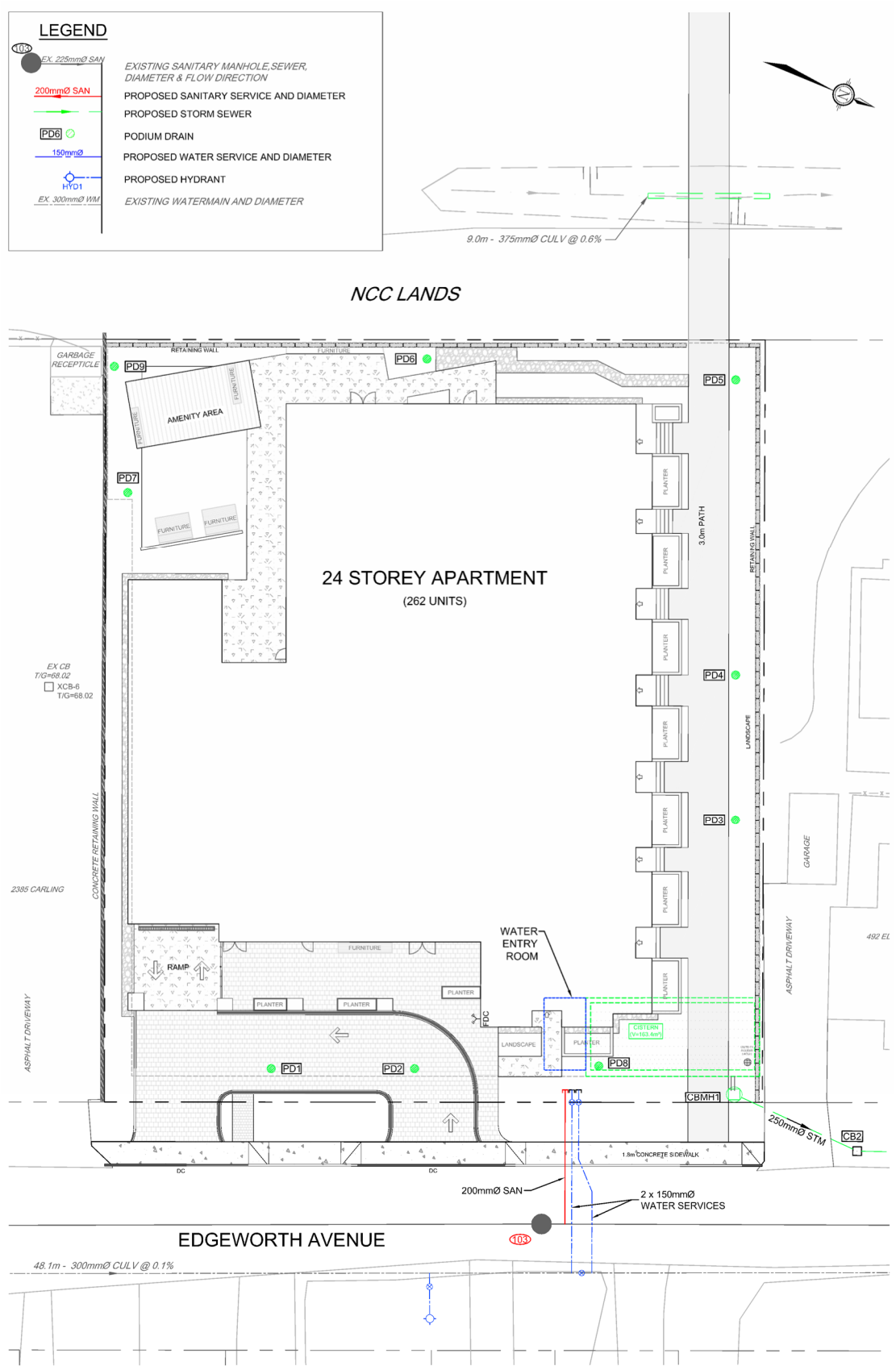

Figure 3-1: Proposed Servicing Schematic

3.2 Stormwater Management Criteria

The development is located within the Pinecrest subwatershed, which falls under the jurisdiction of the Rideau Valley Conservation Authority (RVCA). The following stormwater management criteria has been developed based on the criteria in the Ottawa Sewer Design Guidelines, subsequent Technical Bulletins, and the Pinecrest Creek/Westboro Area Guidelines. The Pinecrest Creek/Westboro Area report prepared by J.F. Sabourin and Associates Inc., dated May 2019 has been used as a reference document only and not for the stormwater management design criteria.

- On-site stormwater quantity control to be implemented to control post-development stormwater discharge for all storms up to and including the 100-year event to the allowable release rate specified in section 3.4.
- A minimum on-site retention of the 10 mm design storm.
- On-site removal of 80% TSS.

3.3 Pre-Development Conditions

The development is currently occupied by two single family dwellings. The topographical survey plan prepared by JD Barnes indicates that under existing conditions, the site sheet drains west towards the NCC Lands. Refer to **Figure 1.1** – Key Plan / Existing Conditions.

3.4 Allowable Release Rates

Based on the Pinecrest Creek/Westboro Area SWM Guidelines, the allowable release rate is the most stringent of:

- The 100-year discharge controlled to 33.5 L/s/ha (33.5 L/s/ha x 0.28 = 9.4 L/s).
- Post-development flows controlled to pre-development release rates ($Q_{2YR\text{-}PRE}$=19.9 L/s).

The most stringent guideline is dictated by the 33.5 L/s/ha and results in an allowable release rate of 9.4 L/s. As mentioned above, the site currently discharges to NCC lands. Under post-development conditions, the on-site cistern will discharge to a proposed CB, which directs flows to the existing ditched pipe system within the west boulevard of Edgeworth Avenue. Refer to **Appendix B** for pre-development flow calculations.

Existing Flows to Edgeworth Avenue

The Pre-Development Storm Drainage Area Plan (**Appendix B**) delineates the site area directed to NCC lands and Edgeworth Avenue. A total area of 0.077 ha is currently being directed to Edgeworth Avenue with a runoff coefficient of 0.42. The 5-year flow directed to Edgeworth Avenue is 9.3 L/s (calculation provided in **Appendix B**). Flows from the site are not permitted to continue draining to NCC lands, as such, the cistern and pump have been designed to detain the full site area storm runoff (0.28 ha) to meet the allowable release rate identified in Section 3.4 above (9.4 L/s) and outlet to the Edgeworth Avenue front-yard sewer pipe system. The allowable release rate to Edgeworth Avenue will be exceeded and at the request of the City of Ottawa, downstream modelling was performed to analyze impacts.

3.5 On-site Retention

The SWM guidelines for the Pinecrest Creek / Westboro Study Area specify the requirement for on-site retention of the 10mm storm event. The proposed high-density residential development includes a parking garage that occupies the full site footprint, limiting the feasibility of infiltration-based LID measures. Section 3.3.6.1 of the Pinecrest Creek/Westboro Area report

prepared by J.F. Sabourin and Associates Inc. dated May 2019, states the 10 mm target can be partially achieved by the default initial abstraction (IA) values applicable in urban areas. The City of Ottawa Sewer Design Guidelines allows a designer to account for a 4.67 mm IA on all soft landscaped surfaces and a 1.57 mm IA on all hardscaped surfaces. The development (0.276 ha) consists of 0.049 ha of soft landscaped surfaces and 0.227 ha of hardscaped surfaces resulting in an IA weighted value of 2.1 mm. With the first 2.1 mm of retention accounted for using default initial abstraction values, the remaining 7.9 mm of the infiltration target can be achieved through additional retention methods and/or detention within the cistern. Alternative retention methods may include soil cells supporting large trees along the north property line beneath the multi-use pathway and/or permeable pavers at the site entrance. At the detailed design stage, any infiltration targets that cannot be met by retention methods will be addressed through detention in the underground parking cistern.

Cistern Capacity

The remaining 7.9 mm target applied across the full 0.276 ha site results in a retention volume of 21.8 m^3. To contain the 100-year storm within the cistern, while meeting the allowable release rate, a volume of 101.6 m^3 is required. The cistern has a total volume of 163.4 m^3 providing an additional 61.8 m^3 of detention storage beyond the 100-year storm event. Refer to Section 3.7 for more detailed cistern information.

3.6 Quality Control

Quality control is not required as the majority of runoff originates from the rooftop (considered relatively clean); there are no parking or roadways located at surface level and all underground parking floor drains are directed to the sanitary sewer.

3.7 Stormwater Quantity Control

Stormwater quantity control will be provided using a single cistern that will be located within the underground parking garage.

SWM Modelling

PCSWMM was used to confirm the required storage volumes for each storm event and ensure the allowable release rate is met.

The SWM modelling was completed using the 3-hour Chicago Storm Distribution (10-minute time step). The design storms were generated using IDF curves from the City of Ottawa Sewer Design Guidelines (October 2012).

Calculation Parameters

Refer to drawing **121109-STM** – Post-Development Storm Drainage Area Plan for details on the drainage areas. A description of each area is as follows:

A-01 to A-03: Areas consist of the building rooftop, entrance access driveway and landscaped areas. These areas will be directed internally to the cistern which will include a pump discharging flows to the Edgeworth Avenue ditched pipe system.

EX01-EX12: Areas consisting of existing residential front-yards and rear-yards draining to the existing storm system along the east and west sides of Edgeworth Avenue and directed to the 1050mm diameter trunk storm sewer at Lawn Avenue.

Cistern Design

Flows from the cistern will be controlled by a pump that conveys flows to CBMH1 via a 75 mm forcemain. Flows from CBMH1 will drain by gravity to the existing ditched pipe system in Edgeworth Avenue. The cistern has storage capacity for storms up to the 100-year event. The cistern will include a 150 mm internal overflow located above the 100-yr water elevation, and vented lids for maintenance access and emergency discharge to the Edgeworth Avenue right-of-way. The proposed pump and back-up power system will be designed by the mechanical consultant. The pump will be designed to convey flows at a constant rate of **9.4 L/s**. Refer to drawing **121109-GP** – General Plan of Service for details on the cistern.

Table 3.1 below summarizes the total post-development flow from the Subject Site for the 5-year and 100-year design events, and storage volume.

Table 3.1: Stormwater Management Summary

Area ID	Area (ha)	1:5 Year Weighted Cw	5-Year Storm Event		100-Year Storm Event		Provided Vol (cu.m)
			Release (L/s)	Req'd Vol (cu.m)	Release (L/s)	Req'd Vol (cu.m)	
Controlled Flow							
A-01 to A-03	0.28	0.74	9.4	42.4	9.4	101.6	163.4
Total Controlled Flow to Edgeworth Ave			**9.4**	**42.4**	**9.4**	**101.6**	**163.4**

As shown in the table above, the cistern provides sufficient volume to contain the 100-year storm event. Additional volume has been provided to contain the 100-year + 20% storm event, refer to **121109-GP** for cistern details and water elevations for the 2-year and 100-year + 20% events.

Downstream Analysis

The City of Ottawa requested a downstream analysis of the ditched pipe system to ensure the additional flow from 500 Edgeworth Avenue does not negatively impact the existing system. All dwellings along the west side of Edgeworth Avenue are equipped with sump pumps which outlet to the grassed surface and are not hydraulically connected to the ditched pipe. The analysis includes subcatchments tributary to both the east and west sides of Edgeworth Avenue up to the connection to the 1050 mm diameter trunk storm sewer. Ponding starts to occur during the 10-year storm event up to a maximum ponding depth of 0.28 m during the 100-year storm event at XCB3. **Table 3.2** below provides a summary of the ponding depths downstream of CB3 for the ditched pipe system running along the west side of Edgeworth Avenue.

Table 3.2: Ponding Results

Structure	T/G (m)	Obvert (m)	HGL Elev. (m)				Ponding Depth (m)			
			5-yr	10-yr	25-yr	100-yr	5-yr	10-yr	25-yr	100-yr
CB1	67.09	65.81	66.19	66.75	67.03	67.13	0.00	0.00	0.00	0.04
CB2	67.36	65.90	66.20	66.77	67.05	67.16	0.00	0.00	0.00	0.00
CBMH1	67.61	65.99	66.20	66.77	67.05	67.16	0.00	0.00	0.00	0.00
LCB1	67.00	65.71	66.12	66.61	66.87	67.11	0.00	0.00	0.00	0.11
LCB2	66.92	65.63	66.07	66.50	66.74	66.94	0.00	0.00	0.00	0.02
LCB3	66.64	65.52	65.95	66.25	66.37	66.58	0.00	0.00	0.00	0.00
XCB3	65.50	64.09	65.45	65.65	65.72	65.78	0.00	0.15	0.22	0.28

Structure	T/G (m)	Obvert (m)	HGL Elev. (m)				Ponding Depth (m)			
			5-yr	10-yr	25-yr	100-yr	5-yr	10-yr	25-yr	100-yr
XCB4	65.97	65.41	65.83	65.99	66.00	66.01	0.00	0.02	0.03	0.04
XCB5	65.81	65.19	65.71	65.90	65.94	65.97	0.00	0.09	0.13	0.16

The table above shows that the additional flow from 500 Edgeworth Avenue does not cause excessive ponding within the boulevard and illustrates that the existing storm system has adequate capacity to convey the flows downstream to the 1050 mm diameter trunk sewer.

3.8 Proposed 375mm HDPE Culvert Analysis (NCC Lands)

The Storm Drainage Area Plan delineates the area directed to the inlet of the proposed 375 mm HDPE culvert located within NCC lands. A total area of 0.40 ha, consisting mainly of grassed and heavy treed areas, has a calculated runoff coefficient of 0.27. The 100-year peak flow directed to the proposed culvert is 64.5 L/s (refer to **Appendix B** for calculations). The 375 mm culvert has a slope of 0.55% and a roughness coefficient of 0.011 providing a full-flow capacity of:

$$\text{Area: } A = \pi D^2/4 = 0.110 \text{ m}^2$$

$$\text{Hydraulic Radius: } R = D/4 = 0.094 \text{ m}$$

$$\text{Manning's Equation: } Q_{FULL} = 1/n\ AR^{2/3}\ S^{1/2} = 151 \text{ L/s}$$

The velocity during the 100-year storm event is estimated below:

$$V = Q/A = 0.59 \text{ m/s}$$

With a full-flow capacity of 151 L/s, the culvert provides adequate conveyance for the 100-year peak flow of 64.5 L/s. The resulting outlet velocity of 0.59 m/s is well below the City of Ottawa's typical erosion thresholds, indicating that scour protection is not required. The downstream ditch is densely vegetated with no exposed soil, further confirming that the installation of the 375 mm culvert will not create erosion concerns. The depth of cover over the proposed culvert is above 500 mm, providing adequate cover for the full depth of material required for the multi-use pathway installation (50 mm asphalt, 150 mm Gran 'A', 300 mm Gran 'B').

3.9 Site Grading & Emergency Overland Flow

As described above, the existing site is currently graded to direct runoff west towards NCC Lands. The proposed design intent for the site is to contain and direct all stormwater runoff to the on-site area drains.

In the case of a major rainfall event exceeding the design storms or blockage of the area drains, stormwater will pond to a maximum depth of 0.18 m before cascading off-site towards Edgeworth Avenue or NCC Lands. The emergency overland flow route is shown on **121109-STM** – Post-Development Storm Drainage Area Plan.

Refer to **121109-GR** - Grading Plan for proposed site grading, grading tie-ins, spill elevations, and the emergency overland flow route.

4.0 SANITARY SEWER

4.1 Sanitary Infrastructure

The proposed development will be serviced by one (1) 200 mm diameter sanitary service. The proposed building sanitary service will be connected to the existing 225 mm diameter sanitary sewer in Edgeworth Avenue, approximately 1.5 m downstream of SANMH 103, directing flows to an existing 450 mm sanitary sewer which outlets to the West Nepean Collector.

Refer to **Figure 3.1** – Proposed Servicing Layout Plan for an illustration of the proposed sanitary service, and existing sanitary sewers.

4.2 Sanitary Design Parameters

The peak design flow parameters in **Table 4.1** have been used in the sewer capacity analysis. Unit and population densities and all other design parameters are specified in the Ottawa Sewer Design Guidelines and Technical Bulletin PIEDTB-2018-01.

Table 4.1: Sanitary Sewer Design Parameters

Design Component	Design Parameter
Unit Population: Single Family Semi-detached/Townhome Average Apartment	 3.4 people/unit (used for existing) 2.7 people/unit (used for existing) 1.8 people/unit
Residential Flow Rate: Design	 280 L/cap/day
Residential Peaking Factor	Harmon Equation (min=2.0, max=4.0)
Harmon Correction Factor: Design	 0.8
Extraneous Flow Rate: Design	 0.33 L/s/ha
Minimum Pipe Size	200 mm (Res)
Minimum Velocity[1]	0.6 m/s
Maximum Velocity	3.0 m/s
Minimum Pipe Cover	2.5 m (Unless frost protection provided)

4.3 Sanitary Sewer Analysis

Existing sanitary flows downstream of City of Ottawa SANMH 103 in Edgeworth Avenue were analyzed to determine available capacity for additional flows from the proposed development. The analysis includes the 225 mm sanitary sewer in Edgeworth Avenue up to the connection to the 450 mm sanitary sewer at Lawn Avenue.

Sanitary flow from 500 & 508 Edgeworth Avenue is calculated to be 5.3 L/s. The sanitary flow entering SANMH107 at Lawn Avenue including the proposed site and existing dwellings is 9.4 L/s. The sanitary design sheet in **Appendix C** includes an analysis of the existing 225 mm diameter

sanitary sewer in Edgeworth Avenue and shows that there is adequate capacity to accommodate the proposed development.

5.0 WATER SUPPLY

5.1 Water Infrastructure

The proposed development will be serviced with two 150 mm diameter watermains with connections to the existing 300 mm diameter watermain in Edgeworth Avenue.

Refer to **Figure 3.1** – Proposed Servicing Layout Plan for an illustration of the proposed watermain services, and existing watermains.

5.2 Watermain Design Parameters and Demands

The domestic and fire fighting demand design parameters, and system pressure design criteria are outlined in **Table 5.1** below. Unit and population densities and all other design parameters and system pressure design criteria are specified in the Ottawa Water Distribution Guidelines.

Table 5.1: Watermain Design Parameters and Criteria

Domestic Demand	**Design Parameters**
Unit Population: Apartment Townhome	 1.8 people/unit 2.7 people/unit
Average Day Residential Demand (AVDY)	280 L/c/d
Maximum Day Demand (MXDY)	2.5 x AVDY
Peak Hour Demand (PKHR)	2.2 x MXDY
Fire Protection	**Design Flows**
Fire Demand (FF)	100 L/s per FUS
System Pressure Scenarios	**Criteria**
Maximum Pressure (AVDY) Condition	< 80 psi occupied areas (552 kPa) < 100 psi unoccupied areas (690 kPa)
Minimum Pressure (PKHR) Condition	> 40 psi (276 kPa)
Minimum Pressure (MXDY + FF) Condition	> 20 psi (138 kPa)

5.2.1 Domestic Demands

Based on the above parameters, the theoretical water demands from the proposed development were calculated and are as follows:

- Population = 477.9 persons
- Average Day Demand = 1.549 L/s
- Maximum Day Demand = 3.872 L/s
- Peak Hour Demand = 8.518 L/s

Refer to **Appendix D** for water demand calculations.

5.2.2 Fire Protection

The required fire protection for the Subject Site was calculated using the Fire Underwriters Survey (FUS). Water supply for fire protection was calculated as 100 L/s.

Refer to **Appendix D** for a copy of the FUS fire flow calculations.

5.3 Hydraulic Analysis

This water demand information was submitted to the City and boundary conditions provided from the City's water model. The boundary conditions were used to complete a hydraulic analysis to confirm the existing water infrastructure has capacity for the proposed development. The hydraulic analysis was completed using EPANET, to confirm that the existing water infrastructure will meet the required pressures in the average day and peak hour conditions under domestic use and during maximum day plus fire flow conditions. Refer to **Table 5.2** and **Table 5.3** for the results of the hydraulic analysis for the domestic demands.

Table 5.2 Summary of Hydraulic Model Results – Peak Hour Demand

Operating Condition	Pressure at Building
8.518 L/s through system	396.91 kPa (57.6 psi)

Table 5.3 Summary of Hydraulic Model Results – Max Pressure Check

Operating Condition	Pressure at Building
1.549 L/s through system	464.01 kPa (67.3 psi)

Therefore, the existing watermain along Edgeworth Avenue provides adequate pressures for domestic demands. Note that due to the size of the buildings, booster pumps will be required to provide adequate service pressure on the upper floor levels.

For fire fighting purposes, the proposed buildings are to be sprinklered with fire department connections (FDC). In addition to the FDC connections, there are two existing fire hydrants in the vicinity of the site; one located at 487 Edgeworth Avenue (79 m from building FDC), and one located at the intersection of Edgeworth and Carling Avenues (125 m from FDC). A hydrant is proposed across the street in front of 501 Edgeworth Avenue located within 45 m of the FDC per Ontario Building Code requirements. Refer to **Table 5.4** for the results of the hydraulic analysis for fire fighting demands.

Table 5.4 Summary of Hydraulic Model Results – Max Day + Fire Flow

Operating Condition	100 L/s at Building
3.872 L/s through system	406.04 kPa (58.9 psi)

Table 5.5 Maximum Hydrant Capacity

Required Fire Flow (per FUS)	Maximum Hydrant Capacity					
	Proposed HYD1		Ex HYD (Carling Avenue)		Ex HYD (487 Edgeworth)	
	Class	Distance to FDC	Class	Distance to FDC	Class	Distance to FDC
100 L/s	AA (Blue Top)	22.5 m	AA (Blue Top)	125.0 m	AA (Blue Top)	79.4 m
	95 L/s		63 L/s		63 L/s	
	221 L/s Available Within 150 m of FDC					

Therefore, based on the boundary condition information provided by the City, the existing watermain infrastructure can provide adequate flow and pressure for domestic demand and fire protection for the proposed development. Refer to **Appendix D** for water demands, fire flow calculations, and boundary conditions.

6.0 EROSION AND SEDIMENT CONTROL AND DEWATERING MEASURES

Erosion and sediment control measures will be implemented in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites" (Government of Ontario, May 1987). Details will be provided on an Erosion and Sediment Control Pla. Erosion and sediment control measures will include:

- Placement of filter fabric under all catch basin and maintenance hatches;
- Tree protection fence around the trees to be maintained;
- Silt fence around the area under construction placed as per OPSS 577 / OPSD 219.110;
- Mud mats located at site entrances.

The erosion and sediment control measures will need to be installed to the satisfaction of the engineer, the City, the Ontario Ministry of Environment Conservation and Parks (MECP), and the RVCA, prior to construction and will remain in place during construction until vegetation is established. The erosion and sediment control measure will also be subject to regular inspection to ensure that measures are operational.

A Permit-To-Take-Water (PTTW) is no longer required as of July 1st, 2025, construction site dewatering activities must be registered on the Environmental Activity and Sector Registry (EASR) if they take more than 50,000 L/day.

7.0 SUMMARY AND CONCLUSIONS

This report demonstrates that the proposed development can be adequately serviced with storm and sanitary sewers and watermain. Key findings are summarized below:

Stormwater:

- The cistern will provide storage necessary for peak flow control. Pump discharge is restricted to the allowable release rate. Quality control is not required. The infiltration target can be satisfied using a combination of retention and detention measures.

Wastewater:

- The building will be serviced with a 200 mm diameter sanitary service and will be connected downstream of the existing SANMH 103 to the 225 mm sanitary sewer within Edgeworth Avenue. The existing sanitary sewers have adequate capacity to service the proposed development.

Water Supply:

- The building will be serviced with two 150 mm diameter watermains and will be connected to the existing 300 mm diameter watermain in Edgeworth Avenue.
- The existing water supply system has capacity to meet system pressure for both domestic demand and fire protection.
- Fire fighting protection is provided by the hydrants, an automated sprinkler system, and the fire department connections.

Erosion and Sediment Control

- Erosion and sediment control measures will be implemented in accordance with the "Guidelines on Erosion and Sediment Control for Urban Construction Sites" (Government of Ontario, May 1987).

This report is respectfully submitted for review and approval. Please contact the undersigned should you have questions or require additional information.

NOVATECH

Prepared by:

Lucas Wilson, P.Eng.
Project Engineer I Land Development

Reviewed by:

Mark Bissett, P.Eng.
Senior Project Manager | Land Development

Appendix A
Correspondence

File No.: PC2024-0476

December 12, 2024

Fotenn Planning and Design
Gillian Henderson
Via email: Henderson@fotenn.com; tremblay@fotenn.com

Subject: **Pre-Consultation: Meeting Feedback**
Proposed Zoning By-law Amendment and Site Plan Control Applications – 500 and 508 Edgeworth Avenue

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on November 27, 2024.

Pre-Consultation Preliminary Assessment

1 ☐	**2** ☐	**3** ☐	**4** ☐	**5** ☐

One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

Next Steps

A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken.

In your subsequent submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed must be included with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.

Please note, if your development proposal changes significantly in scope, design, or density before the next submission, you may be requested to repeat the pre-consultation process before filing an Official application.

Supporting Information and Material Requirements

1. The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either required (R) or advised (A) as part of a future complete application submission.

    a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on Ottawa.ca. These ToR and Guidelines outline

the specific requirements that must be met for each plan or study to be deemed adequate.

Consultation with Technical Agencies

1. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed.

Proposed Development

- A 24-storey high rise residential development, with a nine-storey podium facing the western property line, a 4-storey podium facing Edgeworth Avenue and six ground-oriented units facing the northern property line. A Multi-Use Pathway is proposed along the northern side of the property.

Planning

Comments:

Policies

1. The following policies apply to the site:

    a. The site is designated Neighbourhood within the Inner Urban Transect Area in the Official Plan.

    b. The site is designated as Neighborhood as shown on the Lincoln Field Secondary Plan – Inner Urban Transect.

        i. Staff note that the proposed development on the subject property generally aligns with the intention of the Lincoln Field (LF) Secondary Plan.

            1. Please outline in the planning rationale how the proposal responds to the direction provided in Section 4.3 ‘460 to 508 Edgeworth Avenue’ of the LF Secondary Plan.

        ii. Staff note that the LF Secondary Plan is currently in its appeal period and not yet in full force and effect.

        iii. Per Section 1.4 of the Official Plan, If there are are inconsistencies between the Official Plan and a secondary plans, the policies within the Secondary Plan take precedence.

a. The site is located in close proximity to the O-Train network and Lincoln Fields Station on Schedule C2 – Transit Network.

b. The site is located near a Major Pathway as identified in Schedule C3 – Active Transportation Network (Urban).

c. The site is within 100 metres of Carling Avenue. Per Schedule C4 – Urban Road Network, Carling Avenue is classified as an Arterial Road.

d. The proposed development will be visible from Carling Avenue. Carling is also identified as a Scenic Entry Route on Schedule C13.

e. The subject site in in close proximity of Mainstreet Corridor within a Design Priority Area (Carling Avenue) as shown on Schedule C7-A Design Priority Areas – Urban.

f. The site is adjacent to NCC property.

2. General Zoning Performance Requirements:

    a. A major zoning by-law amendment will be required to rezone the subject property to permit apartment dwelling, high-rise as a permitted use.

        i. As part of your next submission, please indicate the proposed zoning that will be most applicable for the subject property.

    b. As part of your next submission, please demonstrate that thirty percent of the lot area is being provided as landscaped area for the proposed development. Refer to Section 163, policy 9 of the Zoning By-law.

    c. As part of your next submission, please provide measurements of internal walkway(s) accessway(s) and driveway(s) to ensure conformity with zoning provisions.

    d. As part of your next submission, please ensure all architectural drawings are consistent. Currently, the site plan only indicates the existing tree retention along Edgeworth Avenue, however, the elevations indicate additional tree plantings proposed throughout the subject site.

3. Site Design and Configuration:

    a. As part of your next submission, please demonstrate how suitable transition from this high-rise to the low-rise community to the east is achieved. Refer to Policy 2.4, policy 1 of the LF secondary plan.

b. Note that an angular plane analysis is not required to the properties north. Please show how suitable transition towards Lawn Avenue is achieved, per the height Schedule B.

c. The tower portion of a high-rise building should be 750 square metres. Refer to Section 2.1, Policy 11) of the LF Secondary Plan. Please show the floor plate size on the plan. Staff will also require sun shadow and wind studies as part of the submission.

d. Staff appreciate the inclusion of the MUP in the proposed development. Please show measurements of the MUP on the Site Plan, and outline within the Planning Rationale how the MUP aligns with Section 3 – Mobility, Connectivity and Public Realm policies within the LF Secondary Plan as well as the City of Ottawa Accessibility Design Standards (COADS).

e. Consider screening the underground parking access away from the public realm through the use of landscape features. Refer to section 2.1, policy 17a of the LF Secondary Plan.

4. Landscaping:

a. Please explore opportunities for enhanced landscaping along the north lot line and in between residential entrances, to provide natural screening for the residential properties to the north, and to provide tree canopy along the Multi-Use Pathway (MUP).

b. Consider other opportunities for additional tree planting on site. Refer to Section 2.1, policy 19 of the LF Secondary Plan that speaks to urban tree canopy coverage and mitigation of urban heat island effect.

i. Staff note there will be three active frontages on the subject property: east (Edgeworth Avenue), north (proposed MUP) and west (NCC land). Consider prioritizing tree plantings and other landscape features along those frontages to enhance the public realm.

ii. Please note underground parking shall be designed to ensure sufficient soil volumes for tree planting. Refer to section 2.1, policy 17b of the LF Secondary Plan.

5. Vehicular Parking Requirements:

    a. Staff are appreciative of the reduction of parking to promote the use of public and active transportation.

    b. Please provide parking measurements as part of the next submission.

6. Bicycle Parking Requirements:

    a. Staff are appreciative in the increase of bicycle parking spaces provided to promote the use of active transportation.

        i. Please consider providing 1 bicycle parking space per unit.

    b. As part of your next submission, please provide design details and measurements of the proposed bicycle parking in the next submission.

    c. Consider providing additional exterior bicycle parking spaces in accordance with Policy 9 of Section 4.1.2. of the Official Plan.

        i. Short-term bicycle parking facilities shall be highly visible, well-lit, near building entrances and where appropriate, sheltered.

7. Waste Management

    a. Please provide further information on how waste management will be operated on site.

8. Community Benefits Charge
    a. The former Section 37 regime has been replaced with a “Community Benefits Charge”, By-law No. 2022-307, of 4% of the land value. This charge will be required for ALL buildings that are 5 or more storeys and 10 or more units and will be required at the time of building permit unless the development is subject to an existing registered Section 37 agreement. Questions regarding this change can be directed to Ranbir.Singh@ottawa.ca.

9. Submission Requirements and Fees

    a. The following development applications are required to permit the proposed development:

        i. Zoning By-law Amendment (Major)

        ii. Site Plan Control (Complex)

a. Additional information regarding fees related to planning applications can be found here.

Feel free to contact Kimberley Baldwin (Kimberley.Baldwin@ottawa.ca), Planner III, for follow-up questions.

Urban Design

Comments:

10. Submission Requirements (Zoning)

    a. An Urban Design Brief is required. Please see attached customized Terms of Reference (Zoning) to guide the preparation of the submission.

        i. The Urban Design Brief should be structured by generally following the headings highlighted under **Section 3 – Contents of these Terms of Reference**.

        ii. The following elements are particularly important for this development application:

            1. General massing and transition.

        iii. Additional drawings and studies are required as shown on the SPIL. Please follow the terms of reference (Planning application submission information and materials | City of Ottawa) to prepare these drawings and studies. These include:

            1. Schematic building elevations.

            2. Schematic landscape drawing.

11. Submission Requirements (Site Plan)

    a. An Urban Design Brief is required. Please see attached customized Terms of Reference (Site Plan) to guide the preparation of the submission.

        i. The Urban Design Brief should be structured by generally following the headings highlighted under **Section 3 – Contents of these Terms of Reference**.

        ii. Please note that the Urban Design Brief will also serve as the submission to the Urban Design Review Panel (see notes below).

    b. Additional drawings and studies are required as shown on the SPIL. Please follow the terms of reference (Planning application submission

information and materials | City of Ottawa) to prepare these drawings and studies. These include (ie. The UDRP drawings):

i. See TOR (Site Plan) for details.

12. Urban Design Review Panel Review and Report (Site Plan)

a. The site is located within a Design Priority Area and is subject to review by the Urban Design Review Panel. UDRP review occurs within the Preconsultation stage. To proceed with a UDRP review, please contact udrp@ottawa.ca.

b. The submission of a UDRP report is a requirement for deeming an application complete. Please follow the instructions provided in the Terms of Reference available here: Urban Design Review Panel Report (ottawa.ca)

13. Comments on Preliminary Design

a. The following elements of the preliminary design are appreciated:

i. Meeting the general intent of the Lincon Fields Secondary Plan.

b. The following element of the preliminary design are of concern:

i. Drive/drop-off could be more pedestrian sensitive (ie pavers/woonurf).

ii. Inset balconies provide a residential low-rise podium articulation that could be wrapped around all four sides.

14. Recommendations

a. As agreed at the pre-consultation, a visit to the City's UDRP will take place during the Site Plan submission stage. Because of this, there are two Urban Design Brief TOR's, one scoped for re-zoning and one more fulsome for the Site Plan.

Feel free to contact Christoper Moise (christopher.moise@ottawa.ca), Urban Designer, for follow-up questions.

Engineering

Storm Design

15. There is no receiving storm system on Edgeworth Avenue. Ensure existing drainage pattern is maintained with no excess drainage or localized discharge to the street.

16. Part of the site drainage is currently directed to a ditch within the NCC property.

17. The property is located within the Pinecrest subwatershed therefore subject to the stormwater management criteria in the Stormwater Management Guidelines for the Pinecrest Creek/Westboro Area (table 3.1):

    a. A minimum on-site retention of the 10mm design storm

    b. On-site removal of 80% of TSS; some of which could be accomplished by on-site retention of first 10mm of rainfall.

    c. The most stringent of:

        i. 100-year discharge from the site not exceeding 33.5 l/s/ha

        ii. Post-development flows controlled to pre-development release rates

    Note that this applies to both outlets: Edgeworth Avenue and the ditch within NCC property.

18. Written authorization from the NCC to discharge within their land will be required prior to Site Plan Approval

19. Drainage from external site, if any, must be accounted for in the design. An Environmental Compliance Approval (ECA) will be required from the MECP should the proposed storm system serve more than one property.

Water Design

20. There is a 305mm UCI watermain on Edgeworth Avenue

21. A water boundary condition request should be made for this development. Please provide the following information including supporting calculations:

    a. Location of Service

    b. Type of development

    c. Required fire flow

    d. Average daily demand: ___ l/s.

    e. Maximum daily demand: ___l/s.

    f. Maximum hourly daily demand: ___ l/s.

22. As per technical bulletin ISTB-2021-03, the requirements for levels of fire protection on private property in urban areas are covered in Section 7.2.11 of the

Ontario Building Code. If this approach yields a fire flow of 9000 L/min then the Fire Underwritters Survey method shall be used to determine these requirements instead

23. Submission to include watermain system analysis demonstrating adequate pressure as per section 4.2.2 of the Water Distribution Guidelines.

24. Two watermain connections separated by a valve will be required as the proposed development consists of more than 50 units.

25. Demonstrate adequate hydrant coverage for fire protection. Please review Technical Bulletin ISTB-2018-02, Appendix I table 1 – maximum flow to be considered from a given hydrant

26. A fire hydrant will be required within 45m of the fire department connection as per the Ontario Building Code. Additional fire hydrants are only allowed within City property if they meet the hydrant spacing requirement in the City of Ottawa Water Distribution Guidelines. The exact location of a proposed fire hydrant within City property is subject to approval from the City's Drinking Water Services

27. Any proposed emergency route (to be satisfactory to Fire Services).

Sanitary Design

28. There is a 225mm concrete sanitary sewer on Edgeworth Avenue .

29. Please apply the wastewater design flow parameters in Technical Bulletin PIEDTB-2018-01.

30. Demonstrate that there is adequate residual capacity in the receiving and downstream wastewater system, up to the sanitary trunk on Richmond Road, to accommodate the proposed development.

Additional Notes

31. Sensitive Marine Clay (SMC) is widely found across Ottawa- geotechnical reports should include Atterberg Limits, consolidation testing, sensitivity values, and vane

32. Any existing easement identified should be shown on all plans

Feel free to contact Abibatou Dieme (abibatou.dieme@ottawa.ca), Project Manager, for follow-up questions.

Noise

Comments:

33. Noise study required due to proximity to Carling.

Feel free to contact Reed Adams (reed.adams@ottawa.ca), Transportation Project Manager, for follow-up questions.

Transportation

Comments:

34. TIA:

    a. A full Transportation Impact Assessment is required. Please submit the Scoping/Forecasting report to reed.adams@ottawa.ca at your earliest convenience. The applicant is responsible to submit the Scoping Report prior to application and must allow for a 14 day circulation period.

    b. The Strategy Report must be submitted with the formal submission to deem complete. The applicant is strongly encouraged to submit the Strategy Report to the TPM prior to formal submission and allow for a 14 day circulation period.

    c. Complete and submit the Transportation Demand Management Measures Checklist and the Transportation Demand Management Supportive Development Design and Infrastructure Checklist in support of the application.

    d. If an RMA is required to support the proposed development, the functional plan and/or RMA plans must be submitted with the formal submission to deem complete. Request base mapping asap if RMA is required, contact Engineering Services

    e. The “Urban” area designation is based upon the Transportation Master Plan ‘Inner Urban’ area (i.e. 400m Radius for study area).

35. ROW:

    a. No ROW protection required.

36. Site Plan:

    a. Per the Lincoln Fields Secondary Plan:

        i. A sidewalk is required along the frontage of the site as shown in Schedule C of the Secondary Plan (shown on current site plan)

ii. An active transportation connection for pedestrians and cyclists with a public access easement through the property to connect Edgeworth Avenue to the existing or planned active transportation network immediately to the west, where approximately identified on Schedule C – Mobility and Connectivity (shown on current site plan)

b. As the site proposed is residential, AODA legislation applies for all areas accessible to the public (i.e. outdoor pathways, parking, etc.).

c. Ensure site access meets the City's Private Approach Bylaw.

d. Show all details of the roads abutting the site; include such items as pavement markings, accesses and/or sidewalks.

e. Turning movement diagrams required for all accesses showing the largest vehicle to access/egress the site.

f. Turning movement diagrams required for internal movements (loading areas, garbage).

g. Show all curb radii measurements; ensure that all curb radii are reduced as much as possible and fall within TAC guidelines (Figure 8.5.1).

h. Show dimensions for site elements (i.e. lane/aisle widths, access width and throat length, parking stalls, sidewalks, pedestrian pathways, etc.)

i. Show slope of garage ramp on site plan. Note that underground ramps should be limited to a 12% grade and must contain a subsurface melting device when exceeding 6%. Ramp grades greater than 15% can be psychological barriers to some drivers. When the underground parking ramp's break over slope exceeds 8%, a vertical-curve transition or a transition slope of half the ramp slope should be used. Without this transition, bottoming out of vehicles may occur.

Feel free to contact Reed Adams (reed.adams@ottawa.ca), Transportation Project Manager, for follow-up questions.

Light Rail Construction

Comments:

37. The subject property is within the established Development Zone of Influence (DZI) of the Stage 2 western extension of the O-Train. An LRT Proximity Study (Level 3) will be required for the applicant to submit as part of the development application. Please refer to O-Train Proximity Guidelines 2024 for study requirements.

Environment

Comments:

38. Significant environmental features – there are no triggers for an Environmental Impact Study.

39. Urban Heat Island - Please add features that reduce the urban heat island effect (see OP 10.3.3) produced by the parking lot and a building footprint. For example, this impact can be reduced by adding large canopy trees, green roofs or vegetation walls, or constructing the parking lot or building with low heat absorbing materials.

40. Bird-Safe Design - Please review and incorporate bird safe design elements. Some of the risk factors include glass and related design traps such as corner glass and fly-through conditions, ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here: https://documents.ottawa.ca/sites/documents/files/birdsafedesign_guidelines_en.

Feel free to contact Matthew Hayley, Environmental Planner, for follow-up questions.

Forestry

Comments:

41. TCR Comments

    a. This looks to be a positive concept plan, with green amenity space on site. The detailed design will need to retain existing trees and provide sufficient setbacks to plant large-growing trees in these green spaces in the future, to soften the transition between highrise and the single detached neighbourhood, and to improve the canopy cover.

    b. The setbacks to underground parking and the locations of vehicle entrances, curbs, buildings and structures should account for the retention and protection of healthy trees on and adjacent to the site, including those that provide privacy for neighbouring properties.

    c. The healthy City trees along the Edgworth frontage are a high priority to retain through development, as are the trees on shared and adjacent property, including those owned by NCC (if they still exist).

    d. The location and size of the MUP connecting to NCC pathway must minimize impacts to existing trees, especially shared and adjacent trees.

    e. Permeable pavers recommended for curved driveway, to improve the growing conditions for existing and/or new trees.

f. A Tree Conservation Report is required, in accordance with Schedule E of the Tree Protection By-law. Ownership of all trees on the subject site and with Critical Root Zones extending onto the subject site must be determined, and plans must show how they will be protected from proposed works.

    i. A more conceptual version is acceptable at the rezoning stage, but must be based on a survey of tree locations with tree inventory clarifying ownership of all trees.

    ii. The conceptual TIR would also need to consider what setbacks would be necessary from excavation for retention of existing trees, as this will be established through zoning.

g. Section 4.8.2 of the New Official Plan provides strong direction to maintain the urban forest canopy and its ecosystem services during intensification noting when considering the impacts on individual trees, planning and development decisions, including Committee of Adjustment decisions, shall give priority to the retention and protection of large, healthy trees over replacement plantings and compensation. Applications must address the cumulative impacts on the urban forest, over time and space, with the goal of 40% urban forest canopy cover in mind. Further, that the City and the Committee of Adjustment may refuse a development application where it deems the loss of a tree(s) avoidable.

h. If any shared or adjacent trees are impacted by the proposal, the applicant is responsible for consulting with the owners of the trees and for obtaining signed permission if any trees must be removed. If no permission is granted, plans must be designed to allow for the full protection of these trees.

i. A permit is required prior to removal of any protected trees on site. The tree permit will be released upon site plan approval. Monetary compensation for City trees must be paid before the permit is issued. Please contact the planner associated with the file or the Planning Forester, Nancy Young (Nancy.young@ottawa.ca) for information on obtaining the tree permit.

j. To ensure that no harm is caused to breeding birds, tree removal and vegetation clearing should be avoided during the migratory bird season (April 15 – August 15) as specified by The City of Ottawa's Environmental Impact Study Guidelines.

42. Landscape Plan Comments

a. A Landscape Plan is required with this application and must address all requirements within the Landscape Plan Terms of Reference https://documents.ottawa.ca/sites/documents/files/landscape_tor_en.pdf ,

including the projection of canopy cover toward the target of 40%, and confirmation of adequate soil volumes to support any proposed trees. A conceptual landscape plan is acceptable at the rezoning stage, but should show the plantable areas based on the setbacks and related soil volumes which will be established through setbacks, and addressing the priorities noted below.

b. Setbacks of underground parking will need to allow for the planting of large-growing trees on site and within the ROW if the existing trees cannot be maintained.

c. Landscaping and planting should be designed to provide screening from the road to the underground parking entrance.

d. Planting should be provided along the north property line to maintain privacy between MUP and adjacent lots.

e. The Landscape Plan must show the setback distances between proposed and existing trees to buildings and underground structures to ensure that both the above and below-ground space proposed is sufficient for tree planting in the Right of Way and other landscaped areas.

f. The Official Plan section 4.8.2, sub 3 provides the following direction related to tree planting related to site plans:

    i. Preserve and provide space for mature, healthy trees on private and public property, including the provision of adequate volumes of high-quality soil as recommended by a Landscape Architect;

    ii. On urban properties subject to site plan control or community planning permits, development shall create tree planting areas within the site and in the adjacent boulevard, as applicable, that meet the soil volume requirements in any applicable City standards or best management practices or in accordance with the recommendation of a Landscape Architect;

The following requirements are to inform the preparation of these reports and do not need to be addressed as comments.

43. TCR requirements

a. a Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City

b. an approved TCR is a requirement of Site Plan approval.

c. The TCR may be combined with the LP provided all information is supplied

d. Any removal of privately-owned trees 10cm or larger in diameter, or city-owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.

e. Compensation may be required for the removal of city owned trees.

f. The TCR must contain 2 separate plans:

   i. Plan/Map 1 - show existing conditions with tree cover information

   ii. Plan/Map 2 - show proposed development with tree cover information

   iii. Please ensure retained trees are shown on the landscape plan

g. the TCR must list all trees on site, as well as off-site trees if the CRZ extends into the developed area, by species, diameter and health condition

h. please identify trees by ownership – private onsite, private on adjoining site, city owned, co-owned (trees on a property line)

i. If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained

j. All retained trees must be shown, and all retained trees within the area impacted by the development process must be protected as per City guidelines available at Tree Protection Specification or by searching Ottawa.ca

k. the location of tree protection fencing must be shown on the plan

l. show the critical root zone of the retained trees

m. the City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.

44. Landscape Plan tree planting requirements

a. The City recommends the following Best Management Practices to improve the climate change resiliency of new developments:

   i. For parking lots, provide 1 new tree for every 5 parking spaces to help cool the landscape of the site.

   ii. Confirm sufficient Soil volumes to support canopy cover on site ($30m^3$ for street trees)

iii. Proposed species must not include invasive species and target a minimum of 50% native species

b. Minimum Setbacks

i. Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.

ii. Maintain 2.5m from curb

iii. Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.

iv. Maintain 7.5m between large growing trees, and 4m between small growing trees. Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

c. Tree specifications

i. Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.

ii. Maximize the use of large deciduous species wherever possible to maximize future canopy coverage

iii. Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).

iv. Plant native trees whenever possible

v. No root barriers, dead-man anchor systems, or planters are permitted.

vi. No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree).

d. Hard surface planting

i. Curb style planter is highly recommended.

ii. No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.

iii. Trees are to be planted at grade.

e. Soil Volume

i. Please document on the LP that adequate soil volumes can be met:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

f. Sensitive Marine Clay

i. Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines

45. Tree Canopy

a. The landscape plan shall show how the proposed tree planting will replace and increase canopy cover on the site over time, to support the City's 40% urban forest canopy cover target.

b. For more information on calculating canopy cover, this example from Oakville may be used as a reference.

Feel free to contact Nancy Young (nancy.young@ottawa.ca), Forester, for follow-up questions.

Parkland

Comments:

46. Parkland Dedication:

a. The amount of required parkland conveyance is to be calculated as per the City of Ottawa Parkland Dedication By-law No.2022-280 (or as amended):

i. For cash-in-lieu of conveyance of parkland (residential > 18 units/net ha):

1. one hectare per 1,000 net residential units but shall not exceed a maximum of 10% of the gross land area where less than or equal to five hectares.

47. Form of Parkland Dedication:

    a. PFP will be requesting cash-in-lieu of conveyance of parkland for parkland dedication in accordance with the Parkland Dedication By-law.

48. Preliminary Parkland Dedication Calculation:

    a. PFP requests the following information to confirm and calculate the parkland conveyance:

        i. Gross land area, in square meters

        ii. Number of residential units proposed/existing

    b. Please note, if the proposed unit count, land use changes or gross floor area changes, then the parkland dedication requirement will be re-evaluated accordingly.

49. Additional comments :

    a. For site plan applications taking CILP on sites adjacent to existing parkland, please note if any measures of protection of public land should be implemented through the site plan to protect the existing park, in this case the NCC land adjacent to the property.

50. Reference Documents:

    a. Please review the following City of Ottawa reference documents which outline the requirements for parkland conveyance and/or cash-in-lieu of parkland.

        i. Official Plan (2021)

        ii. Parks and Recreation Facilities Master Plan (2021)

        iii. Park Development Manual, 2nd edition

        iv. Parkland Dedication By-Law (2022-280) and Planning Act amendments

        v. City of Ottawa Standard Parks Conditions

        vi. Lincoln Fields Secondary Plan

Please note that the park comments are preliminary and will be finalized (and subject to change) upon receipt of the development application and the requested supporting documentation.

Feel free to contact Louise Cerveny (louise.cerveny@ottawa.ca), Parks Planner, for follow-up questions.

NCC

Comments:

51. NCC comments will be provided upon receipt at a later date.

Feel free to contact Ted Horton (ted.horton@ncc-ccn.ca), NCC Planner, for follow-up questions.

Other

52. The High Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design and will be applicable to Site Plan Control and Plan of Subdivision applications.

    a. The HPDS was passed by Council on April 13, 2022, but is not in effect at this time, as Council has referred the 2023 HPDS Update Report back to staff with the direction to bring forward an updated report to Committee at a later date. The timing of an updated report to Committee is unknown at this time, and updates will be shared when they are available.

    b. Please refer to the HPDS information at ottawa.ca/HPDS for more information.

53. Under the Affordable Housing Community Improvement Plan, a Tax Increment Equivalent Grant (TIEG) program was created to incentivize the development of affordable rental units. It provides a yearly fixed grant for 20 years. The grant helps offset the revenue loss housing providers experience when incorporating affordable units in their developments.

    a. To be eligible for the TIEG program you must meet the following criteria:

        i. the greater of five units OR 15 per cent of the total number of units within the development must be made affordable

        ii. provide a minimum of 15 per cent of each unit type in the development as affordable

        iii. enter into an agreement with the city to ensure the units maintain affordable for a minimum period of 20 years at or below the city-wide average market rent for the entire housing stock based on

building form and unit type, as defined by the Canada Mortgage and Housing Corporation

iv. must apply after a formal Site Plan Control submission, or Building Permit submission for projects not requiring Site Plan Control, and prior to Occupancy Permit issuance

b. Please refer to the TIEG information *at Affordable housing community improvement plan / Plan d'améliorations communautaires pour le logement abordable for more details or contact the TIEG coordinator via email at affordablehousingcip@ottawa.ca.*

All of the above comments or issues should be addressed to ensure the effectiveness of the application submission review.

Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly,
Kimberley Baldwin

Encl. SPIL and HPDS

c.c. Nishant Dave, Planner I (DR West)
Abibatou Dieme, Infrastructure Project Manager
Christopher Moise, Urban Designer
Reed Adams, Transportation Project Manager
Matthew Hayley, Environmental Planner
Nancy Young, Planning Forester
Louise Cerveny, Parks Planner
Jocelyn Cadieux, Policy Planner (for Lincoln Fields Secondary Plan)
Jerico Gapas, Rail Construction Program (LRT Ph 2)
Ted Horton, NCC

Appendix B
Stormwater Management Calculations

500 and 508 Edgeworth Avenue (121109)
Pre-Development Peak Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

EXISTING CONDITIONS - FLOWS DIRECTED TO EDGEWORTH AVENUE

Time-of-Concentration (Uplands Method)

Flow Classification (Land Use)	Length (m)	Elevation U/S (m)	Elevation D/S (m)	Slope (%)	Velocity[1] (m/s)	Time-of-Concentration (min)
Overland Flow (Sheet Flow to Edgeworth)	15	67.5	67.2	2.0%	0.90	0.3
TOTAL	**15**	**67.5**	**67.2**	**2.0%**	**0.90**	**10.0**

[1] *Refer to Uplands Velocity Chart.* **Min 10-minutes.*

Existing Catchment Parameters

Catchment ID	Areas (ha)			Runoff Coefficient		%Imperv.
	Total	Hard Surfaces (C=0.90)	Soft Surfaces (C=0.20)	C_{avg}	C_{100yr}[1]	
TOTAL	**0.077**	**0.024**	**0.053**	**0.42**	**0.48**	**31.2%**

[1] *Runoff coefficient increases by 25%, up to a maximum value of 1.00, for the 100-year event.*

Pre-Development Peak Flows

Catchment ID	Rainfall Intensity (mm/hr)[1]			Peak Flows (L/s)		
	2-year	5-year	100-year	2-year	5-year	100-year
Site Boundary (existing conditions)	76.81	104.19	178.56	6.9	9.3	18.5

[1] *Tc is based on Uplands Method.*

Notes:

Rainfall Intensity from City of Ottawa Sewer Design Guidelines (Oct. 2012)
- 100 year Intensity = $1735.688 / (Tc + 6.014)^{0.820}$
- 5 year Intensity = $998.071 / (Tc + 6.053)^{0.814}$
- 2 year Intensity = $732.951 / (Tc + 6.199)^{0.810}$

Q(peak flow) = 2.78 x C x I x A
- C is the runoff coefficient
- I is the rainfall intensity
- A is the total drainage area

500 and 508 Edgeworth Avenue (121109)
Uplands Velocity Chart

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Engineers, Planners & Landscape Architects

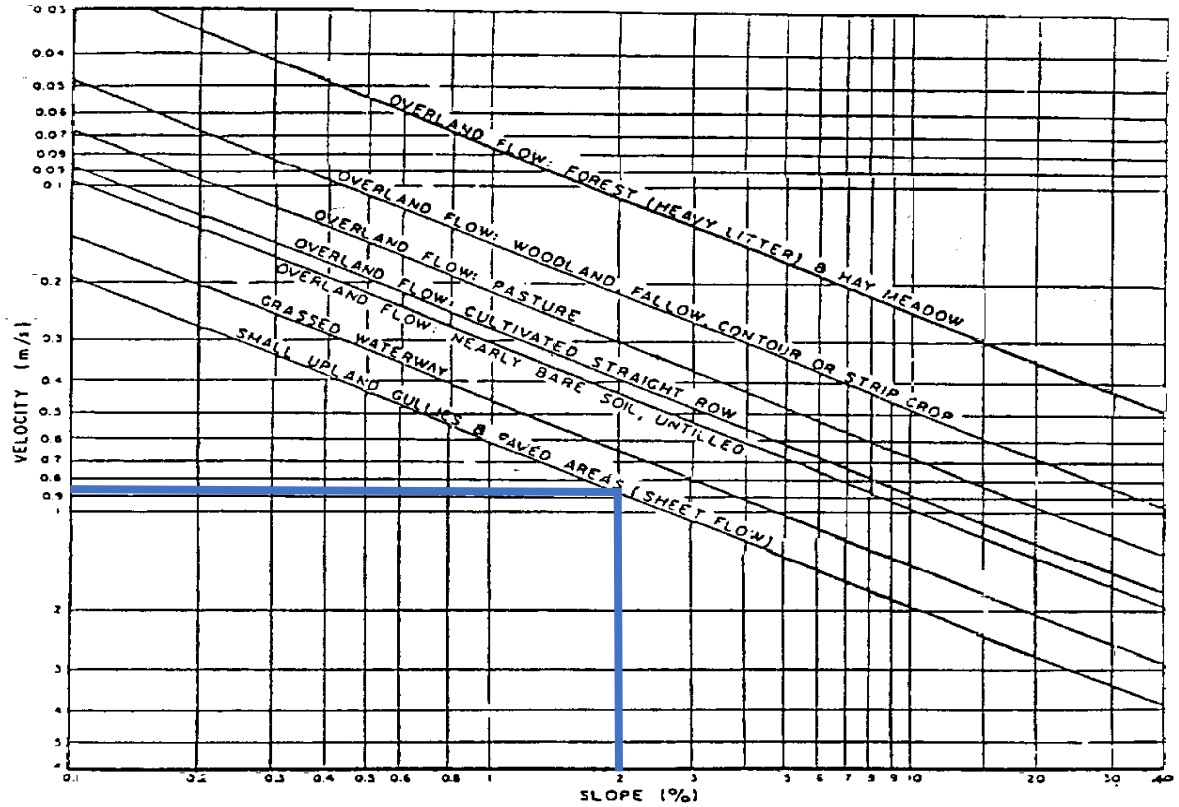

Figure A.5.2: Upland Method for Estimating Time of Concentration
(SCS National Engineering Handbook, 1971)

500 Edgeworth Avenue (121109)
Pre-Development Peak Flow Calculations

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EXISTING CONDITIONS - FLOW TO PROPOSED 375mm HDPE CULVERT (NCC LANDS)

Time-of-Concentration (Uplands Method)

Flow Classification (Land Use)	Length (m)	Elevation U/S (m)	Elevation D/S (m)	Slope (%)	Velocity[1] (m/s)	Time-of-Concentration (min)
Overland Flow (Sheet Flow)	100	68.5	66.5	2.0%	0.65	2.6
TOTAL	**100**	**68.5**	**66.5**	**2.0%**	**0.65**	**10.0**

[1] *Refer to Uplands Velocity Chart.* **Min 10-minutes.*

Existing Catchment Parameters

Catchment ID	Areas (ha) Total	Hard Surfaces (C=0.90)	Soft Surfaces (C=0.20)	Runoff Coefficient C_{avg}	Runoff Coefficient C_{100yr}[1]	%Imperv.
TOTAL	**0.400**	**0.040**	**0.360**	**0.27**	**0.33**	**10.0%**

[1] *Runoff coefficient increases by 25%, up to a maximum value of 1.00, for the 100-year event.*

Pre-Development Peak Flows

Catchment ID	Rainfall Intensity (mm/hr)[1] 2-year	5-year	100-year	Peak Flows (L/s) 2-year	5-year	100-year
NCC LANDS (EX-13)	76.81	104.19	178.56	23.1	31.3	64.5

[1] *Tc is based on Uplands Method.*

Notes:

Rainfall Intensity from City of Ottawa Sewer Design Guidelines (Oct. 2012)
- 100 year Intensity = $1735.688 / (Tc + 6.014)^{0.820}$
- 5 year Intensity = $998.071 / (Tc + 6.053)^{0.814}$
- 2 year Intensity = $732.951 / (Tc + 6.199)^{0.810}$

Q(peak flow) = 2.78 x C x I x A
- C is the runoff coefficient
- I is the rainfall intensity
- A is the total drainage area

Stormwater Management Design Criteria

for the Pinecrest Creek/Westboro Area

City of Ottawa

Final – May 2020

The SWM Criteria have been derived from detailed study documented in the following reports:
i) Pinecrest/Centrepointe SWM Criteria Study, JFSA et. al., 2010;

ii) Pinecrest Creek/Westboro SWM Retrofit Study, JFSA et. al., 2011; and

iii) Stormwater Management Guidelines for the Pinecrest Creek/Westboro Area - Final Report, JFSA, 2019 (***NOTE: to be used as a reference document only not for SWM design criteria***).

These documents are available on request from the City of Ottawa's Drawing Information Centre: informationcentre@ottawa.ca .

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1 Introduction

The Pinecrest Creek subwatershed and adjacent Westboro catchments that drain directly to the Ottawa River are fully urbanized and were built out with little or no stormwater management (SWM). The consequences of this historical lack of SWM include:

- poor water quality in the Creek and local reach of the Ottawa River;
- increased closures of Westboro Beach during wet weather;
- on-going erosion in the Creek that has impacted infrastructure and fish habitat; and
- high peak flows that, in combination with the piping of the Creek from south of Carling Avenue to just upstream of the confluence with the Ottawa River, make the Sir John A. Macdonald Parkway susceptible to flooding.

The Pinecrest Creek/Westboro SWM Retrofit Plan, an Ottawa River Action Plan (ORAP) project, was prepared to provide a long-term plan to address these historical impacts. It was approved by Council in 2011 in report ACS2011-ICS-PGM-0114 and is currently being implemented.

While the Pinecrest Creek/Westboro SWM Retrofit Plan aims to address the impacts of existing development, the study area continues to experience growth via infill and redevelopment. The SWM Design Criteria for the Pinecrest Creek/Westboro Area (SWM Criteria) have been prepared to ensure the impacts of continued growth do not result in further negative impacts to the Creek and local reach of the Ottawa River.

The SWM Criteria provide subwatershed and catchment-specific direction related to runoff volume, water quality and water quantity control that new development located within the area shown on **Figure 1** will be required to achieve. The SWM Criteria are not “stand-alone” but are intended to augment the City of Ottawa Sewer Design Guideline and other available guidance related to the design of SWM measures.

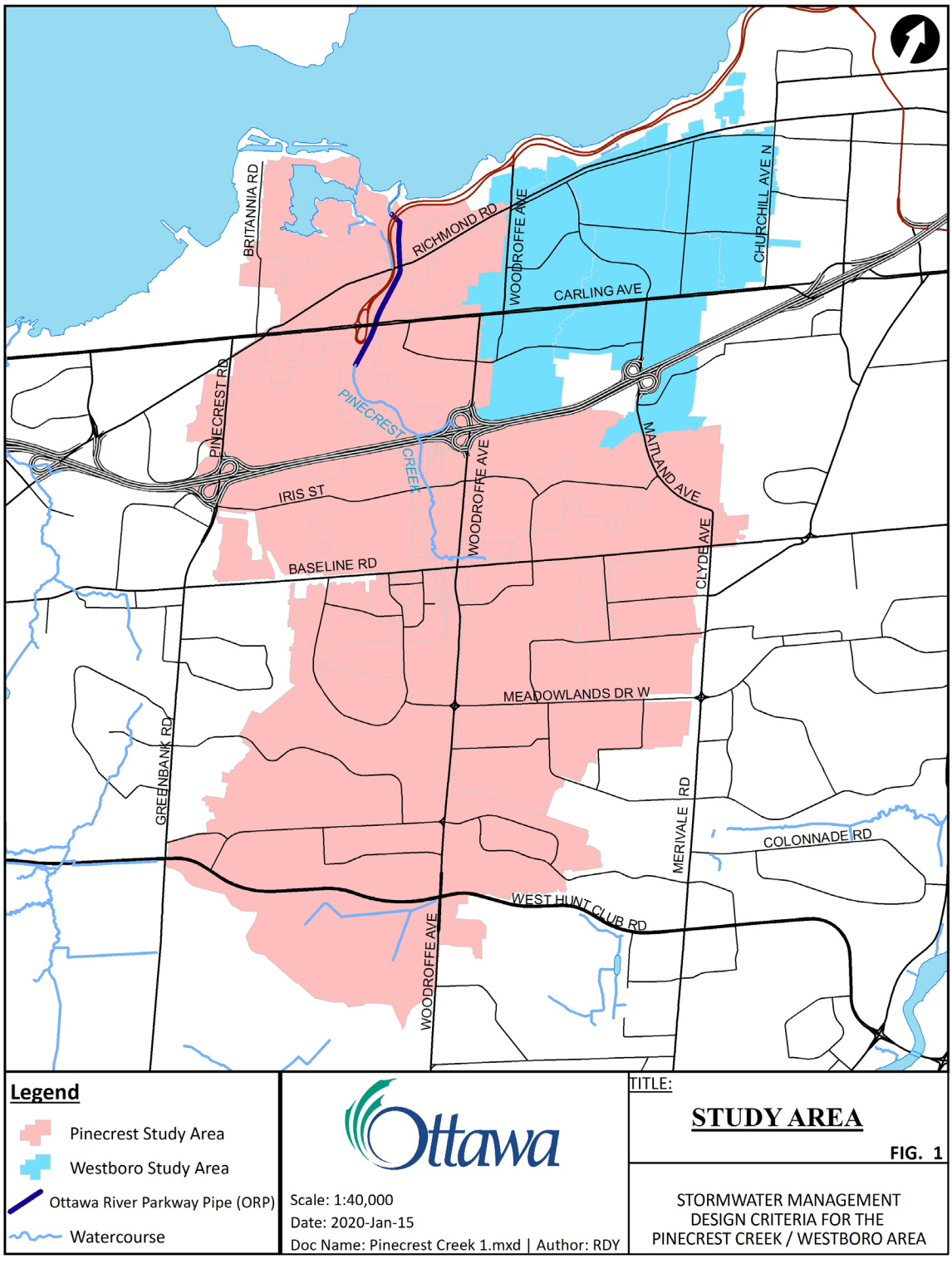

Figure 1: Study Area

2 Background

The SWM Criteria have been derived from detailed study documented in the following reports:

i) Pinecrest/Centrepointe SWM Criteria Study, JFSA et. al., 2010;

ii) Pinecrest Creek/Westboro SWM Retrofit Study, JFSA et. al., 2011; and

iii) Stormwater Management Guidelines for the Pinecrest Creek/Westboro Area - Final Report, JFSA, 2019 (***NOTE: to be used as a reference document only not for SWM design criteria***).

These documents are available on request from the City of Ottawa's Drawing Information Centre: informationcentre@ottawa.ca .

3 SWM Design Criteria for the Pinecrest Creek/Westboro Area

The SWM Criteria address water quality, water quantity and runoff volume (erosion) control requirements. These criteria have been tailored to specific constraints in the receiving watercourse or outlet, i.e., the SWM criteria to be met depend upon where the development will outlet.

A summary of the SWM criteria for the Pinecrest Creek/Westboro area is provided in **Table 1**: **SWM Design Criteria for the Pinecrest Creek/Westboro Area**.

Table 1: SWM Design Criteria for the Pinecrest Creek / Westboro Study Area

	Development Type	Runoff Volume Reduction	Water Quality	Water Quantity	
			TSS Removal	Flood Control	Erosion Control
All Locations					
Residential Development *not* subject to Plan of Subdivision or Site Plan Control approval(s)					
1	all soil infiltration rates	Direction/re-direction of downspouts/roof drainage to discharge to pervious surfaces, where possible, to reduce runoff, while meeting all other City of Ottawa lot grading requirements. Amended topsoil, or a depth of topsoil up to 300 mm, provides runoff volume reduction benefits and is encouraged (but not mandatory) as a best practice over all soft landscaped surfaces.	Not applicable	Not applicable	Not applicable
Draining to the Ottawa River					
Development subject to Plan of Subdivision or Site Plan Control approval(s) - discharging directly to the Ottawa River					
2	all soil infiltration rates	A minimum on-site retention of the 10 mm design storm; refer to LID references[(i)] for guidance on prudent approach to planning infiltration-based LID best management practices. Assumptions re: non-viability of infiltration measures must be substantiated. A green roof, rain harvesting measures and/or a combination of detention/retention measures[(ii)] could be implemented to provide further runoff volume reduction.	On-site removal of 80% of TSS; some of which ma be achieved by on-site retention of first 10 mm of rainfall.	As per City of Ottawa Sewer Design Guideline	Not applicable
Draining to Pinecrest Creek					
Development subject to Plan of Subdivision or Site Plan Control approval(s) - discharging upstream of the Ottawa River Parkway pipe (ORPP) inlet					
3	all soil infiltration rates	A minimum on-site retention of the 10 mm design storm; refer to LID references[(i)] for guidance on prudent approach to planning infiltration-based LID best management practices. Assumptions re: non-viability of infiltration measures must be substantiated. A green roof, rain harvesting measures and/or a combination of detention/retention measures[(ii)] could be implemented to provide further runoff volume reduction.	On-site removal of 80% of TSS; some of which may be achieved by on-site retention of first 10 mm of rainfall and detention of the 25 mm design storm[(iii)].	The more stringent of the following criteria will govern: i) 1:100 year discharge from site not to exceed 33.5 L/s/ha) or; ii) Requirements of City of Ottawa Sewer Design Guideline.	Control (detain) the runoff from the 25 mm design storm[(iii)] such that the peak outflow from the site does not exceed 5.8 L/s/ha.
Development subject to Plan of Subdivision or Site Plan Control approval(s) - discharging directly to the Ottawa River Parkway pi					
4	all soil infiltration rates	A minimum on-site retention of the 10 mm design storm; refer to LID references[(i)] for guidance on prudent approach to planning infiltration-based LID best management practices. Assumptions re: non-viability of infiltration measures must be substantiated. A green roof, rain harvesting measures and/or a combination of detention/retention measures[(ii)] could be implemented to provide further runoff volume reduction.	On-site removal of 80% of TSS; some of which may be achieved by on-site retention of first 10 mm of rainfall.	The more stringent of the following criteria will govern: i) 1:100 year discharge from site not to exceed 33.5 L/s/ha) or; ii) Requirements of City of Ottawa Sewer Design	Not applicable

Notes:

(i) Re: Infiltration measures: Beyond the targets specified in this table, the planning, design and use of these systems shall be in accordance with the guidance in the Stormwater Management Planning and Design Manual (MOE, 2003); the Low Impact Development Stormwater Management Planning and Design Guide (CVC and TRCA, 2010); the Low Impact Development Stormwater Management Planning and Design Wiki at: wiki.sustainabletechnologies.ca; and Draft No.2 Low Impact Development (LID) Stormwater Management Guidance Manual (MOECC, November 2017) or the final version of this Manual, when available. As noted in the MOECC LID SWM Guidance Manual, a prudent approach to planning infiltration-based LID best management practices on any site involves delineating catchment areas that contain high risk site activities and isolating them by applying non-infiltration-based practices to these areas.

(ii) Retention is to hold or retain stormwater on a more permanent basis such as for infiltration to the surrounding soils. Detention is the temporary storage or detaining of stormwater for eventual release to the downstream system.

(iii) 25 mm 4-hour Chicago design storm

3.1 SWM Design – General

The SWM Criteria are prescriptive targets, not "stand-alone" design guidance. These criteria are to be met in addition to those required by the City of Ottawa Sewer Design Guideline, with the most stringent requirement(s) governing.

Designers are further directed to other available guidance related to the design of SWM measures listed in the References at the end of this document.

3.2 Applicability of SWM Criteria

The SWM Criteria apply to:

- development subject to Plan of Subdivision and Site Plan Control approvals; and
- City of Ottawa (new) capital projects, but not including right-of-way renewal projects[1].

The SWM Criteria do not apply to:

- development that is not subject to Plan of Subdivision and Site Plan Control approvals (development subject only to a building permit).

However, downspouts/roof drainage should be directed to discharge to pervious surfaces, where possible, to minimize runoff, while meeting all other City of Ottawa lot grading requirements. Further, amended topsoil, or a depth of topsoil up to 300 mm, provides runoff volume reduction benefits and is encouraged (but not mandatory) as a best practice over all soft landscaped surfaces.

3.3 Quantity Control

Quantity control criteria are specified based upon the catchment's receiving watercourse (Pinecrest Creek or the Ottawa River) or storm sewer (the Ottawa River Parkway pipe (ORPP) or local storm sewer outlet). For example, there are no quantity control requirements for discharge directly to the Ottawa River, whereas the limited capacity of the ORPP requires a higher level of control to avoid increasing flood risk. (Pinecrest Creek flows are conveyed by the ORPP from just south of Carling Avenue to the Ottawa River.)

[1] Right-of-way (ROW) renewal projects will be subject to a separate screening process that will identify retrofit opportunities. The SWM objective for selected ROW renewals will be to optimize runoff volume control/treatment/attenuation subject to the existing site constraints.

3.3.1 Draining Directly to the Ottawa River

Developments serviced by outfalls draining directly to the Ottawa River (shown in **Figures 2** and **3**) shall provide sufficient quantity control storage to meet the most limiting downstream storm sewer capacity. Per the City of Ottawa Sewer Design Guideline, the capacity of the downstream receiving system shall be assessed when connecting to an existing storm sewer. The allowable release rate to the existing system is to be confirmed with the City.

3.3.2 Draining to Pinecrest Creek

Developments draining to Pinecrest Creek (either upstream of or directly into the ORPP) shall provide sufficient quantity control storage to address the most stringent of the local sewer capacity or the flow target for the ORPP. The catchments that discharge to Pinecrest Creek upstream or directly into the ORP are identified in **Figures 2** and **3**.

To maintain existing peak flow and headwater conditions up to and including the 100-year storm at the inlet of the ORPP, development shall control the total 100-year discharge from the site to a maximum rate of 33.5 L/s/ha. This unit flow target is based upon the hydrologic (SWMHYMO) modelling conducted for the *Pinecrest/Centrepointe Stormwater Management Criteria Study (2010)* and the *Pinecrest Creek/Westboro SWM Retrofit Study (2011)*, which assessed the subwatershed conditions as of 2009. From that modelling, the existing unit flow rate, at the ORPP, for the critical design storm (24-hour 100-year SCS Type II) was found to be 33.5 L/s/ha. These results can be found in Appendix J of the *Pinecrest Creek/Westboro SWM Retrofit Study*. The *Pinecrest Creek/Westboro SWM Retrofit Study* also established erosion control and water quality targets and objectives in concert with the 33.5 L/s/ha discharge rate.

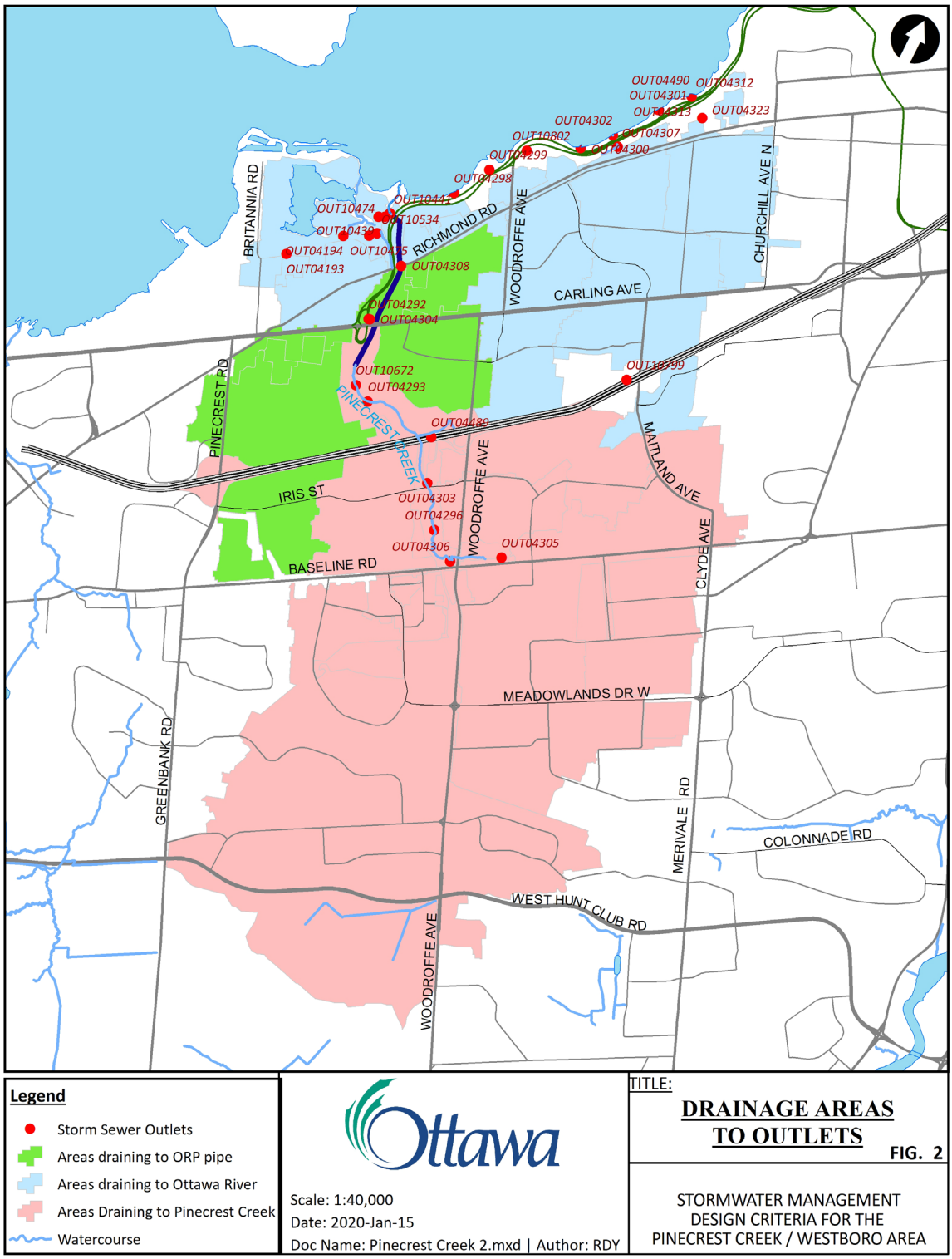

Figure 2: Drainage Areas to Outlets

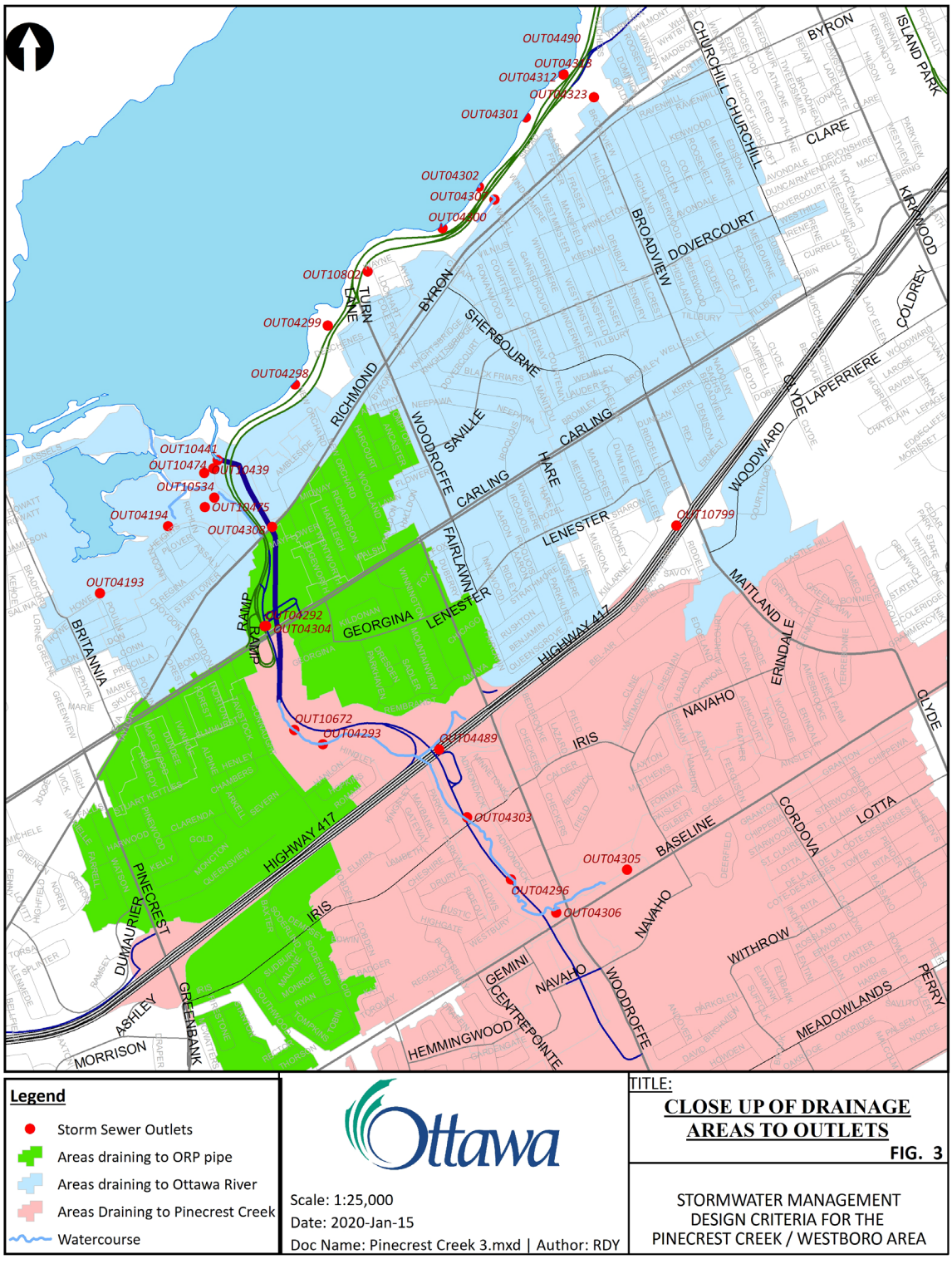

Figure 3: Close-up of Drainage Areas to Outlets

Note: Since completion of the 2010 modelling for the Pinecrest Creek subwatershed, subsequent studies resulted in a conversion of the subwatershed model from the SWMHYMO platform to PCSWMM. The PCSWMM model was used to simulate the existing peak flow and headwater conditions up to and including the 100-year storm at the inlet of the ORPP in these subsequent studies[2]. With no other changes to model parameters, the PCSWMM version calculated a unit flow rate of 36.2 L/s/ha to maintain the existing 100-year discharge at the ORPP. The storage volume requirements for various levels of imperviousness were determined for both SWMHYMO and PCSWMM unit rates. These results were found to be within 2% of each other. The required unit flow rate, originally obtained with SWMHYMO (33.5 L/s/ha) is slightly more conservative, therefore this value will continue to be the required unit flow rate to control the 100-year discharge from the site.

The 100-year unit flow rate of 33.5 L/s/ha reflects a condition where the ORPP provides less than a 100-year level-of-service (LOS): simulation results indicate that flood flows will spill from Pinecrest Creek upstream of the ORPP inlet onto the Ottawa River Parkway. Therefore, the flood control target has been set to ensure that infill, re- and new development projects within the subwatershed do not exacerbate existing flooding conditions at the ORPP inlet.

An anticipated outcome from introducing SWM controls as development and redevelopment progress in the largely uncontrolled Pinecrest Creek subwatershed is to gradually reduce peak flood flows on Pinecrest Creek and at the ORPP. The *Pinecrest Creek/Westboro SWM Retrofit Study* also identified a suite of SWM retrofits to be incorporated within the subwatershed either on an opportunistic basis (e.g., in combination with planned road renewal projects) or as stand-alone projects such as the Baseline/Woodroffe SWM retrofit pond. SWM retrofit projects will also cumulatively reduce flood risk along the creek over time (as well as improve water quality and geomorphic stability). Therefore, while the LOS should slowly improve at the ORPP inlet as (re)developments proceed and SWM retrofits are implemented, the 33.5 L/s/ha unit flow rate will remain as the target 100-year release rate for projects within the subwatershed.

---

[2] Pinecrest Creek Cumulative Impacts Study – Hydrology, Hydraulics and Water Quality, J.F. Sabourin and Associates Inc., prepared for Morrison Hershfield, December 2018.

Hydrologic and Hydraulic Analyses for the Pinecrest Creek Baseline/Woodroffe Stormwater Management Retrofit Pond Detailed (90%) Design, J.F. Sabourin and Associates Inc., prepared for Capital Transit Phase 2, December 2017.

Other flow restrictions, such as limiting storm sewer capacities, may also exist and should be identified by the proponent in consultation with the City.

The proponent shall, at the design stage, demonstrate that the proposed design can achieve the target release flow rates. For planning purposes, approximate on-site storage volumes to achieve the required control are provided below in **Table 2**. The approximate on-site storage volumes listed in **Table 2** were calculated using the Horton's Infiltration procedure. Designers should use the Horton's infiltration procedure for urban developments per Section 5.4.5.5 of the Sewer Design Guideline (2012), unless otherwise directed by the City.

Table 2[3]: Approximate on-site storage volume requirements to control flows to 33.5L/s/ha

(Using Horton's Infiltration Method)

Total Imperviousness (Timp)			
40%	**50%**	**75%**	**95%**
352 m^3/ha	380 m^3/ha	455 m^3/ha	535 m^3/ha

Parameters: Ximp = 30%, 40%, 65% and 95% respectively

SLPP = 1.0%, SLPPI = 0.75%

Horton's infiltration parameters (f_0, fc and DCAY and F) as per the Sewer Design Guideline (2012).

Note: The volume provided on-site to meet other design criteria (i.e., runoff volume control and/or erosion control) can provide a portion of the volume required to attenuate the 100-year event as well. The designer will need to provide detailed calculations showing how the different storage volumes and control structures (typically orifices or weirs) will interact so that the volume that is being accounted for will act as effective storage during the 100-year event.

[3] Note: This table is intended for planning purposes only. The final total volume required is to be confirmed during detailed design and may be higher.

Furthermore, the storage volumes accounted for must be provided by permanent structures that will not be removed or modified over time[4].

3.4 Erosion and Runoff Volume Control

Runoff volume control requirements are specified for the purposes of erosion mitigation only for those catchments that drain to the open channel portion of Pinecrest Creek located upstream of the ORPP. For catchments discharging directly to the Ottawa River, volume control requirements are specified for the water quality benefits.

3.4.1 Draining to Pinecrest Creek Upstream of the ORPP (Erosion Mitigation)

The required runoff volume control criteria were determined from hydrologic and hydraulic analyses completed during the preparation of the *Pinecrest/Centrepointe Stormwater Management Criteria Study (February, 2010)* and further analyses completed for the *Pinecrest Creek/Westboro SWM Retrofit Study (May, 2011).* Catchments draining to Pinecrest Creek upstream of the ORPP are shown on **Figures 2** and **3**.

i) To mitigate the cumulative impacts of infill and redevelopment and not aggravate existing erosion within the creek corridor, development shall capture and retain (infiltrate or abstract) the first 10 mm of rainfall. This 10 mm target can be partially achieved by the default initial abstraction (IA) values applicable in urban areas. The Sewer Design Guideline allows a designer to account for a 4.67 mm IA on all soft landscaped surfaces and a 1.57 mm IA on all hardscaped surfaces. Refer to the references cited in the notes of **Table 1** for guidance on prudent approaches to planning infiltration-based LID measures. A green roof or roofs, rainwater harvesting measures and/or a combination of retention measures could be implemented to provide further runoff volume control.

ii) In addition to the above, development shall control site runoff from the 25 mm 4-hour Chicago design storm to a maximum peak flow of 5.8 L/s/ha. This peak flow target is based on releasing 25 mm of runoff over a 24-hour time period, using a peaking factor of 2 (i.e., assuming the peak outflow is equal to twice the average outflow).

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[4] For examples of these types of calculations, refer to: Appendix B, *Stormwater Management Guidelines for the Pinecrest Creek/Westboro Area - Final Report, JFSA, 2019* (***NOTE: to be used as a reference document only***).

Note that, as outlined in **Table 1**, all development draining to Pinecrest Creek upstream of the ORPP shall control site runoff from the 25 mm 4-hour Chicago storm to a peak unit outflow rate of 5.8 L/s/ha regardless of whether the first 10 mm of runoff volume will be retained on-site. The required on-site storage volume, to control the runoff from the 25 mm storm, will vary from site to site based on the amount of volume retained or infiltrated.

3.4.2 Draining Directly to the Ottawa River (Water Quality)

The following runoff volume control criterion applies to catchments discharging directly to the Ottawa River. Those catchments are shown on **Figures 2** and **3**.

To mitigate the cumulative impacts of infill and redevelopment and not aggravate existing water quality degradation, development shall capture and retain (infiltrate or abstract) the first 10 mm of rainfall. This 10 mm target can be partially achieved by the default initial abstraction (IA) values applicable in urban areas. The Sewer Design Guideline allows a designer to account for a 4.67 mm IA on all soft landscaped surfaces and a 1.57 mm IA on all hardscaped surfaces. Refer to the references cited in the notes of **Table 1** for guidance on prudent approaches to planning infiltration-based LID measures. A green roof or roofs, rain harvesting measures and/or a combination of retention measures could be implemented to provide further runoff volume control.

3.5 Quality Control

Enhanced level of treatment (equivalent to long-term average TSS removal of 80%) is required for water quality control. This requirement may, in some cases, be accomplished by means of conventional measures (e.g., with a combination of end-of-pipe facilities such as oil/grit separators and filters). The water quality benefits of runoff volume control are also recognized in the *Draft No.2 LID SWM Guidance Manual (MOECC, 2017*), which notes that SWM measures that achieve control of the regionally specific 90th percentile event (27mm for Ottawa) shall be considered to have achieved Enhanced level of treatment for the respective contributing drainage area.

4 References

Development of SWM design criteria:

- Pinecrest/Centrepointe SWM Criteria Study, JFSA et. al., 2010
- Pinecrest Creek/Westboro SWM Retrofit Study, JFSA et. al., 2011
- Stormwater Management Guidelines for the Pinecrest Creek/Westboro Area - Final Report, JFSA, 2019 (***NOTE: to be used as a reference document only not for SWM design criteria***).

LID Design Guidance:

- Low Impact Development Stormwater Management Planning and Design Wiki at: https://wiki.sustainabletechnologies.ca/wiki/Main_Page
- Draft No.2 Low Impact Development (LID) Stormwater Management Guidance Manual (MOECC, November 2017) or the final version of this Manual, when available

500 Edgeworth Avenue
Subcatchment Parameters

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Area ID	Area (ha)	Width (m)	Flow Length (m)	Slope (%)	Runoff Coeff.	Imperv. (%)	Zero Imperv (%)
500 Edgeworth Avenue							
A-01	0.14	28	50	0.5	0.90	100.0	95
A-02	0.07	27	25	1.0	0.57	52.9	0
A-03	0.07	27	25	1.0	0.57	52.9	0
Existing Areas							
EX-01	0.10	50	20	2.0	0.54	49.1	19
EX-02	0.08	40	20	2.0	0.59	55.0	36
EX-03	0.08	40	20	2.0	0.67	67.3	33
EX-04	0.09	45	20	2.0	0.64	62.2	29
EX-05	0.21	105	20	2.0	0.58	54.9	35
EX-06	0.23	115	20	2.0	0.53	46.5	36
EX-07	0.75	375	20	2.0	0.44	34.7	85
EX-08	0.16	80	20	2.0	0.59	55.0	31
EX-09	0.13	65	20	2.0	0.50	43.0	27
EX-10	0.16	80	20	2.0	0.63	61.3	43
EX-11	0.06	60	10	2.0	0.60	57.1	0
EX-12	0.10	100	10	2.0	0.60	57.1	0

500 Edgeworth Avenue (121109)
PCSWMM Model Output
100yr 3-hour Chicago Storm

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```
EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)
  ------------------------------------------------------------

  WARNING 02: maximum depth increased for Node EndNullStruct0
  WARNING 02: maximum depth increased for Node EndNullStruct1
  WARNING 02: maximum depth increased for Node EndNullStruct2
  WARNING 02: maximum depth increased for Node EndNullStruct3
  WARNING 02: maximum depth increased for Node EndNullStruct8
  WARNING 02: maximum depth increased for Node StartNullStruct0
  WARNING 02: maximum depth increased for Node StartNullStruct1
  WARNING 02: maximum depth increased for Node StartNullStruct2
  WARNING 02: maximum depth increased for Node StartNullStruct3

  *************
  Element Count
  *************
  Number of rain gages ...... 1
  Number of subcatchments ... 15
  Number of nodes ........... 30
  Number of links ........... 38
  Number of pollutants ...... 0
  Number of land uses ....... 0


  ****************
  Raingage Summary
  ****************
                                                  Data       Recording
  Name                 Data Source                Type       Interval
  ----------------------------------------------------------------------
  RG-1                 C3h-100yr                  INTENSITY  10 min.


  ********************
  Subcatchment Summary
  ********************
  Name                        Area     Width   %Imperv    %Slope Rain Gage            Outlet
  ------------------------------------------------------------------------------------------
---
  A-01                       0.14     28.20    100.00    0.5000 RG-1                 Cistern
  A-02                       0.07     26.80     52.90    1.0000 RG-1                 Cistern
  A-03                       0.07     27.20     52.90    1.0000 RG-1                 Cistern
  ex-01                      0.10     50.00     49.10    2.0000 RG-1                 CB1_(STM)
  EX-02                      0.08     40.00     55.00    2.0000 RG-1                 LCB2_(STM)
  EX-03                      0.08     40.00     67.30    2.0000 RG-1                 XLCB4_(STM)
  EX-04                      0.09     45.00     62.20    2.0000 RG-1                 XCB3_(STM)
  EX-05                      0.21    105.00     54.90    2.0000 RG-1                 XCB2_(STM)
  EX-06                      0.23    115.00     46.50    2.0000 RG-1                 StartNullStruct0
  EX-07                      0.75    375.00     34.70    2.0000 RG-1                 J3
  EX-08                      0.16     80.00     55.00    2.0000 RG-1                 XCB4_(STM)
  EX-09                      0.13     65.00     43.00    2.0000 RG-1                 J1
  EX-10                      0.16     80.00     61.30    2.0000 RG-1                 J2
  EX-11                      0.06     60.00     57.10    2.0000 RG-1                 J4
  EX-12                      0.10    100.00     57.10    2.0000 RG-1                 J5


  ************
  Node Summary
  ************
                                        Invert      Max.    Ponded    External
  Name                 Type               Elev.     Depth      Area    Inflow
  ----------------------------------------------------------------------------
  EndNullStruct0       JUNCTION          66.13      1.00       0.0
  EndNullStruct1       JUNCTION          65.99      1.00       0.0
  EndNullStruct2       JUNCTION          65.81      1.00       0.0
  EndNullStruct3       JUNCTION          65.64      1.00       0.0
  EndNullStruct8       JUNCTION          66.53      1.56       0.0
  J1                   JUNCTION          66.00      1.00       0.0
  J2                   JUNCTION          65.50      1.00       0.0
  J3                   JUNCTION          69.00      1.00       0.0
  J4                   JUNCTION          68.56      1.00       0.0
  J5                   JUNCTION          68.56      1.00       0.0
  J6                   JUNCTION          65.60      1.00       0.0
  StartNullStruct0     JUNCTION          66.31      1.00       0.0
  StartNullStruct1     JUNCTION          66.06      1.00       0.0
  StartNullStruct2     JUNCTION          65.85      1.00       0.0
  StartNullStruct3     JUNCTION          65.67      1.00       0.0
  143_(STM)            OUTFALL           63.52      0.30       0.0
  OF1                  OUTFALL           65.55      1.00       0.0
  CB1_(STM)            STORAGE           65.56      2.53       0.0
  CB2_(STM)            STORAGE           65.65      1.71       0.0
  CB3_(STM)            STORAGE           65.70      1.82       0.0
  Cistern              STORAGE           63.30      4.40       0.0
  LCB1_(STM)           STORAGE           65.46      2.54       0.0
  LCB2_(STM)           STORAGE           65.38      2.54       0.0
  LCB3_(STM)           STORAGE           65.27      2.37       0.0
  XCB2_(STM)           STORAGE           66.64      1.57       0.0
  XCB3_(STM)           STORAGE           63.79      2.71       0.0
  XCB4_(STM)           STORAGE           63.76      2.64       0.0
  XCB5_(STM)           STORAGE           63.59      1.79       0.0
  XLCB4_(STM)          STORAGE           65.16      1.81       0.0
  XLCB5_(STM)          STORAGE           64.94      1.87       0.0


  ************
  Link Summary
  ************
  Name                 From Node          To Node            Type           Length    %Slope Roughness
  ---------------------------------------------------------------------------------------------------
  C1                   EndNullStruct8     StartNullStruct0 CONDUIT            17.1    1.2867    0.0350
  C10                  CB1_(STM)          LCB1_(STM)       CONDUIT            21.6    0.4167    0.0150
  C11                  LCB2_(STM)         LCB3_(STM)       CONDUIT            24.8    1.1291    0.0150
  C12                  XLCB4_(STM)        XLCB5_(STM)      CONDUIT            17.8    0.8989    0.0150
  C13                  J5                 XCB2_(STM)       CONDUIT           151.5    0.8938    0.0150
  C14                  J4                 CB2_(STM)        CONDUIT           129.4    0.9274    0.0150
  C15                  LCB1_(STM)         LCB2_(STM)       CONDUIT            17.8    0.4494    0.0350
  C16                  XLCB5_(STM)        XCB3_(STM)       CONDUIT            36.8    0.8424    0.0350
  C17                  LCB3_(STM)         XLCB4_(STM)      CONDUIT            24.6    2.7246    0.0350
  C18                  XCB4_(STM)         XCB3_(STM)       CONDUIT             7.0    2.0004    0.0150
  C19                  J6                 OF1              CONDUIT             3.0    1.6669    0.0350
  C2                   EndNullStruct0     StartNullStruct1 CONDUIT            10.9    0.6422    0.0350
  C20                  XCB3_(STM)         J6               CONDUIT            13.5   -0.7408    0.0350
  C3                   EndNullStruct1     StartNullStruct2 CONDUIT            19.9    0.7035    0.0350
  C4                   EndNullStruct2     StartNullStruct3 CONDUIT            19.3    0.7254    0.0350
  C5                   EndNullStruct3     XCB4_(STM)       CONDUIT            15.9    1.5096    0.0350
  C6                   J1                 XCB5_(STM)       CONDUIT            58.0    1.0690    0.0350
  C7                   J2                 XCB5_(STM)       CONDUIT            75.0    0.1600    0.0350
  C8                   J3                 EndNullStruct3   CONDUIT           213.0    1.5777    0.0350
  C9                   XCB2_(STM)         EndNullStruct8   CONDUIT             8.1    0.1235    0.0150
  Ex_Culvert-51_(Ex_Culvert) StartNullStruct0 EndNullStruct0 CONDUIT            13.2    1.3638    0.0240
  Ex_Culvert-52_(Ex_Culvert) StartNullStruct1 EndNullStruct1 CONDUIT            10.2    0.6863    0.0240
  Ex_Culvert-53_(Ex_Culvert) StartNullStruct2 EndNullStruct2 CONDUIT             5.8    0.6897    0.0240
  Ex_Culvert-54_(Ex_Culvert) StartNullStruct3 EndNullStruct3 CONDUIT             6.0    0.5000    0.0240
  n1_(STM)             CB3_(STM)          CB2_(STM)        CONDUIT            10.3    0.4854    0.0130
  n3_(STM)             CB1_(STM)          LCB1_(STM)       CONDUIT            19.8    0.5044    0.0130
  n4_(STM)             LCB1_(STM)         LCB2_(STM)       CONDUIT            15.4    0.5194    0.0130
  n5_(STM)             LCB2_(STM)         LCB3_(STM)       CONDUIT            23.0    0.4792    0.0130
  n6_(STM)             LCB3_(STM)         XLCB4_(STM)      CONDUIT            22.9    0.4801    0.0130
  nn2_(STM)            CB2_(STM)          CB1_(STM)        CONDUIT            17.0    0.5292    0.0130
  STM-10_(STM)         XCB5_(STM)         143_(STM)        CONDUIT             6.8    1.0295    0.0130
  STM-27_(STM)         XLCB4_(STM)        XLCB5_(STM)      CONDUIT            15.4    1.4309    0.0130
  STM-29_(STM)         XCB2_(STM)         EndNullStruct8   CONDUIT             8.1    1.3581    0.0240
  STM-30_(STM)         XLCB5_(STM)        XCB3_(STM)       CONDUIT            34.3    1.6317    0.0130
  STM-47_(STM)         CB1_(STM)          XCB2_(STM)       CONDUIT             9.9    0.6036    0.0130
  STM-8_(STM)          XCB3_(STM)         XCB4_(STM)       CONDUIT             9.1    0.2203    0.0130
  STM-9_(STM)          XCB4_(STM)         XCB5_(STM)       CONDUIT            19.9    0.8038    0.0130
  P1                   Cistern            CB3_(STM)        TYPE2 PUMP


  *********************
  Cross Section Summary
  *********************
                                          Full      Full      Hyd.      Max.   No. of      Full
  Conduit              Shape              Depth      Area      Rad.     Width  Barrels      Flow
  ---------------------------------------------------------------------------------------------
  C1                   TRAPEZOIDAL         1.00      3.15      0.49      6.15       1   6315.39
  C10                  RECT_OPEN           1.00      3.00      0.60      3.00       1   9184.45
  C11                  RECT_OPEN           1.00      3.00      0.60      3.00       1  15119.03
  C12                  RECT_OPEN           1.00      3.00      0.60      3.00       1  13490.12
  C13                  Edgeworth_East      1.00      8.57      0.22      9.01       1  19410.15
  C14                  Edgeworth_West      1.00      8.57      0.27      9.01       1  22855.37
  C15                  TRAPEZOIDAL         1.00      3.30      0.50      6.30       1   3972.35
  C16                  TRAPEZOIDAL         1.00      3.30      0.50      6.30       1   5438.45
  C17                  TRAPEZOIDAL         1.00      3.30      0.50      6.30       1   9780.49
  C18                  RECT_OPEN           1.00      3.00      0.60      3.00       1  20124.05
  C19                  RECT_OPEN           1.00      3.00      0.60      3.00       1   7872.90
  C2                   TRAPEZOIDAL         1.00      3.15      0.49      6.15       1   4461.79
  C20                  RECT_OPEN           1.00      3.00      0.60      3.00       1   5248.31
  C3                   TRAPEZOIDAL         1.00      3.15      0.49      6.15       1   4669.95
  C4                   TRAPEZOIDAL         1.00      3.15      0.49      6.15       1   4741.98
  C5                   TRAPEZOIDAL         1.00      3.15      0.49      6.15       1   6840.71
  C6                   TRAPEZOIDAL         1.00      3.15      0.49      6.15       1   5756.56
  C7                   TRAPEZOIDAL         1.00      3.15      0.49      6.15       1   2227.05
  C8                   TRAPEZOIDAL         1.00      3.30      0.50      6.30       1   7442.47
```

C9	RECT_OPEN	1.00	3.00	0.60	3.00	1	4999.36	
Ex_Culvert-51_(Ex_Culvert)	CIRCULAR		0.30	0.07	0.07	0.30	1	61.17
Ex_Culvert-52_(Ex_Culvert)	CIRCULAR		0.30	0.07	0.07	0.30	1	43.40
Ex_Culvert-53_(Ex_Culvert)	CIRCULAR		0.30	0.07	0.07	0.30	1	43.50
Ex_Culvert-54_(Ex_Culvert)	CIRCULAR		0.30	0.07	0.07	0.30	1	37.04
n1_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.44	
n3_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.24	
n4_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	42.86	
n5_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.17	
n6_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	41.21	
nn2_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	43.26	
STM-10_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	98.12	
STM-27_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	71.14	
STM-29_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	61.05	
STM-30_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	75.97	
STM-47_(STM)	CIRCULAR	0.25	0.05	0.06	0.25	1	46.21	
STM-8_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	45.39	
STM-9_(STM)	CIRCULAR	0.30	0.07	0.07	0.30	1	86.70	

****
Transect Summary
****

Transect Edgeworth_East
Area:

0.0023	0.0093	0.0210	0.0370	0.0556
0.0763	0.0973	0.1182	0.1392	0.1602
0.1812	0.2021	0.2231	0.2441	0.2651
0.2861	0.3070	0.3280	0.3490	0.3700
0.3910	0.4120	0.4329	0.4539	0.4749
0.4959	0.5169	0.5379	0.5589	0.5799
0.6009	0.6219	0.6429	0.6639	0.6849
0.7059	0.7269	0.7479	0.7689	0.7899
0.8109	0.8319	0.8529	0.8739	0.8949
0.9159	0.9370	0.9580	0.9790	1.0000

Hrad:

0.0178	0.0356	0.0535	0.0786	0.1061
0.1294	0.1529	0.1765	0.2001	0.2235
0.2467	0.2697	0.2925	0.3151	0.3375
0.3597	0.3816	0.4034	0.4249	0.4462
0.4673	0.4882	0.5089	0.5294	0.5497
0.5698	0.5897	0.6094	0.6290	0.6483
0.6675	0.6865	0.7053	0.7239	0.7424
0.7606	0.7788	0.7967	0.8145	0.8321
0.8496	0.8669	0.8841	0.9011	0.9179
0.9346	0.9512	0.9676	0.9839	1.0000

Width:

0.2217	0.4433	0.6650	0.8313	0.9423
0.9979	0.9979	0.9980	0.9980	0.9980
0.9981	0.9981	0.9982	0.9982	0.9983
0.9983	0.9984	0.9984	0.9985	0.9985
0.9986	0.9986	0.9987	0.9987	0.9988
0.9988	0.9989	0.9989	0.9990	0.9990
0.9991	0.9991	0.9992	0.9992	0.9993
0.9993	0.9994	0.9994	0.9995	0.9995
0.9996	0.9996	0.9997	0.9997	0.9998
0.9998	0.9999	0.9999	1.0000	1.0000

Transect Edgeworth_West
Area:

0.0023	0.0093	0.0210	0.0370	0.0556
0.0763	0.0973	0.1183	0.1392	0.1602
0.1812	0.2022	0.2231	0.2441	0.2651
0.2861	0.3070	0.3280	0.3490	0.3700
0.3910	0.4120	0.4330	0.4539	0.4749
0.4959	0.5169	0.5379	0.5589	0.5799
0.6009	0.6219	0.6429	0.6639	0.6849
0.7059	0.7269	0.7479	0.7689	0.7899
0.8109	0.8319	0.8529	0.8739	0.8949
0.9159	0.9370	0.9580	0.9790	1.0000

Hrad:

0.0144	0.0288	0.0431	0.0636	0.0864
0.1059	0.1258	0.1460	0.1663	0.1866
0.2071	0.2275	0.2480	0.2684	0.2889
0.3094	0.3298	0.3503	0.3708	0.3912
0.4116	0.4321	0.4525	0.4729	0.4933
0.5137	0.5341	0.5545	0.5748	0.5952
0.6155	0.6358	0.6562	0.6765	0.6968
0.7171	0.7373	0.7576	0.7779	0.7981
0.8183	0.8386	0.8588	0.8790	0.8992
0.9194	0.9395	0.9597	0.9799	1.0000

Width:

0.2218	0.4435	0.6653	0.8316	0.9424
0.9979	0.9979	0.9980	0.9980	0.9980
0.9981	0.9981	0.9982	0.9982	0.9983
0.9983	0.9984	0.9984	0.9985	0.9985
0.9986	0.9986	0.9987	0.9987	0.9988
0.9988	0.9989	0.9989	0.9990	0.9990
0.9991	0.9991	0.9992	0.9992	0.9993
0.9993	0.9994	0.9994	0.9995	0.9995
0.9996	0.9996	0.9997	0.9997	0.9998
0.9998	0.9999	0.9999	1.0000	1.0000

****
Analysis Options
****
Flow Units ..... LPS
Process Models:
  Rainfall/Runoff ..... YES
  RDII ..... NO
  Snowmelt ..... NO
  Groundwater ..... NO
  Flow Routing ..... YES
  Ponding Allowed ..... NO
  Water Quality ..... NO
Infiltration Method ..... HORTON
Flow Routing Method ..... DYNWAVE
Surcharge Method ..... EXTRAN
Starting Date 07/23/2025 00:00:00
Ending Date 07/24/2025 00:00:00
Antecedent Dry Days 0.0
Report Time Step 00:01:00
Wet Time Step 00:05:00
Dry Time Step 00:05:00
Routing Time Step ..... 5.00 sec
Variable Time Step ..... YES
Maximum Trials 8
Number of Threads 8
Head Tolerance ..... 0.001524 m

Runoff Quantity Continuity	Volume hectare-m	Depth mm
Total Precipitation	0.174	71.667
Evaporation Loss	0.000	0.000
Infiltration Loss	0.054	22.054
Surface Runoff	0.121	50.032
Final Storage	0.001	0.423
Continuity Error (%)	-1.175	

Flow Routing Continuity	Volume hectare-m	Volume 10^6 ltr
Dry Weather Inflow	0.000	0.000
Wet Weather Inflow	0.121	1.213
Groundwater Inflow	0.000	0.000
RDII Inflow	0.000	0.000
External Inflow	0.000	0.000
External Outflow	0.121	1.212
Flooding Loss	0.000	0.000
Evaporation Loss	0.000	0.000
Exfiltration Loss	0.000	0.000
Initial Stored Volume	0.000	0.000
Final Stored Volume	0.000	0.000
Continuity Error (%)	0.054	

****
Time-Step Critical Elements
****
Link STM-10_(STM) (28.40%)
Link Ex_Culvert-54_(Ex_Culvert) (5.75%)
Link Ex_Culvert-53_(Ex_Culvert) (2.93%)

****
Highest Flow Instability Indexes
****
Link STM-29_(STM) (6)
Link Ex_Culvert-51_(Ex_Culvert) (4)

Link C1 (2)
Link C2 (2)

****
Most Frequent Nonconverging Nodes
****
Convergence obtained at all time steps.

****
Routing Time Step Summary
****

Minimum Time Step	:	0.50 sec
Average Time Step	:	4.01 sec
Maximum Time Step	:	5.00 sec
% of Time in Steady State	:	0.00
Average Iterations per Step	:	2.00
% of Steps Not Converging	:	0.00
Time Step Frequencies	:	
5.000 - 3.155 sec	:	72.96 %
3.155 - 1.991 sec	:	15.40 %
1.991 - 1.256 sec	:	8.13 %
1.256 - 0.792 sec	:	1.58 %
0.792 - 0.500 sec	:	1.93 %

****
Subcatchment Runoff Summary
****

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
A-01	71.67	0.00	0.00	0.00	72.21	0.00	72.21	0.10	69.05	1.008
A-02	71.67	0.00	0.00	21.33	37.20	12.93	50.13	0.03	26.35	0.700
A-03	71.67	0.00	0.00	21.33	37.20	12.93	50.13	0.03	26.75	0.700
ex-01	71.67	0.00	0.00	22.75	34.62	14.51	49.13	0.05	41.70	0.686
EX-02	71.67	0.00	0.00	20.06	38.93	12.94	51.87	0.04	34.58	0.724
EX-03	71.67	0.00	0.00	14.50	47.63	9.61	57.24	0.05	36.72	0.799
EX-04	71.67	0.00	0.00	16.81	43.97	11.00	54.97	0.05	40.39	0.767
EX-05	71.67	0.00	0.00	20.11	38.85	12.97	51.82	0.11	90.71	0.723
EX-06	71.67	0.00	0.00	23.94	32.91	15.20	48.10	0.11	94.28	0.671
EX-07	71.67	0.00	0.00	29.36	24.81	18.28	43.09	0.32	281.18	0.601
EX-08	71.67	0.00	0.00	20.06	38.89	12.94	51.83	0.08	69.15	0.723
EX-09	71.67	0.00	0.00	25.55	30.37	16.12	46.48	0.06	52.00	0.649
EX-10	71.67	0.00	0.00	17.21	43.47	11.24	54.71	0.09	71.49	0.763
EX-11	71.67	0.00	0.00	18.93	40.07	12.97	53.04	0.03	27.46	0.740
EX-12	71.67	0.00	0.00	18.93	40.07	12.97	53.04	0.05	45.77	0.740

****
Node Depth Summary
****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
EndNullStruct0	JUNCTION	0.05	0.52	66.65	0 01:17	0.52
EndNullStruct1	JUNCTION	0.04	0.33	66.32	0 01:22	0.33
EndNullStruct2	JUNCTION	0.04	0.33	66.14	0 01:24	0.33
EndNullStruct3	JUNCTION	0.04	0.30	65.94	0 01:12	0.30
EndNullStruct8	JUNCTION	0.04	0.62	67.15	0 01:13	0.62
J1	JUNCTION	0.02	0.16	66.16	0 01:10	0.16
J2	JUNCTION	0.04	0.28	65.78	0 01:11	0.28
J3	JUNCTION	0.02	0.25	69.25	0 01:10	0.25
J4	JUNCTION	0.01	0.04	68.60	0 01:13	0.04
J5	JUNCTION	0.01	0.05	68.61	0 01:13	0.05
J6	JUNCTION	0.00	0.11	65.71	0 01:13	0.11
StartNullStruct0	JUNCTION	0.07	0.84	67.15	0 01:13	0.84
StartNullStruct1	JUNCTION	0.06	0.59	66.65	0 01:17	0.59
StartNullStruct2	JUNCTION	0.06	0.46	66.31	0 01:22	0.46
StartNullStruct3	JUNCTION	0.06	0.46	66.13	0 01:24	0.46
143_(STM)	OUTFALL	0.06	0.30	63.82	0 00:59	0.30
OF1	OUTFALL	0.00	0.10	65.65	0 01:13	0.10
CB1_(STM)	STORAGE	0.13	1.57	67.13	0 01:13	1.57
CB2_(STM)	STORAGE	0.12	1.51	67.16	0 01:13	1.51
CB3_(STM)	STORAGE	0.11	1.46	67.16	0 01:13	1.46
Cistern	STORAGE	0.37	1.68	64.98	0 01:49	1.68
LCB1_(STM)	STORAGE	0.13	1.65	67.11	0 01:13	1.65
LCB2_(STM)	STORAGE	0.13	1.56	66.94	0 01:13	1.56
LCB3_(STM)	STORAGE	0.11	1.31	66.58	0 01:13	1.31
XCB2_(STM)	STORAGE	0.04	0.51	67.15	0 01:13	0.51
XCB3_(STM)	STORAGE	0.19	1.99	65.78	0 01:13	1.99
XCB4_(STM)	STORAGE	0.19	2.04	65.80	0 01:14	2.00
XCB5_(STM)	STORAGE	0.10	1.06	64.65	0 01:11	1.05
XLCB4_(STM)	STORAGE	0.09	0.85	66.01	0 01:11	0.85
XLCB5_(STM)	STORAGE	0.10	1.03	65.97	0 01:12	1.03

****
Node Inflow Summary
****

Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
EndNullStruct0	JUNCTION	0.00	107.35	0 01:11	0	0.235	-0.084
EndNullStruct1	JUNCTION	0.00	95.12	0 01:15	0	0.235	-0.044
EndNullStruct2	JUNCTION	0.00	97.17	0 01:17	0	0.235	-0.040
EndNullStruct3	JUNCTION	0.00	330.56	0 01:10	0	0.56	0.389
EndNullStruct8	JUNCTION	0.00	86.64	0 01:10	0	0.124	-0.185
J1	JUNCTION	52.00	52.00	0 01:10	0.0604	0.0604	-0.014
J2	JUNCTION	71.49	71.49	0 01:10	0.0875	0.0875	-0.010
J3	JUNCTION	281.18	281.18	0 01:10	0.323	0.323	-0.645
J4	JUNCTION	27.46	27.46	0 01:10	0.0318	0.0318	1.277
J5	JUNCTION	45.77	45.77	0 01:10	0.053	0.053	0.984
J6	JUNCTION	0.00	307.30	0 01:14	0	0.173	-0.011
StartNullStruct0	JUNCTION	94.28	149.67	0 01:10	0.111	0.235	0.085
StartNullStruct1	JUNCTION	0.00	100.74	0 01:11	0	0.235	0.041
StartNullStruct2	JUNCTION	0.00	97.58	0 01:17	0	0.235	0.059
StartNullStruct3	JUNCTION	0.00	94.94	0 01:17	0	0.235	0.023
143_(STM)	OUTFALL	0.00	336.82	0 01:11	0	1.04	0.000
OF1	OUTFALL	0.00	298.35	0 01:13	0	0.173	0.000
CB1_(STM)	STORAGE	41.70	85.50	0 01:10	0.0491	0.287	0.107
CB2_(STM)	STORAGE	0.00	26.09	0 01:21	0	0.201	-0.001
CB3_(STM)	STORAGE	0.00	11.00	0 01:03	0	0.169	0.002
Cistern	STORAGE	122.15	122.15	0 01:10	0.169	0.169	-0.009
LCB1_(STM)	STORAGE	0.00	83.21	0 01:10	0	0.286	-0.138
LCB2_(STM)	STORAGE	34.58	96.95	0 01:12	0.0415	0.328	0.004
LCB3_(STM)	STORAGE	0.00	94.32	0 01:13	0	0.328	-0.002
XCB2_(STM)	STORAGE	90.71	113.03	0 01:10	0.109	0.161	0.206
XCB3_(STM)	STORAGE	40.39	532.78	0 01:14	0.0494	0.501	-0.134
XCB4_(STM)	STORAGE	69.15	534.08	0 01:14	0.0829	0.97	0.028
XCB5_(STM)	STORAGE	0.00	337.31	0 01:11	0	1.04	-0.003
XLCB4_(STM)	STORAGE	36.72	120.49	0 01:10	0.0458	0.374	0.006
XLCB5_(STM)	STORAGE	0.00	119.54	0 01:10	0	0.374	0.031

****
Node Surcharge Summary
****

No nodes were surcharged.

****

Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
****

Storage Unit	Average Volume 1000 m³	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m³	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
CB1_(STM)	0.000	5.0	0.0	0.0	0.001	62.0	0 01:13	83.21
CB2_(STM)	0.000	6.9	0.0	0.0	0.001	88.3	0 01:13	29.95
CB3_(STM)	0.000	6.2	0.0	0.0	0.001	80.4	0 01:13	14.87
Cistern	0.023	13.6	0.0	0.0	0.102	61.4	0 01:49	9.40
LCB1_(STM)	0.000	5.0	0.0	0.0	0.000	64.8	0 01:13	76.31
LCB2_(STM)	0.000	4.9	0.0	0.0	0.000	61.2	0 01:13	94.32
LCB3_(STM)	0.000	4.7	0.0	0.0	0.000	55.4	0 01:13	94.18
XCB2_(STM)	0.000	2.9	0.0	0.0	0.000	32.7	0 01:13	109.07
XCB3_(STM)	0.000	6.9	0.0	0.0	0.001	73.6	0 01:13	471.70
XCB4_(STM)	0.000	7.1	0.0	0.0	0.001	77.1	0 01:14	637.34
XCB5_(STM)	0.000	5.9	0.0	0.0	0.000	58.9	0 01:11	336.82
XLCB4_(STM)	0.000	4.7	0.0	0.0	0.000	47.0	0 01:11	119.54
XLCB5_(STM)	0.000	5.2	0.0	0.0	0.000	55.2	0 01:12	116.93

****
Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
143_(STM)	63.26	51.83	336.82	1.039
OF1	7.21	122.77	298.35	0.173
System	35.24	174.60	629.54	1.212

****
Link Flow Summary
****

Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth	
C1	CONDUIT	57.27	0 01:11	0.26	0.01	0.73	
C10	CONDUIT	57.37	0 01:13	0.40	0.01	0.07	
C11	CONDUIT	20.51	0 01:13	0.44	0.00	0.02	
C12	CONDUIT	87.13	0 01:11	0.38	0.01	0.10	
C13	CHANNEL	26.87	0 01:13	0.27	0.00	0.04	
C14	CHANNEL	15.69	0 01:13	0.25	0.00	0.04	
C15	CONDUIT	13.87	0 01:13	0.33	0.00	0.08	
C16	CONDUIT	70.65	0 01:12	0.39	0.01	0.22	
C17	CONDUIT	0.00	0 00:00	0.00	0.00	0.02	
C18	CONDUIT	401.04	0 01:14	0.75	0.02	0.20	
C19	CONDUIT	298.35	0 01:13	0.93	0.04	0.11	
C2	CONDUIT	100.74	0 01:11	0.31	0.02	0.56	
C20	CONDUIT	307.30	0 01:14	0.52	0.06	0.20	
C3	CONDUIT	97.58	0 01:17	0.34	0.02	0.40	
C4	CONDUIT	94.94	0 01:17	0.33	0.02	0.39	
C5	CONDUIT	313.60	0 01:12	0.98	0.05	0.34	
C6	CONDUIT	48.45	0 01:10	0.60	0.01	0.14	
C7	CONDUIT	58.89	0 01:11	0.38	0.03	0.20	
C8	CONDUIT	258.50	0 01:10	0.86	0.03	0.27	
C9	CONDUIT	46.11	0 01:11	0.40	0.01	0.06	
Ex_Culvert-51_(Ex_Culvert)	CONDUIT	107.35	0 01:11	1.52	1.75	1.00	
Ex_Culvert-52_(Ex_Culvert)	CONDUIT	95.12	0 01:15	1.35	2.19	1.00	
Ex_Culvert-53_(Ex_Culvert)	CONDUIT	97.17	0 01:17	1.37	2.23	1.00	
Ex_Culvert-54_(Ex_Culvert)	CONDUIT	91.09	0 01:24	1.37	2.46	1.00	
n1_(STM)	CONDUIT	14.87	0 01:21	0.69	0.36	1.00	
n3_(STM)	CONDUIT	59.84	0 01:20	1.22	1.42	1.00	
n4_(STM)	CONDUIT	67.15	0 01:19	1.37	1.57	1.00	
n5_(STM)	CONDUIT	84.17	0 01:09	1.71	2.04	1.00	
n6_(STM)	CONDUIT	94.18	0 01:14	1.92	2.29	1.00	
nn2_(STM)	CONDUIT	29.95	0 01:21	0.71	0.69	1.00	
STM-10_(STM)	CONDUIT	336.82	0 01:11	4.76	3.43	1.00	
STM-27_(STM)	CONDUIT	73.81	0 01:03	1.72	1.04	1.00	
STM-29_(STM)	CONDUIT	81.08	0 01:07	1.15	1.33	1.00	
STM-30_(STM)	CONDUIT	65.77	0 01:03	1.64	0.87	1.00	
STM-47_(STM)	CONDUIT	38.56	0 01:06	0.88	0.83	1.00	
STM-8_(STM)	CONDUIT	88.52	0 01:32	1.25	1.95	1.00	
STM-9_(STM)	CONDUIT	244.05	0 01:19	3.45	2.81	1.00	
P1	PUMP	9.40	0 00:50		1.00		

****
Flow Classification Summary
****

Conduit	Adjusted /Actual Length	Fraction of Time in Flow Class: Dry	Up Dry	Down Dry	Sub Crit	Sup Crit	Up Crit	Down Crit	Norm Ltd	Inlet Ctrl	
C1	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.97	0.00	
C10	1.00	0.99	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.00	
C11	1.00	0.99	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	
C12	1.00	0.98	0.00	0.00	0.02	0.00	0.00	0.00	0.95	0.00	
C13	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00	
C14	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00	
C15	1.00	0.99	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	
C16	1.00	0.98	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.00	
C17	1.00	0.98	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
C18	1.00	0.98	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	
C19	1.00	0.91	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	
C2	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.96	0.00	
C20	1.00	0.91	0.00	0.00	0.02	0.00	0.00	0.07	0.00	0.00	
C3	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.97	0.00	
C4	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.96	0.00	
C5	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98	0.01	0.00	
C6	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00	
C7	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99	0.00	0.00	
C8	1.00	0.01	0.14	0.00	0.85	0.00	0.00	0.00	0.98	0.00	
C9	1.00	0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Ex_Culvert-51_(Ex_Culvert)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.23	
Ex_Culvert-52_(Ex_Culvert)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.05	
Ex_Culvert-53_(Ex_Culvert)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.06	
Ex_Culvert-54_(Ex_Culvert)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.08	
n1_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.77	0.00	
n3_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.02	0.00	
n4_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.96	0.00	
n5_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.87	0.00	
n6_(STM)	1.00	0.01	0.00	0.00	0.80	0.19	0.00	0.00	0.00	0.00	
nn2_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.97	0.00	
STM-10_(STM)	1.00	0.01	0.00	0.00	0.68	0.32	0.00	0.00	0.76	0.00	
STM-27_(STM)	1.00	0.01	0.00	0.00	0.69	0.30	0.00	0.00	0.77	0.00	
STM-29_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.19	
STM-30_(STM)	1.00	0.01	0.00	0.00	0.02	0.00	0.00	0.97	0.00	0.00	
STM-47_(STM)	1.00	0.01	0.89	0.00	0.01	0.00	0.09	0.00	0.00	0.00	
STM-8_(STM)	1.00	0.01	0.00	0.00	0.12	0.00	0.00	0.87	0.00	0.00	
STM-9_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96	0.00	0.00	

****
Conduit Surcharge Summary
****

Conduit	Hours Full: Both Ends	Upstream	Dnstream	Hours Above Full Normal Flow	Hours Capacity Limited	
Ex_Culvert-51_(Ex_Culvert)		0.40	0.45	0.41	0.42	0.38
Ex_Culvert-52_(Ex_Culvert)		0.25	0.45	0.25	0.48	0.25
Ex_Culvert-53_(Ex_Culvert)		0.23	0.47	0.23	0.50	0.23
Ex_Culvert-54_(Ex_Culvert)		0.01	0.48	0.01	0.54	0.01
n1_(STM)	0.52	0.52	0.53	0.01	0.01	
n3_(STM)	0.55	0.55	0.56	0.20	0.20	
n4_(STM)	0.56	0.56	0.57	0.35	0.35	
n5_(STM)	0.56	0.57	0.56	0.52	0.49	
n6_(STM)	0.54	0.56	0.54	0.55	0.49	
nn2_(STM)	0.53	0.53	0.55	0.01	0.01	
STM-10_(STM)	0.72	0.72	0.74	0.74	0.72	
STM-27_(STM)	0.54	0.54	0.56	0.01	0.01	
STM-29_(STM)	0.27	0.27	0.31	0.04	0.04	

STM-30_(STM)	0.56	0.56	0.59	0.01	0.01
STM-47_(STM)	0.26	0.26	0.33	0.01	0.01
STM-8_(STM)	0.69	0.69	0.69	0.31	0.37
STM-9_(STM)	0.69	0.70	0.69	0.72	0.69

****
Pumping Summary
****

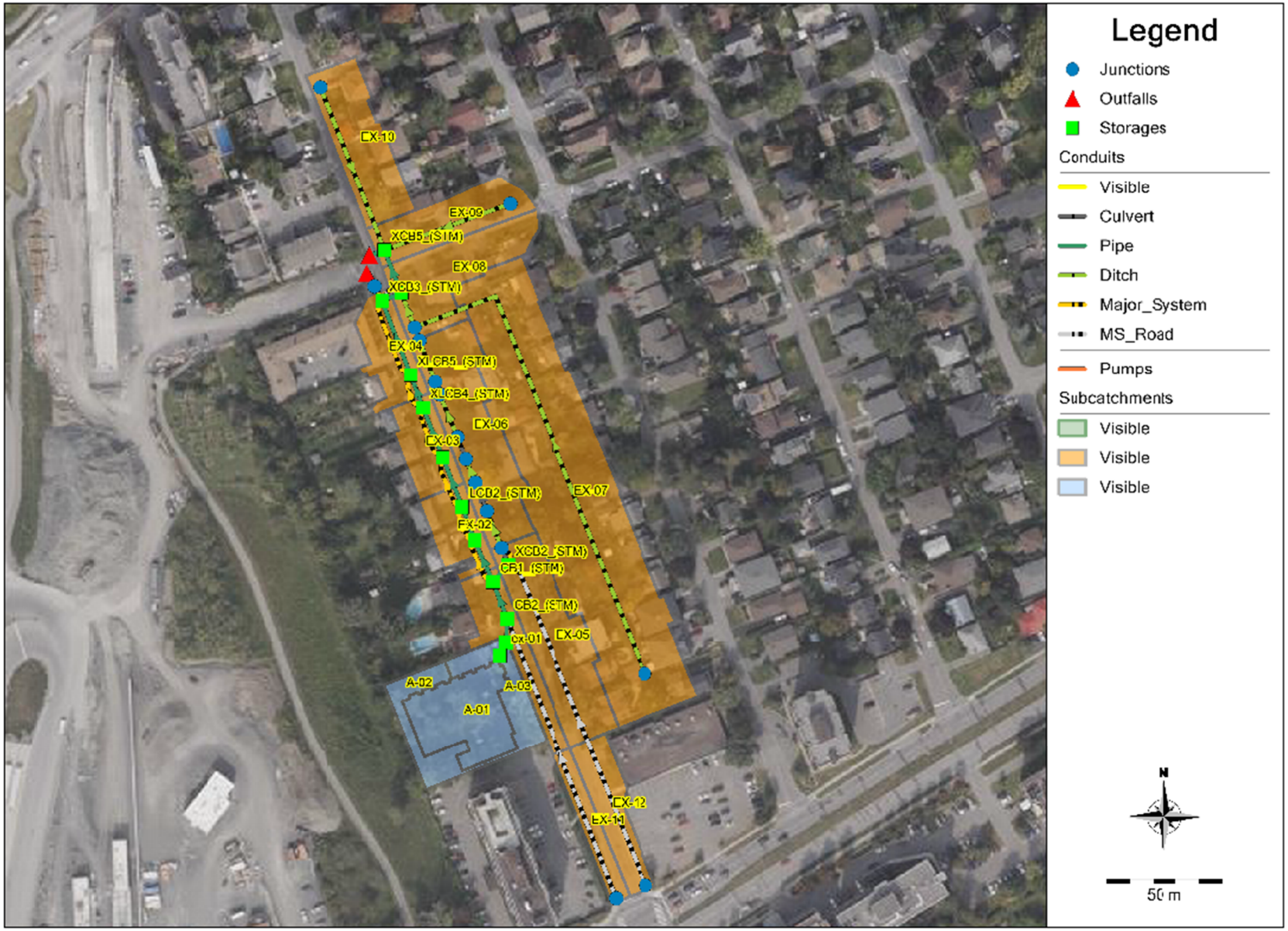
Pump	Percent Utilized	Number of Start-Ups	Min Flow LPS	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr	Power Usage Kw-hr	% Time Off Pump	% Time Curve Low	% Time Curve High
P1	22.53	1	0.00	8.96	9.40	0.169	0.76	0.0	0.0	

Analysis begun on: Tue Oct 7 21:54:48 2025
Analysis ended on: Tue Oct 7 21:54:48 2025
Total elapsed time: < 1 sec

500 Edgeworth Avenue (121109)
PCSWMM Model Schematic

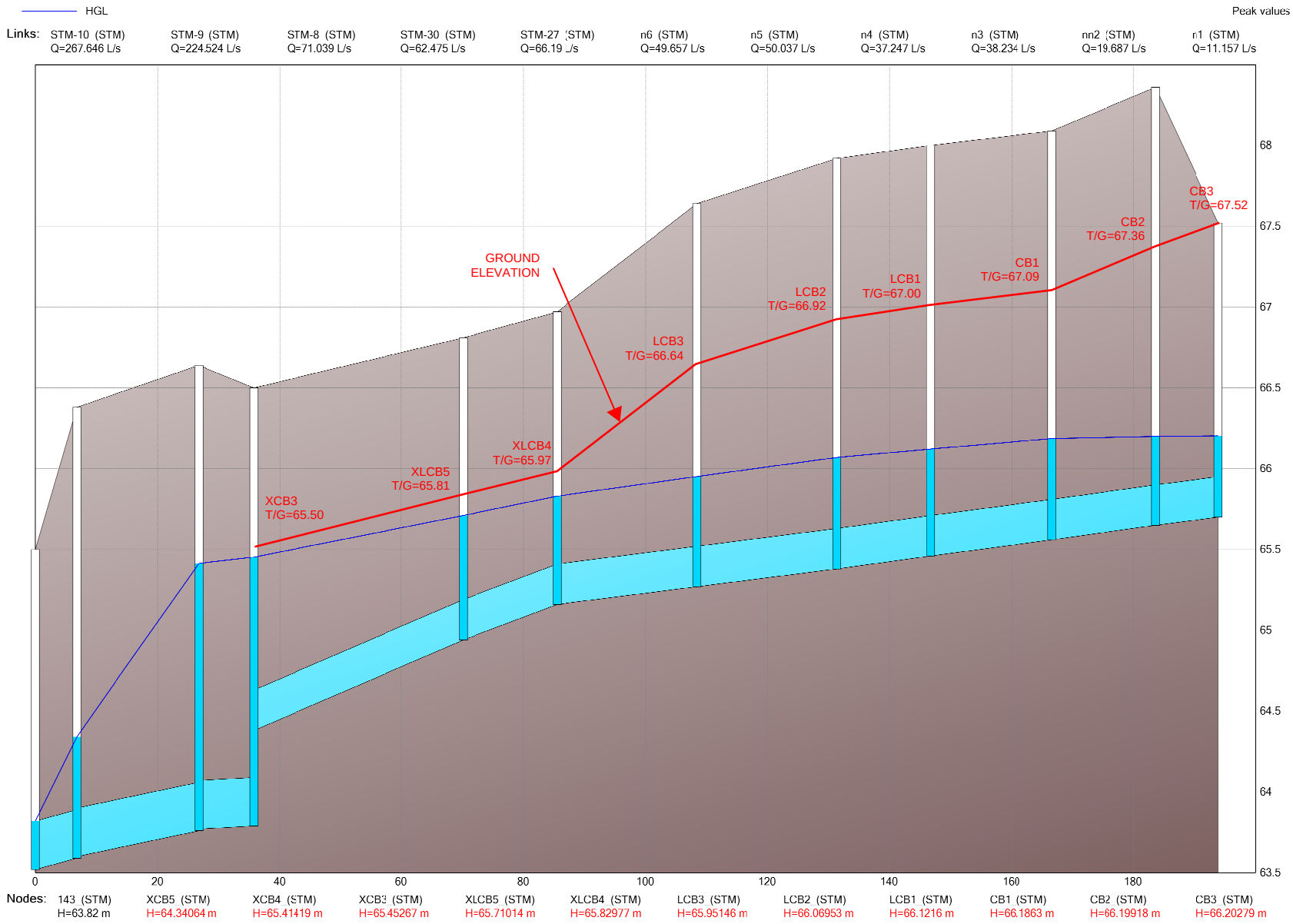
NOVATECH
Engineers, Planners & Landscape Architects

Overall Model Schematic

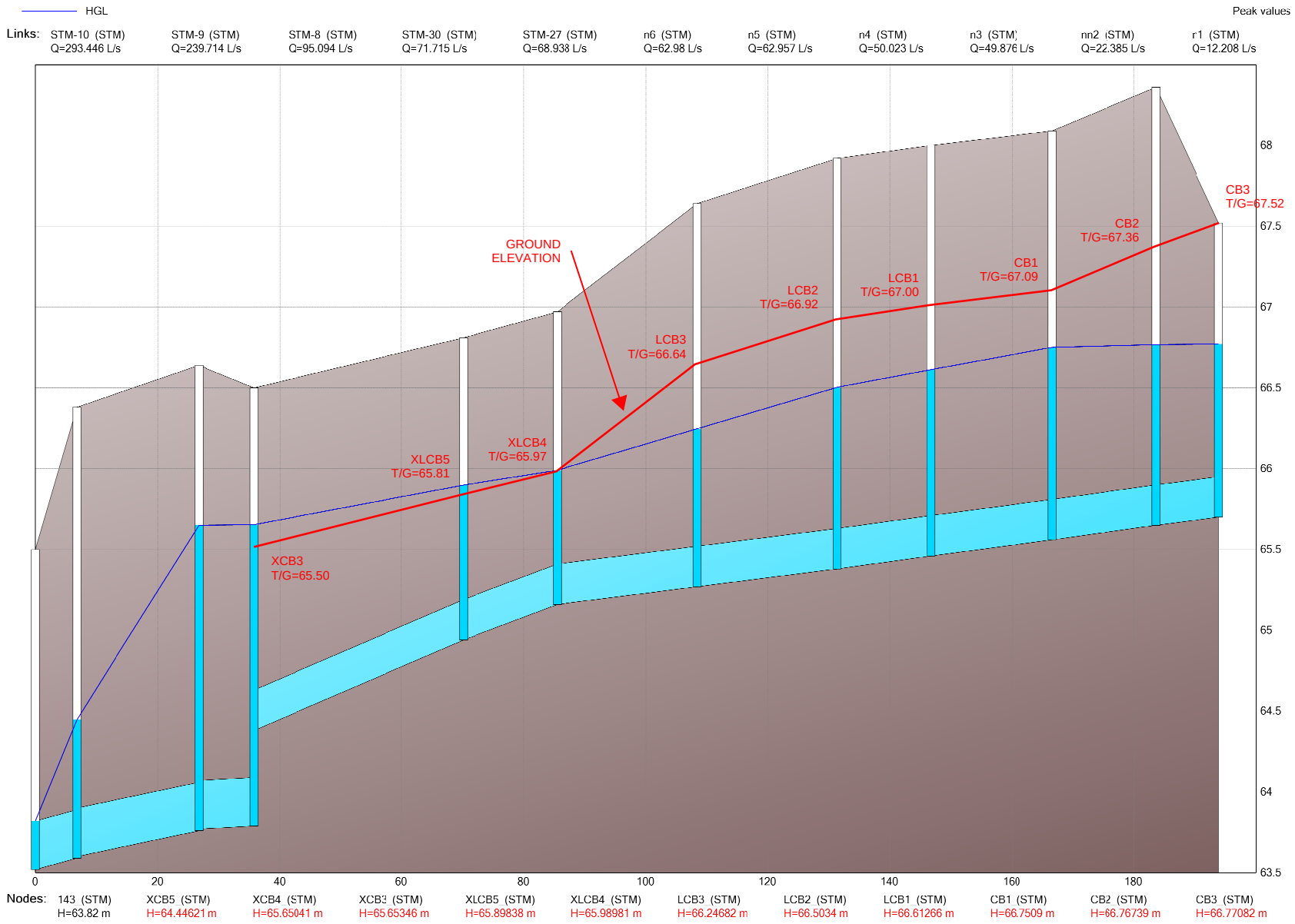


Date: 2025-10-08
M:\2021\121109\DATA\Calculations\SWM\Model Schematic.docx

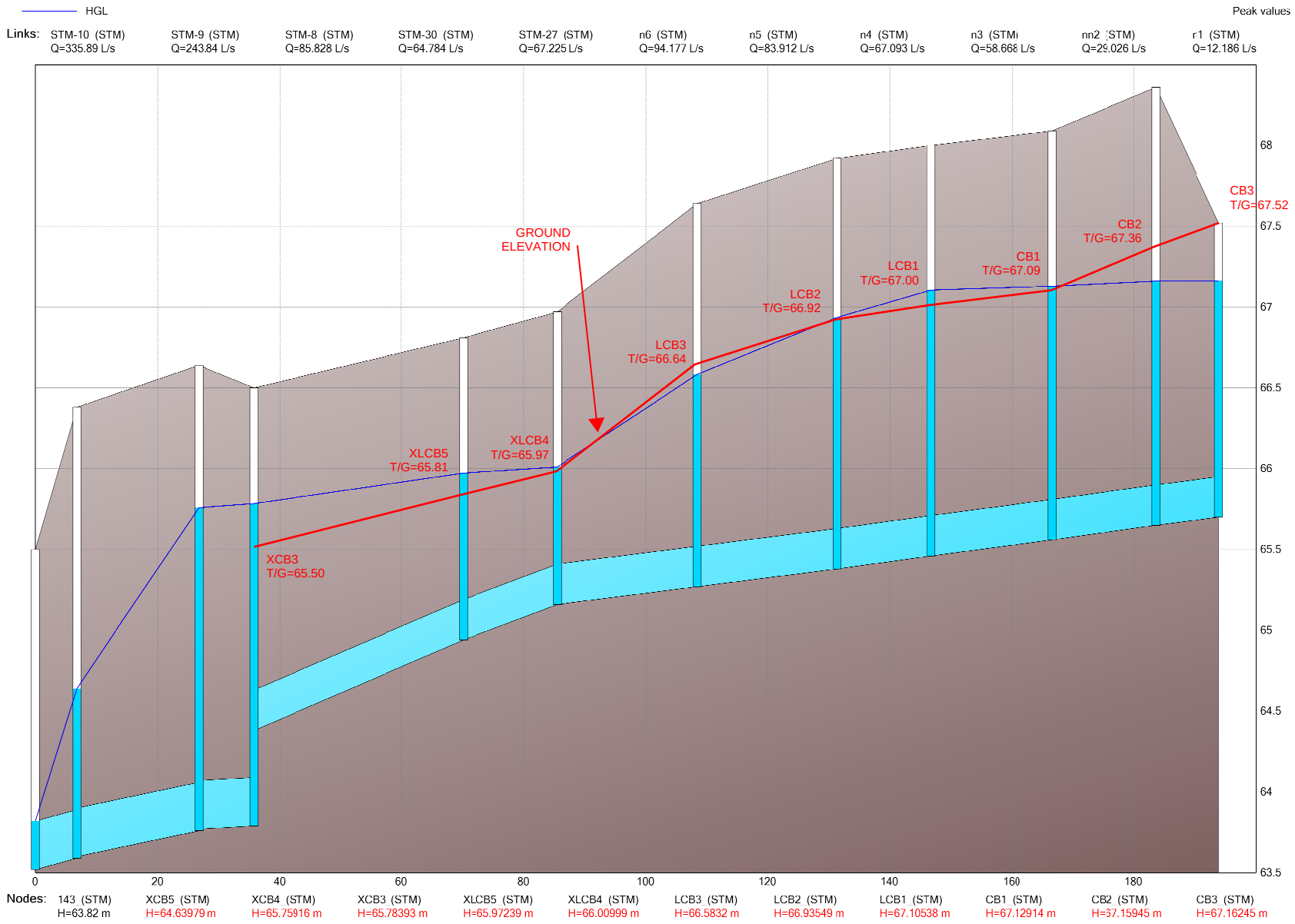
3HR CHICAGO 5-YEAR HGL ELEVATION



3HR CHICAGO 10-YEAR HGL ELEVATION



3HR CHICAGO 100-YEAR HGL ELEVATION



LEGEND

0.24 ha
B-1
0.42

AREA (hectares)

AREA ID

RUN-OFF COEFFICIENT

EXISTING STORM DRAINAGE AREA BOUNDARY

EXISTING DRAINAGE FLOW DIRECTION

NCC LANDS

TOP OF SLOPE

DITCH CENTERLINE

TOP OF SLOPE

NCC LANDS

GARBAGE RECEPTICLE

VINYL SHED

0.199
B-2
0.31

POOL

GARAGE

CB
LD=68.02

WOOD DECK

STUCCO ADDITION (SUNROOM)

CONCRETE RETAINING WALL

2385 CARLING

508 EDGEWORTH

500 EDGEWORTH

492 EDGEWORTH

ASPHALT DRIVEWAY

ASPHALT DRIVEWAY

ASPHALT DRIVEWAY

ASPHALT DRIVEWAY

0.077
B-1
0.42

EDGEWORTH AVENUE

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

500 & 508 EDGEWORTH AVENUE

PRE-DEVELOPMENT STORM DRAINAGE AREA FIGURE

SCALE 1 : 300 (0 3 6 9 12)

DATE JAN. 7, 2026 | JOB 121109 | FIGURE 121109-XSTM

M:\2021\121109\CAD\CIVIL\121109-PRE_DEV STM.DWG 1/7/2026 1:57 PM - LPEREZ

SHT11X17.DWG - 279mmX432mm

Appendix C
Sanitary Sewer Design Sheets and Sanitary Calculations

SANITARY SEWER DESIGN SHEET

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 121109
Project Name: 500 Edgeworth Avenue
Date: 10/8/2025
Input By: Lucas Wilson
Reviewed By: Mark Bissett
Drawing Reference: 121109-GP, 121109-PR

Legend:
- Design Input by User
- As-Built Input by User
- Cumulative Cell
- Calculated Design Cell Output
- Calculated Annual Cell Output
- Calculated Rare Cell Output

Reference: City of Ottawa - Sewer Design Guidelines (2012 and TBs)
MOE - Design Guidelines for Sewage Works (2008)

Location				Demand																Design Capacity							
				Residential Flow									Industrial / Commercial / Institutional (ICI) Flow						Extraneous Flow Area Method		Total Design Flow	Proposed Sewer Pipe Sizing / Design						
Street	Area ID	From MH	To MH	Singles	Semis / Towns	Apts	Population (in 1000's)	Cumulative Population (in 1000's)	Average Pop. Flow Q(q) (L/s)	Design Peaking Factor M	Peak Design Pop. Flow Q(p) (L/s)	Res. Drainage Area (ha.)	Cumulative Res. Drainage Area (ha.)	Commercial / Institutional Area (ha.)	Cumulative Commercial / Institutional Area (ha.)	Average Design Commercial / Institutional Flow (L/s)	Commercial / Institutional Peaking Factor	Cumulative ICI Area (ha.)	Peak Design ICI Flow Q (ici) (L/s)	Cumulative Extraneous Drainage Area (ha.)	Design Extraneous Flow Q(e) (L/s)	Total Peak Design Flow Q(D) (L/s)	Pipe Length (m)	Pipe Size (mm) and Material	Pipe ID Actual (m)	Roughness n	Design Grade So (%)	Capacity Qfull (L/s)	Full Flow Velocity Vfull (m/s)	Q(D) / Qfull
Site																													
		Site	SANMH103		7	255	0.478	0.478	1.55	3.39	5.25	0.280	0.280	0.000	0.000	0.00	1.00	0.000	0.00	0.280	0.09	5.3	9.9	200 PVC	0.203	0.013	1.00	34.2	1.06	15.6%
	Existing Flows																												
Edgeworth Avenue		SANMH101	SANMH103	2	1	120	0.226	0.226	0.73	3.50	2.56	0.250	0.250	0.400	0.400	0.13	1.50	0.400	0.19	0.650	0.21	3.0	99.4	200 PVC	0.225	0.013	0.29	24.2	0.61	12.3%
Edgeworth Avenue		SANMH103	SANMH105	9	1		0.033	0.737	2.39	3.31	7.89	0.390	0.920	0.000	0.400	0.13	1.50	0.400	0.19	1.320	0.44	8.5	91.4	200 PVC	0.225	0.013	0.56	33.6	0.85	25.4%
Edgeworth Avenue		SANMH105	SANMH107	5	18		0.066	0.802	2.60	3.29	8.55	0.550	1.470	0.000	0.400	0.13	1.50	0.400	0.19	1.870	0.62	9.4	93.9	200 PVC	0.225	0.013	1.58	56.4	1.42	16.6%
Total Flow							0.000	0.802	2.60	3.29	8.55	1.470	1.470	0.000	0.400	0.13	1.50	0.400	0.19	1.870	0.62	**9.4**	93.9	200 PVC	0.225	0.013	1.58	56.4	1.42	16.6%

Demand Equation / Parameters

1. **Q(D), Q(A), Q(R) =** Q(p) + Q(fd) + Q(ici) + Q(e)
2. **Q(p) =** (P x q x M x K / 86,400)
3. **q =** 280 L/per person/day (design)
   200 L/per person/day (annual and rare)
4. **M = Harmon Formula (maximum of 4.0)**
5. **K =** 0.8 (design)
   0.6 (annual and rare)
6. **Park flow is considered equivalent to a single unit / ha**
   Park Demand = 4 single unit equivalent / park ha (~ 3,600 L/ha/day)
7. **Q(fd) =** 0.45 L/s/unit
8. **Q(ici) =** ICI Area x ICI Flow x ICI Peak
9. **Q(e) =** 0.33 L/s/ha (design)
   0.30 L/s/ha (annual)
   0.55 L/s/ha (rare)

Definitions

Q(D) = Peak Design Flow (L/s)
Q(A) = Peak Annual Flow (L/s)
Q(R) = Peak Rare Flow (L/s)
Q(p) = Peak Design Population Flow (L/s)
Q(q) = Average Population Flow (L/s)

	Singles	Semis / Towns	Apts
P = Residential Population =	3.4	2.7	1.8
q = Average Capita Flow			
M = Harmon Formula			
K = Harmon Correction Factor			
Typ. Service Diameter (mm) =	135		
Typ. Service Length (m) =	15	15	
I/I Pipe Rate (L/mm dia/m/hr) =	0.007		

Q(fd) = Foundation Flow (L/s)
Q(ici) = Industrial / Commercial / Institutional Flow (L/s)
Q(e) = Extraneous Flow (L/s)

Institutional / Commercial / Industrial	Industrial	Commercial / Institutional	
Design =	35000	28000	L/gross ha/day
Annual / Rare =	10000	17000	L/gross ha/day
ICI Peak *			
Design =	1.0	1.5	* ICI Peak = 1.0 Default, 1.5 if ICI in contributing area is >20% (design only)
Annual / Rare =		1.0	

Capacity Equation

Q full = (1/n) Ap R^(2/3) So^(1/2)

Definitions

Q full = Capacity (L/s)
n = Manning coefficient of roughness (0.013)
Ap = Pipe flow area (m^2)
R = Wetted perimeter (m)
So = Pipe slope/gradient

Appendix D
Boundary Conditions, Water Demands and FUS Calculations

Lucas Wilson

From: Dieme, Abi <Abibatou.Dieme@ottawa.ca>
Sent: Thursday, August 14, 2025 11:19 AM
To: Lucas Wilson
Cc: Mark Bissett; Fawzi, Mohammed; Nehzat Khoshamal, Ali
Subject: RE: 500 Edgeworth -Boundary conditions
Attachments: 500 Edgeworth Avenue August 2025.pdf

Hi Lucas,

The following are boundary conditions, HGL, for hydraulic analysis at 500 Edgeworth Avenue (zone 1W) assumed to be connected via *a dual connection* to the 305 mm watermain on Edgeworth Avenue (see attached PDF for location). I will follow up on the storm drainage matter early next week.

Minimum HGL: 108.4 m
Maximum HGL: 115.2 m
Max Day + Fire Flow (100 L/s): 109.3 m
Max Day + Fire Flow (133 L/s): 108.6 m

These are for current conditions and are based on computer model simulation.

Disclaimer:
The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.
"The IWSD has recently updated their water modelling software. Any significant difference between previously received BC results and newly received BC results could be attributed to this update

Regards,
Abi

Absence Alert: I will be away from August 22nd to September 24th.

From: Lucas Wilson <l.wilson@novatech-eng.com>
Sent: Wednesday, July 23, 2025 10:00 AM
To: Dieme, Abi <Abibatou.Dieme@ottawa.ca>
Cc: Mark Bissett <m.bissett@novatech-eng.com>
Subject: RE: 500 Edgeworth - Storm Drainage

Abi – Thanks for forwarding this information. I'll wait to discuss the options with Mark but see benefits to connecting the storm to Carling.

I'd also like to request boundary conditions for the hydraulic analysis. I have attached a Site and Connection to existing location figure along with the water demand and FUS calculations. Calculations are summarized below:

- Required fire flow: I have provided two potential options resulting in FF of 100 L/s and 133 L/s.
- Average daily demand: 1.528 L/s.
- Maximum daily demand: 3.821 L/s.
- Maximum hourly daily demand: 8.406 L/s

We're also looking for the maximum available fire flow. Please let me know if you need anything further.

Thanks,
Lucas Wilson, P.Eng., Project Manager | Engineering
NOVATECH
Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON K2M 1P6 | Tel: 613.254.9643 Ext: 282

From: Dieme, Abi <Abibatou.Dieme@ottawa.ca>
Sent: Monday, July 21, 2025 11:19 AM
To: Lucas Wilson <l.wilson@novatech-eng.com>
Cc: Mark Bissett <m.bissett@novatech-eng.com>; Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Subject: FW: 500 Edgeworth - Storm Drainage

Hi Lucas,

Forwarding my feedback on the proposed concept for 500 Edgworth Avenue. I understand from discussion with the owner that you're already working on the design and wanted to make sure you get it before finalizing anything.
Happy to discuss further once Mark returns.

Regards,
Abi

From: Dieme, Abi
Sent: Monday, July 21, 2025 11:16 AM
To: Mark Bissett <m.bissett@novatech-eng.com>
Cc: Ravi Shanghavi <ravi@antiliahomes.com>; George Gaty <ggaty@elkproperty.com>; Baldwin, Kimberley <Kimberley.Baldwin@ottawa.ca>; Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>; Conrod, Becca

<becca.conrod@ottawa.ca>
Subject: RE: 500 Edgeworth - Storm Drainage

Hi Mark,

I have consulted the water resources and infrastructure renewal team on your proposed concept. A direct connection to the pipe on Edgeworth Avenue will not be permitted as the receiving system is too shallow. The catch basin at the sidewalk is not supported either. Similar designs have resulted in sidewalk puddles.
Based on the current drainage concerns on Edgeworth Avenue and, considering the proposed diversion of the entire property drainage to the street, staff recommend a storm sewer extension from Carling Avenue. I have requested assistance from the water resources team to confirm the residual capacity of the storm sewer within Carling Avenue in case you want to explore this option. This may be a way to reduce the on-site storage requirements for the development.
Otherwise, discharge would only be permitted within private property then flow overland to the pipe system on Edgeworth Avenue. I acknowledge this second alternative is not ideal to accommodate the sidewalk. We would have to discuss further internally on the best way to secure the sidewalk.

I am available to discuss further on Teams if needed.

Regards,
Abi

From: Mark Bissett <m.bissett@novatech-eng.com>
Sent: Thursday, June 5, 2025 11:45 AM
To: Dieme, Abi <Abibatou.Dieme@ottawa.ca>
Cc: Ravi Shanghavi <ravi@antiliahomes.com>; George Gaty <ggaty@elkproperty.com>; Baldwin, Kimberley <Kimberley.Baldwin@ottawa.ca>; Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Subject: 500 Edgeworth - Storm Drainage

Abi- acknowledging flow control from the development site (pre-to-post).

I've attached an Existing Conditions Plan Novatech prepared. The snapshot images below are broadly correct. The back half of lots on Edgeworth drain to a ditch on NCC land that flows north toward a DICB in the community garden. We intent to have a cistern in the apartment building for stormwater flow control sending all discharge to the Edgeworth storm sewer (250mm HDPE) in the boulevard. The storm sewer was recently constructed by the city…I suspect geoOttawa database not yet updated. We surveyed the sewers to confirm existing conditions…I've been to site and visually confirmed pipe material and dimensions.

That would be great if you circulated Asset Management to get their buy-in now. Understood regarding future Utility Circulation for road modification.
Let me know if any other questions. With thanks,

Mark Bissett, P.Eng., Senior Project Manager | Land Development
NOVATECH
Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 237 | Cell: 613.261.4792

From: Dieme, Abi <Abibatou.Dieme@ottawa.ca>
Sent: Wednesday, June 4, 2025 6:01 PM
To: Mark Bissett <m.bissett@novatech-eng.com>
Cc: Ravi Shanghavi <ravi@antiliahomes.com>; George Gaty <ggaty@elkproperty.com>; Baldwin, Kimberley <Kimberley.Baldwin@ottawa.ca>; Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Subject: RE: 500 Edgeworth - Storm Drainage

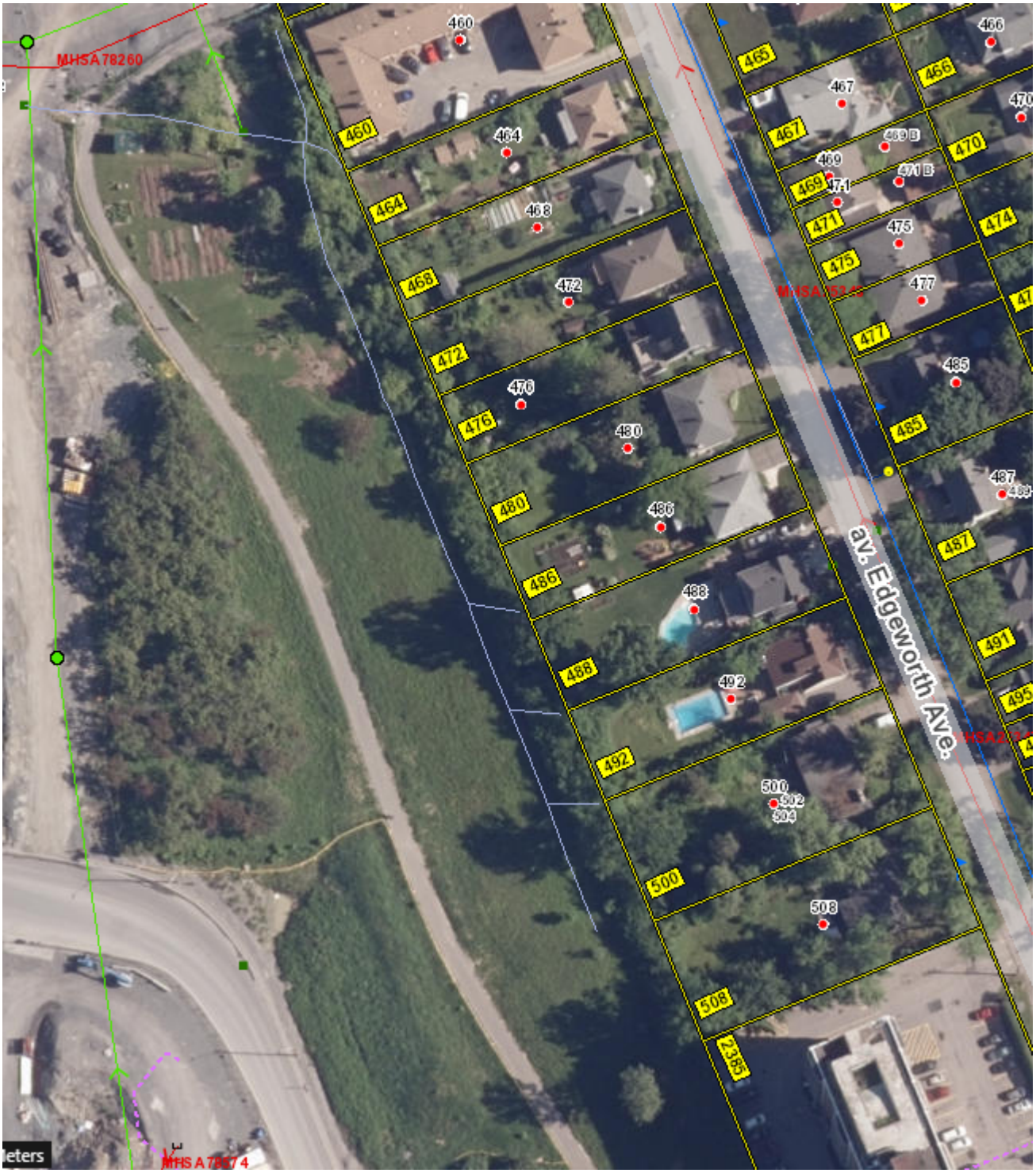
Hi Mark,

I don't have any existing condition drawing for that area, just information from GeoOttawa and Asset Management streambuilder. It is not 100% accurate but generally shows drainage pattern. You will see on the first capture an existing ditch, along the rear property lines, all the way to Lawn Avenue. It seems, based on the second capture, that the properties along Edgeworth partially discharge into the existing ditch within NCC property. You would certainly have more information on your site with the survey.

Our standard criterion is that a site discharging onto adjacent land may continue to do so if post-development release rate is controlled to the pre-development release rate. I am not very familiar with NCC requirements however, it is also standard that a property receiving external drainage would accommodate such drainage in a proposed design for re-development.
It seems that there was a missing line on the feedback form. For both existing outlets (Edgeworth Avenue and NCC property), post-development flows must be controlled to the pre-development release rates for all storm events.

You may modify the drainage area for each outlet as you see fit. I don't have any concern if you choose to not discharge within NCC property. The proposed concept would help mitigate the drainage concerns on Edgeworth Avenue and accommodate the sidewalk. However, we would still request that you control the post-development flows to the pre-development release rate.

I will circulate Asset Management on the proposed concept for further feedback. We may also need to complete a Utility Circulation for the works within the ROW.
I couldn't find the 250mm storm sewer on our record drawings. Would you be able to share further information on how it was identified and which material it is?


MHSA78260
av. Edgeworth Ave.
460
464
468
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486
488
492
500
508
2385
466
467
469
471
475
477
485
487
491
495

Regards,
Abi

Classified as City of Ottawa - Internal / Ville d'Ottawa - classé interne

From: Mark Bissett <m.bissett@novatech-eng.com>
Sent: Friday, May 30, 2025 1:16 PM
To: Dieme, Abi <Abibatou.Dieme@ottawa.ca>
Cc: Ravi Shanghavi <ravi@antiliahomes.com>; George Gaty <ggaty@elkproperty.com>; Baldwin, Kimberley <Kimberley.Baldwin@ottawa.ca>
Subject: 500 Edgeworth - Storm Drainage

Abi- we have concern sending storm drainage west from 500 Edgeworth to NCC lands. The NCC plans to develop the parcel in the medium-term and they don't want to encumber their land...this is understandable. This leads to complexity with drainage routed through private property that has yet to

be developed. The landform will change, which might alter drainage conditions. Would all the properties along the west side of Edgeworth from Carling to Lawn drain through NCC lands, or just 500 Edgeworth? What size of pipe is installed on NCC land and who pays for over-sizing? In short, drainage through NCC land is messy and does not have NCC support.

We think a better solution for 500 Edgeworth is to capture and store runoff in a cistern located inside the new building (likely in the underground parking). We could extend the existing boulevard storm sewer (see attached PDF) and pump runoff to that system at a controlled rate. This appears to be cost effective and routes drainage to the municipal ROW.

Hoping staff can generally support this approach; if yes, Novatech will proceed with a proper detail design and analysis. I'm available to discuss concerns or design alternatives. Let me know what you think.
With thanks,

Mark Bissett, P.Eng., Senior Project Manager | Land Development
NOVATECH
Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 Ext: 237 | Cell: 613.261.4792

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FUS - Fire Flow Calculations

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 121109
Project Name: 500 Edgeworth
Date: 5/7/2026
Input By: Lucas Wilson
Reviewed By: Mark Bissett
Drawing Reference:

Legend: Input by User
No Input Required
Reference: Fire Underwriter's Survey Guideline (2020)
Formula Method

Building Description: 24 Storey Residential Buidling
Type II - Non-combustible construction

Step			Choose		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Type V - Wood frame		1.5	0.8	
		Type IV - Mass Timber		Varies		
		Type III - Ordinary construction		1		
		Type II - Non-combustible construction	Yes	0.8		
		Type I - Fire resistive construction (2 hrs)		0.6		
2	**Floor Area**					
	A	Podium Level Footprint (m^2)	1411			
		Total Floors/Storeys (Podium)	2			
		Tower Footprint (m^2)	1285			
		Total Floors/Storeys (Tower)	22			
		Protected Openings (1 hr)	Yes			
		A, Total Effective Floor Area (m^2)			**2,085**	
	F	**Base fire flow without reductions**				**8,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**		**FUS Table 3**	**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**6,800**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**		**FUS Table 4**	**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	Yes	-30%	-30%	**-3,390**
		Standard Water Supply	Yes	-10%	-10%	
		Fully Supervised System	Yes	-10%	-10%	
				Cumulative Sub-Total	**-50%**	
		Area of Sprinklered Coverage (m^2)	31000	100%		
				Cumulative Total	**-50%**	
5	**Exposure Surcharge per**		**FUS Table 5**		**Surcharge**	
	(3)	North Side	10.1 - 20 m		15%	**2,720**
		East Side	20.1 - 30 m		10%	
		South Side	10.1 - 20 m		15%	
		West Side	>30m		0%	
				Cumulative Total	**40%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**6,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**100**
				or	USGPM	1,585

500 and 508 Edgeworth Avenue
Water Demand

	Area (ha)	Town Unit	Apartment Unit	Population	Average Day Demand (L/s)	Maximum Day Demand (L/s)	Peak Hour Demand (L/s)
Building	N/A	7	255	478	1.549	3.872	8.518
Total	**0.00**	**7**	**255**	**478**	**1.549**	**3.872**	**8.518**

Water Demand Parameters

Apartment Unit	1.8	ppl/unit
Town Unit	2.7	ppl/unit
Residential Demand	280	L/c/day
Residential Max Day	2.5	x Avg Day
Residential Peak Hour	2.2	x Max Day
Residential Fire Flow	100	L/s

500 Edgeworth Avenue: Watermain Analysis

Network Table - Nodes - (Peak Hour)

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc B1	67.9	8.52	108.36	40.46	396.91	57.57
Resvr RES1	108.4	-8.52	108.4	0	0.00	0.00

Network Table - Links - (Peak Hour)

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe P1	14	150	100	-8.52	0.48	3.19	0.040

500 Edgeworth Avenue: Watermain Analysis

Network Table - Nodes - (Max Pressure Check)

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi	Age Hours
Junc B1	67.9	1.55	115.2	47.3	464.01	67.30	0.04
Resvr RES1	115.2	-1.55	115.2	0	0.00	0.00	0

Network Table - Links - (Max Pressure Check)

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe P1	14	150	100	-1.55	0.09	0.14	0.052

500 Edgeworth Avenue: Watermain Analysis

Network Table - Nodes - (Max Day + FF) 100 L/s FF

Node ID	Elevation m	Demand LPS	Head m	Pressure m	Pressure kPa	Pressure psi
Junc B1	67.9	3.87	109.29	41.39	406.04	58.89
Resvr RES1	109.3	-3.87	109.3	0	0.00	0.00

Network Table - Links - (Max Day + FF)

Link ID	Length m	Diameter mm	Roughness	Flow LPS	Velocity m/s	Headloss m/km	Friction Factor
Pipe P1	13.6	150	100	-3.87	0.22	0.74	0.045

Total Effective Area (A)

To determine a required fire flow for an individual building, the Total Effective Area that would be affected during the design fire must be determined. The Total Effective Area is the largest Floor Area (in square metres) plus the following percentages of the total area of the other floors:

1) For a building classified with a Construction Coefficient from 1.0 to 1.5:
   a) 100% of all Floor Areas are considered in determining the Total Effective Area to be used in the formula.
2) For a building classified with a Construction Coefficient below 1.0:
   a) if any vertical openings in the building (ex. interconnected floor spaces, atria, elevators, escalators, etc.) are unprotected, consider the two largest adjoining floor areas plus 50% of all floors immediately above them up to a maximum of eight; or
   b) if all vertical openings and exterior vertical communications are properly protected in accordance with the National Building Code, consider only the single largest Floor Area plus 25% of each of the two immediately adjoining floors.

Protection requirements:

The protection requirements for vertical openings are only applicable in buildings with a Construction Coefficient below 1.0. The type of protection for vertical openings shall be based on the construction of the enclosure walls and the type of opening or other device used for the protection of openings in the enclosure. See also NBC Division B, Section 3.5. Vertical Transportation.

Protected openings:

i. Enclosures shall have walls of masonry or other limited or noncombustible construction with a fire resistance rating of not less than one hour.
ii. Openings including doors shall be provided with automatic closing devices
iii. Elevator doors shall be of metal or metal-covered construction, so arranged that the doors must normally be closed for operation of the elevator.

Unprotected openings:

i. Any opening through horizontal separations that are unprotected or otherwise have closures that do not meet the minimum requirements for protected openings, above.

High One Storey Buildings

When a building has large single storey spaces (ex. warehouses, atria, etc.) exceeding 3 m in height, the number of storeys to be used in determining the total effective area depends upon the use being made of the building. For example, consider a 1=3 storey building. If the building is being used for high piled stock, or for rack storage, the building would be considered as 3 storeys. However, if the building is being used for steel fabrication and the extra height is provided only to facilitate movement of objects by a crane, the building should be considered as a one storey.

Each normal height (3m) storey included in the formula provides for additional fire loading. In the case of normal height storeys this fire loading comes from the structure, walls, floors, ceilings/roofs as well as the contents.

Lucas Wilson

From: Robert Verch <rverch@rlaarchitecture.ca>
Sent: Wednesday, March 18, 2026 1:36 PM
To: Lucas Wilson
Cc: Mark Bissett
Subject: 2323: 500 Edgeworth - Civil (121109)

Lucas: yes: the entire building with be non-combustible with fire rating, 1 to 2 hours, building is fully sprinklered and supervised.

Rob

From: Lucas Wilson <l.wilson@novatech-eng.com>
Sent: Wednesday, March 18, 2026 12:50 PM
To: Robert Verch <rverch@rlaarchitecture.ca>
Cc: Mark Bissett <m.bissett@novatech-eng.com>
Subject: 2323: 500 Edgeworth - Civil (121109)

Rob – To satisfy City comments, they are asking for us to confirm with the Architect that our type of construction, protective openings and sprinkler reduction assumptions are correct.
We've assumed Type II – Non-combustible construction: A building is considered to be of non-combustible construction when all structural elements, walls, arches, floors, and roofs are constructed with a minimum 1-hour fire resistance rating, and are constructed with noncombustible materials.

Potential construction type Fire-resistive Construction Type I: When all structural elements, walls, arches, floors, and roofs are constructed with a minimum 2-hour fire-resistance rating, and all materials used in the construction of the structural elements are constructed with noncombustible materials.

We also need to confirm that vertical openings have minimum 1 hour rating between floors as we've assumed all floors have protected openings.

Can you confirm that the entire building area will be sprinklered, we've assumed sprinklered coverage over the total building area.

Let me know if you have any questions.

Thanks,
Lucas Wilson, P.Eng., Project Manager | Engineering
NOVATECH
Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON K2M 1P6 | Tel: 613.254.9643 Ext: 282

NCC LANDS

RETAINING WALL

FURNITURE

4.7m

AMENITY AREA

FURNITURE

FURNITURE

FURNITURE

FURNITURE

24 STOREY APARTMENT

(262 UNITS)

2385 CARLING AVE.
APARTMENT BUILDING

2385 CARLING

13.8m

PLANTER

PLANTER

PLANTER

PLANTER

PLANTER

PLANTER

RETAINING WALL

3.0m PATH

13.1m

RAMP

FURNITURE

PLANTER

PLANTER

PLANTER

FDC

LANDSCAPE

PLANTER

PLANTER

492 EDGEWORTH

488 EDGEWORTH

486 EDGE

ASPHALT EDGE

28.3m

EDGEWORTH AVENUE

EXISTING HYDRANT (487 EDGEWORTH AVE)
CLASS AA (BLUE TOP)
HYD IS 79.4m FROM FDC
MAXIMUM CAPACITY = 63L/S

PROPOSED HYDRANT
CLASS AA (BLUE TOP)
HYS IS 22.5m FROM FDC
MAXIMUM CAPACITY = 95L/S

EXISTING HYDRANT AT CARLING AVENUE
CLASS AA (BLUE TOP)
HYD IS 125.0m FROM FDC
MAXIMUM CAPACITY = 63 L/s

2353 CARLING AVE

503 EDGEWORTH

501 EDGEWORTH

495-497 EDGEWORTH

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

500 EDGEWORTH AVE

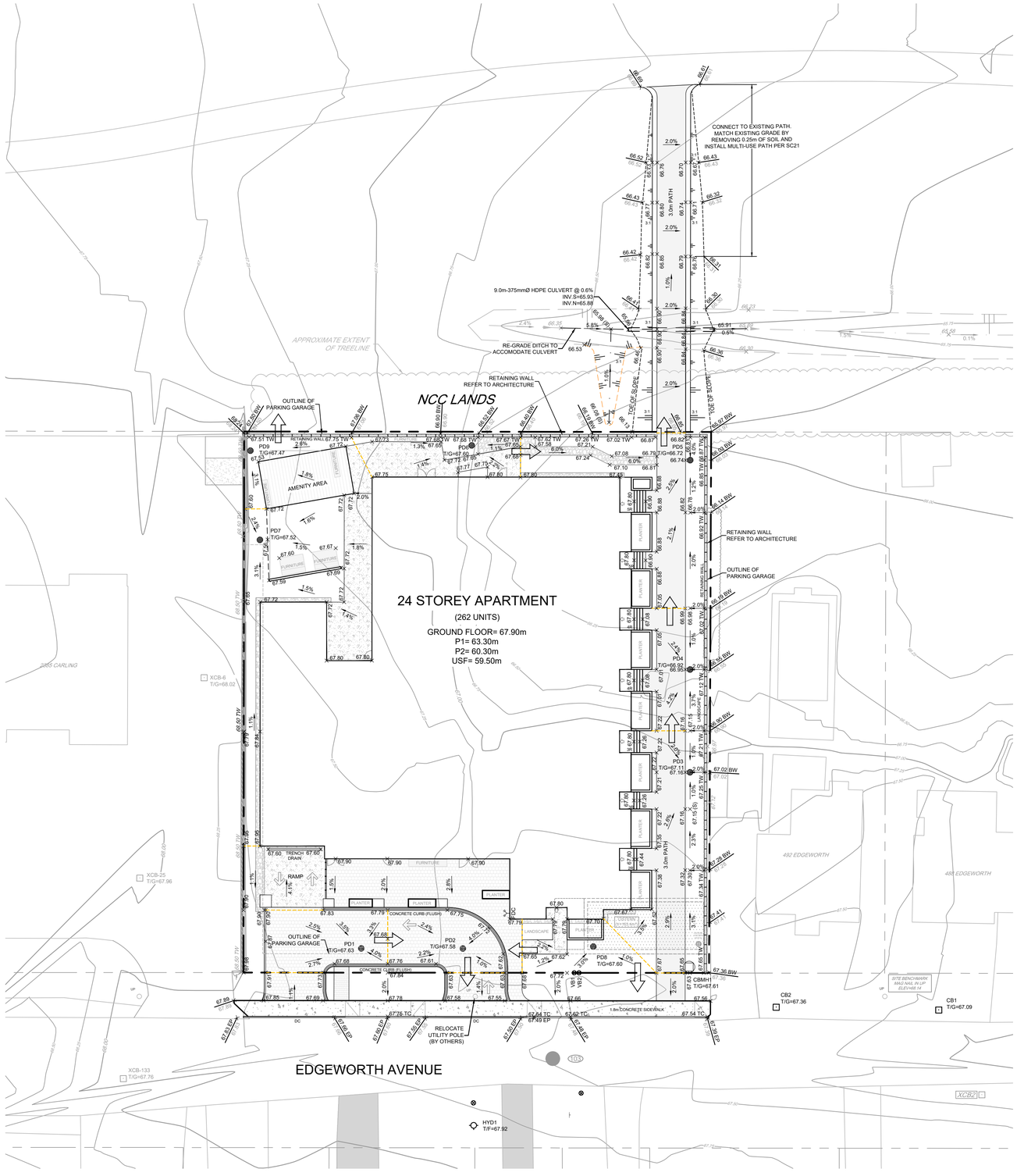
FIRE FLOW ANALYSIS

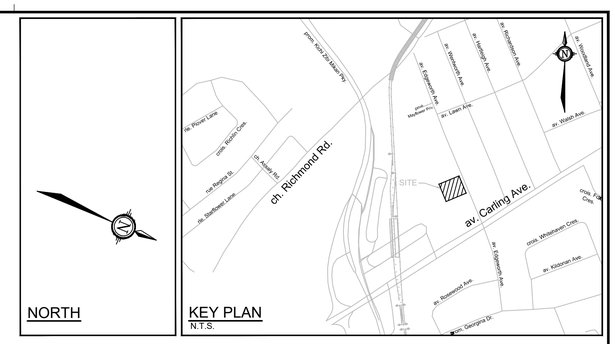
SCALE 1 : 400 (0, 4, 8, 12, 16)

DATE MAR 24/26 | JOB 121109 | FIGURE FIG-4

M:\2021\121109\CAD\CIVIL\FIGURES\121109-FUS.DWG 3/24/2026 11:47 AM - LPEREZ

SHT11X17.DWG - 279mmX432mm





LEGEND

×66.30	PROPOSED ELEVATION	HYD T/F=56.84	HYDRANT WITH TOP OF FLANGE ELEVATION
2.0%	PROPOSED GRADE AND DIRECTION OF FLOW	INV	*EXISTING SANITARY MANHOLE*
66.26 / 66.02	PROPOSED ELEVATION / *EXISTING ELEVATION*	STM	STORM MANHOLE
×55.98	*EXISTING SPOT ELEVATION*	PD1 T/G=67.63	PODIUM DRAIN
DC	PROPOSED DEPRESSED CURB	VB1	VALVE & VALVE BOX LOCATION
×67.03 TW	PROPOSED TOP OF WALL ELEVATION		MAJOR SYSTEM FLOW ROUTE
× 67.03 BW	PROPOSED BOTTOM OF WALL ELEVATION		RETAINING WALL
× 67.63 TC	PROPOSED TOP OF CURB ELEVATION	3R	STEPS (# OF RISERS)
×67.50 EP	PROPOSED EDGE OF PAVEMENT ELEVATION		

GENERAL NOTES:

1. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. THE ORIGINAL TOPOGRAPHY AND GROUND ELEVATIONS, SERVICING AND SURVEY INFORMATION SHOWN ON THIS PLAN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF ALL INFORMATION OBTAINED FROM THIS PLAN.
3. CO-ORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
4. BEFORE COMMENCING CONSTRUCTION, PROVIDE PROOF OF COMPREHENSIVE ALL RISK AND OPERATIONAL LIABILITY INSURANCE INCLUDING BLASTING. INSURANCE POLICY TO NAME THE OWNER, ENGINEER AND THE CITY AS CO-INSURED. AMOUNT OF INSURANCE TO BE SPECIFIED BY OWNER'S AGENT.
5. CONNECT TO EXISTING SYSTEMS AS DETAILED, INCLUDING ALL RESTORATION WORK NECESSARY TO REINSTATE SURFACES TO EXISTING CONDITIONS OR BETTER.
6. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME ALL RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS.
7. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS BEFORE COMMENCING CONSTRUCTION.
8. RESTORE ALL TRENCHES AND SURFACE FEATURES TO EXISTING CONDITIONS OR BETTER AND TO THE SATISFACTION OF CITY OF OTTAWA AUTHORITIES.
   - ASPHALT RESTORATION SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA DETAIL R-10.
   - THICKNESS OF GRANULAR MATERIAL AND ASPHALT LAYERS TO MATCH EXISTING.
   - BOULEVARDS SHALL BE REINSTATED WITH 100mm OF TOPSOIL, AND SOD.
9. REMOVE FROM SITE ALL EXCESS EXCAVATED MATERIAL UNLESS OTHERWISE INSTRUCTED BY ENGINEER.
10. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
11. REFER TO GEOTECHNICAL INVESTIGATION OTT-23002437-B0 - FINAL REPORT, PREPARED BY EXP SERVICES FOR SUBSURFACE CONDITIONS AND CONSTRUCTION RECOMMENDATIONS.

GRADING AND PAVEMENT NOTES:

1. ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED HARD SURFACE (ie. PAVEMENT, CURB, SIDEWALK, ETC.) AREAS AS DIRECTED BY THE SITE ENGINEER OR GEOTECHNICAL ENGINEER.
2. EXPOSED SUBGRADES IN PROPOSED PAVED AREAS SHOULD BE HEAVILY PROOF ROLLED WITH A LARGE (10 TON) VIBRATORY STEEL DRUM ROLLER UNDER DRY CONDITIONS AND INSPECTED BY THE GEOTECHNICAL ENGINEER PRIOR TO THE PLACEMENT OF GRANULARS.
3. ANY SOFT AREAS EVIDENT FROM THE PROOF ROLLING SHOULD BE SUB-EXCAVATED AND REPLACED WITH SUITABLE MATERIAL THAT IS FROST COMPATIBLE WITH THE EXISTING SOILS AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER.
4. THE GRANULAR BASE SHOULD BE PLACED IN MAXIMUM 300mm LIFTS AND COMPACTED TO AT LEAST 100% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE. ANY ADDITIONAL GRANULAR FILL USED BELOW THE PROPOSED PAVEMENT SHOULD BE PLACED IN MAXIMUM 300mm LIFTS AND COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY VALUE.
5. ROADWAY SUBGRADE TO BE INSPECTED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION TO REVIEW IF A WOVEN GEOTEXTILE IS REQUIRED BELOW THE GRANULAR MATERIALS; AND TO CONFIRM THE DEPTH AND COMPACTION OF GRANULAR 'B'
6. PRIOR TO PLACEMENT OF TOPLIFT, THE CONTRACTOR SHALL ADJUST ALL STRUCTURES TO FINAL GRADE PER CITY OF OTTAWA STANDARDS.
7. MINIMUM OF 2% GRADE FOR ALL GRASS AREAS UNLESS OTHERWISE NOTED.
8. MAXIMUM TERRACING GRADE TO BE 3:1 UNLESS OTHERWISE NOTED.
9. ALL GRADES BY CURBS ARE EDGE OF PAVEMENT GRADES UNLESS OTHERWISE INDICATED.

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
2.	REVISED PER CITY COMMENTS	MAR 24/26	MAB
1.	ISSUED WITH SITE PLAN APPLICATION	OCT 08/25	MAB

SCALE
1:250
1:250
0 2 4 6 8 10

DESIGN LRW
CHECKED MAB
DRAWN LPA
CHECKED LRW
APPROVED MAB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
L. R. WILSON
100160065
PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER
M.A. BISSETT
2026.03.24
PROVINCE OF ONTARIO

NOVATECH
Engineers, Planners & Landscape Architects
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CITY OF OTTAWA
500 & 508 EDGEWORTH AVENUE

GRADING PLAN

PROJECT No. 121109
REV REV # 2
DRAWING No. 121109-GR

M:\2021\121109\CAD\Civil\121109-GR.dwg, PLANS-A1, Mar 24, 2026 - 3:36pm, lperez

PLANA1.DWG - Bl'mm=5Mm

CISTERN DESIGN
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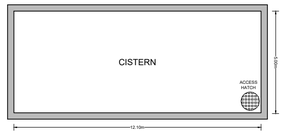

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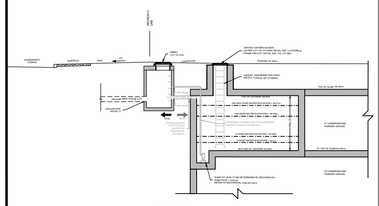
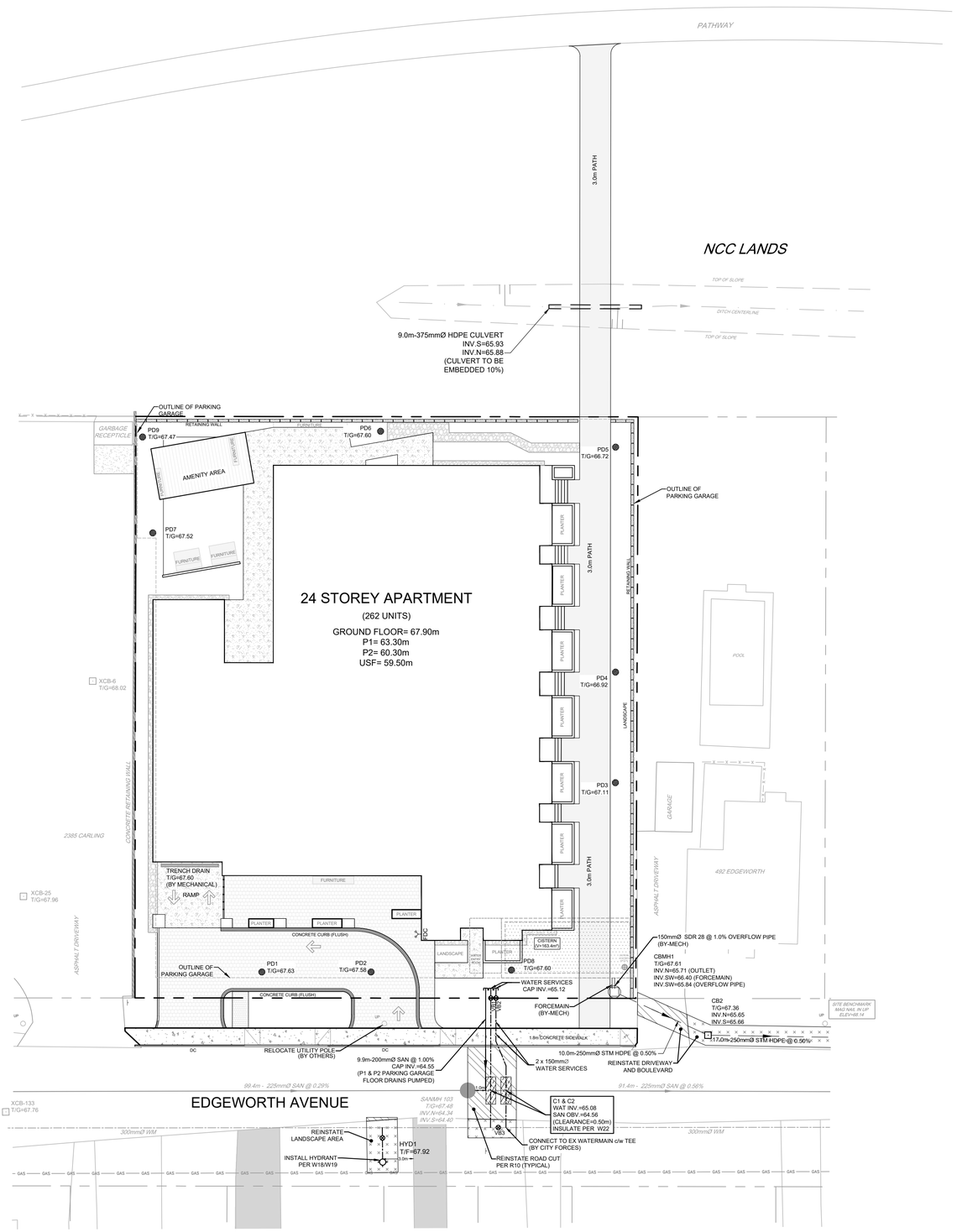
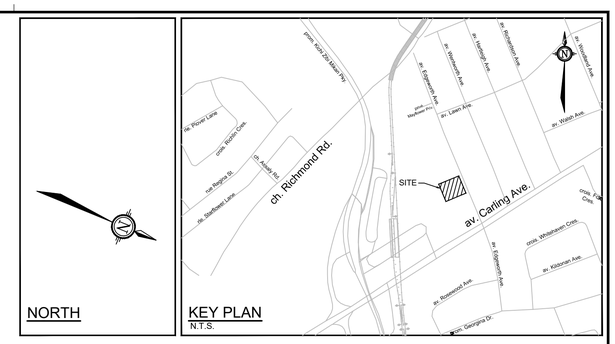


SECTION

CISTERN ANALYSIS			
DESIGN EVENT	DISCHARGE RATE	STORAGE VOLUMES	
		REQUIRED	PROVIDED
1:2 YR	9.4 L/s	24.2 m³	>163.4 m³
1:5 YR		42.4 m³	
1:100 YR		101.6 m³	
1:100+20%		133.7 m³	

NOTES:
1. REFER TO ARCHITECTURAL AND MECHANICAL PLANS FOR DETAILS.





LEGEND

- SANITARY MANHOLE, SEWER & FLOW DIRECTION
- STORM SEWER & FLOW DIRECTION
- 150mmØ — WATER SERVICE AND DIAMETER
- VB — VALVE & VALVE BOX
- 300mmØ WM — WATERMAIN AND DIAMETER
- CB3 T/G=67.60 — PROPOSED CATCHBASIN
- HYD1 — HYDRANT C/W VALVE & LEAD
- CAP
- PD1 — PODIUM DRAIN
- FDC — FIRE DEPARTMENT CONNECTION
- RETAINING WALL

GENERAL NOTES:

1. DIMENSIONS AND LAYOUT INFORMATION SHALL BE CONFIRMED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. THE ORIGINAL TOPOGRAPHY AND GROUND ELEVATIONS, SERVICING AND SURVEY INFORMATION SHOWN ON THIS PLAN ARE SUPPLIED FOR INFORMATION PURPOSES ONLY. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE ACCURACY OF ALL INFORMATION OBTAINED FROM THIS PLAN.
3. CO-ORDINATE AND SCHEDULE ALL WORK WITH OTHER TRADES AND CONTRACTORS.
4. BEFORE COMMENCING CONSTRUCTION, PROVIDE PROOF OF COMPREHENSIVE ALL RISK AND OPERATIONAL LIABILITY INSURANCE INCLUDING BLASTING. INSURANCE POLICY TO NAME THE OWNER, ENGINEER AND THE CITY AS CO-INSURED.
5. CONNECT TO EXISTING SYSTEMS AS DETAILED, INCLUDING ALL RESTORATION WORK NECESSARY TO REINSTATE SURFACES TO EXISTING CONDITIONS OR BETTER.
6. DETERMINE THE EXACT LOCATION, SIZE, MATERIAL AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING CONSTRUCTION. PROTECT AND ASSUME RESPONSIBILITY FOR ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON THESE DRAWINGS.
7. OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND APPROVALS BEFORE COMMENCING CONSTRUCTION.
8. RESTORE ALL TRENCHES AND SURFACE FEATURES TO EXISTING CONDITIONS OR BETTER AND TO THE SATISFACTION OF MUNICIPAL AUTHORITIES.
9. REMOVE FROM SITE ALL DEBRIS AND EXCESS EXCAVATED MATERIAL UNLESS OTHERWISE INSTRUCTED BY THE ENGINEER.
10. ALL ELEVATIONS ARE GEODETIC AND UTILIZE METRIC UNITS.
11. REFER TO GEOTECHNICAL INVESTIGATION OTT-23002437-B0 - FINAL REPORT, PREPARED BY EXP SERVICES FOR SUBSURFACE CONDITIONS AND CONSTRUCTION RECOMMENDATIONS..
12. PERFORATED PIPE SUB-DRAINS TO BE PROVIDED AT SUBGRADE LEVEL EXTENDING FROM THE ROADSIDE CATCHBASIN FOR A DISTANCE OF 3.0m, PARALLEL TO THE CURB IN TWO DIRECTIONS.

SEWER NOTES:

1. SPECIFICATIONS:

ITEM	SPEC. No.	REFERENCE
STORM SEWER	HDPE	(CLASS SPECIFIED ON PROFILE DRAWINGS)

2. INSULATE ALL PIPES (SAN/STM) THAT HAVE LESS THAN 1.5m COVER WITH 50mmX1200mm HI-40 INSULATION. PROVIDE 150mm CLEARANCE BETWEEN PIPE AND INSULATION.
3. PIPE BEDDING, COVER AND BACKFILL ARE TO BE COMPACTED TO AT LEAST 95% OF THE STANDARD PROCTOR MAXIMUM DRY DENSITY. THE USE OF CLEAR CRUSHED STONE AS A BEDDING LAYER SHALL NOT BE PERMITTED.
4. SEWER SERVICE CONNECTIONS PER CITY OF OTTAWA DETAILS S11 AND S11.1.
5. THE SITE SERVICING CONTRACTOR SHALL PERFORM FIELD TESTS FOR QUALITY CONTROL OF ALL SANITARY SEWERS. LEAKAGE TESTING SHALL BE COMPLETED IN ACCORDANCE WITH OPSS 410.07.16 AND 407.07.24. DYE TESTING IS TO BE COMPLETED ON ALL SANITARY SERVICES TO CONFIRM PROPER CONNECTION TO THE SANITARY SEWER MAIN. THE FIELD TESTS SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER.
6. CONTRACTOR TO TELEVISE (CCTV) ALL PROPOSED SEWERS, 200mmØ OR GREATER PRIOR TO BASE COURSE ASPHALT. UPON COMPLETION OF CONTRACT, THE CONTRACTOR IS RESPONSIBLE TO FLUSH AND CLEAN ALL SEWERS & APPURTENANCES.
7. BUILDING FOUNDATION DRAIN PUMPED TO STORM SERVICE DOWNSTREAM OF CISTERN CLEAN OUT.
8. PODIUM DRAINS ROUTED TO CISTERN (BY MECHANICAL).

WATERMAIN NOTES:

1. GENERAL:

ITEM	DETAIL No.	REFERENCE
WATERMAIN TRENCHING	W17	CITY OF OTTAWA
THERMAL INSULATION IN SHALLOW TRENCHES	W22	CITY OF OTTAWA
WATERMAIN CROSSING BELOW SEWER / OVER SEWER	W25 / W25.2	CITY OF OTTAWA

2. THE WATERMAIN SHALL BE PVC DR 18 PER MATERIAL SPECIFICATION MW-18.1, UNLESS OTHERWISE INDICATED.
3. SUPPLY AND CONSTRUCT ALL WATERMAINS AND APPURTENANCES IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS AND SPECIFICATIONS. EXCAVATION, INSTALLATION, BACKFILL AND RESTORATION OF ALL WATERMAINS BY THE CONTRACTOR. CONNECTIONS AND SHUT-OFFS AT THE MAIN AND CHLORINATION OF THE WATER SYSTEM SHALL BE PERFORMED BY CITY OFFICIALS.
4. WATERMAIN SHALL BE MINIMUM 2.4m DEPTH BELOW GRADE UNLESS OTHERWISE INDICATED.
5. PROVIDE MINIMUM 0.50m CLEARANCE BETWEEN OUTSIDE OF PIPES AT ALL CROSSINGS.

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SCALE
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0 2 4 6 8 10

DESIGN LRW
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L. R. WILSON
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CITY OF OTTAWA
500 & 508 EDGEWORTH AVENUE

SERVICING PLAN

PROJECT No. 121109
REV REV # 2
DRAWING No. 121109-GP

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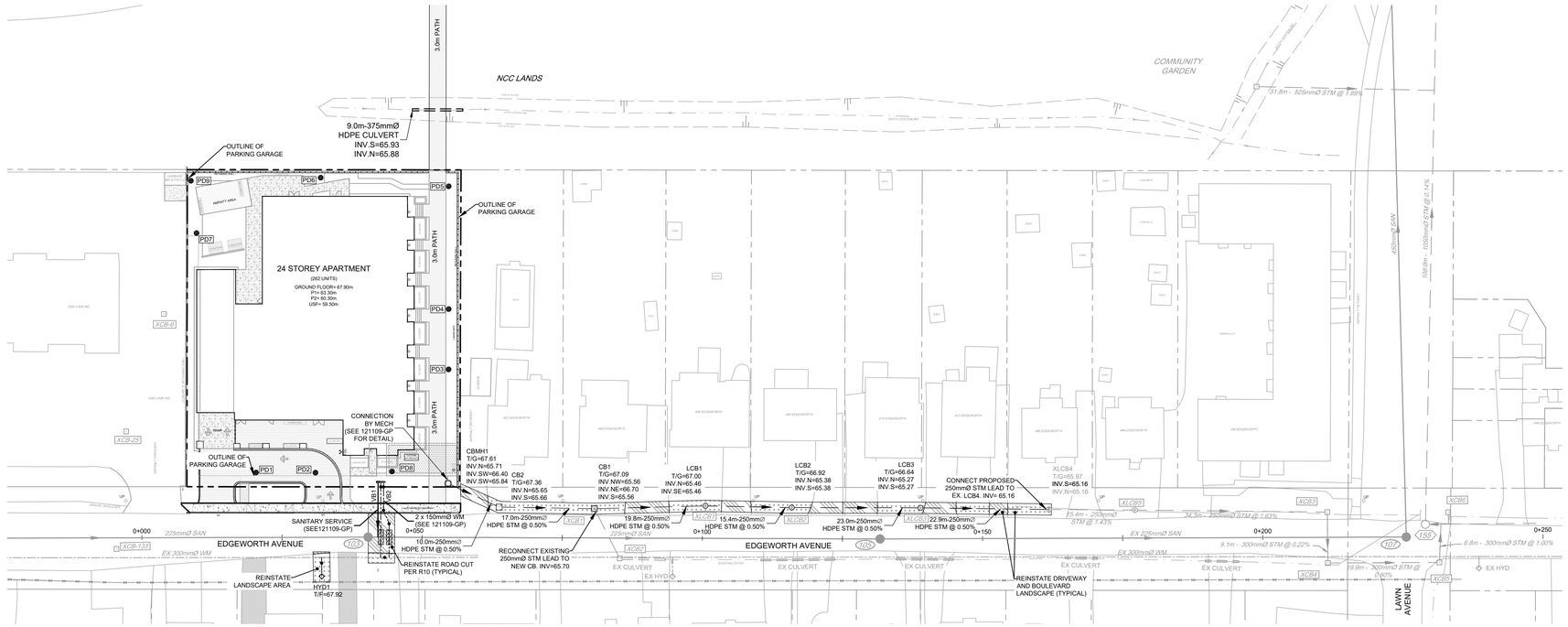

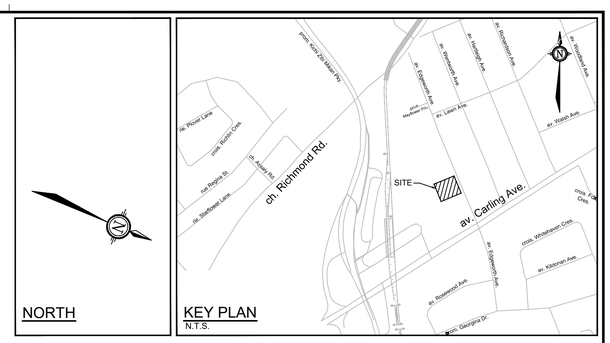

LEGEND

- EXISTING SANITARY MANHOLE, SEWER & FLOW DIRECTION
- EXISTING STORM MANHOLE SEWER & FLOW DIRECTION
- EX 300mmØ WM — EXISTING WATERMAIN AND DIAMETER
- 150mmØ — WATER SERVICE AND DIAMETER
- VB1 — VALVE & VALVE BOX
- SANITARY SERVICE AND FLOW DIRECTION
- STORM SEWER AND FLOW DIRECTION
- CB3 T/G=67.60 — PROPOSED CATCHBASIN
- LCB3 T/G=66.64 — PROPOSED LANDSCAPE TYPE CATCHBASIN
- PD1 — PODIUM DRAIN
- HYD — HYDRANT C/W VALVE & LEAD
- FDC — FIRE DEPARTMENT CONNECTION
- CAP

GENERAL NOTES:

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SEWER NOTES:

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ITEM	SPEC. No.	REFERENCE
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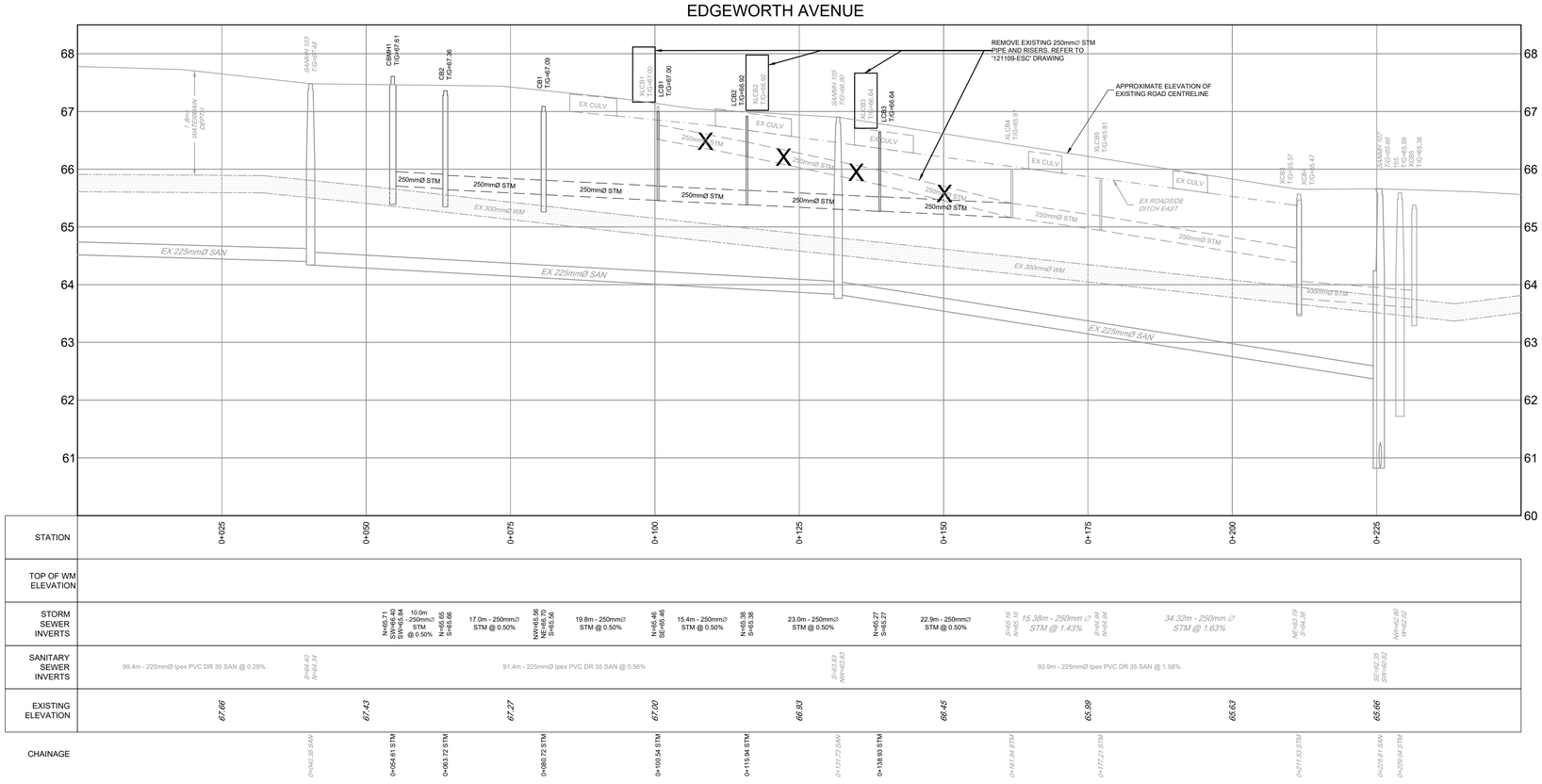

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1.	ISSUED WITH SITE PLAN APPLICATION	OCT 08/25	MAB

SCALE
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1:50 VERTICAL (0 0.5 1.0 1.5 2.0)

DESIGN LRW
CHECKED MAB
DRAWN LPA
CHECKED LRW
APPROVED MAB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER — L. R. WILSON — 100160065 — PROVINCE OF ONTARIO

LICENSED PROFESSIONAL ENGINEER — M.A. BISSETT — 2026.03.24 — PROVINCE OF ONTARIO

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CITY OF OTTAWA
500 & 508 EDGEWORTH AVENUE

PLAN & PROFILE
EDGEWORTH AVENUE
STA 0+000 TO 0+250

PROJECT No. 121109
REV REV # 2
DRAWING No. 121109-PR

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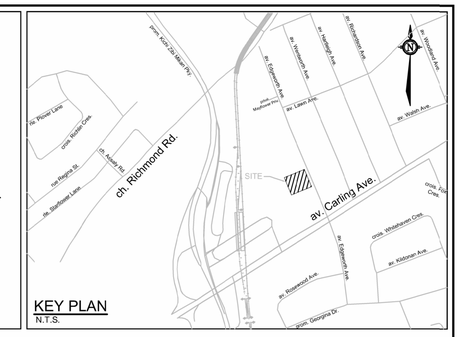
PLAN-A1.DWG - 841mmx594mm

NORTH

KEY PLAN
N.T.S.



LEGEND

- 0.141 / A-1 / 0.90 — AREA (hectares) / AREA ID / RUN-OFF COEFFICIENT
- STORM DRAINAGE AREA BOUNDARY
- STORM MANHOLE, SEWER & FLOW DIRECTION
- EXISTING / PROPOSED CATCHBASIN
- EXISTING / PROPOSED LAWN CATCHBASIN
- PODIUM DRAIN
- MAJOR SYSTEM FLOW DIRECTION

0.404 / EX-13 / 0.27

9.0m-375mmØ HDPE CULVERT

EX 525mmØ STM

EX 1050mmØ STM

PD9 PD6 PD5 PD7 PD4 PD3 PD1 PD2 PD8

0.069 / A-2 / 0.55

0.141 / A-1 / 0.90

24 STOREY APARTMENT
(282 UNITS)

3.0m PATH

0.066 / A-3 / 0.65

CBMH1

250mmØ STM

CB2 CB1 LCB1 LCB2 LCB3

0.102 / EX-01 / 0.54

0.077 / EX-02 / 0.59

0.084 / EX-03 / 0.67

0.094 / EX-04 / 0.54

XLCB4 XLCB5 XCB3 XCB6 XCB4 XCB5

EX 250mmØ STM

EX 300mmØ STM

155

0.060 / EX-11 / 0.60

0.100 / EX-12 / 0.60

XCB-133

EDGEWORTH AVENUE

CSP CULVERT

XCB2

0.211 / EX-05 / 0.58

0.227 / EX-06 / 0.53

0.163 / EX-08 / 0.59

0.161 / EX-10 / 0.63

LAWN AVENUE

0.754 / EX-07 / 0.44

0.126 / EX-09 / 0.50

CARLING AVENUE

NOTE:
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SCALE
1:500
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0 5 10 15 20

DESIGN LRW
CHECKED MAB
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LICENSED PROFESSIONAL ENGINEER
L. R. WILSON
100160065
PROVINCE OF ONTARIO

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M.A. BISSETT
2026.03.24
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LOCATION
CITY OF OTTAWA
500 & 508 EDGEWORTH AVENUE

DRAWING NAME
STORM DRAINAGE AREA PLAN

PROJECT No. 121109
REV REV # 2
DRAWING No. 121109-STM

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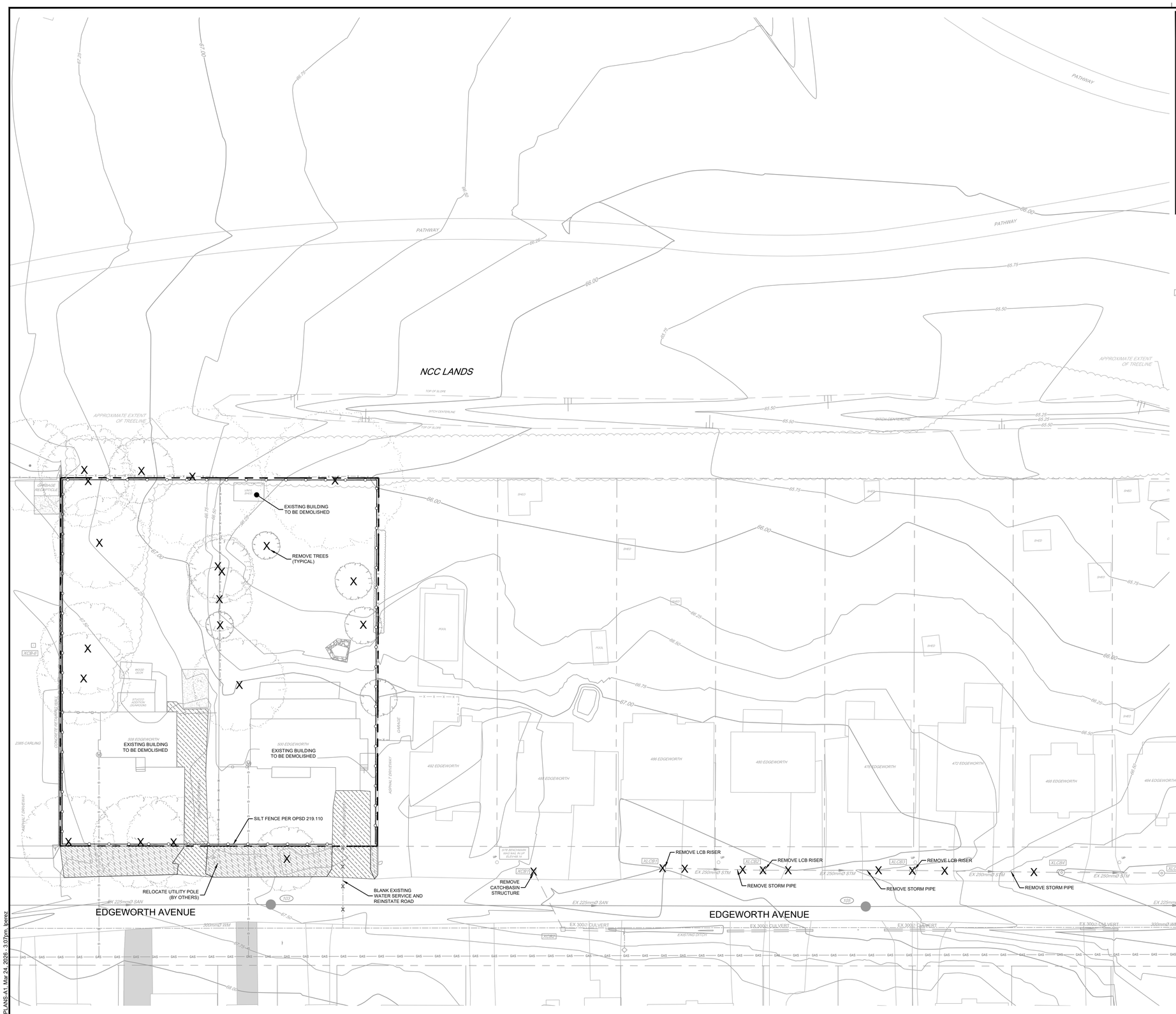

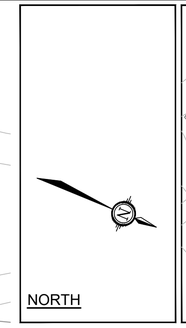

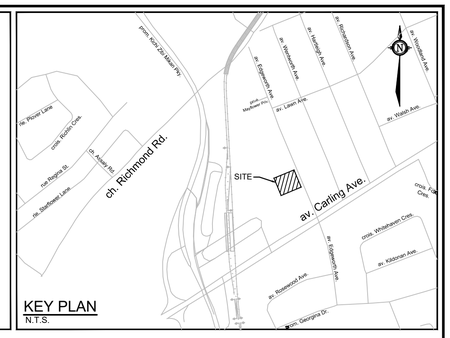

LEGEND

- SANITARY MANHOLE, SEWER & FLOW DIRECTION
- STORM MANHOLE, SEWER & FLOW DIRECTION
- EXISTING CATCHBASIN
- EXISTING LANDSCAPE CATCHBASIN
- EXISTING SERVICE POST
- EXISTING WATERMAIN AND DIAMETER
- REMOVALS
- SILT FENCE PER OSPD 219.110
- FULL DEPTH ASPHALT REMOVAL
- CLEARING AND GRUBBING

EROSION AND SEDIMENT CONTROL NOTES :

1. ALL EROSION AND SEDIMENT CONTROLS ARE TO BE INSTALLED TO THE SATISFACTION OF THE ENGINEER, THE MUNICIPALITY AND THE CONSERVATION AUTHORITY. THEY ARE TO BE APPROPRIATE TO THE SITE CONDITIONS, PRIOR TO UNDERTAKING ANY SITE ALTERATIONS (FILLING, GRADING, REMOVAL OF VEGETATION, ETC.) AND DURING ALL PHASES OF SITE PREPARATION AND CONSTRUCTION. THESE PRACTICES ARE TO BE IMPLEMENTED IN ACCORDANCE WITH THE CURRENT BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL AND SHOULD INCLUDE AS A MINIMUM THOSE MEASURES INDICATED ON THE PLAN.
2. TO PREVENT SURFACE EROSION FROM ENTERING THE DITCH OR STORM SYSTEM DURING CONSTRUCTION, SILT SACKS WILL BE PLACED UNDER GRATES OF ALL PROPOSED AND EXISTING CATCHBASINS AND STRUCTURES. A LIGHT DUTY SILT FENCE BARRIER WILL ALSO BE INSTALLED IN SELECTED LOCATIONS SHOWN ON THIS PLAN, AND STRAW BALE BARRIERS WILL BE INSTALLED WITHIN THE OUTLET DITCHES. THESE CONTROL MEASURES WILL REMAIN IN PLACE UNTIL VEGETATION HAS BEEN ESTABLISHED AND CONSTRUCTION COMPLETE.
3. THE SEDIMENT CONTROL MEASURES SHALL ONLY BE REMOVED WHEN, IN THE OPINION OF THE ENGINEER, THE MEASURES ARE NO LONGER REQUIRED. NO CONTROL MEASURES MAY BE PERMANENTLY REMOVED WITHOUT PRIOR AUTHORIZATION FROM THE ENGINEER.
4. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO ANY DITCH OR STORM SEWER SYSTEM. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
5. THE CONTRACTOR ACKNOWLEDGES THAT FAILURE TO IMPLEMENT EROSION AND SEDIMENT CONTROL MEASURES MAY BE SUBJECT TO PENALTIES IMPOSED BY ANY APPLICABLE REGULATORY AGENCY.
6. THE CONTRACTOR SHALL ENSURE PROPER DUST CONTROL IS PROVIDED WITH THE APPLICATION OF WATER (AND IF REQUIRED, CALCIUM CHLORIDE) DURING DRY PERIODS.

REMOVALS NOTES :

1. ALL HYDRANTS, VALVES AND OTHER APPURTENANCES TO BE REMOVED SHALL BE SALVAGED AND DELIVERED TO CITY OF OTTAWA MAINTENANCE YARD AT CLYDE AVENUE.
2. THE CONTRACTOR SHALL PROTECT ALL SURVEY MONUMENTS.
3. REMOVAL OF ALL ABOVE GROUND TRAFFIC PLANT AND STREETLIGHTING TO BE DONE BY OTHERS. CONTRACTOR SHALL PROTECT AND MAINTAIN EXISTING STREETLIGHTING, HYDRO POLES AND OVERHEAD LINES DURING CONSTRUCTION.
4. ALL BELL AND HYDRO OTTAWA MAINTENANACE HOLE ADJUSTMENTS SHALL BE PERFORMED BY AN APPROVED CONTRACTOR ONLY.
5. ALL TOPSOIL AND ANY SOFT, WET OR DELETERIOUS MATERIAL SHALL BE REMOVED FROM IMPROVED AREAS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
6. FORESTRY TO BE CONTACTED PRIOR TO ANY SELECTIVE PRUNING OR REMOVALS WITHIN THE AREAS OF TRESS SURROUNDING THE TRANS CANADA TRAIL AND TREES THAT ARE TO REMAIN ARE TO HAVE PROPER TREE PROTECTION FENCING.

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	DATE	BY
2.	REVISED PER CITY COMMENTS	MAR 24/26	MAB
1.	ISSUED WITH SITE PLAN APPLICATION	OCT 08/25	MAB

SCALE 1:300

1:300
0 3 6 9 12

DESIGN LRW
CHECKED MAB
DRAWN LPA
CHECKED LRW
APPROVED MAB

FOR REVIEW ONLY

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CITY OF OTTAWA
500 & 508 EDGEWORTH AVENUE

EXISTING CONDITIONS, REMOVALS, EROSION AND SEDIMENT CONTROL PLAN

PROJECT No. 121109
REV REV # 2
DRAWING No. 121109-ESC

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