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## **500 & 508 Edgeworth Avenue Ottawa, ON**

### **Site Servicing & Stormwater Management Report**

Engineering excellence.

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**500 & 508 EDGEWORTH AVENUE**

**SITE SERVICING AND STORMWATER MANAGEMENT REPORT**

Prepared for:

**Edgeworth Development Lands Corporation**  
451 Daly Avenue, 2<sup>nd</sup> Floor  
Ottawa, Ontario  
K1N 6H6

Prepared By:

**NOVATECH**  
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October 8, 2025

Novatech File: 121109  
Ref: R-2025-93

October 8, 2025

City of Ottawa  
Planning and Growth Management Department  
Development Review (Urban Services - Central) Branch  
Infrastructure Approvals Division  
110 Laurier Avenue West, 4<sup>th</sup> Floor  
Ottawa, ON K1P 1J1

**Attention:** **Abibatou Dieme**  
**Project Manager**

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

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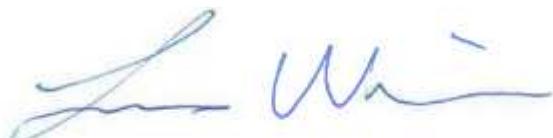
Novatech has prepared this Site Servicing and Stormwater Management Report of behalf of Edgeworth Development Lands Corporation for 500 & 508 Edgeworth Avenue.

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 Edgeworth Avenue (Subject Site), which is being proposed by Edgeworth Development Lands Corporation (Developer).

The Subject Site is located approximately 100m 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.

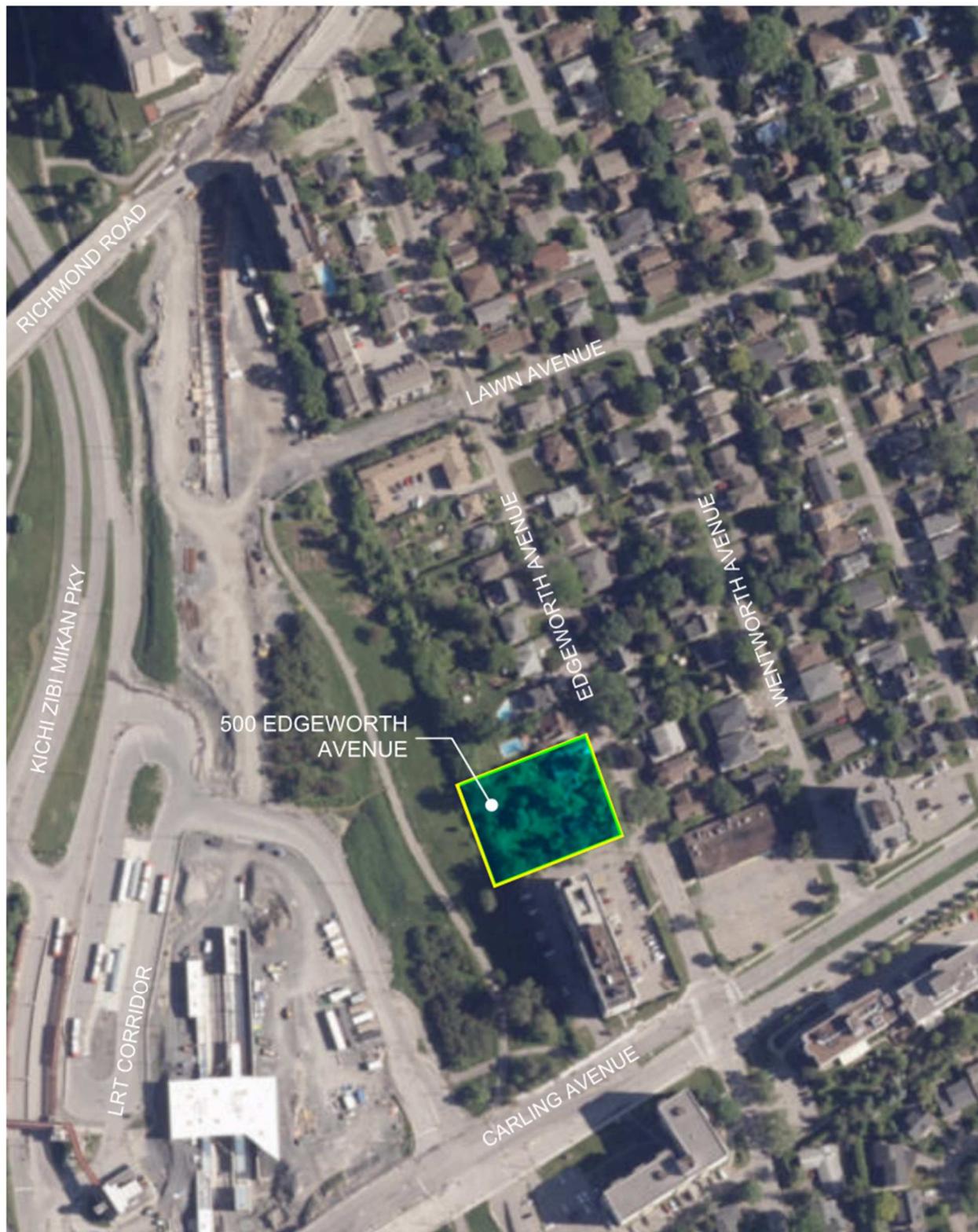
The existing land usage consists of private dwellings, as shown on **Figure 1-1**. The Subject Site slopes to the west and drains overland to NCC lands.

### 1.2 Proposed Development

The Subject Site has an area of 0.28ha, consisting of a single 24 storey residential tower. The building has a total of 262 units, consisting of seven (7) townhome units and 255 apartment 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
<b>Population Estimate</b>	<b>478 (262 Units)</b>	



**Figure 1-1: Key Plan / Existing Conditions**

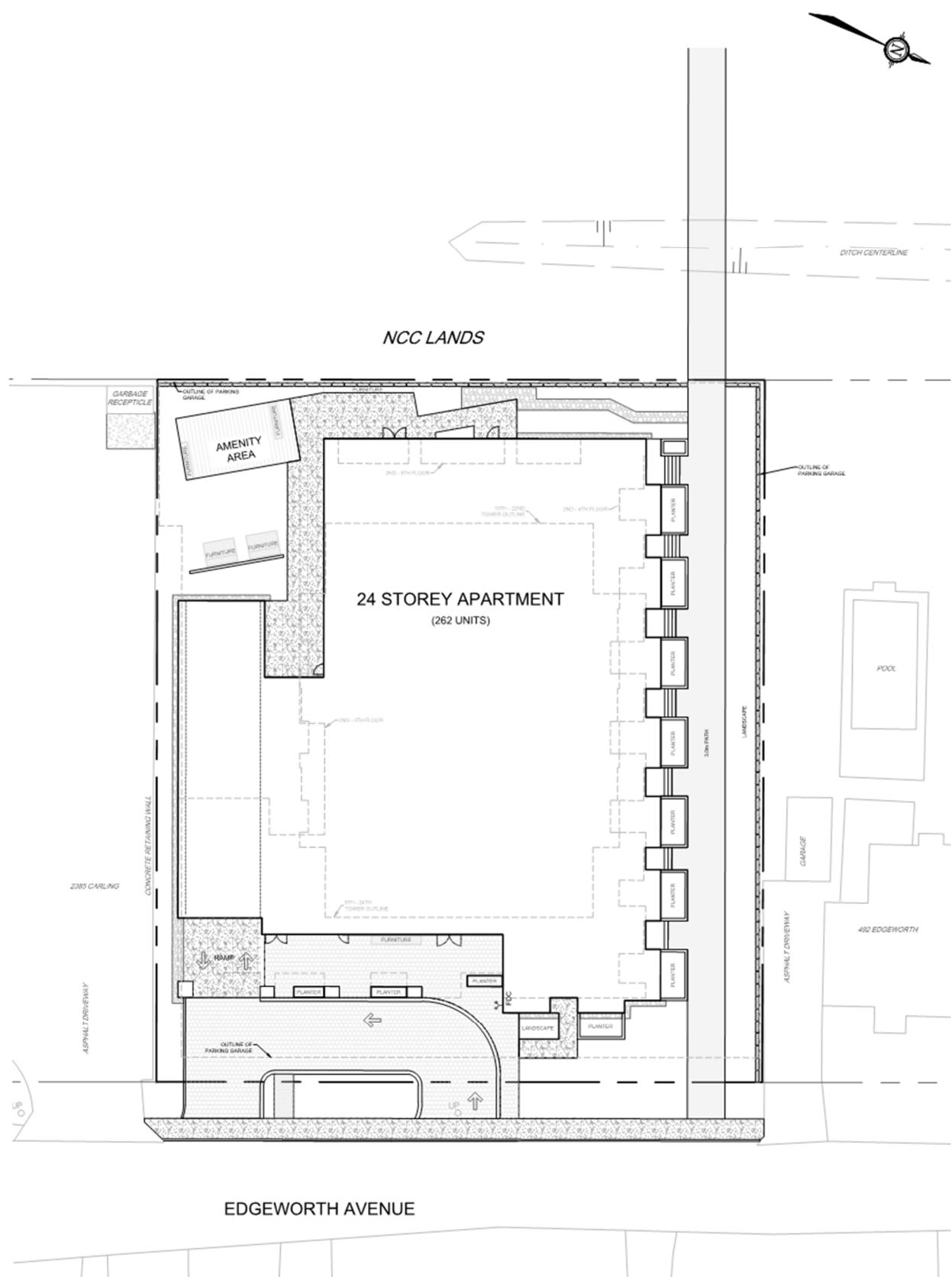


Figure 1-2: Concept Plan

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

A cistern is proposed to capture site drainage and will discharge via a 75mm forcemain connected to CB3 located on-site. The upper portion of the ditched pipe system will be removed (approximately 81m) and replaced at a lower elevation and extended to the proposed CB3.

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

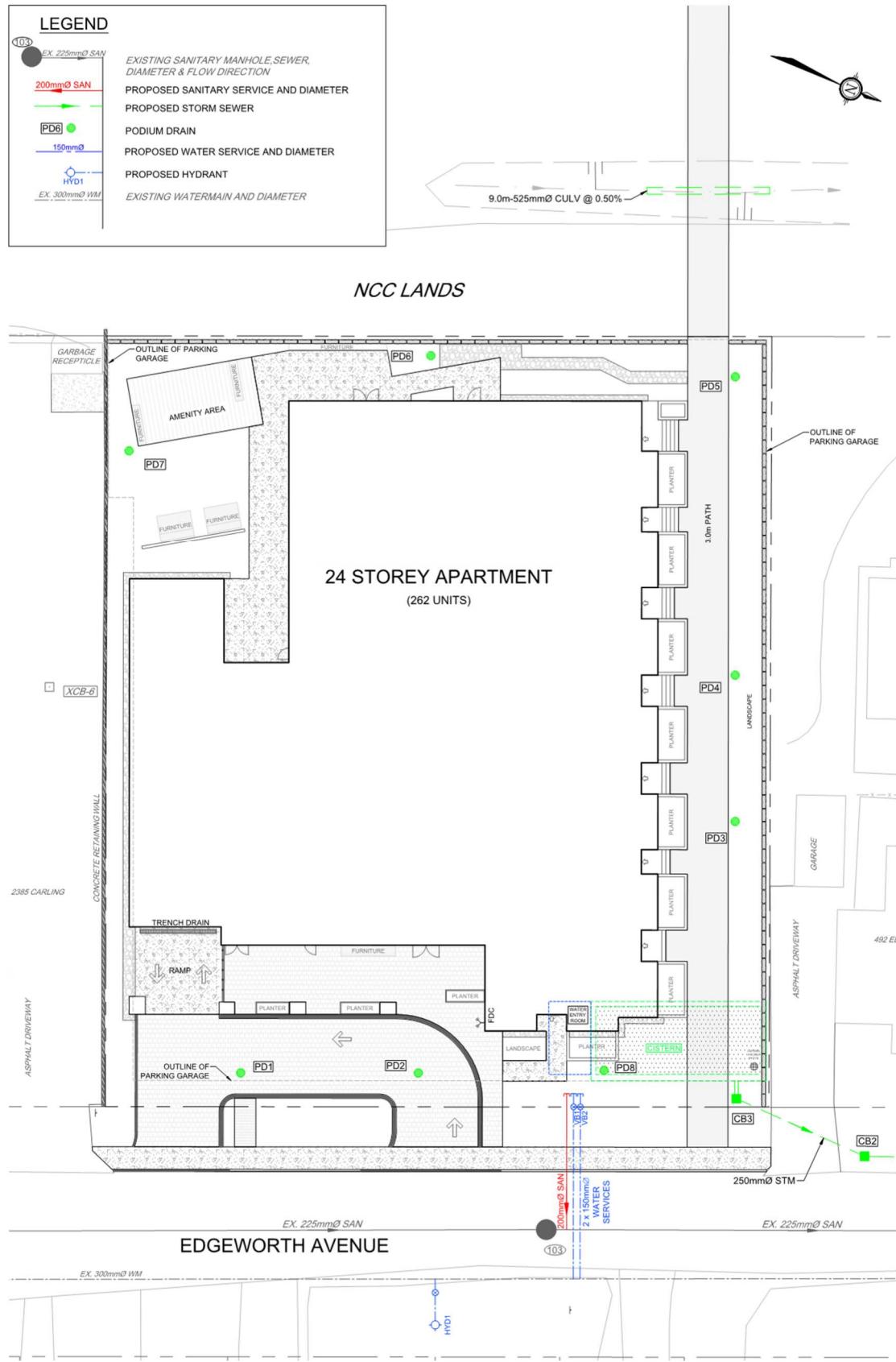


Figure 3-1: Proposed Servicing Layout Plan

### 3.2 Stormwater Management Criteria

The Subject Site 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. As such, the City will require that on-site stormwater quantity control be implemented to control post-development stormwater discharge for all storms up to and including the 100-year event. Quality control is not required as there are no parking or roadways located at surface level and all underground parking floor drains are directed to the sanitary sewer.

### 3.3 Pre-Development Conditions

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

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.

### 3.5 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-EX02:** 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 CB3 via a 75mm forcemain. Flows from CB3 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 150mm 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
<b>Total Controlled Flow to Edgeworth Ave</b>			<b>9.4</b>	<b>42.4</b>	<b>9.4</b>	<b>101.6</b>	<b>163.4</b>

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 1050mm diameter trunk storm sewer. Ponding starts to occur during the 10-year storm event up to a maximum ponding depth of 0.28m 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
CB3	67.52	65.95	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
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 1050mm diameter trunk sewer.

### 3.6 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 0.18m 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) 200mm diameter sanitary service. The proposed building sanitary service will be connected to the existing 225mm diameter sanitary sewer in Edgeworth Avenue, approximately 1.5m downstream of SANMH 103, directing flows to an existing 450mm 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	3.4 people/unit (used for existing)
Semi-detached/Townhome	2.7 people/unit (used for existing)
Average Apartment	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 <sup>1</sup>	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 225mm sanitary sewer in Edgeworth Avenue up to the connection to the 450mm 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 225mm 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 150mm diameter watermains with connections to the existing 300mm 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**

### 5.2.1 Domestic Demands

Domestic Demand	Design Parameters
Unit Population:	
Apartment	1.8 people/unit
Townhome	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)

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 (63m from building FDC) and one located at the intersection of Edgeworth and Carling Avenues (107m from FDC). A hydrant is proposed across the street in front of 501 Edgeworth Avenue located within 45m 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)

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 Plan. 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.

Prior to construction, a Permit-To-Take-Water (PTTW) or Environmental Activity and Sector Registry (EASR) application will be submitted to the Ministry of the Environment, Conservation and Parks (MECP). The permit will outline the water taking quantity, and location/quality of the discharge.

## 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.

### Wastewater:

- The building will be serviced with a 200mm diameter sanitary service and will be connected downstream of the existing SANMH 103 to the 225mm 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 150mm diameter watermains and will be connected to the existing 300mm 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 | 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](mailto:Henderson@fotenn.com); [tremblay@fotenn.com](mailto: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 <input type="checkbox"/>	2 <input type="checkbox"/>	3 <input type="checkbox"/>	4 <input type="checkbox"/>	5 <input type="checkbox"/>
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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](http://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 is 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](mailto: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](mailto: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 Lincoln 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/woonurfs).
  - 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 Christopher Moise ([christopher.moise@ottawa.ca](mailto: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 Underwriters 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](mailto: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](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 Edgeworth 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](mailto: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](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<sup>3</sup> 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

- 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.
- 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:

- 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):
  - 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](mailto: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](mailto: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](http://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](mailto: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**

**EXISTING CONDITIONS**

**Time-of-Concentration (Uplands Method)**

Flow Classification (Land Use)	Length (m)	Elevation		Slope (%)	Velocity <sup>1</sup> (m/s)	Time-of- Concentration (min)
		U/S (m)	D/S (m)			
Overland Flow (Sheet Flow)	55	67.5	66.1	2.5%	0.90	1.0
<b>TOTAL</b>	<b>55</b>	<b>67.5</b>	<b>66.1</b>	<b>2.5%</b>	<b>0.90</b>	<b>10.0</b>

<sup>1</sup> 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 <sub>avg</sub>	C <sub>100yr</sub> <sup>1</sup>	
<b>TOTAL</b>	<b>0.276</b>	<b>0.054</b>	<b>0.222</b>	<b>0.34</b>	<b>0.40</b>	<b>19.6%</b>

<sup>1</sup> 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) <sup>1</sup>			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	19.9	26.9	54.4

<sup>1</sup> 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 =  $732.951 / (Tc + 6.199)^{0.810}$

$$Q(\text{peak flow}) = 2.78 \times C \times I \times A$$

- C is the runoff coefficient
- I is the rainfall intensity
- A is the total drainage area

Table 3.1: SWM Guidelines for the Pinecrest Creek / Westboro Study Area

Development Type	Runoff Volume Reduction	Water Quality	Water Quantity		
		TSS Removal	Flood Flow Management	Erosion Control	
<b>Commercial/Institutional and Industrial Developments - discharging directly to Ottawa River Parkway pipe (ORPP)</b>					
5	all soil infiltration rates	A minimum on-site retention of the 10 mm design storm; refer to LID references <sup>(i)</sup> 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 <sup>(ii)</sup> could be implemented to provide further runoff volume reduction.	On-site removal of 80% of TSS; some of which would be accomplished 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 Guidelines.	Not applicable
<b>Residential Development Requiring Site Plan Control Approval - discharging upstream of Ottawa River Parkway pipe (ORPP) inlet</b>					
6	all soil infiltration rates	A minimum on-site retention of the 10 mm design storm; refer to LID references <sup>(i)</sup> 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 <sup>(ii)</sup> could be implemented to provide further runoff volume reduction.	On-site removal of 80% of TSS; some of which would be accomplished by on-site retention of first 10 mm of rainfall and detention of the 25 mm design storms <sup>(iii)</sup> .	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 Guidelines.	Control (detain) the runoff from the 25 mm design storm <sup>(iii)</sup> such that the peak outflow from the site does not exceed 5.8 L/s/ha.
<b>Residential Development Requiring Site Plan Control Approval - discharging directly to Ottawa River Parkway pipe (ORPP)</b>					
7	all soil infiltration rates	A minimum on-site retention of the 10 mm design storm; refer to LID references <sup>(i)</sup> 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 <sup>(ii)</sup> could be implemented to provide further runoff volume reduction.	On-site removal of 80% of TSS; some of which would be accomplished 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 Guidelines.	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](http://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

**500 Edgeworth Avenue**  
**Subcatchment Parameters**

Area ID	Area (ha)	Width (m)	Flow Length (m)	Slope (%)	Runoff Coeff.	Imperv. (%)	Zero Imperv (%)
<b>500 Edgeworth Avenue</b>							
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
<b>Existing Areas</b>							
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**

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

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Element Count

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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

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Rainage Summary

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Subcatchment Summary

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Name Data Source Data Type Recording Interval

RG-1 C3h-100yr INTENSITY 10 min.

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Subcatchment Summary

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Name Area Width %Imperv %Slope Rain Gage Outlet

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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

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Node Summary

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Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
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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

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Link Summary

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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)	XCB5_(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			

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Cross Section Summary

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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full 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	7972.90
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

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

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

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 Transect Summary  
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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	0.9988	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	0.9980
0.9981	0.9981	0.9982	0.9982	0.9982	0.9983
0.9983	0.9984	0.9984	0.9984	0.9985	0.9985
0.9986	0.9986	0.9986	0.9987	0.9987	0.9988
0.9988	0.9988	0.9989	0.9989	0.9990	0.9990
0.9991	0.9991	0.9992	0.9992	0.9992	0.9993
0.9993	0.9994	0.9994	0.9994	0.9995	0.9995
0.9996	0.9996	0.9996	0.9997	0.9997	0.9998
0.9998	0.9999	0.9999	1.0000	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	Depth
hectare-m	mm	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	Volume
hectare-m	10^6 ltr	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  
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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)

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

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  
\*\*\*\*\*

Total	Peak	Runoff	Total	Total	Total	Imperv	Perv	Total
Runoff	Runoff	Coeff	Precip	Runon	Evap	Infil	Runoff	Runoff
10 <sup>6</sup> ltr	LPS		mm	mm	mm	mm	mm	mm
A-01	69.05	1.008	71.67	0.00	0.00	0.00	72.21	0.00
A-02			71.67	0.00	0.00	21.33	37.20	12.93
0.03	26.35	0.700	71.67	0.00	0.00	21.33	37.20	12.93
0.03	26.75	0.700	71.67	0.00	0.00	22.75	34.62	14.51
0.05	41.70	0.686	71.67	0.00	0.00	20.06	38.93	12.94
0.04	34.58	0.724	71.67	0.00	0.00	14.50	47.63	9.61
0.05	36.72	0.799	71.67	0.00	0.00	16.81	43.97	11.00
0.05	40.39	0.767	71.67	0.00	0.00	20.11	38.85	12.97
0.11	90.71	0.723	71.67	0.00	0.00	23.94	32.91	15.20
0.11	94.28	0.671	71.67	0.00	0.00	29.36	24.81	18.28
0.32	281.18	0.601	71.67	0.00	0.00	20.06	38.89	12.94
0.08	69.15	0.723	71.67	0.00	0.00	25.55	30.37	16.12
0.06	52.00	0.649	71.67	0.00	0.00	17.21	43.47	11.24
0.09	71.49	0.763	71.67	0.00	0.00	18.93	40.07	12.97
0.03	27.46	0.740	71.67	0.00	0.00	18.93	40.07	12.97
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 <sup>6</sup> ltr	Total Inflow Volume 10 <sup>6</sup> 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	0.00	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.

\*\*\*\*\*

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

Node Flooding Summary

\*\*\*\*\*

No nodes were flooded.

\*\*\*\*\*

Storage Volume Summary

\*\*\*\*\*

Storage Unit	Average Volume 1000 m <sup>3</sup>	Avg Full	Evap Pcnt	Exfil Pcnt	Maximum Volume 1000 m <sup>3</sup>	Max Full	Time of Max Occurrence	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	0.02	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	Avg Flow Lps	Max Flow Lps	Total Volume 10 <sup>6</sup> 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

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Link Flow Summary

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Link	Type	Maximum [Flow] Lps	Time of Max Occurrence	Maximum [Veloc] m/sec	Max/ Full	Max/ 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
n2_(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						
		Up Dry	Up Dry	Sub Dry	Sup Crit	Up Crit	Down Crit	Norm Crit
C1	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.97
C10	1.00	0.99	0.00	0.00	0.01	0.00	0.00	0.01
C11	1.00	0.99	0.00	0.00	0.00	0.00	0.01	0.00
C12	1.00	0.98	0.00	0.00	0.02	0.00	0.00	0.95
C13	1.00	0.01	0.00	0.00	0.00	0.00	0.99	0.00
C14	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
C15	1.00	0.99	0.00	0.00	0.00	0.00	0.01	0.00
C16	1.00	0.98	0.00	0.00	0.02	0.00	0.00	0.02
C17	1.00	0.98	0.02	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
C19	1.00	0.91	0.00	0.00	0.09	0.00	0.00	0.00
C2	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.96
C20	1.00	0.91	0.00	0.00	0.02	0.00	0.00	0.07
C3	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.97
C4	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.96
C5	1.00	0.01	0.00	0.00	0.01	0.00	0.00	0.98
C6	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99
C7	1.00	0.01	0.00	0.00	0.00	0.00	0.00	0.99
C8	1.00	0.01	0.14	0.00	0.85	0.00	0.00	0.98
C9	1.00	0.99	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
Ex_Culvert-52_(Ex_Culvert)	1.00	0.01	0.00	0.00	0.99	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	0.06
Ex_Culvert-54_(Ex_Culvert)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.08
n1_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.77
n3_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.02
n4_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.96
n5_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.87
n6_(STM)	1.00	0.01	0.00	0.00	0.80	0.19	0.00	0.00
nn2_(STM)	1.00	0.01	0.00	0.00	0.99	0.00	0.00	0.97
STM-10_(STM)	1.00	0.01	0.00	0.00	0.68	0.32	0.00	0.76
STM-27_(STM)	1.00	0.01	0.00	0.00	0.99	0.30	0.00	0.77
STM-29_(STM)	1.00	0.01	0.00	0.00	0.99	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
STM-47_(STM)	1.00	0.01	0.89	0.00	0.01	0.00	0.09	0.00
STM-8_(STM)	1.00	0.01	0.00	0.00	0.12	0.00	0.00	0.87
STM-9_(STM)	1.00	0.01	0.00	0.00	0.03	0.00	0.00	0.96

Conduit	Hours		Hours		Hours	Hours
	Both Ends	Upstream	Dnstream	Normal Flow		
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	0.01
n1_(STM)	0.52	0.52	0.53	0.01	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	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	0.01
STM-29_(STM)	0.27	0.27	0.31	0.04	0.04	0.04

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

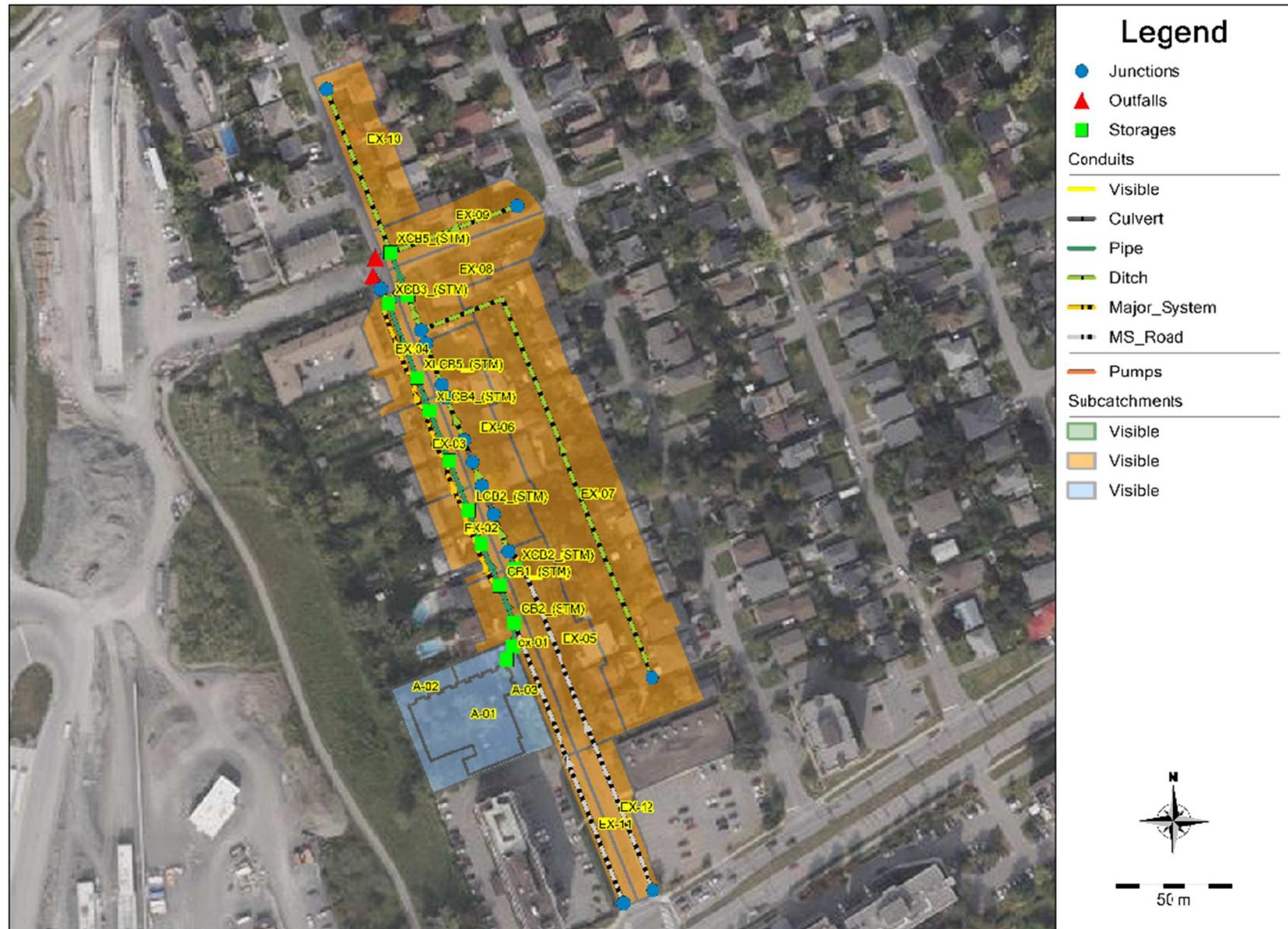
STM-30_(STM)	0.56	0.56	0.59	0.01	0.01
STM-47_(STM)	0.26	0.26	0.33	0.01	0.01
STM-8_(STM)	0.69	0.69	0.69	0.31	0.37
STM-9_(STM)	0.69	0.70	0.69	0.72	0.69

\*\*\*\*\*  
Pumping Summary  
\*\*\*\*\*

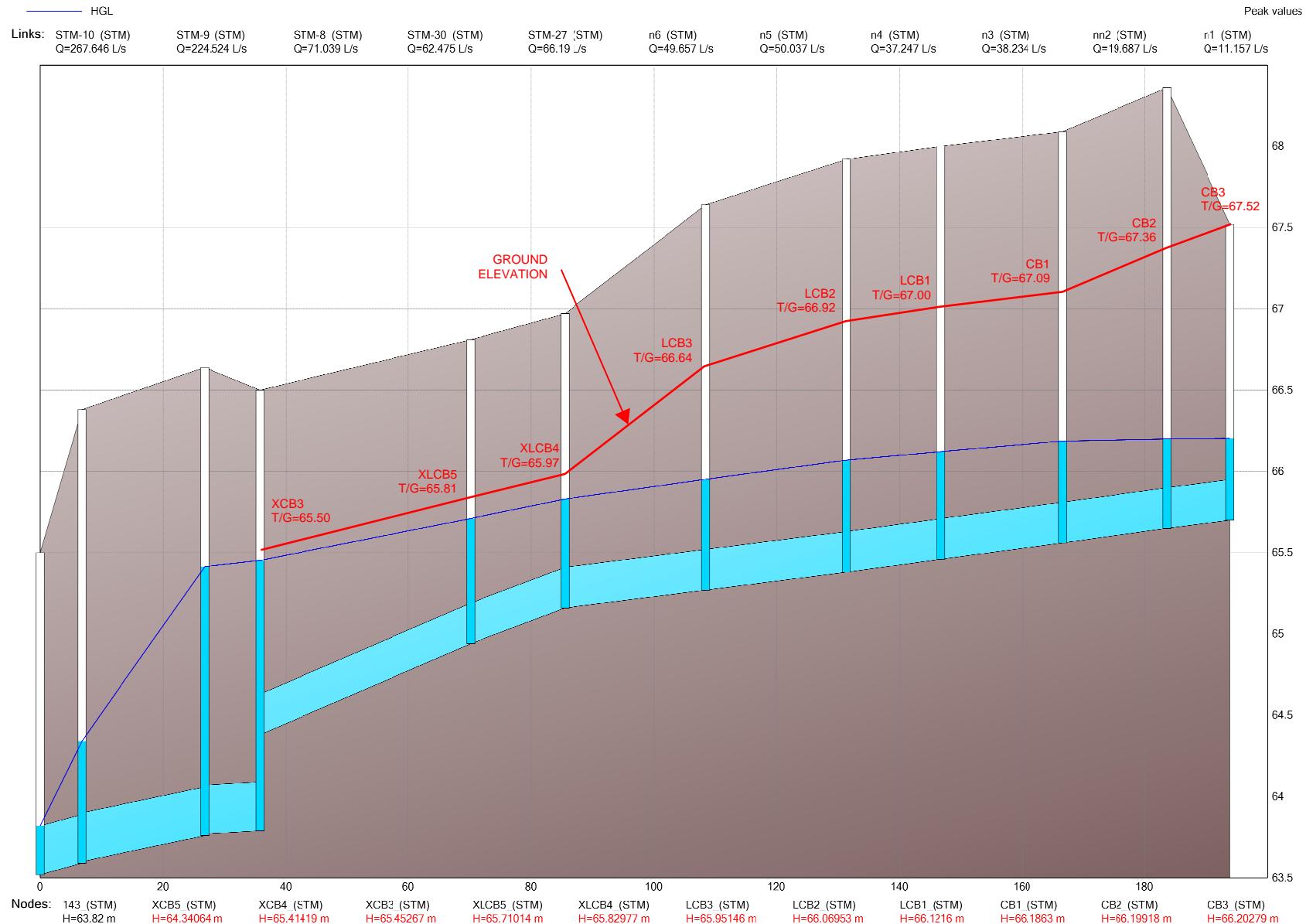
		Min	Avg	Max	Total	Power	% Time		
Off	Percent	Number of	Flow	Flow	Flow	Volume	Usage	Pump	
Curve	Utilized	Start-Ups	LPS	LPS	LPS	10^6 ltr	Kw-hr	Low	
Pump								High	
-	P1	22.53	1	0.00	8.96	9.40	0.169	0.76	0.0
0.0									

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

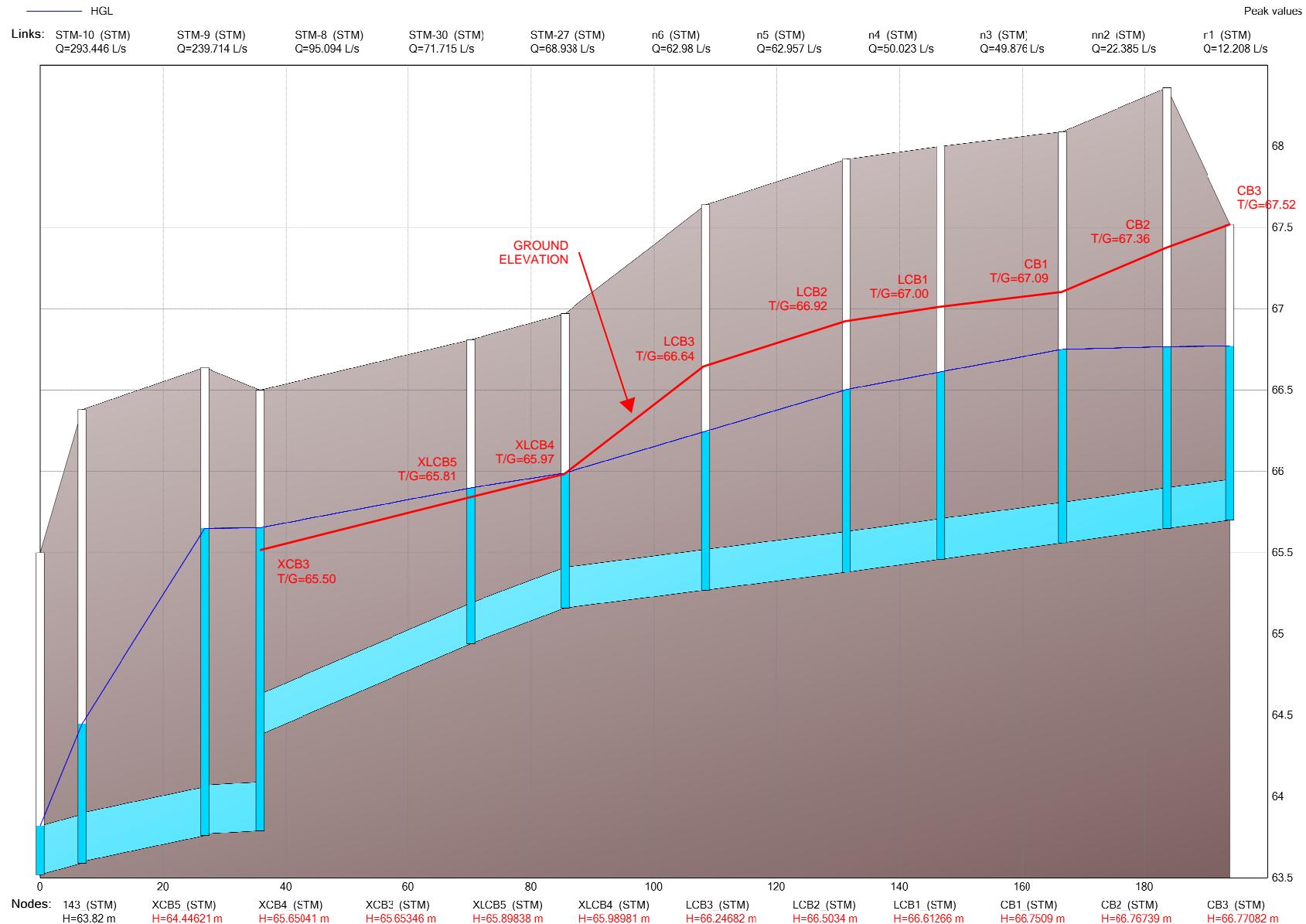
Overall Model Schematic



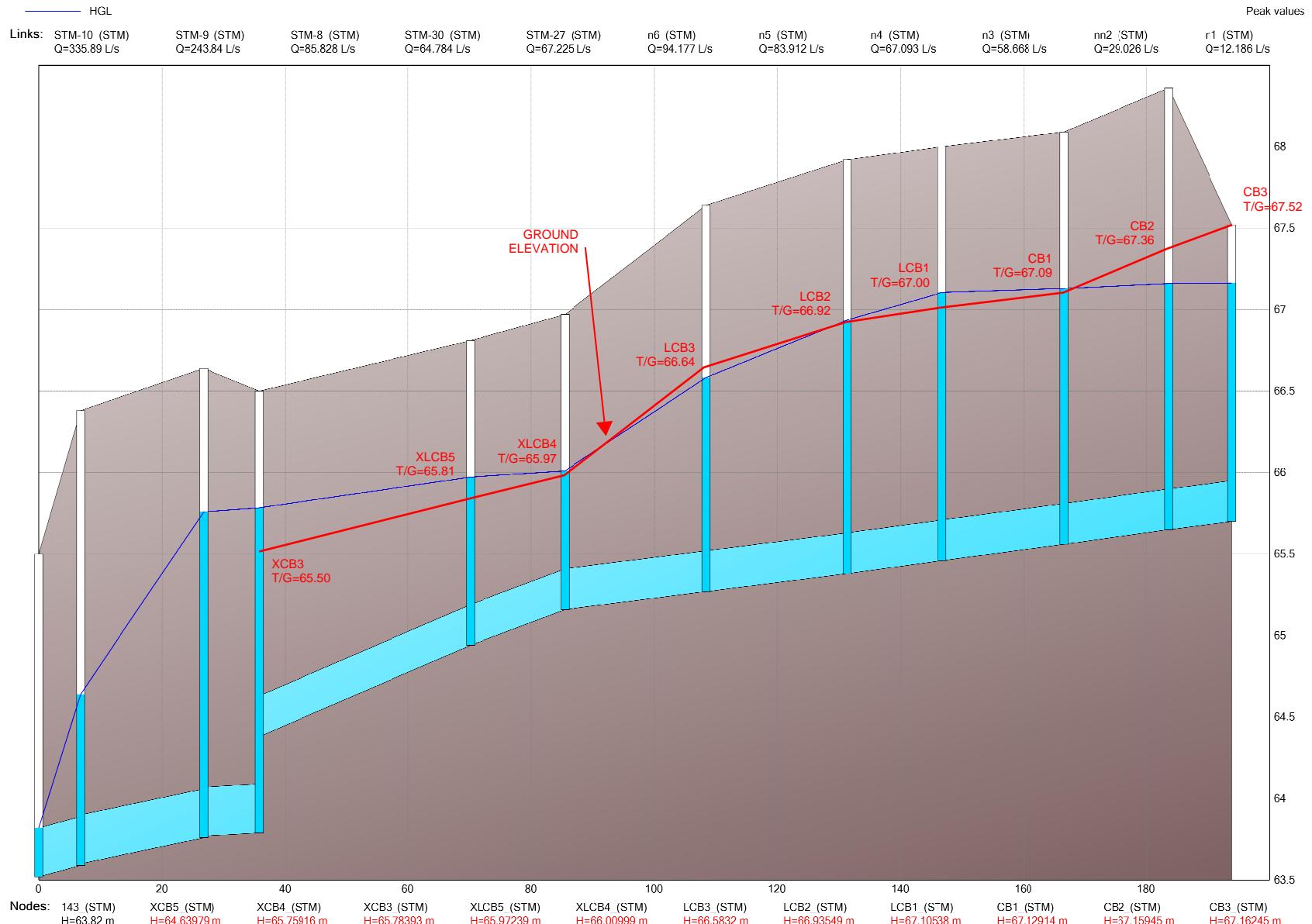
### 3HR CHICAGO 5-YEAR HGL ELEVATION



### 3HR CHICAGO 10-YEAR HGL ELEVATION



### 3HR CHICAGO 100-YEAR HGL ELEVATION



**Appendix C**  
**Sanitary Sewer Design Sheets and Sanitary Calculations**

# SANITARY SEWER DESIGN SHEET

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									
Street	Area ID	From MH	To MH	Residential Flow								Industrial / Commercial / Institutional (ICI) Flow						Extraneous Flow Area Method		Total Design Flow		Proposed Sewer Pipe Sizing / Design									
				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	0.033	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	0.066	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	0.000	2.60	3.29	8.55	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

$$1. Q(D), Q(A), Q(R) = Q(p) + Q(fd) + Q(ici) + Q(e)$$

$$2. Q(p) = (P \times q \times M \times K / 86,400)$$

$$3. q = 280 \text{ L/person/day (design)}$$

$$4. M = \text{Harmon Formula (maximum of 4.0)}$$

$$5. K = 0.8 \text{ (design)}$$

$$6. \text{Park flow is considered equivalent to a single unit / ha}$$

$$\text{Park Demand} = 4 \text{ single unit equivalent / park ha } (\sim 3,600 \text{ L/ha/day})$$

$$7. Q(fd) = 0.45 \text{ L/unit}$$

$$8. Q(ici) = \text{ICI Area} \times \text{ICI Flow} \times \text{ICI Peak}$$

$$9. Q(e) = 0.33 \text{ L/s/ha (design)}$$

$$0.30 \text{ L/s/ha (annual)}$$

$$0.55 \text{ L/s/ha (rare)}$$

## 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)

$P$  = Residential Population =

$q$  = Average Capita Flow

$M$  = Harmon Formula

$K$  = Harmon Correction Factor

$Typ. Service Diameter (mm) =$

$Typ. Service Length (m) =$

$l/f Pipe Rate (L/mm dia/m/hr) =$

$Q(fd)$  = Foundation Flow (L/s)

$Q(ici)$  = Industrial / Commercial / Institutional Flow (L/s)

$Q(e)$  = Extraneous Flow (L/s)

$Singles$

$Semis / Towns$

$Apts$

$P$  = Residential Population =

$q$  = Average Capita Flow

$M$  = Harmon Formula

$K$  = Harmon Correction Factor

$Typ. Service Diameter (mm) =$

$Typ. Service Length (m) =$

$l/f Pipe Rate (L/mm dia/m/hr) =$

$Q(fd)$  = Foundation Flow (L/s)

$Q(ici)$  = Industrial / Commercial / Institutional Flow (L/s)

$Q(e)$  = Extraneous Flow (L/s)

$Design =$

$Annual / Rare =$

$Design =$

$Annual / Rare =</$

**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 IWS 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 22<sup>nd</sup> to September 24<sup>th</sup>.**

---

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**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

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**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

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**From:** Dieme, Abi <[Aabitou.Dieme@ottawa.ca](mailto:Aabitou.Dieme@ottawa.ca)>

**Sent:** Monday, July 21, 2025 11:19 AM

**To:** Lucas Wilson <[l.wilson@novatech-eng.com](mailto:l.wilson@novatech-eng.com)>

**Cc:** Mark Bissett <[m.bissett@novatech-eng.com](mailto:m.bissett@novatech-eng.com)>; Fawzi, Mohammed <[mohammed.fawzi@ottawa.ca](mailto:mohammed.fawzi@ottawa.ca)>

**Subject:** FW: 500 Edgeworth - Storm Drainage

Hi Lucas,

Forwarding my feedback on the proposed concept for 500 Edgeworth 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

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**From:** Dieme, Abi

**Sent:** Monday, July 21, 2025 11:16 AM

**To:** Mark Bissett <[m.bissett@novatech-eng.com](mailto:m.bissett@novatech-eng.com)>

**Cc:** Ravi Shanghavi <[ravi@antiliahomes.com](mailto:ravi@antiliahomes.com)>; George Gaty <[gatty@elkproperty.com](mailto:gatty@elkproperty.com)>; Baldwin, Kimberley <[Kimberley.Baldwin@ottawa.ca](mailto:Kimberley.Baldwin@ottawa.ca)>; Fawzi, Mohammed <[mohammed.fawzi@ottawa.ca](mailto:mohammed.fawzi@ottawa.ca)>; Conrod, Becca

<[becca.conrod@ottawa.ca](mailto: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](mailto:m.bissett@novatech-eng.com)>

**Sent:** Thursday, June 5, 2025 11:45 AM

**To:** Dieme, Abi <[Abibatou.Dieme@ottawa.ca](mailto:Abibatou.Dieme@ottawa.ca)>

**Cc:** Ravi Shanghavi <[ravi@antiliahomes.com](mailto:ravi@antiliahomes.com)>; George Gaty <[ggaty@elkproperty.com](mailto:ggaty@elkproperty.com)>; Baldwin, Kimberley <[Kimberley.Baldwin@ottawa.ca](mailto:Kimberley.Baldwin@ottawa.ca)>; Fawzi, Mohammed <[mohammed.fawzi@ottawa.ca](mailto:mohammed.fawzi@ottawa.ca)>

**Subject:** 500 Edgeworth - Storm Drainage

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**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

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**From:** Dieme, Abi <[Abibatou.Dieme@ottawa.ca](mailto:Abibatou.Dieme@ottawa.ca)>

**Sent:** Wednesday, June 4, 2025 6:01 PM

**To:** Mark Bissett <[m.bissett@novatech-eng.com](mailto:m.bissett@novatech-eng.com)>

**Cc:** Ravi Shanghavi <[ravi@antiliahomes.com](mailto:ravi@antiliahomes.com)>; George Gaty <[ggaty@elkproperty.com](mailto:ggaty@elkproperty.com)>; Baldwin, Kimberley

<[Kimberley.Baldwin@ottawa.ca](mailto:Kimberley.Baldwin@ottawa.ca)>; Fawzi, Mohammed <[mohammed.fawzi@ottawa.ca](mailto: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.

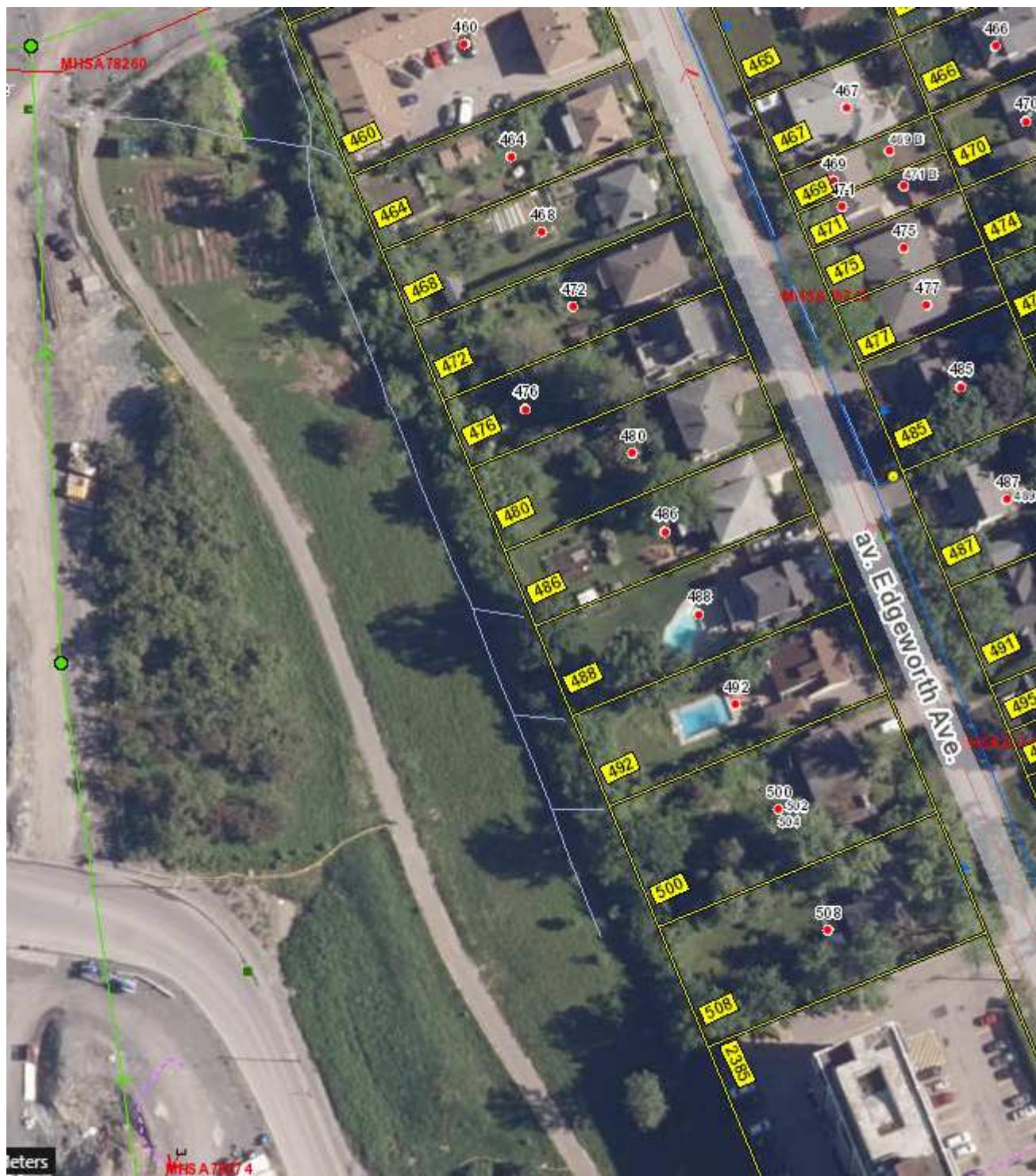
Our standard criterion is that a site discharging onto adjacent land may continue to do so if post-development release rate is controlled to the pre-development release rate. I am not very familiar with NCC requirements however, it is also standard that a property receiving external drainage would accommodate 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?





Regards,  
Abi

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---

**From:** Mark Bissett <[m.bissett@novatech-eng.com](mailto:m.bissett@novatech-eng.com)>

**Sent:** Friday, May 30, 2025 1:16 PM

**To:** Dieme, Abi <[Abibatou.Dieme@ottawa.ca](mailto:Abibatou.Dieme@ottawa.ca)>

**Cc:** Ravi Shanghavi <[ravi@antiliahomes.com](mailto:ravi@antiliahomes.com)>; George Gaty <[ggaty@elkproperty.com](mailto:ggaty@elkproperty.com)>; Baldwin, Kimberley <[Kimberley.Baldwin@ottawa.ca](mailto:Kimberley.Baldwin@ottawa.ca)>

**Subject:** 500 Edgeworth - Storm Drainage

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**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

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# FUS - Fire Flow Calculations



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:**

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

**Building Description:** 24 Storey Residential Building  
**Type I - Fire resistive construction (2 hrs)**

Step		Choose		Value Used	Total Fire Flow (L/min)		
<b>Base Fire Flow</b>							
1	<b>Construction Material</b>		<b>Multiplier</b>				
	<b>C</b>	Type V - Wood frame	1.5	0.6			
		Type IV - Mass Timber	Varies				
		Type III - Ordinary construction	1				
		Type II - Non-combustible construction	0.8				
		Type I - Fire resistive construction (2 hrs)	Yes		0.6		
2	<b>Floor Area</b>						
	<b>A</b>	Podium Level Footprint (m <sup>2</sup> )	1352	2,011			
		Total Floors/Storeys (Podium)	2				
		Tower Footprint (m <sup>2</sup> )	1285				
		Total Floors/Storeys (Tower)	22				
		Protected Openings (1 hr)	Yes				
		A, Total Effective Floor Area (m <sup>2</sup> )			6,000		
3	<b>F</b>	<b>Base fire flow without reductions</b>					
		$F = 220 C (A)^{0.5}$					
		<b>Reductions or Surcharges</b>					
4	<b>Occupancy hazard reduction or surcharge</b>		<b>FUS Table 3</b>	<b>Reduction/Surcharge</b>			
	<b>(1)</b>	Non-combustible		-25%	5,100		
		Limited combustible	Yes	-15%			
		Combustible		0%			
		Free burning		15%			
		Rapid burning		25%			
5	<b>Sprinkler Reduction</b>		<b>FUS Table 4</b>	<b>Reduction</b>			
	<b>(2)</b>	Adequately Designed System (NFPA 13)	Yes	-30%	-2,042		
		Standard Water Supply	Yes	-10%			
		Fully Supervised System	No	-10%			
				Cumulative Sub-Total			
		Area of Sprinklered Coverage (m <sup>2</sup> )	31000	100%			
				Cumulative Total	-40%		
6	<b>Exposure Surcharge per</b>		<b>FUS Table 5</b>	<b>Surcharge</b>			
	<b>(3)</b>	North Side	10.1 - 20 m	15%	2,805		
		East Side	20.1 - 30 m	10%			
		South Side	10.1 - 20 m	15%			
		West Side	10.1 - 20 m	15%			
				Cumulative Total	55%		
<b>Results</b>							
6	<b>(1) + (2) + (3)</b>	<b>Total Required Fire Flow, rounded to nearest 1000L/min</b>		<b>L/min</b>	<b>6,000</b>		
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s		
				or	USGPM		
					1,585		

<b>500 Edgeworth Avenue</b> <b>Water Demand</b>							
	Area (ha)	Town Unit	Apartment Unit	Population	Average Day Demand (L/s)	Maximum Day Demand (L/s)	Peak Hour Demand (L/s)
<b>Building</b>	N/A	7	255	478	1.549	3.872	8.518
<b>Total</b>	<b>0.00</b>	<b>7</b>	<b>255</b>	<b>478</b>	<b>1.549</b>	<b>3.872</b>	<b>8.518</b>

**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

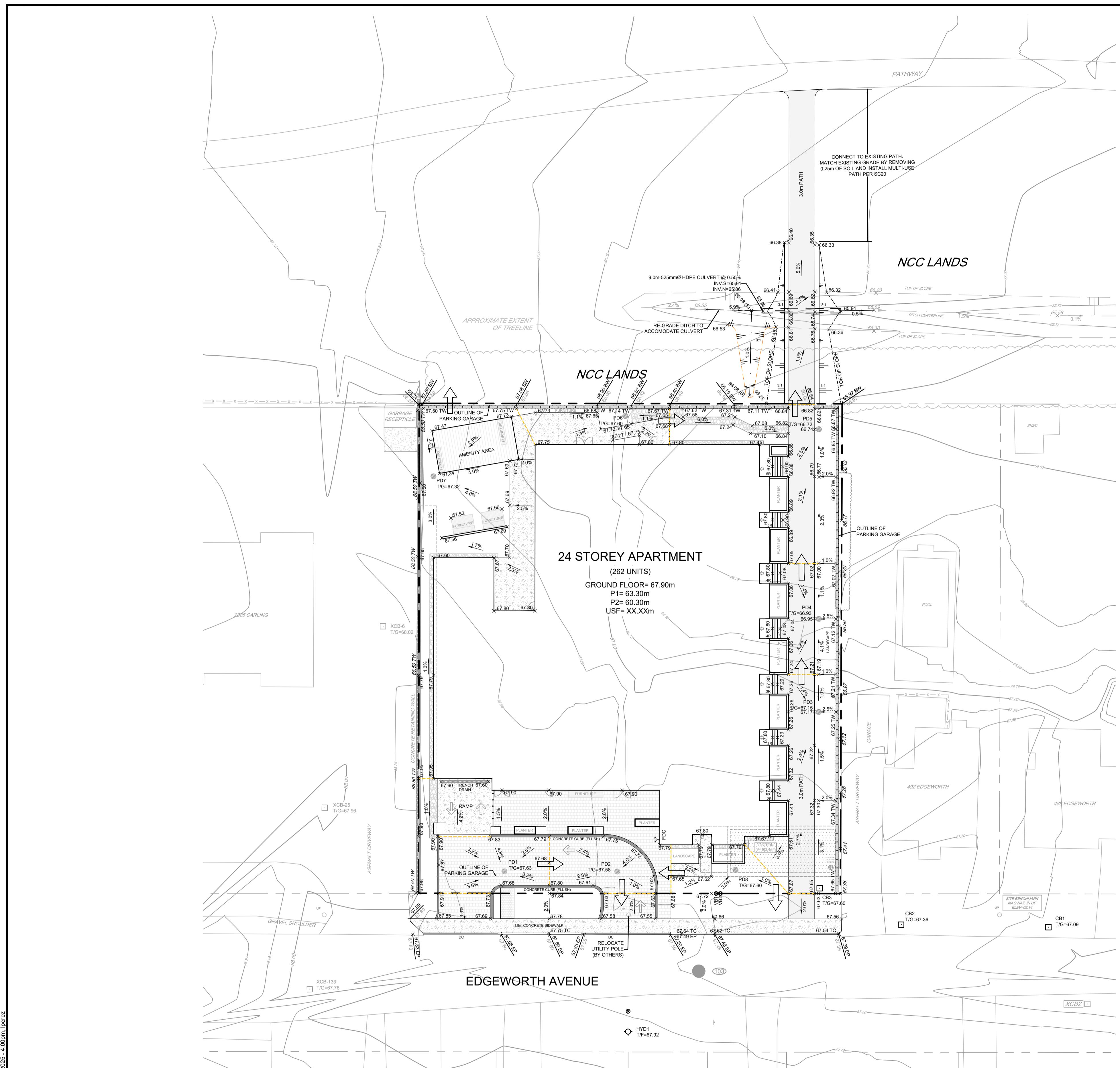
## 500 Edgeworth Avenue: Watermain Analysis

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	14	150	100	-3.87	0.22	0.74	0.045



#### 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 (DATED AUG 26, 2025), PREPARED BY EXP SERVICES FOR SUBSURFACE CONDITIONS AND CONSTRUCTION RECOMMENDATIONS.

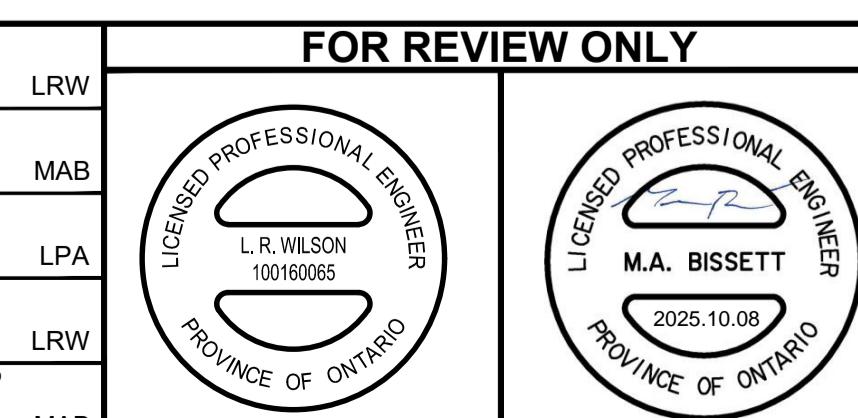
#### GRADING AND PAVEMENT NOTES:

1. ALL TOPSOIL, ORGANIC OR DELETERIOUS MATERIAL MUST BE ENTIRELY REMOVED FROM BENEATH THE PROPOSED HARD SURFACE (i.e. 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 GRANULAR.
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 COMPAKTED 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 COMPAKTED 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 COMPAKCTION 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.

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No.	REVISION	DATE	BY	SCALE	
				1:250	1:250
1.	ISSUED WITH SITE PLAN APPLICATION	OCT 08/25	MAB	0 2 4 6 8 10	0 2 4 6 8 10

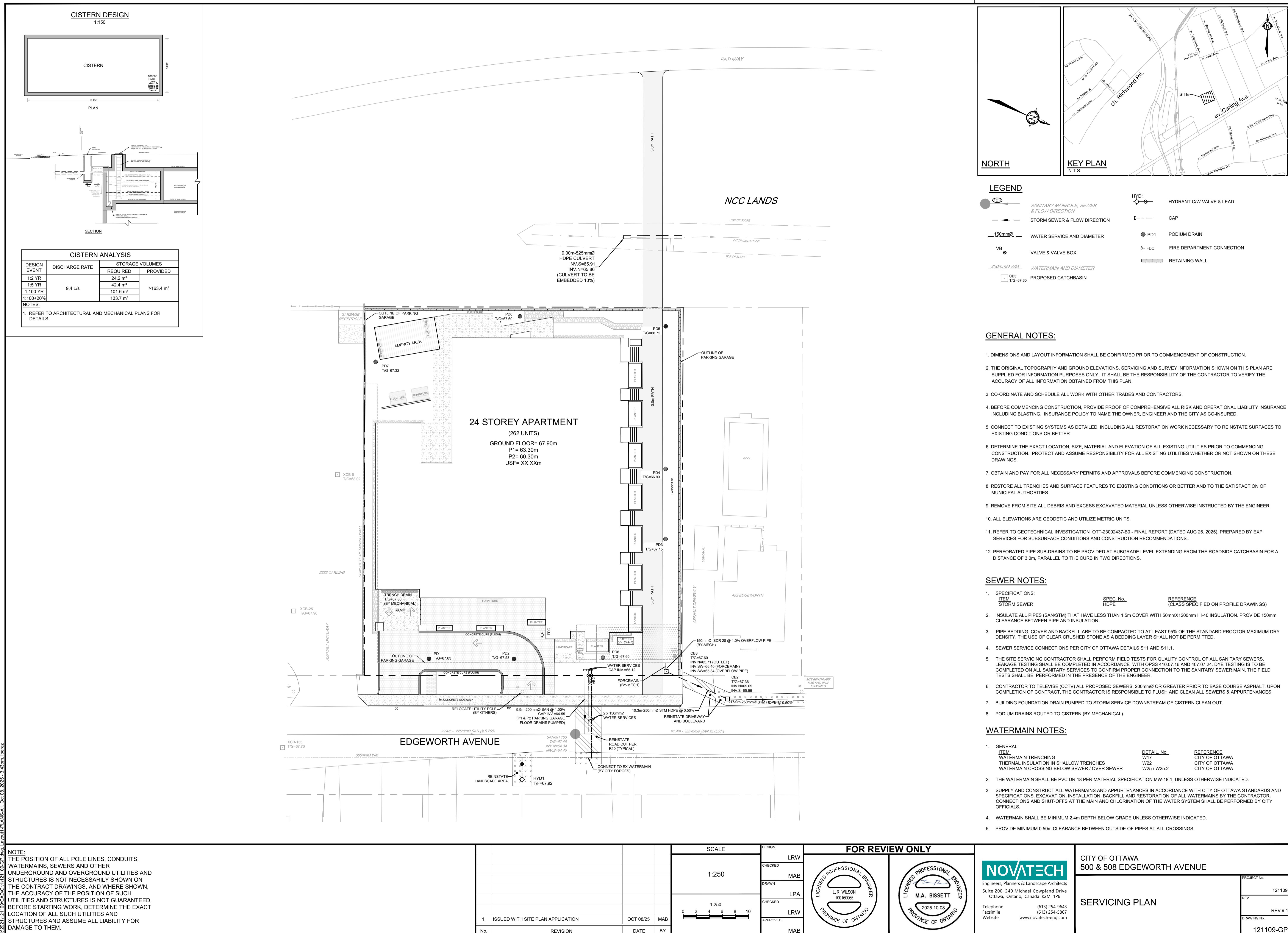


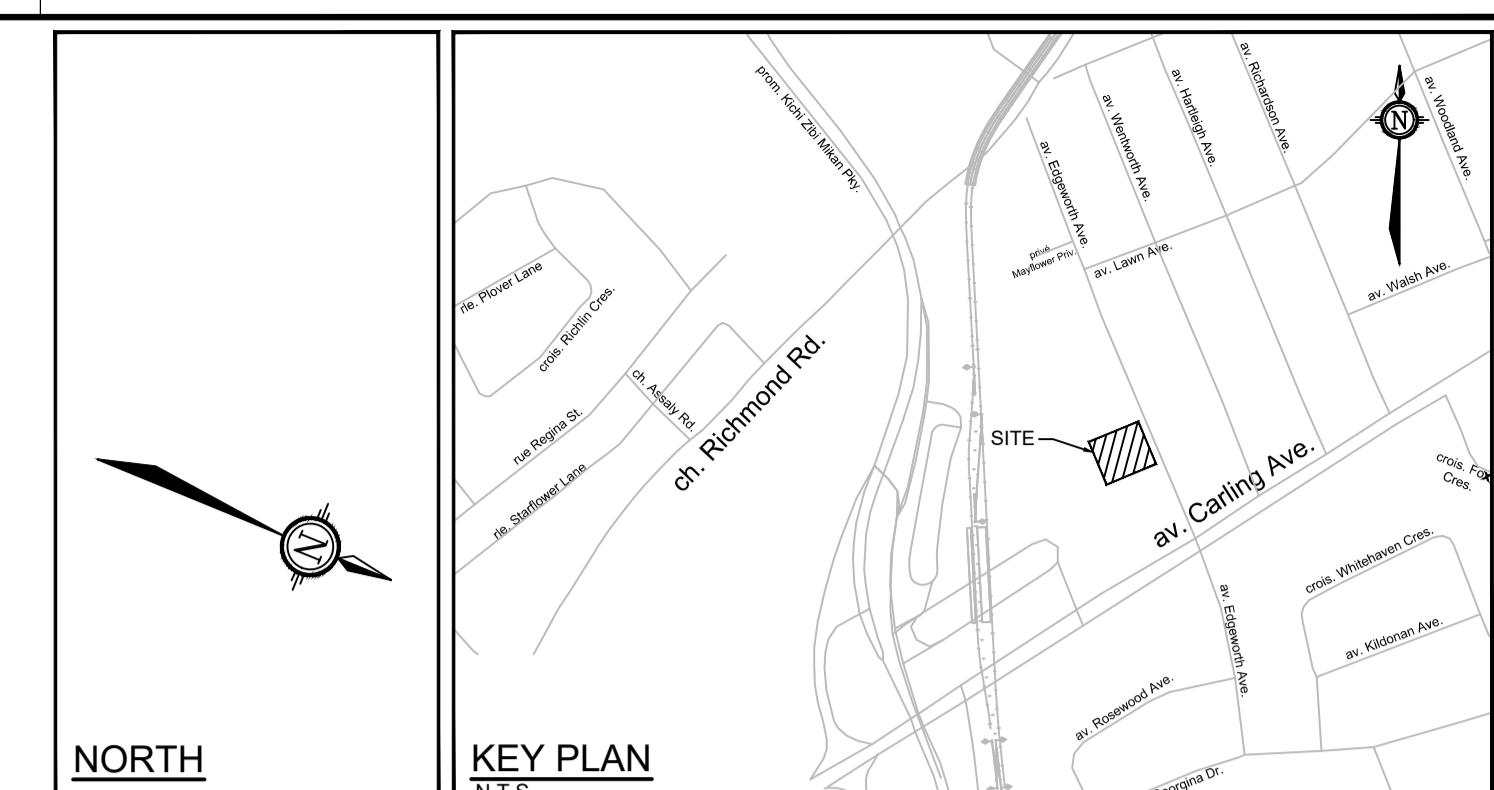
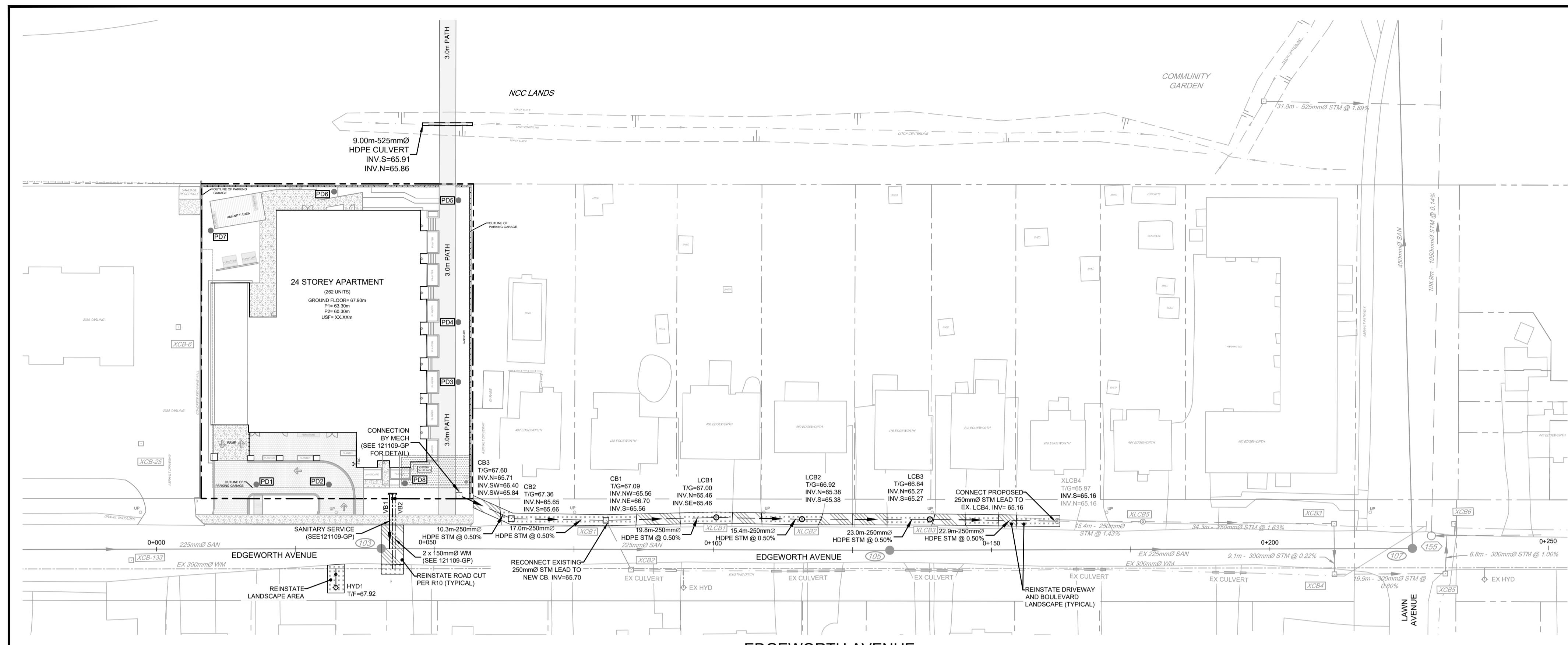
**NOVATECH**  
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CITY OF OTTAWA  
500 & 508 EDGEWORTH AVENUE

PROJECT No.  
121109  
REV  
REV #1  
DRAWING No.  
121109-GR

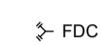
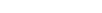
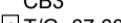
GRADING PLAN





## NORTH

## LEGEND

	EXISTING SANITARY MANHOLE, SEWER & FLOW DIRECTION		HYDRANT C/W VALVE & LEAD
	EXISTING STORM MANHOLE SEWER & FLOW DIRECTION		FIRE DEPARTMENT CONNECTION
	EXISTING WATERMAIN AND DIAMETER		CAP
	WATER SERVICE AND DIAMETER		
	VALVE & VALVE BOX		
	SANITARY SERVICE AND FLOW DIRECTION		
	STORM SEWER AND FLOW DIRECTION		
	PROPOSED CATCHBASIN		
	PROPOSED LANDSCAPE TYPE CATCHBASIN		
	PODIUM DRAIN		

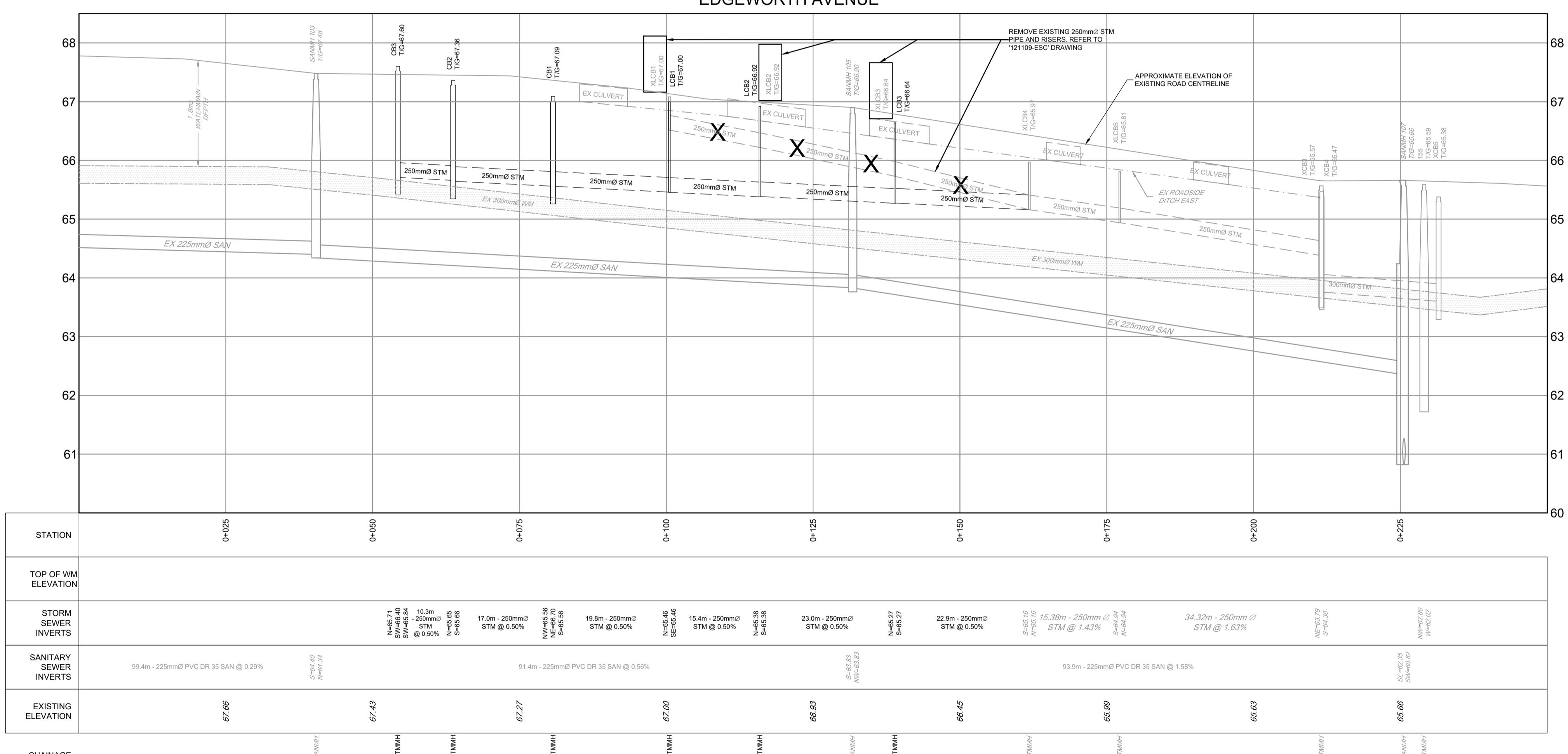
## GENERAL NOTES:

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-23002437-80 - FINAL REPORT (DATED AUG 26, 2025), 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:

<u>ITEM</u>	<u>SPEC. No.</u>	<u>REFERENCE</u>
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 1-8 ROUTED TO CISTERN (BY MECHANICAL).



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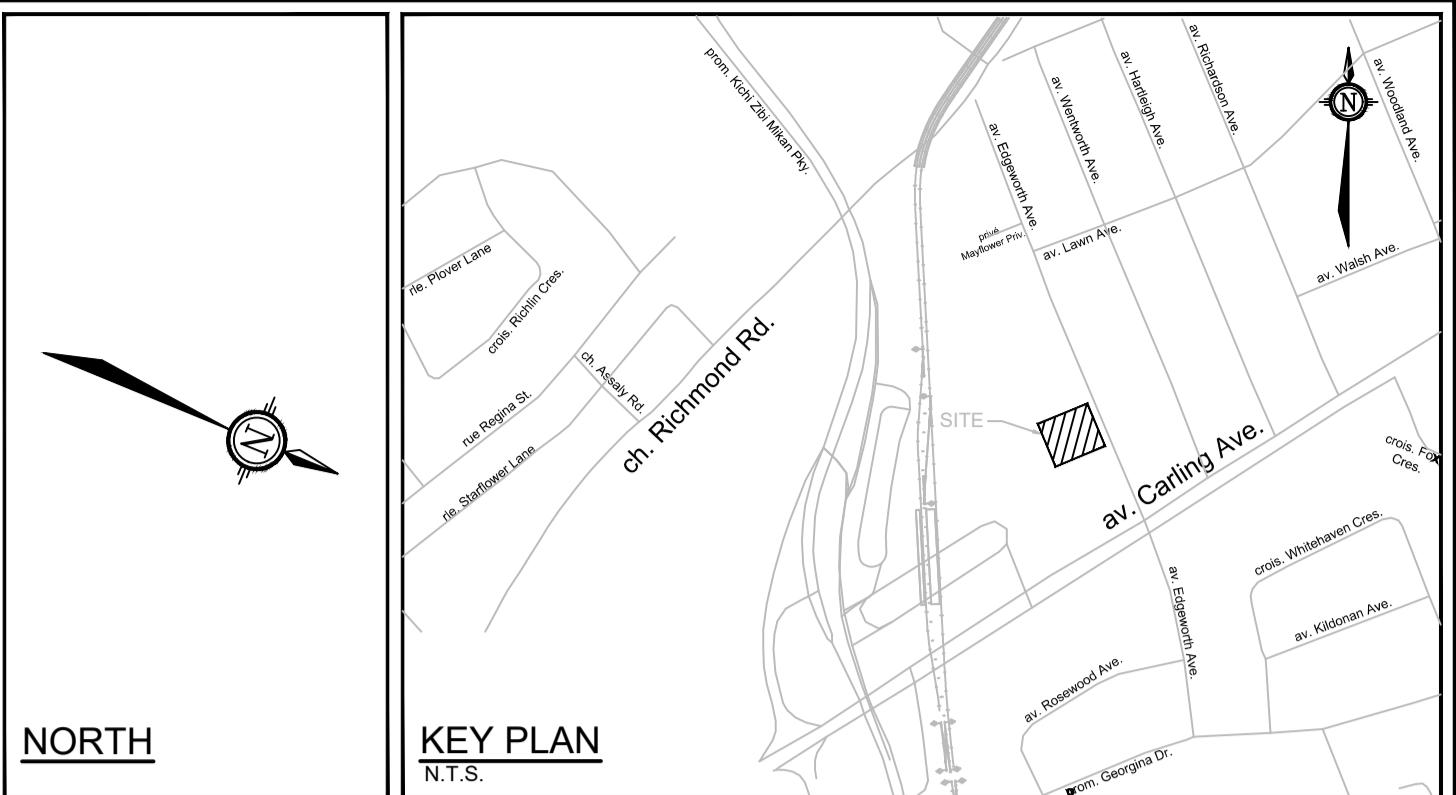
			SCALE		DESIGN		FOR REVIEW ON	
			 1:500		LRW CHECKED MAB DRAWN LPA CHECKED LRW APPROVED MAB		 LICENSED PROFESSIONAL ENGINEER L. R. WILSON 100160065 PROVINCE OF ONTARIO	
1. ISSUED WITH SITE PLAN APPLICATION			OCT 08/25	MAB				

CITY OF OTTAWA  
500 & 508 EDGEWORTH AVENUE

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Website [www.novatech-eng.com](http://www.novatech-eng.com)

THE CITY OF OTTAWA  
10 & 508 EDGEWORTH AVENUE

PLAN & PROFILE		PROJECT No.
DGEWORTH AVENUE		12110
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		REV #
		DRAWING No.
		121100 RE



## LEGEND

## NORTH

## LEGEND

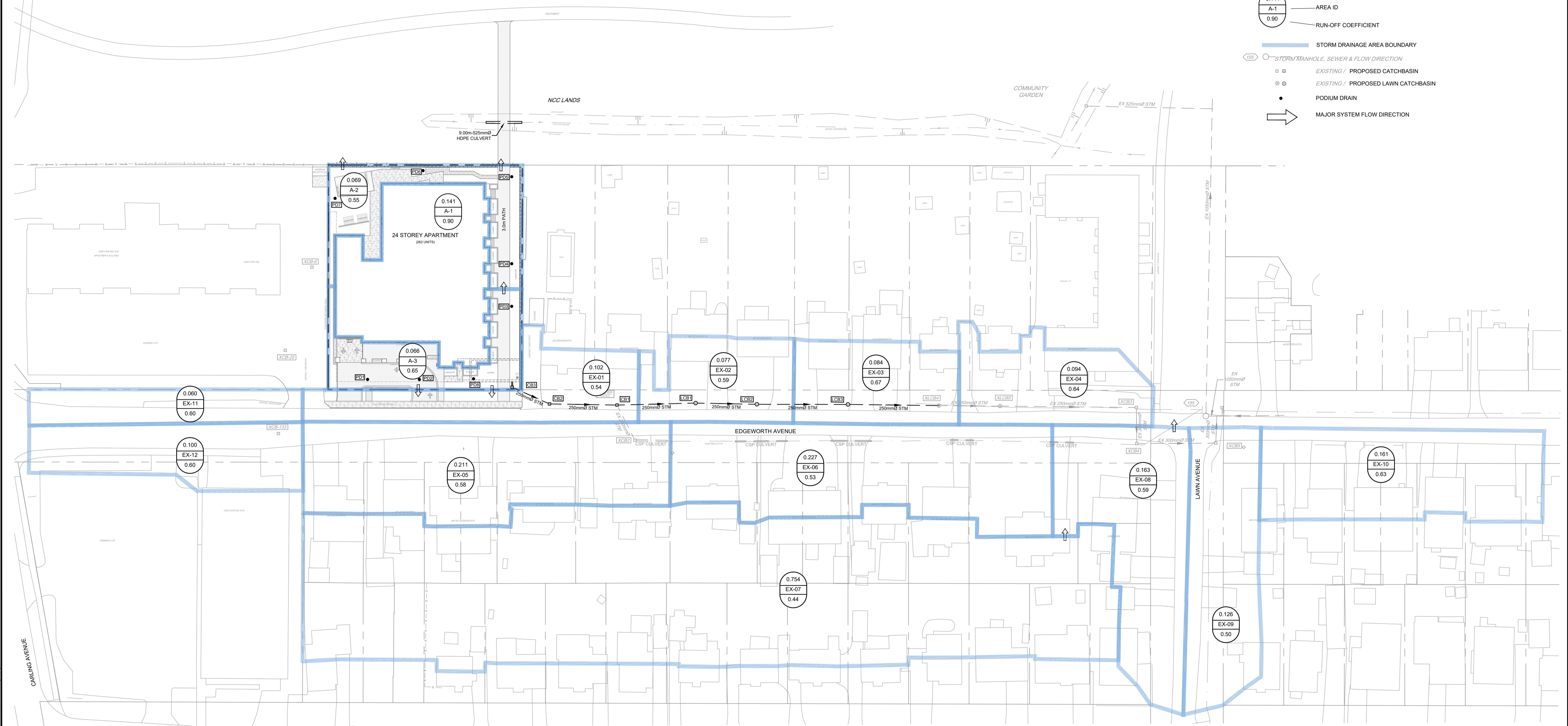
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A-1 → AREA ID

0.90 → RUN-OFF COEFFICIENT

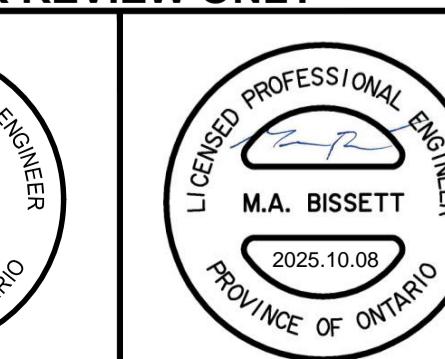
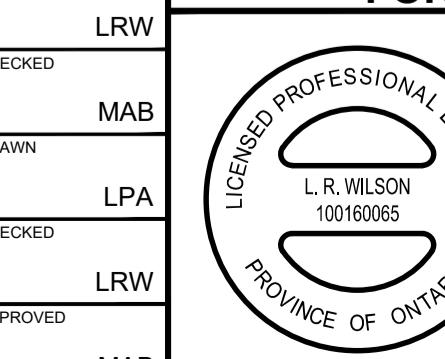
Legend for Storm Drainage Area Boundary:

- *STORM MANHOLE, SEWER & FLOW DIRECTION*
- *EXISTING / PROPOSED CATCHBASIN*
- ◎   *EXISTING / PROPOSED LAWN CATCHBASIN*
- *PODIUM DRAIN*
- *MAJOR SYSTEM FLOW DIRECTION*



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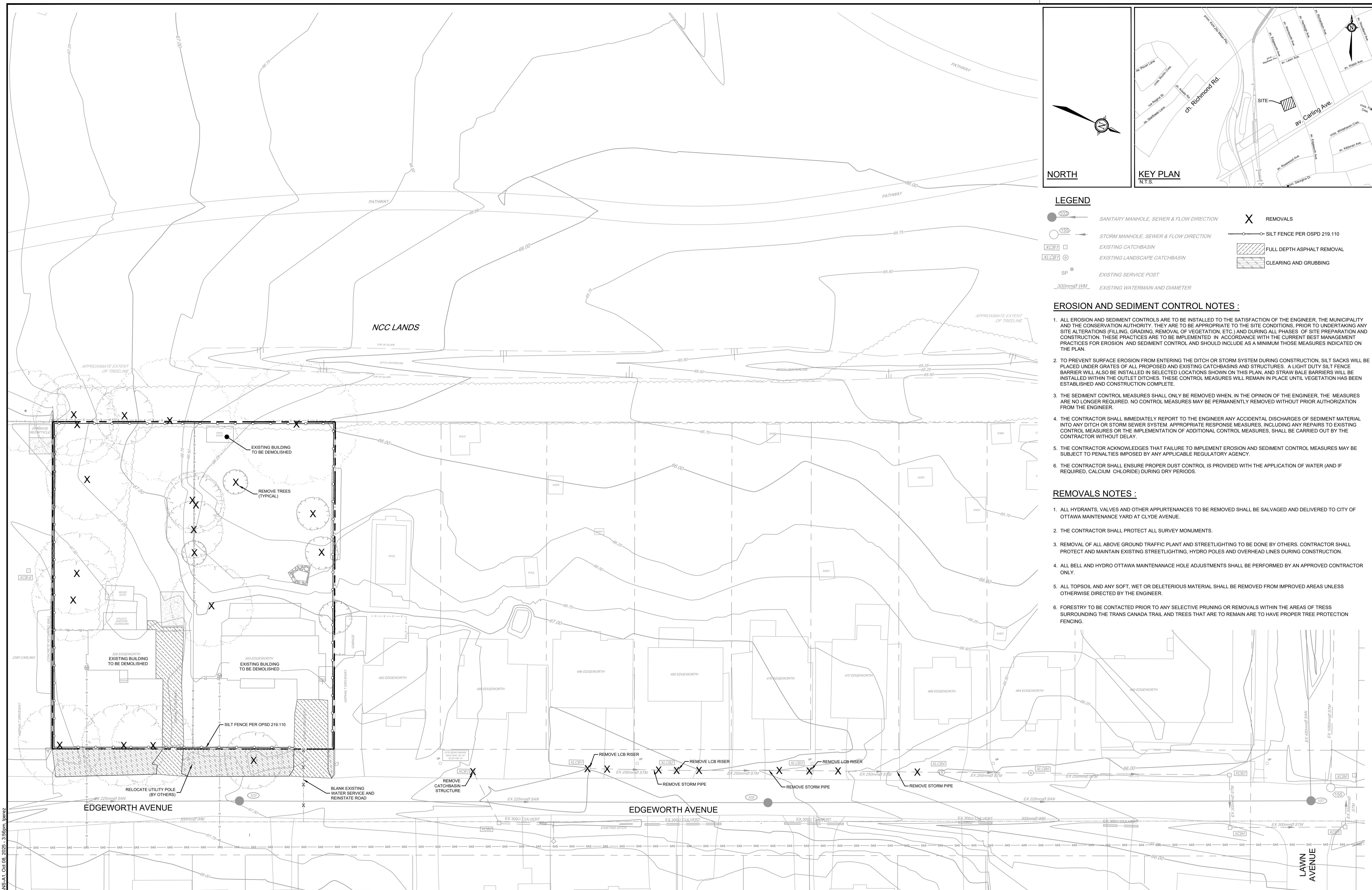
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LOCATION  
CITY OF OTTAWA  
500 & 508 EDGEWORTH AVENUE

DRAWING NAME

# STORM DRAINAGE AREA PLAN



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

No. REVISION DATE BY

SCALE		DESIGN LRW CHECKED MAB DRAWN LPA	FOR REVIEW ONLY
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0 3 6 9 12	CHECKED LRW APPROVED MAB	LICENSED PROFESSIONAL ENGINEER L. R. WILSON 100160065 PROVINCE OF ONTARIO	LICENSED PROFESSIONAL ENGINEER M. A. BISSETT 2025.10.08 PROVINCE OF ONTARIO
1:300		1:300	1:300

No.

REVISION

DATE

BY

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CITY OF OTTAWA  
500 & 508 EDGEWORTH AVENUE  
EXISTING CONDITIONS,  
REMOVALS, EROSION AND  
SEDIMENT CONTROL PLAN

PROJECT No.  
121109  
REV  
REV # 1  
DRAWING No.  
121109-ESC