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PROPOSED 25-STOREY MIXED-USE DEVELOPMENT 116 Beech Street

Assessment of Adequacy of
Public Services Report

**PROPOSED 25-STOREY MIXED-USE DEVELOPMENT
116 BEECH STREET**

**ASSESSMENT OF ADEQUACY OF
PUBLIC SERVICES REPORT**

Prepared by:

NOVATECH

Suite 200, 240 Michael Cowpland Drive
Kanata, Ontario
K2M 1P6

December 17, 2025

Ref: R-2025-116
Novatech File No. 125143

December 17, 2025

Beech Street LP
116 Beech Street
Ottawa, Ontario
K1S 2E1

Attention : Chaxu Baria, Assistant Project Manager

**Re: Assessment of Adequacy of Public Services Report
Proposed 25-Storey, Mixed-Use Development
116 Beech Street, Ottawa, ON
Novatech File No.: 125143**

Enclosed is a copy of the 'Assessment of Adequacy of Public Services Report' for the proposed 25-storey mixed-use development located at 116 Beech Street, in the City of Ottawa. The purpose of this report is to demonstrate that the proposed development can be serviced by the nearby existing municipal infrastructure. This report is being submitted in support of Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBLA) applications.

Please contact the undersigned, should you have any questions or require additional information.

NOVATECH



François Thauvette, P. Eng.
Senior Project Manager

cc: Farbod Azimi (City of Ottawa)
Paul Black (Fotenn)
Ryan Koolwine (Project 1 Studio)

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1.0 INTRODUCTION

Novatech has been retained by Beech Street LP to assess the adequacy of the existing public services related to the proposed re-development of the 116 Beech Street property. The purpose of this report is to demonstrate that the proposed 25-storey development can be serviced by the nearby existing municipal infrastructure. This report is being submitted in support of Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBLA) applications.

1.1 Location and Site Description

The 0.499-hectare site to be re-developed currently consists of an existing low-rise residential building with a surface parking lot and outdoor amenity space. The property occupies the northern portion of the block and is bordered by Beech Street to the north, Loretta Avenue S. to the west, Champagne Avenue S. to the east and existing residential properties to the south. The legal description of the site is designated as Lots 33, 34, 35, 36, 37, 60, 61, 62, 63 and 64, and Part of the Adjacent Lane (As Closed by Judge's Order Inst. No. CR227792), Registered Plan 131037, City of Ottawa.

Figure 1: Aerial View of the Subject Site

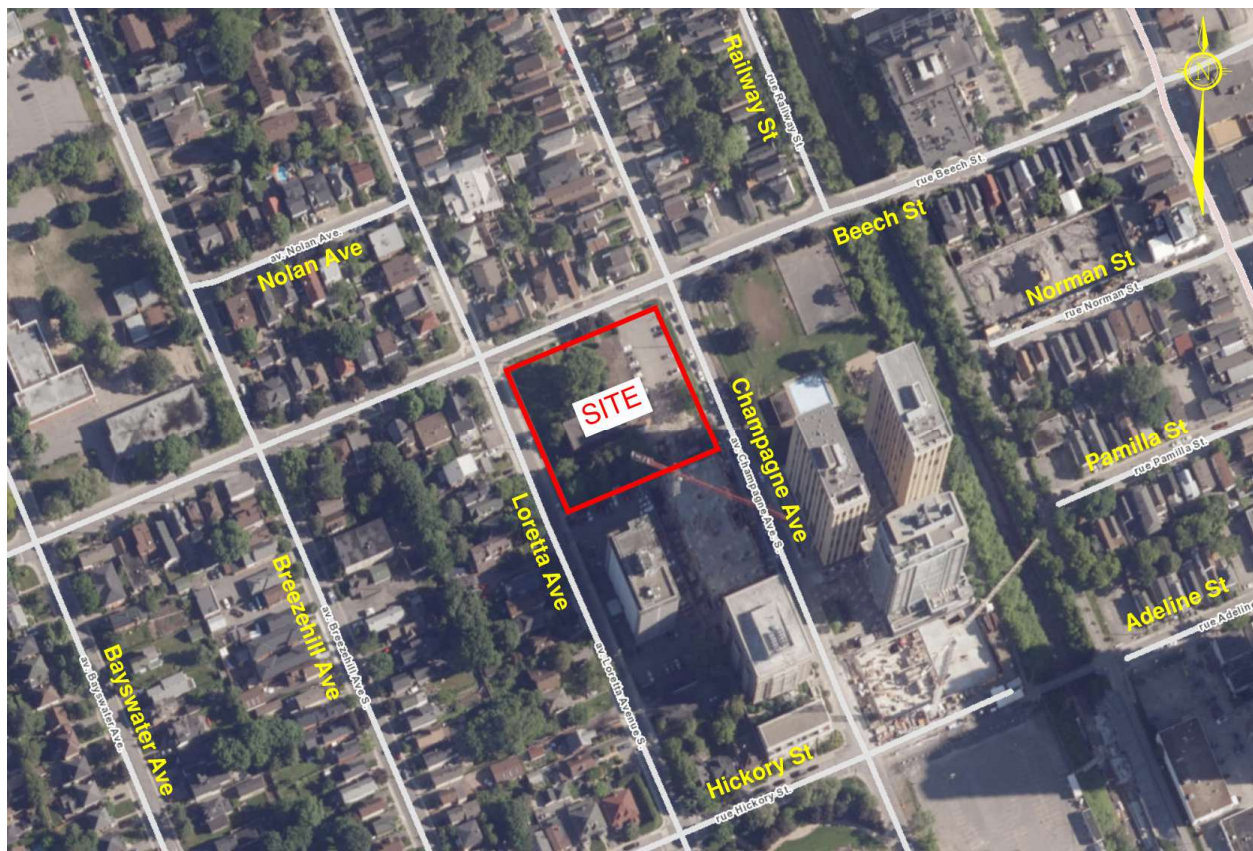


Image Source: geoOttawa (City of Ottawa)

1.2 Pre-Consultation Information

An initial pre-consultation meeting was held with the City of Ottawa on May 12, 2023, at which time the client was advised of the general submission requirements. Subsequent discussions were held with City of Ottawa staff related to site servicing options and sewer capacity constraints. Refer to **Appendix A** for a summary of the correspondence related to the proposed development.

1.3 Proposed Development

The proposed development will consist of a 25-storey mixed-use building with a podium ranging from 4-6 storeys. The preliminary Site Plan includes minimal surface parking (accessible off Loretta Avenue), underground loading and parking (accessible off Champagne Avenue), as well as outdoor amenity space. A dedicated City Parkland block located on the northeast portion of the site will occupy approximately 10% (or 0.0498 ha.) of the total 0.499 ha. Site.

2.0 SITE SERVICING

The objective of this report is to demonstrate that proper sewage outlets (sanitary and storm) as well as a suitable domestic water supply and appropriate fire protection are available for the proposed development. The servicing criteria, the expected sewage flows, and water demands are to conform to the requirements of the City of Ottawa municipal design guidelines for sewer and water distribution systems.

2.1 Sanitary Servicing

There are three distinct existing municipal sanitary sewer systems adjacent to the site. Flows from the 250mm dia. PVC sewer in Loretta Avenue and 300mm dia. PVC sewer in Beech Street ultimately discharge into the 1050mm dia. concrete trunk sewer in Champagne Avenue. It is unclear into which sewer system sewage flows from the existing building are directed.

Under post-development conditions, the proposed development will be serviced by the 300mm dia. sanitary sewer in Beech Street, as connections to the other nearby sanitary sewers are not feasible connection points. New connections to existing sanitary trunk sewers are generally not permitted, and a connection to the sanitary sewer in Loretta Avenue would require crossing the existing 1220mm municipal backbone watermain. A backflow preventor will be required per OBC and Ottawa Sewer Design Guidelines to ensure the proposed building is protected from any potential backflow from the municipal sanitary sewer system. Based on criteria in Section 4 of the City of Ottawa Sewer Design Guidelines, the total theoretical peak sanitary flow from the proposed development will be approximately 7.11 L/s, including infiltration. The City of Ottawa has confirmed that there are no capacity concerns with the proposed peak sanitary flows. Refer to **Table 1** below for a summary of the post-development sanitary sewage flows, and to **Appendix B** for detailed calculations and correspondence with the City of Ottawa.

Table 1: Theoretical Post-Development Sanitary Flows

Proposed Development	Unit Count (1-Bd/2-Bd)	Design Population / Area	Average Flow (L/s) *	Peaking Factor	Sanitary Peak Flow (L/s) *
Residential Units	258/134	643	2.08	3.33	6.94
Commercial Units	-	90 m ²	<0.01	1.5	0.01
Infiltration Allowance	-	0.499 ha	-	-	0.16
Total	392	-	2.08	-	7.11

*Represents rounded values

The existing 300mm dia. PVC sanitary sewer in Beech Street is approximately 2.7m deep, with an invert elevation of 64.00±. The roadway elevation is approximately 66.70± at the anticipated service connection location. Beech Street and subsequently the sanitary sewer within it is quite

Figure 3: Conceptual Water Servicing Layout

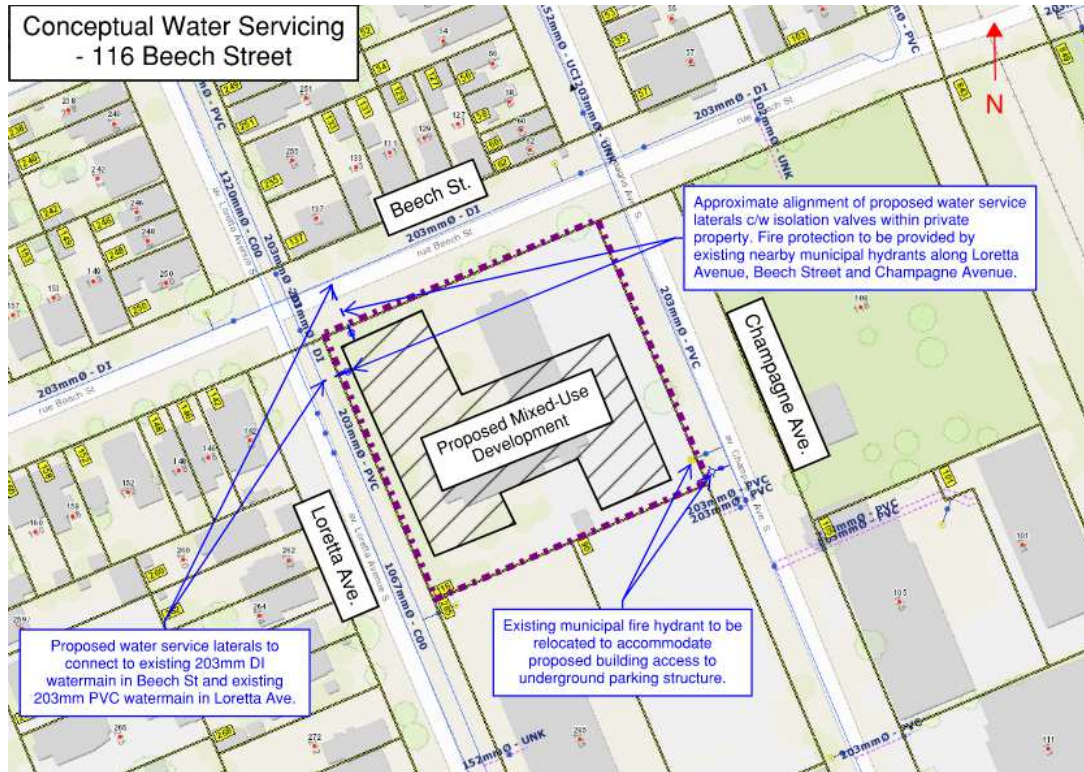


Image Source: geoOttawa (City of Ottawa)

Preliminary water demand and fire flow calculations have been prepared for the proposed development based on criteria in Section 4 of the City of Ottawa Design Guidelines for Water Distribution Systems. The fire flows are calculated using the Fire Underwriters Survey (FUS) method, based on general building assumptions, including building footprint, construction materials and a fully sprinklered building. Refer to **Table 2** below for a summary of the domestic water demands and fire flows and to **Appendix C** for detailed calculations.

Table 2: Theoretical Water Demand and FUS Fire Flows for Proposed Development

Proposed Development	Unit Count (1-Bd/2-Bd)	Design Population/ Area	Avg. Daily Demand (L/s)	Max. Daily Demand (L/s)*	Peak Hour Demand (L/s)*	FUS Fire Flow (L/s)
Residential Units	258/134	643	2.08	5.21	11.46	183
Commercial Units	-	90 m ²	<0.01	<0.01	0.01	
Total	392	-	2.09	5.21	11.47	

*Represents rounded values

The following design criteria were taken from Section 4.2.2 – ‘Watermain Pressure and Demand Objectives’ of the City of Ottawa Design Guidelines for Water Distribution:

- Normal operating pressures are to range between 345 kPa (50 psi) and 483 kPa (70 psi) under Max Day demands
- Minimum system pressures are to be 276 kPa (40 psi) under Peak Hour demands

- Minimum system pressures are to be 140 kPa (20 psi) under Max Day + Fire Flow demands

Table 3 summarizes preliminary hydraulic analysis results based on municipal watermain boundary conditions provided by the City as indicated in the correspondence from the City of Ottawa.

Table 3: Hydraulic Boundary Conditions Provided by the City

Municipal Watermain Boundary Condition	Boundary Condition Head of Water (m)	Normal Operating Pressure Range (psi)	Anticipated WM Pressure (psi)*
Connection #1 to 203mm dia. watermain in Beech Street			
Minimum HGL (Peak Hour Demand)	107.1 m	40 psi (min.)	~ 58 psi
Maximum HGL (Max Day Demand)	114.7 m	50-70 psi	~ 69 psi
HGL Max Day + Fire Flow (183 L/s)	90.1 m	20 psi (min.)	~ 34 psi
Connection #2 to 203mm dia. watermain in Loretta Avenue			
Minimum HGL (Peak Hour Demand)	107.1 m	40 psi (min.)	~ 57 psi
Maximum HGL (Max Day Demand)	114.7 m	50-70 psi	~ 67 psi
HGL Max Day + Fire Flow (183 L/s)	89.5 m	20 psi (min.)	~ 31 psi

*Based on approximate roadway elevations of 68.5m (Connection 1) in Beech Street and 69.4 (Connection 2) in Loretta Avenue. Design pressure = (HGL – watermain elevation) x 1.42197 PSI/m

**A multi-hydrant approach to firefighting will be necessary.

Based on preliminary calculations and correspondence received from the City of Ottawa, it is anticipated that the pressure within the municipal watermain network will be within the normal operating pressure range during the Peak Hour, Max HGL, and Max Day + Fire Flow Conditions. Given the height of the proposed tower, it is anticipated that a booster pump(s) will be required to provide adequate water pressure to the upper floors (details to be determined by the mechanical consultant as part of the detailed design of the building).

A multi-hydrant approach to firefighting will be required to supply the fire flow calculated above. Based on a review of the geoOttawa website, there are several municipal hydrants available within 150m of the subject site. Based on the City of Ottawa Technical Bulletin ISTB-2018-02, Class AA (blue bonnet) hydrants within 75m of the building should provide a capacity 95 L/s each (at a pressure of 20 PSI) while hydrants between 75m and 150m should provide at least 63 L/s (at a pressure of 20 PSI). The combined maximum flow from these hydrants will exceed the Fire

Flow requirement (183 L/s) of the proposed development. This multi-hydrant approach to firefighting is in accordance with the City of Ottawa Technical Bulletin ISTB-2018-02.

Refer to **Appendix C** for preliminary domestic water demand, FUS fire flow calculations and correspondence with the City of Ottawa related to the municipal watermain network and fire flow available for the proposed development. An updated analysis will need to be provided as part of the Site Plan Control application to the City of Ottawa, including a City Parkland block water service design, if required.

2.3 Storm Drainage and Stormwater Management

Storm drainage from the existing site is currently being directed towards the municipal storm sewers adjacent to the site. Storm flows from the 525mm dia. concrete storm sewer in Loretta Avenue and 450mm dia. PVC storm sewer in Beech Street ultimately discharge into the 1050mm dia. concrete storm sewer in Champagne Avenue. The trunk sewer system flows north along Champagne Avenue, west along Gladstone Avenue, and ultimately discharges into the Rideau River, >2km downstream of the subject site.

Under post-development conditions, the 0.499 ha. property will be split into two parcels: the 0.449 ha. subject site and the 0.0498 ha. City Parkland block. Storm flows will include a combination of uncontrolled direct runoff, controlled site flows, as well as controlled flow from the City Parkland block. Refer to **Figure 4** showing the existing storm sewer infrastructure and conceptual servicing layout.

Figure 4: Conceptual Storm Servicing Layout

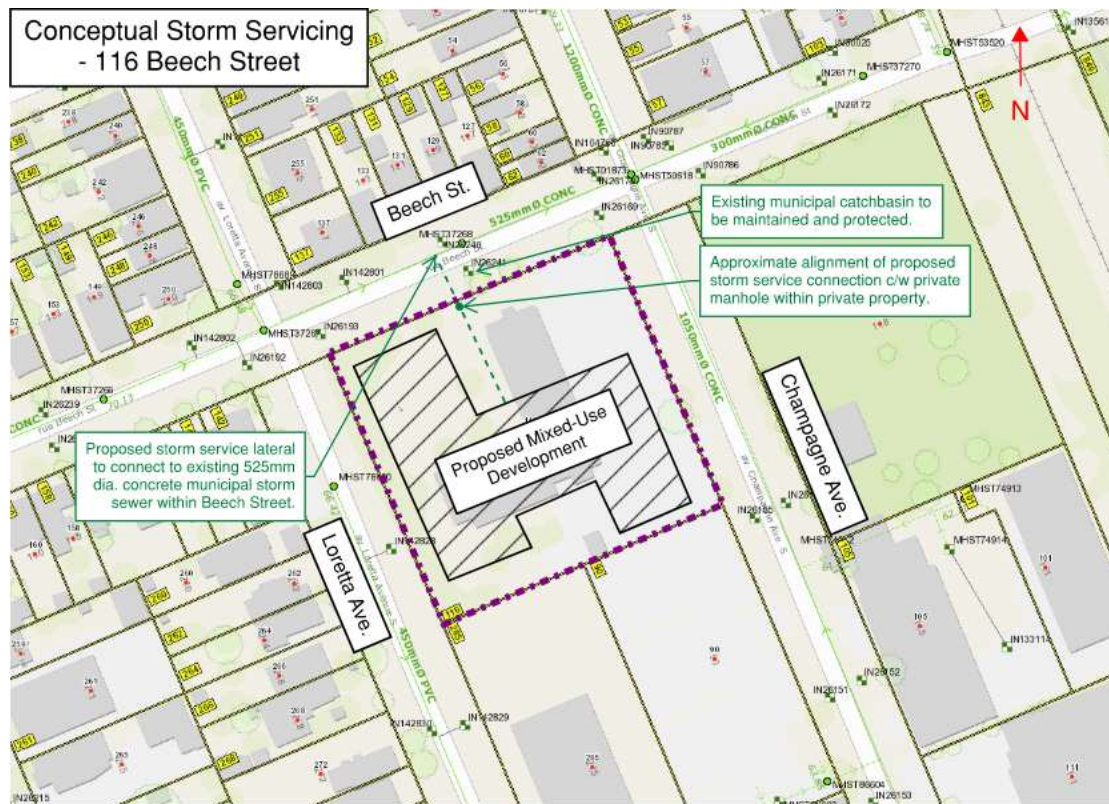


Image Source: geoOttawa (City of Ottawa)

The 525mm dia. storm sewer in Beech Street is approximately 2.5m deep, with an approximate invert elevation of $64.31\pm$. The roadway elevation is approximately $66.80\pm$ at the proposed

service connection location. Beech Street and subsequently the storm sewer within it is quite steep, dropping approximately 5m from Loretta Avenue down to Champagne Avenue. As a result, even a slight shifting of the service lateral can significantly lower the connection elevation and thus the service elevation at the foundation wall. The post-development stormwater flows from the site will likely need to be pumped to the municipal storm sewer; however, this will be confirmed at the detailed design stage. A backflow preventor will be required per OBC and Ottawa Sewer Design Guidelines to ensure the proposed building is protected from any potential backflow from the municipal storm sewer system.

The SWM criteria were provided during a pre-consultation meeting with the City of Ottawa. The allowable release rate from the entire 0.499 ha. property has been calculated using the Rational Method, with a maximum allowable runoff coefficient equivalent to existing conditions, but in no case greater than $C_w=0.50$, a time of concentration of 10 minutes and a 2-year rainfall intensity from City of Ottawa IDF curves. Based on a runoff coefficient ($C_w=0.50$) and a time of concentration of 10 minutes., the allowable release rate for the entire property was calculated using the Rational Method to be approximately 53.2 L/s. Refer to **Appendix D** for preliminary SWM calculations and to **Appendix A** for a copy of the correspondence from the City of Ottawa. **Figure 5** shows the conceptual stormwater management plan and approach to on-site stormwater management for the 0.449 ha. subject site and 0.0498 ha. City Parkland block.

Figure 5: Conceptual Stormwater Management Plan



Image Source: geoOttawa (City of Ottawa)

Subject Site (0.449 ha.)

Based on a weighted runoff coefficient ($C_w=0.50$) and a time of concentration of 10 minutes, the allowable release rate for the 0.449 ha. subject site (excluding the City Parkland block) was calculated to be approximately 47.9 L/s (of the total allowable 53.2 L/s for the entire site). The portion of the total allowable release rate will be allotted to the various catchment areas on site, depending on the relative size and imperviousness as well as the potential storage available

within the sub-catchment areas. For the purpose of this report (and preliminary calculations), the 0.449 ha. site area was divided into the following sub-catchment areas with an estimated allotted 100-year allowable release rate:

- A-1a: Uncontrolled direct runoff to Loretta Ave. (~0.011 ha.) – Allotted release rate = 3.4 L/s to 4.0 L/s
- A-1b: Uncontrolled direct runoff to Beech St. (~0.010 ha.) – Allotted release rate = 1.6 L/s to 2.5 L/s
- A-1c: Uncontrolled direct runoff to Champagne Ave. (~0.024 ha.) – Allotted release rate = 10.6 L/s to 11.5 L/s
- A-2: Controlled Site Flow from Internal SWM Storage (~0.147 ha.) – Allotted release rate = 15.0 L/s
- A-3: Controlled Building Roof Drains (~0.258 ha.) – Allotted release rate = 14.3 L/s to 15.0 L/s

Table 4 compares the post-development flows from the subject site only to both the uncontrolled pre-development flows and to the allowable release rate specified by the City of Ottawa, for the 2-year, 5-year and the 100-year design events.

Table 4: Preliminary Stormwater Flow Comparison Table – Subject Site

Design Event	Drainage Areas							
	Pre-Development Conditions		Post-Development Conditions					
	Uncontrolled Flow (L/s)	Allowable Release Rate (L/s)	A-1a (L/s)	A-1b (L/s)	A-1c (L/s)	A-2 (L/s)	A-3 (L/s)	Total Flow (L/s)*
2-Yr	58.3	47.9	1.3	0.6	4.1	15.0	10.7	31.7
5-Yr	79.1		1.7	0.8	5.5	15.0	11.9	34.9
100-Yr	153.3		3.4	1.6	10.6	15.0	14.3	44.9

*Reduced flow compared to pre-development uncontrolled conditions

It is anticipated that a pump(s), within the internal SWM storage system, as well as the use of control flow roof drains will be required to control flows from catchment areas A-2 and A-3.

Table 5 summarizes the approximate storage volume requirements for the various sub-catchment areas, based on the allotted release rates.

Table 5: Preliminary Stormwater Storage Requirements Table – Subject Site

Design Event	Post-Development Storage Volume Requirements			
	A-1a, A-1b, A-1c Direct Runoff	A-2 Controlled Flows (m ³)	A-3 Controlled Flows (m ³)	Total Site (m ³)
5-Yr	-	~5	~20	~25
100-Yr	-	~44	~95	~139

Represents preliminary calculations only.

Refer to **Appendix D** for preliminary SWM calculations and to **Figure 5** showing the conceptual stormwater management plan. Based on correspondence from the City of Ottawa, on-site quality control measures will not be required.

City Parkland Block (0.0498 hectares)

Based on a weighted runoff coefficient ($C_w=0.50$) and a time of concentration of 10 mins., the allowable release rate for the 0.0498 ha. City Parkland block was calculated to be approximately 5.3 L/s (of the total allowable 53.2 L/s for the entire site). The allowable release rate will have to be allotted to the various catchment areas within the park block, depending on the relative size and imperviousness as well as the potential storage available within the sub-catchment areas. For the purpose of this report (and preliminary calculations), the park block was divided into the following sub-catchment areas with an estimated allotted 100-year allowable release rate:

- P-1: Direct Runoff from City Parkland (~0.08 ha) – Allotted release rate = 1.3 L/s to 1.8 L/s
- P-2: Controlled Flow within City Parkland (~0.042 ha) – Allotted release rate = 3.5 L/s

Table 6 compares the post-development flows from the proposed City Parkland block to the allowable release rate specified by the City of Ottawa, for the 2-year, 5-year, and the 100-year design events.

Table 6: Preliminary Stormwater Flow Comparison Table – City Parkland Block

Design Event	Pre-Dev. Conditions	Post-Development Conditions Drainage Areas P-1 and P-2		
	Allowable Release Rate (L/s)	P-1 Flow (L/s)	P-2 Flow (L/s)	Total Flow (L/s)
2-Yr	5.3	0.5	2.3	2.8
5-Yr		0.6	2.7	3.3
100-Yr		1.3	3.5	4.8

It is anticipated that the use of an inlet control device (ICD) will be required to control flows from catchment area P-1. **Table 7** summarizes the approximate storage volume requirements for the City Parkland block, based on a controlled release rate.

Table 7: Preliminary Stormwater Storage Requirements Table – City Parkland Block

Design Event	Post-Development Storage Volume Requirements	
	P-1 Direct Runoff	P-2 Controlled Flows (m ³)
5-Yr	-	~ 2
100-Yr	-	~ 5

Represents preliminary calculations only.

It is anticipated that the minimal storage requirement could be accommodated on the surface, thus avoiding the need for underground storage. Refer to **Appendix D** for preliminary SWM calculations and to **Figure 5** showing the conceptual stormwater management plan. If the total flows from the 0.449 ha subject site are significantly over-controlled, it may be possible to increase

the allowable release rate for the City Parkland block to eliminate the need for any surface and/or underground storage at this location. This will need to be determined at the detailed design stage. On-site quality control measures will not be required for the City Parkland block.

A complete stormwater management (SWM) analysis of the development will be included as part of the Site Plan Control submission to the City of Ottawa, including both the 0.449 ha subject site and 0.0498 ha City Parkland block.

3.0 CONCLUSION

Based on our analysis of the information available, the existing municipal watermain, sanitary and storm sewers should have adequate capacity to service the proposed development. On-site stormwater management will be implemented to meet the requirements of the City of Ottawa and other authorities having jurisdiction. A complete servicing, grading and SWM design will be included as part of the Site Plan Control submission to the City.

NOVATECH

Prepared by:



Kynan D'sa, B.A.Sc. (Engineering)
CAD Designer

Reviewed by:



François Thauvette, P. Eng.
Senior Project Manager

Appendix A
Project Correspondence

Pre-Application Consultation Meeting Notes

Property Address: 116 Beech Street
PC2023-106
Teams Meeting

Attendees:

Jack Smith, Development Review Planner, (File Lead) – City of Ottawa
Eric Forhan, Development Review Planner – City of Ottawa
Kimberly Baldwin, Parks Planner – City of Ottawa
Randolph Wang, Urban Designer – City of Ottawa
Hayley Murray, Forestry Planner – City of Ottawa

Paul Black, Planner - Fotenn
Ryan Koolwine, Architect – Project1Studio
Bailey Haskins, Architectural Designer – Project1Studio
Tanya Chowieri, Development & Acquisition – Katasa
Chaxu Baria, Assistant Project Manager – Katasa

Regrets:

Mohammad Fawzi, Infrastructure Project Manager – City of Ottawa
Wally Dubyk, Transportation Project Manager – City of Ottawa
Sami Rehman, Environmental Planner – City of Ottawa
Eric Lalonde, Planner – Rideau Valley Conservation Authority

Subject: 116 Beech Street

Meeting notes:

Opening & attendee introduction

- Introduction of meeting attendees.
- The applicant proposes to permit and construct a high-rise building with a 25-storey tower, and a 4 and 6 storey podium. Approximately 361 units are anticipated with three (3) potential retail spaces along Champagne Avenue.
- The proposal will require an OPA and ZBA to permit the sought after use. A Site Plan application will also be required to finalize site design of the proposed development, following the OPA and ZBA.

Preliminary comments and questions from staff and agencies, including follow-up actions:

Planning (Jack Smith)

Context

- The subject property is directly adjacent to low-rise residential uses to the north of Beech Street and west of Loretta Avenue.
- Directly to the east is Ev Tremblay Park.
- To the south are existing mid/high-rise buildings.

Policy Context:

- The subject lands are located within the West Downtown Core Secondary Plan, more specifically the Dow's Lake Station District (Chapter 1 of Secondary Plan)
- The property is designated Hub in the secondary plan (4.1.1)
- An expansion of Ev Tremblay Park is contemplated as per Schedule F
- Overall, staff have some policy concerns as discussed below.

Height:

- Understanding that the property is designated Hub, the Dow's Lake Station District chapter of the Secondary Plan, as a more local and applicable plan to the subject area, provides further site-specific context with regards to development on the site relating to height:
 - Particularly, the Hub within the secondary plan policies indicate that a gradual reduction in height and density from the centre towards the surrounding neighbourhoods will be necessary to provide the desirable transition (Section 4.1.1).
 - Specifically, section 4.1.1 (9) further outlines that mid-rise neighbourhood development up to a height of six storeys, with a built form sympathetic to the surrounding low-profile neighbourhood buildings, may be permitted on the property facing Beech Street between Champagne Avenue and Loretta Avenue. As such, the maximum permitted height on the property determined through the secondary plan process is 6 storeys.
 - The subject property is also directly adjacent to the "Neighbourhood Line" (Section 4.2.5), which requires developments to be sympathetic to the height, massing, scale and architectural rhythm of the adjacent low-rise neighbourhood buildings. The subject property should provide for an appropriate transition in height from the high-rise developments to the south and east, into the low-rise neighbourhoods. Seeking height permissions greater than what is permitted to the south is not an appropriate transition.
- Staff believe that the current concept proposing 25 storeys is a significant departure from these policies, especially considering the lands to the south (90 Champagne) are permitted and currently being built to 14 storeys due to its closer proximity to the transit station. It would contravene the goals of the secondary plan to permit a greater height on the subject property when it has a great interface with the neighbourhood designation.
- Staff are not currently convinced that the current high-rise proposal, especially at the proposed scale, would be appropriate for this site based on policy and context... The redevelopment of this site needs to consider the heights established on the lots directly to the south and align with the transition vision of the Secondary Plan. This transition and proposed height should also take into consideration parkland dedication on the site. As mentioned, the proposed height should provide a clear transition from the sites to the south, which provide greater height requirements.

Parkland & Public Realm:

- Please note that Section 5.1.1 of the Dow's Lake Station District chapter outlines that Ev Tremblay Park will be revitalized and expanded as a public park with extensive programming to serve the existing and the new residents, as well as a heart for the community:

- Section 5.1.3 (2) outlines requirements for Beech Streets public realm, including the requirements for generous pedestrian zones, patios, furnishing, trees, etc.
- Section 5.1.3 (4) outlines that Champagne Ave will be a shared street that prioritizes pedestrians and allow the street to be used as an extension of Ev Tremblay Park when closed to traffic.
- Section 5.2.2 (1) requires the enhancement and expansion of Ev Tremblay Park, including the provision of urban plazas and courtyards in association with major redevelopment.
- Further, Schedule F identifies portions of the subject property as potential park expansion.

Additional Secondary Plan Policy Considerations:

- Section 5.2.3 outlines requirements for retail and residential at the edge, applicable to this development as a mixed-use proposal.
- Section 9.1.1 requires that any ZBL for a mid to high-rise will require Holding provision on the subject property that cannot be removed until execution of the agreement.
- The subject property is located in a Design Priority Area and will be subject to the City's UDRP.

Zoning Comments:

- Currently, the zoning permits a height of 18 metres, and as such, prohibits high-rise buildings on the site. We will need rationale to justify the deviation from the requirements.
- Zoning By-law amendment should be considerate of landscaping requirements, applicable setbacks, lot requirements, parking requirements, and zone the parkland appropriately.

Site Plan

- All Parking should be located underground, to allow for more programmable space and developable footprint at the surface.

Process & Additional Requirements

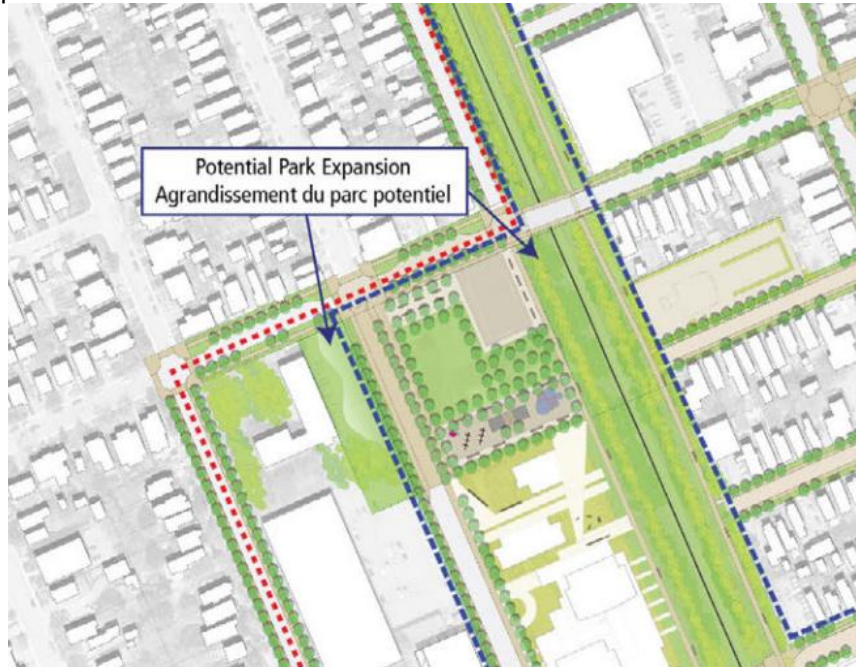
- We will be providing the list of required studies and plans, however new processes for pre-application consultation and application submission may be in place prior to your application being submitted and/or deemed complete to/by City Staff in accordance with Planning Act requirements.
- Planning Rationale is to be prepared in accordance with the Terms of Reference for OPA, ZBA, and SPA applications.
- High Performance Development Standard (HPDS) were passed by Council on April 13, 2022. For Complex Site Plan applications, it is recommended that applicants engage an energy consultant at the same time as the building architectural drawings are being developed. A completed HPDS checklist will be required at submission.
- Section 37 requirements / Community Benefits Charge
 - 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.

Parks (Kim Baldwin)

Secondary Plan Policies

- Schedule I of the Plan (as shown below) specifically identifies a portion of the site as a suitable location for a potential expansion to Ev Tremblay Park, with a woonerf in between the existing and proposed park.



- Please review the policies in “Section 5: Public Realm and Mobility” of the Plan:
 - “Ev Tremblay Park will be revitalized and expanded as a public park with extensive programming to serve the existing and the new residents and as a heart for the community and a centre for activities such as markets, or planned community events”
 - “Champagne Avenue will be a shared street that prioritizes pedestrians and allows for the street to be used as a plaza and an extension of Ev Tremblay Park when closed to traffic for special events”
- As per Section 9.3.1 of the Plan, cash-in-lieu of park land (CILP) funds collected in the District is to be used for the acquisition of new park land and the improvements to the existing parks within the Dow’s Lake Station District.
 - In accordance with this direction, the City would like to purchase ~17% of the owner’s property using CILP funds.

Preston-Carling District Public Realm and Mobility Study

- A supportive document to the Secondary Plan, this study provides further direction for public realm improvements in the Dow’s Lake Station district (formerly referred to as the Preston-Carling District)

Official Plan Policies

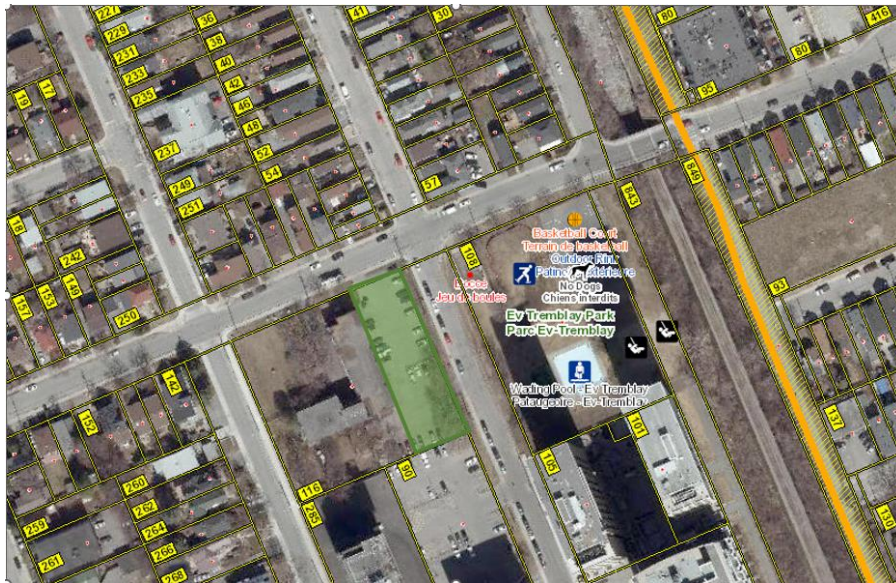
- As per Section 4.4.1 of the Official Plan,
 - The site, being over 4000 sq metres, meets the criteria for requesting parkland conveyance over cash-in-lieu of parkland.
 - Parkland conveyance is to:
 - Be free of encumbrances above and below ground
 - Be a usable shape, topography and size that reflects its intended use
 - Meet applicable provincial soil regulations; and
 - Meet the minimum standards for drainage, grading and general condition.

Parkland Dedication

- The amount of parkland dedication required is calculated as per the Parkland Dedication By-law No.2022-280, as amended
 - Note: By-law 2022-280 was amended by the Planning Act on November 28 2022. For residential uses, the maximum amount of land that can be conveyed or paid in lieu is now capped at 10% of the land or its value for sites under 5 hectares

Preliminary Criteria for Parkland

- Approximately 20 m (Beech frontage) x 69 m (Champagne frontage), rectangular in shape.
- As shown in green below, generally the area of the existing parking lot.



- If a park is provided, please review how the proposed development and window openings will comply with the Ontario Building Code, as measured from the building to the future park lot line.

Parks Summary

- As outlined above, and subject to further discussion, PFP requests approximately 27% of the owner's land to be conveyed to the City for parkland purposes:
 - ~10% park land dedication (as per Parkland By-law)

- ~17% acquisition with CILP funds (as the West Downtown Core Secondary Plan: Dow's Lake Station District).
- If/when they are ready to do so, the applicant/owner is welcomed to contact me to set up a meeting to further discuss the potential land acquisition.

Urban Design (Randolph Wang)

- The site is in a Design Priority Area and the design is subject to UDRP review. Under the new development review timeline (yet to be approved), UDRP review will occur in the pre-consultation stage. I do not recommend bringing the current design to the UDRP as it is premature. The applicant should work with the City to confirm parkland dedication, and explore a number of site plan and massing alternatives, present these alternatives to the City at a second pre-consultation. The appropriate time to visit the UDRP can be determined by then.
- A Urban Design Brief is required. The City is currently updating the Terms of Reference, which is expected to be adopted by Council soon. A customized Terms of Reference will be provided at the second pre-consultation meeting. It is important, at this stage of the process, to explore site plan and massing alternatives before locking into a particular preferred scheme. When exploring alternative options, it is important to always include an option of "as of right" to offer as a baseline for comparison. Wind and shadow studies are required, and will contribute to the evaluation of the various options explored.
- It is also important to note that the Secondary Plan requires the completion of a Public Realm Network Study. Policy 9.1.2 of the Secondary Plan states that the Study should:
 - 1) Place the development application within the context of the Public Realm and Mobility Study and identify the existing and planned public realm network, including the publicly accessible space that may be in public or private ownership.
 - 2) Clarify how the application implements the policies in Section 5 of this chapter and strategies and guidelines outlined in the Public Realm and Mobility Study.
 - 3) Identify the location and design of parks and public plazas, including public land, publicly accessible private land, cash-in-lieu land or some combination.
 - 4) Identify how the development will be responsible for but not limited to the following improvements within and adjacent to the public right of ways: new sidewalks and special paving, street trees and understory plantings, pedestrian level lighting, street furniture and landscaping
- With respect to the conceptual design presented, The architectural merits, particularly with respect to the articulation of the podium, are appreciated. I also appreciate the intent to locate the tower away from the low-rise area. However, the flip side of this move is, arguably, Ev Tremblay Park will be subject to more shadow and potentially impacts of stronger winds. The proposed tower at the height of 25 storeys, apparently goes against the intent of the Secondary Plan. Overall, despite the considerable architectural merits, the conceptual design does not meet with the intent and policies of the Secondary Plan, both respect to built form design and public realm. It does not support the vision of the Secondary Plan.

Forestry (Hayley Murray on behalf of Mark Richardson)

Project Comments

- The underground parking garage is expected to have significant impact to the existing tree cover on site. An effort should be made to retain trees where feasible. In particular, on the southern boundary of the property there are existing mature trees. Assuming these trees are in good condition and the parking garage can be designed to allow for tree retention, that would be the ideal scenario.
- The City is working towards 40% canopy cover target. Preserving mature trees on site will contribute to this goal and help bridge the transition as the newly planted trees establish on site.
- We expect a strong landscape plan with space for tree planting and adequate soils volumes provided for tree growth.

TCR Requirements

- 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
 - Please identify trees by ownership – private onsite, private on adjoining site, city owned, boundary (trees on a property line)
- If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
- 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
- The location of tree protection fencing must be shown on the plan
- 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.
- For more information on the process or help with tree retention options, contact Mark Richardson (mark.richardson@ottawa.ca) or on [City of Ottawa](#)

LP Tree Planting Requirements

Minimum Setbacks

- Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.
- Maintain 2.5m from curb
- Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
- 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.**

Tree Specifications

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- Maximize the use of large deciduous species wherever possible to maximize future canopy coverage

- 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).
- Plant native trees whenever possible
- No root barriers, dead-man anchor systems, or planters are permitted.
- No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

Hard Surface Planting

- Curb style planter is highly recommended.
- No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
- Trees are to be planted at grade.

Soil Volume

- 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

- Please follow the City’s 2017 Tree Planting in Sensitive Marine Clay guidelines

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.
- At a site level, efforts shall be made to provide as much canopy cover as possible, through tree planting and tree retention, with an aim of 40% canopy cover at 40 years, as appropriate. Indicate on the plan the projected future canopy cover at 40 years for the site.

Transportation (Wally Dubyk)

- Both Beech Street and Loretta Avenue are classified as Local Roads. There are no additional protected ROW limits identified in the OP.
- The Screening Form has indicated that both the Trip Generation and Location Trigger have been met. Please proceed with the next TIA Step 2 – Scoping Report.

- A 3.0 metres x 3.0 metres sight triangle would be required at the intersection of Beech Street and Loretta Avenue based on Schedule C16 of the Official Plan. The sight triangle area is to be conveyed to the city and is to be shown on all drawings. The sight triangle dimensions are to be measured from the ROW protected limits.
- All underground and above ground building footprints and permanent walls need to be shown on the plan to confirm that any permanent structure does not extend either above or below into the sight triangles and/or future road widening protection limits.
- Permanent structures such as curbing, stairs, retaining walls, and underground parking foundation also bicycle parking racks are not to extend into the City's right-of-way limits.
- The consultant should review the sight distance to the accesses and any obstructions that may hinder the view of the driver.
- The Owner acknowledges and agrees that all private accesses to Roads shall comply with the City's Private Approach By-Law being By-Law No. 2003-447 as amended <https://ottawa.ca/en/living-ottawa/laws-licences-and-permits/laws/law-z/private-approach-law-no-2003-447> or as approved through the Site Plan control process.
- The concrete sidewalks should be 2.0 metres in width and be continuous and depressed through the proposed accesses.
- The closure of an existing private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards.
- No private approach shall be constructed within 0.3 metres of any adjacent property measured at the highway line, and at the curb line or roadway edge.
- The proponent is to provide an access grade that does not exceed 2% within the private property for a minimum distance of 6.0 metres from the ROW limits. This is a critical safe distance to allow a driver to stop at the top of the ramp and have a good sight angle of pedestrians. If ramp exceeds 6% grade, a subsurface melting element will be required.
- The Owner shall be required to enter into maintenance and liability agreement for all pavers, plant and landscaping material placed in the City right-of-way and the Owner shall assume all maintenance and replacement responsibilities in perpetuity.
- Bicycle parking spaces are required as per Section 111 of the Ottawa Comprehensive Zoning By-law. Bicycle parking spaces should be in safe, secure places near main entrances and preferably protected from the weather.

Infrastructure Engineering (Mohammad Fawzi)

Available Infrastructure (Preliminary comments subject to change due to on-site Parkland Dedication):

- Beech Street:
 - Sanitary: 300mm PVC (Install 1992)

- Storm: 525mm Conc (Install 1992)
- Water: 203mm DI (Install 1994)
- Loretta Avenue S:
 - Sanitary: 250mm PVC (Install 1989)
 - Water: 200mm PVC (Install 2017)
 - *Water: 1067mm COO (Install 1961)
 - Storm: 450mm PVC (Install 2018)
 - Sanitary: 250mm PVC (Install 2018)
- Champagne Avenue:
 - Water: 200mm PVC (Install 2004)
 - *Storm: 1050mm CONC (Install 1967)
 - *Sanitary: 1050mm Conc (Install 1965)
- *Connection to backbone watermains and trunk sewers are not permissible.

Water Boundary Conditions:

- Will be provided at request of consultant. Requests must include the location of the service and the expected loads required by the proposed development. Please provide the following and submit Fire Flow Calculation Sheet per FUS method with the request:
 - Location of service
 - Type of development and amount of required fire flow (per FUS method – include FUS calculation sheet with request)
 - Average Daily Demand (l/s)
 - Maximum Hourly Demand (l/s)
 - Maximum Daily Demand (l/s)
 - Water Supply Redundancy – Fire Flow: Applicant to ensure that a second service with an inline valve chamber be provided where the average daily demand exceeds 50 m³ / day (0.5787 l/s per day)
- Water services larger than 19 mm require a Water Data Card. Please complete card and submit.

Stormwater Management (Quantity Control):

- Coefficient (C) of runoff determined **as per existing conditions** but in no case more than 0.5.
- TC = To be calculated, minimum 10 minutes
- Any storm events greater than 2 year, up to 100 year, and including 100-year storm event must be detained on site.
- Foundation drains are to be independently connected to sewer main unless being pumped with appropriate back up power, sufficient sized pump and back flow prevention.
- Roof drains are to be connected downstream of any incorporated ICD within the SWM system.

Stormwater Management (Quality Control):

- None required.

Noise Study:

- Noise study required – due to proximity of Trillium Rail Corridor.

Phase I and Phase II ESA:

- Phase I ESA is required; Phase II ESA may be required depending on the results of the Phase I ESA. Phase I ESA must include an EcoLog ERIS Report.
- Phase I ESA and Phase II ESAs must conform to clause 4.8.4 of the Official Plan that requires that development applications conform to Ontario Regulation 153/04.

Required Studies

- Stormwater Management Report
- Site Servicing Study
- Geotechnical Study
- Phase I ESA
- Phase II ESA (depends on outcome of Phase I)
- Noise Study

Required Plans

- Site Servicing Plan
- Grade Control and Drainage Plan
- Erosion and Sediment Control Plan (Can be combined with Grading Plan)
- Existing Conditions and Removals Plan
- Pre and Post Development Drainage Plans
- Roof Drainage Plan
- Watermain Protection Plan*

*Depending on the subsurface conditions (such as bedrock) and location of proposed service laterals, a watermain protection plan may be required due to the existing backbone watermain on Loretta Avenue.

Snow Storage:

- Any portion of the subject property which is intended to be used for permanent or temporary snow storage shall be as shown on the approved site plan and grading plan. Snow storage shall not interfere with approved grading and drainage patterns or servicing. Snow storage areas shall be setback from the property lines, foundations, fencing or landscaping a minimum of 1.5m. Snow storage areas shall not occupy driveways, aisles, required parking spaces or any portion of a road allowance. If snow is to be removed from the site please indicate this on the plan(s).

Exterior Site Lighting:

- Any proposed light fixtures (both pole-mounted and wall mounted) must be part of the approved Site Plan. All external light fixtures must meet the criteria for Full Cut-off Classification as recognized by the Illuminating Engineering Society of North America (IESNA or IES), and must result in minimal light spillage onto adjacent properties (as a guideline, 0.5 fc is normally the maximum allowable spillage). In order to satisfy these criteria, the please provide the City with a Site Lighting Plan, and Certification (Statement) Letter from an acceptable professional engineer stating that the design is compliant.

Relevant information

General:

- If there are any utilities being installed parallel within the existing Right of Way or a road modification within the existing Right of Way, or a shoring system with tie backs encroaching the ROW then a Municipal Consent Circulation would be required. The installation of any structure, structure footing, geo-membrane or perforated pipe encroaching into the existing ROW is not permitted without a separate Municipal Consent Approval.
- It is the sole responsibility of the consultant to investigate the location of existing underground utilities in the proposed servicing area and submit a request for locates to avoid conflict(s). The location of existing utilities and services shall be documented on an **Existing Conditions Plan**.
- Any easements on the subject site shall be identified and respected by any development proposal and shall adhere to the conditions identified in the easement agreement. A **legal survey plan** shall be provided, and all easements shall be shown on the engineering plans.
- **Concern** about Sanitary sewer capacity, please provide the new Sanitary sewer discharge and we confirm if sanitary sewer main has the capacity. Also provide the size proposed sanitary service.
- A deep excavation and dewatering operations have the potential to cause damages to the neighboring adjacent buildings/ City infrastructure. Document that construction activities (excavation, dewatering, vibrations associated with construction, etc.) will not have an impact on any adjacent buildings and infrastructure.
- All underground and above ground building footprints and permanent walls need to be shown on the plans to confirm that any permanent structure does not extend either above or below into the existing property lines and sight triangles.

1. The Servicing Study Guidelines for Development Applications are available at the following address: <https://ottawa.ca/en/city-hall/planning-and-development/information-developers/development->

[application-review-process/development-application-submission/guide-preparing-studies-and-plans#servicing-study-guidelines-development-applications.](#)

2. Servicing and site works shall be in accordance with the following documents:
- ⇒ Ottawa Sewer Design Guidelines (October 2012)
 - ⇒ Ottawa Design Guidelines – Water Distribution (2010)
 - ⇒ Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
 - ⇒ City of Ottawa Slope Stability Guidelines for Development Applications (revised 2012)
 - ⇒ City of Ottawa Environmental Noise Control Guidelines (January 2016)
 - ⇒ City of Ottawa Park and Pathway Development Manual (2012)
 - ⇒ City of Ottawa Accessibility Design Standards (2012)
 - ⇒ Ottawa Standard Tender Documents (latest version)
 - ⇒ Ontario Provincial Standards for Roads & Public Works (2013)

3. Record drawings and utility plans are also available for purchase from the City (Contact the City's Information Centre by email at InformationCentre@ottawa.ca or by phone at (613) 580-2424 x.44455).

4. Any proposed work in utility easements requires written consent of easement owner. Please note that these comments are considered preliminary based on the information available to date and therefore maybe amended as additional details become available and presented to the City. It is the responsibility of the applicant to verify the above information. The applicant may contact me for follow-up questions related to engineering/infrastructure prior to submission of an application if necessary.

Environmental (Sami Rehman)

- Applicant to review and incorporate the design elements from the City's Bird Safe Design Guidelines into their design for any proposal greater than 4-storeys, at site plan control.
- [Bird-Safe Design Guidelines | City of Ottawa](#)

City Surveyor

- The determination of property boundaries, minimum setbacks and other regulatory constraints are a critical component of development. An Ontario Land Surveyor (O.L.S.) needs to be consulted at the outset of a project to ensure properties are properly defined and can be used as the geospatial framework for the development.
- Topographic details may also be required for a project and should be either carried out by the O.L.S. that has provided the Legal Survey or done in consultation with the O.L.S. to ensure that the project is integrated to the appropriate control network.
- Questions regarding the above requirements can be directed to the City's Surveyor, Bill Harper, at Bill.Harper@ottawa.ca

Waste Services

- New multi-unit residential development, defined as containing six (6) or more units, intending to receive City waste collection services will be required, as of June 1, 2022, to participate in the

City's Green Bin program in accordance with Council's approval of the [multi-residential waste diversion strategy](#). The development must include adequate facilities for the proper storage of allocated garbage, recycling, and green bin containers and such facilities built in accordance with the approved site design. Questions regarding this change and requirements can be directed to Andre.Laplante@ottawa.ca.

Rideau Valley Conservation Authority (Eric Lalande)

- The RVCA has no concerns or comments related to the project.

Submission requirements and fees

- Outline the submission requirements and fees.
- Additional information regarding fees related to planning applications can be found [here](#).
- Plans are to be standard A1 size (594 mm x 841 mm) or Arch D size (609.6 mm x 914.4 mm) sheets, dimensioned in metric and utilizing an appropriate Metric scale (1:200, 1:250, 1:300, 1:400 or 1:500).
- All PDF submitted documents are to be unlocked, flattened and not saved as a portfolio file.

Next steps

- Please review the attached required list of plans and studies.
- It is anticipated that, as a result of the More Homes for Everyone Act, 2022, for applications for site plan approval, new processes in respect of pre-application consultation and application submission may be in place prior to your application being submitted and/or deemed complete to/by City Staff in accordance with Planning Act requirements.
- The new processes are anticipated to require a multiple phase pre-application consultation approach before an application will be deemed complete. Applicants who have not filed a complete application by the effective date may be required to undertake further pre-application consultation(s) consistent with the provincial changes. The by laws to be amended include By-law 2009-320, the Pre-Consultation By-law, By-law 2022-239, the planning fees by-law and By-law 2022-254, the Information and Materials for Planning Application By-law.
- City Staff strongly recommend the applicant resolve outstanding matters and send revised concepts to Staff prior to the submission of the applications for Official Plan Amendment, or Zoning By-Law Amendment.
- City Staff encourage the applicant to discuss the proposal with the Ward Councillor, community groups and neighbours.
- Subject to the above, these pre-con comments are only valid for one year.

APPENDIX B

Preliminary Sanitary Sewage Calculations and E-mail Correspondence from the City of Ottawa

116 Beech St - 25-Storey Tower and Podium
POST-DEVELOPMENT SANITARY FLOWS

Residential Flows	Post-Development
Number of 1-Bedroom Units & Studio	258
Persons per 1-Bedroom Units	1.4
Number of 2-Bedroom Units	134
Persons per 2-Bedroom Unit	2.1
Total Number of Units	392
Design Population	643
Average Daily Flow per Resident (280 L/c/day)	2.08
Peak Factor (Harmon Formula)	3.33
Peak Residential Flow	6.94 L/s
Commercial Flows	
Ground Floor Area	90 m ²
Average Commercial Sewage Flow (2.8 L/m²/day)	0.003
Peaking Factor	1.5
Peak Commercial Flows	0.004 L/s
Extraneous Flow	
Site Area	0.499 ha
Infiltration Allowance	0.33 L/s/ha
Peak Extraneous Flow	0.16 L/s
Total Peak Sanitary Flow	7.11 L/s

Kynan Dsa

From: Azimi, Farbod <farbod.azimi@ottawa.ca>
Sent: Wednesday, December 10, 2025 12:13 PM
To: Francois Thauvette
Cc: Brendan Nichols; Kynan Dsa; Fawzi, Mohammed; Wu, John; Rohan, Fayaz; Bourke, Simone
Subject: RE: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)

Good day, Francois,

Regarding the **sanitary sewer connection**, the City's preferred option is to connect to the existing 300 mm PVC municipal sanitary sewer on **Beech Street**. As you correctly noted, the other nearby sanitary sewers on Loretta Avenue and Champagne Avenue are not feasible connection points. Connections to the existing 1050 mm concrete municipal sanitary trunk sewer on Champagne Avenue are generally not permitted unless specifically authorized by Asset Management. In addition, connecting to the 250 mm PVC municipal sanitary sewer partway down Loretta Avenue would require crossing the existing 1220 mm municipal watermain, which may trigger requirements for vibration and settlement monitoring on the backbone watermain, as well as a certificate of liability insurance.

Based on the preliminary calculations you provided—indicating an anticipated peak sanitary flow of approximately 7.1 L/s and the preferred connection location on Beech Street—the City's Asset Management team has confirmed that there are no capacity concerns with the proposed peak flows.

Regarding the **watermain boundary conditions**, we are still awaiting a response from the Infrastructure & Water Services Department concerning the two (2) anticipated water service connections to the existing 203 mm DI watermains on **Beech Street and Loretta Avenue**, based on the domestic and fire demand information you provided. We will provide an update as soon as the boundary conditions are received.

Kind regards,

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

From: Francois Thauvette <f.thauvette@novatech-eng.com>
Sent: Wednesday, December 10, 2025 10:53 AM
To: Azimi, Farbod <farbod.azimi@ottawa.ca>
Cc: Brendan Nichols <b.nichols@novatech-eng.com>; k.dsa <k.dsa@novatech-eng.com>; Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Subject: RE: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)
Importance: High

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Hi Farbod,

I am just following up on the 2 e-mails we sent to the City related to the proposed redevelopment of the 116 Beech Street property. Could you please provide an update on the following items:

- Request for municipal watermain boundary conditions
- Confirmation of preferred sanitary service connection location and confirming if there are any sewer capacity concerns in this area

We require responses to these inquiries ASAP as we need this information to finalize our Assessment of Adequacy of Public Services Report, which the client wants submitted within the next 1.5 weeks, prior to the Holidays.

Regards,

François Thauvette, P. Eng., Sr. Project Manager | Land Development & Public-Sector Engineering

NOVATECH

Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | T: 613.254.9643 Ext: 219 | C: 613.276.0310

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From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>

Sent: Friday, November 28, 2025 10:10 AM

To: Francois Thauvette <f.thauvette@novatech-eng.com>; Azimi, Farbod <farbod.azimi@ottawa.ca>

Cc: Brendan Nichols <b.nichols@novatech-eng.com>; Kynan Dsa <k.dsa@novatech-eng.com>

Subject: RE: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)

Hi Francois,

My colleague Farbod Azimi (cc'd) has been assigned to this file. The boundary conditions have been forwarded to him.

[@Azimi, Farbod](#) – please also refer to the emails below. Novatech is looking to confirm if there are any sanitary capacity concerns.

Thank you.

Best Regards,

Mohammed Fawzi, P.Eng.

Senior Project Manager (A), Infrastructure Projects
Development Review – West Branch

Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West | 110 Avenue Laurier Ouest
Ottawa, ON K1P 1J1
613.580.2424 ext./poste 70120, Mohammed.Fawzi@ottawa.ca

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

From: Fawzi, Mohammed
Sent: November 28, 2025 9:03 AM
To: Francois Thauvette <f.thauvette@novatech-eng.com>
Cc: Brendan Nichols <b.nichols@novatech-eng.com>; k.dsa <k.dsa@novatech-eng.com>
Subject: RE: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)

Hi Francois,

Thank you for your email and as well for your request for boundary conditions. I am looking to confirm who will be handling this file since I am no longer in the Central group and have moved to the West group.

I'll be in touch soon.

Best Regards,

Mohammed Fawzi, P.Eng.

Senior Project Manager (A), Infrastructure Projects
Development Review – West Branch

Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West | 110 Avenue Laurier Ouest
Ottawa, ON K1P 1J1
613.580.2424 ext./poste 70120, Mohammed.Fawzi@ottawa.ca

From: Francois Thauvette <f.thauvette@novatech-eng.com>
Sent: November 28, 2025 8:51 AM
To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>
Cc: Brendan Nichols <b.nichols@novatech-eng.com>; k.dsa <k.dsa@novatech-eng.com>
Subject: FW: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)

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Hi Mohammed,

We are sending this e-mail to provide the City with the anticipated peak sanitary flows associated with the proposed re-development of the 116 Beech Street property (as requested in the City's pre-consultation meeting minutes). Please see e-mail below and attachments for further details.

Please review and advise if there are any capacity concerns in this part of the City and confirm if we can make a connection to the municipal sanitary sewer in Beech Street.

Regards,

François Thauvette, P. Eng., Sr. Project Manager | Land Development & Public-Sector Engineering

NOVATECH

Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | T: 613.254.9643 Ext: 219 | C: 613.276.0310

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From: Brendan Nichols <b.nichols@novatech-eng.com>

Sent: Thursday, November 27, 2025 3:25 PM

To: Francois Thauvette <f.thauvette@novatech-eng.com>

Subject: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)

Hi François,

We are sending this e-mail with the anticipated peak sanitary flows to obtain feedback on the capacity of the nearby sanitary sewer systems and to discuss the proposed sanitary servicing configuration in support of our ZBLA application. The proposed re-development of 116 Beech Street will seek to demolish the existing building, followed by the construction of a 25-storey tower with a podium ranging from 4-6 stories containing a commercial unit at grade with residential units above. Parking will mainly be provided within an underground parking structure, with a few parking spots at grade.

Our preference would be to connect to the 300mm dia. PVC municipal sanitary sewer flowing east in Beech Street assuming there is adequate capacity. This sewer discharges into the 1050mm dia. municipal conc. sanitary trunk sewer flowing north in Champagne Avenue. Based on preliminary calculations, the anticipated peak sanitary flow for the proposed development would be approximately **~7.1 L/s**. Refer to the attached **Sanitary Flows calculation sheet** for details.

We also looked at alternative connections to the other nearby sanitary sewers in Loretta Avenue and Champagne Avenue; however, connections to these sewers may not be possible for the reasons described below:

There is an existing 250mm dia. municipal PVC sanitary sewer partway down Loretta Avenue adjacent to the proposed development that direct flows south (as shown on geoOttawa), however, based on a review of the City as-built plan and profile drawings, we will be unable to connect to this sewer due to crossing constraints related to the existing 1220mm dia. municipal (feeder) watermain.

There is also an existing 1050mm dia. municipal Conc. sanitary trunk sewer in Champagne Avenue that runs adjacent to the proposed development that flows north (as shown on geoOttawa), however the City typically doesn't allow connections to trunk sewers if a local sewer is available.

Thank you,

Brendan Nichols, CAD Technologist

NOVATECH

Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6

Tel: 613.254.9643

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APPENDIX C

Preliminary Water Demands, FUS Calculations, Watermain Boundary Conditions and E-mail Correspondence from the City of Ottawa

FUS - Fire Flow Calculations



Engineers, Planners & Landscape Architects

Novatech Project #: 125143
 Project Name: 116 Beech Street
 Date: 11/27/2025
 Input By: B. Nichols
 Reviewed By: F. Thauvette
 Drawing Reference:

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

Building Description: 25-Storey building with varying height podiums
 Type II - Non-combustible construction

Step		Choose		Value Used	Total Fire Flow
					5%
Base Fire Flow					
1	Construction Material C	Type V - Wood frame		1.5	0.8
		Type IV - Mass Timber		Varies	
		Type III - Ordinary construction		1	
		Type II - Non-combustible construction		Yes 0.8	
		Type I - Fire resistive construction (2 hrs)		0.6	
2	Floor Area A	Podium Level Footprint (m ²)		2494	11,644
		Total Floors/Storeys (Podium)		6	
		Tower Footprint (m ²)		834	
		Total Floors/Storeys (Tower)		19	
		Protected Openings (1 hr)		16.3	
				11,644	
	F	Base fire flow without reductions $F = 220 C (A)^{0.5}$			19,000
Reductions or Surcharges					
3	(1)	Occupancy hazard reduction or surcharge		FUS Table 3	Reduction/Surcharge
		Non-combustible			-25%
		Limited combustible		Yes	-15%
		Combustible			0%
		Free burning			15%
Rapid burning			25%		
4	(2)	Sprinkler Reduction		FUS Table 4	Reduction
		Adequately Designed System (NFPA 13)		Yes	-30%
		Standard Water Supply		Yes	-10%
		Fully Supervised System		Yes	-10%
		Cumulative Sub-Total			-50%
Area of Sprinklered Coverage (m²)		30810	100%		
Cumulative Total			-50%		
5	(3)	Exposure Surcharge per		FUS Table 6	Surcharge
		North Side		20.1 - 30 m	4%
		East Side		>30m	0%
		South Side		3.1 - 10 m	4%
		West Side		20.1 - 30 m	10%
Cumulative Total			18%		
Results					
6	(1) + (2) + (3)	Total Required Fire Flow, rounded to nearest 1000L/min		L/min	11,000
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s
				or	USGPM

Conceptual Water Servicing - 116 Beech St



City Fire Hydrant ID:
366028H018
approximately 48m
away from proposed
building

City Fire Hydrant ID:
366028H034
approximately 101m
away from proposed
building

City Fire Hydrant ID:
366028H096
approximately 43m
away from proposed
building

Proposed twin water
service connections to
203mm dia. DI municipal
watermains.

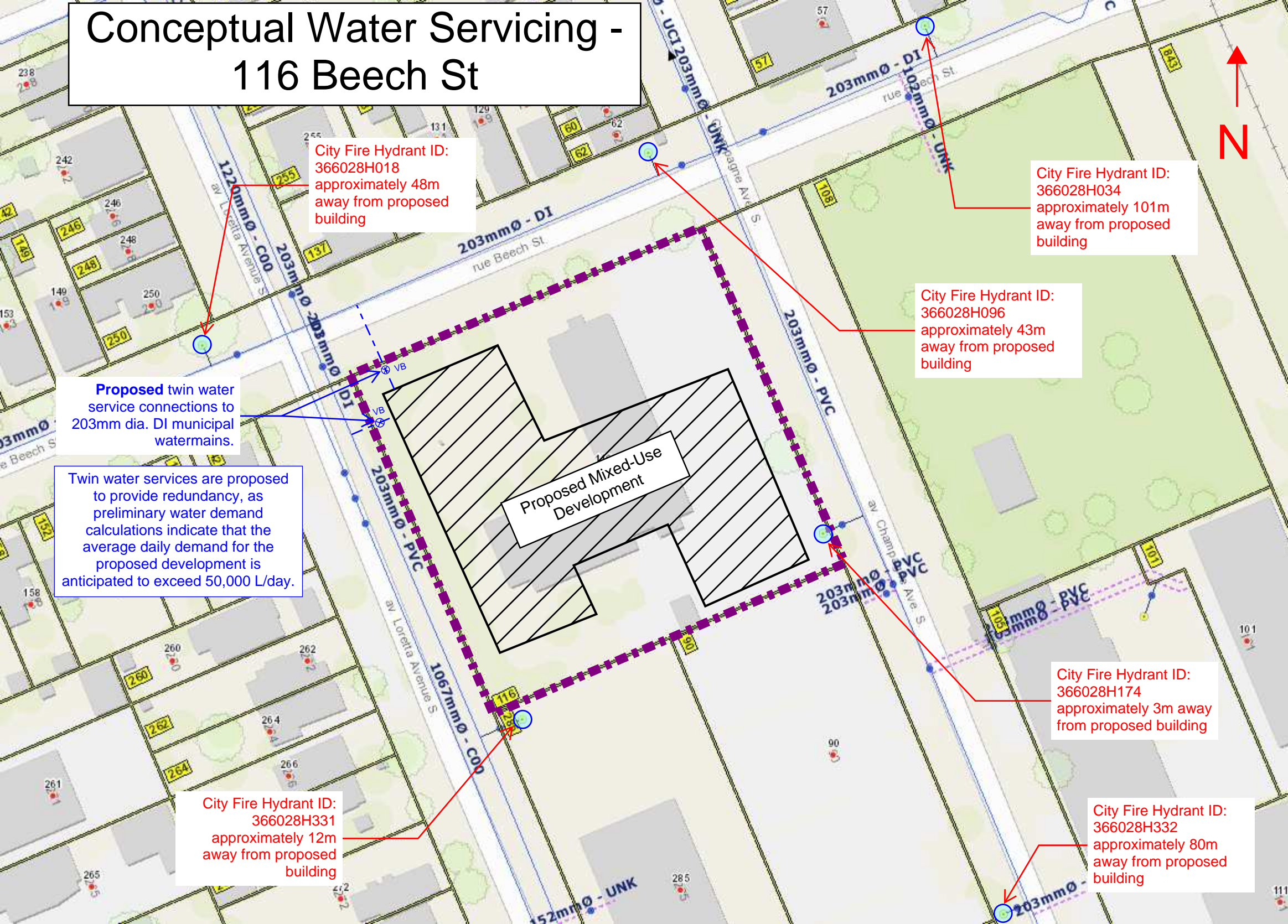
Twin water services are proposed
to provide redundancy, as
preliminary water demand
calculations indicate that the
average daily demand for the
proposed development is
anticipated to exceed 50,000 L/day.

Proposed Mixed-Use
Development

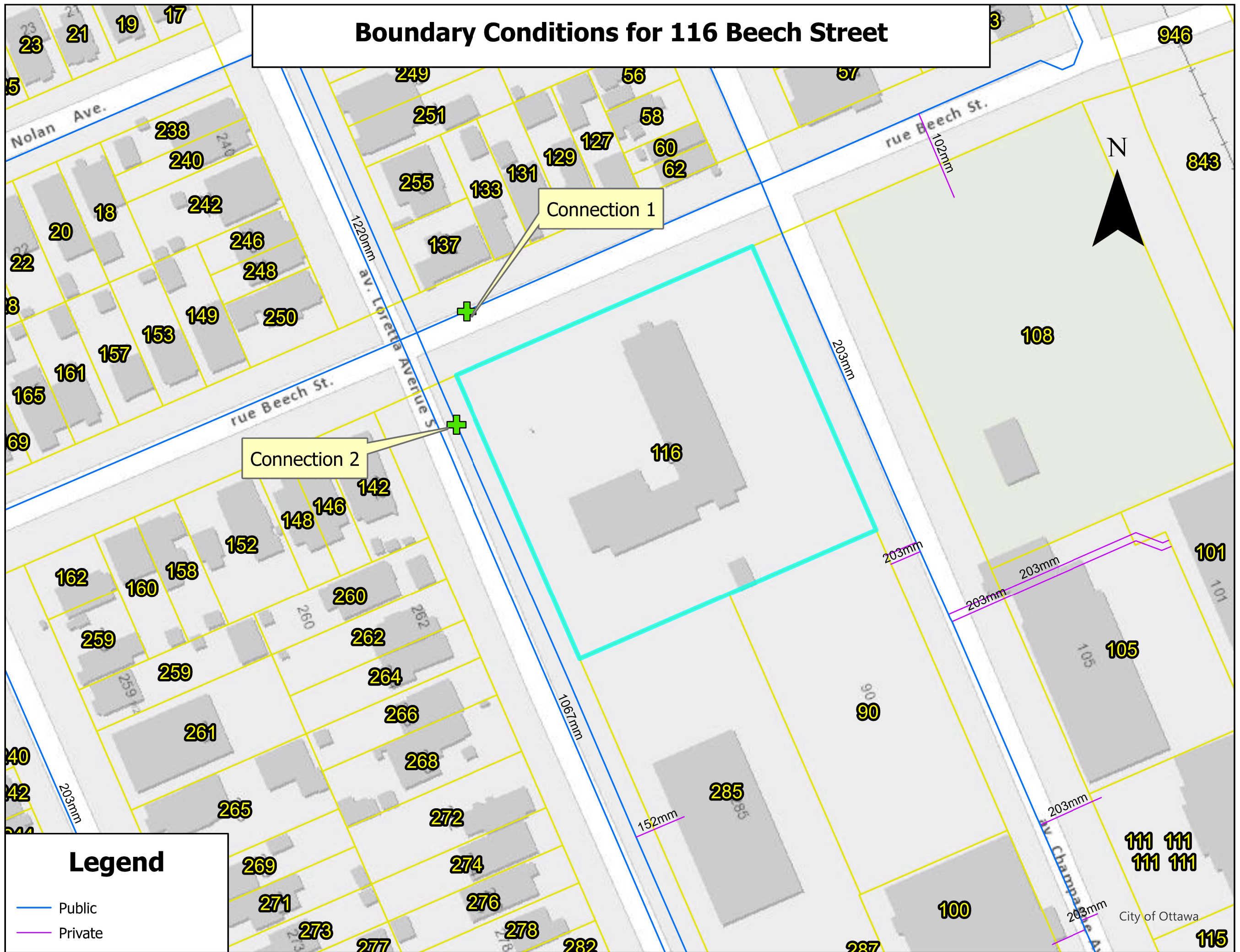
City Fire Hydrant ID:
366028H174
approximately 3m
away from proposed
building

City Fire Hydrant ID:
366028H331
approximately 12m
away from proposed
building

City Fire Hydrant ID:
366028H332
approximately 80m
away from proposed
building



Boundary Conditions for 116 Beech Street



Legend

- Public
- Private

Kynan Dsa

From: Azimi, Farbod <farbod.azimi@ottawa.ca>
Sent: Wednesday, December 10, 2025 3:47 PM
To: Francois Thauvette
Cc: Brendan Nichols; Kynan Dsa; Fawzi, Mohammed; Wu, John; Rohan, Fayaz
Subject: RE: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)
Attachments: 116 Beech Street December 2025.pdf

Good afternoon, Francois,

The following are boundary conditions, HGL, for hydraulic analysis at 116 Beech Street (zone 1W) assumed to be connected at the locations as identified below (see attached PDF for location).

Connection 1 – 203mm Watermain on Beech Street

Minimum HGL = 107.1 m
Maximum HGL = 114.7 m
Max Day + Fire Flow (183.3 L/s) = 90.1 m

Connection 2 – 203mm Watermain on Loretta Avenue

Minimum HGL = 107.1 m
Maximum HGL = 114.7 m
Max Day + Fire Flow (183.3 L/s) = 89.5 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.

Kind regards,

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

From: Azimi, Farbod
Sent: Wednesday, December 10, 2025 12:13 PM
To: Francois Thauvette <f.thauvette@novatech-eng.com>
Cc: Brendan Nichols <b.nichols@novatech-eng.com>; k.dsa <k.dsa@novatech-eng.com>; Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>; Wu, John <John.Wu@ottawa.ca>; Rohan, Fayaz <fayaz.rohan@ottawa.ca>; Bourke, Simone <simone.bourke@ottawa.ca>
Subject: RE: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)

Good day, Francois,

Regarding the **sanitary sewer connection**, the City's preferred option is to connect to the existing 300 mm PVC municipal sanitary sewer on **Beech Street**. As you correctly noted, the other nearby sanitary sewers on Loretta Avenue and Champagne Avenue are not feasible connection points. Connections to the existing 1050 mm concrete municipal sanitary trunk sewer on Champagne Avenue are generally not permitted unless specifically authorized by Asset Management. In addition, connecting to the 250 mm PVC municipal sanitary sewer partway down Loretta Avenue would require crossing the existing 1220 mm municipal watermain, which may trigger requirements for vibration and settlement monitoring on the backbone watermain, as well as a certificate of liability insurance.

Based on the preliminary calculations you provided—indicating an anticipated peak sanitary flow of approximately 7.1 L/s and the preferred connection location on Beech Street—the City's Asset Management team has confirmed that there are no capacity concerns with the proposed peak flows.

Regarding the **watermain boundary conditions**, we are still awaiting a response from the Infrastructure & Water Services Department concerning the two (2) anticipated water service connections to the existing 203 mm DI watermains on **Beech Street and Loretta Avenue**, based on the domestic and fire demand information you provided. We will provide an update as soon as the boundary conditions are received.

Kind regards,

From: Francois Thauvette <f.thauvette@novatech-eng.com>

Sent: Wednesday, December 10, 2025 10:53 AM

To: Azimi, Farbod <farbod.azimi@ottawa.ca>

Cc: Brendan Nichols <b.nichols@novatech-eng.com>; k.dsa <k.dsa@novatech-eng.com>; Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>

Subject: RE: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)

Importance: High

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Hi Farbod,

I am just following up on the 2 e-mails we sent to the City related to the proposed redevelopment of the 116 Beech Street property. Could you please provide an update on the following items:

- Request for municipal watermain boundary conditions
- Confirmation of preferred sanitary service connection location and confirming if there are any sewer capacity concerns in this area

We require responses to these inquiries ASAP as we need this information to finalize our Assessment of Adequacy of Public Services Report, which the client wants submitted within the next 1.5 weeks, prior to the Holidays.

Regards,

François Thauvette, P. Eng., Sr. Project Manager | Land Development & Public-Sector Engineering

NOVATECH

Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | T: 613.254.9643 Ext: 219 | C: 613.276.0310

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From: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>

Sent: Friday, November 28, 2025 10:10 AM

To: Francois Thauvette <f.thauvette@novatech-eng.com>; Azimi, Farbod <farbod.azimi@ottawa.ca>

Cc: Brendan Nichols <b.nichols@novatech-eng.com>; Kynan Dsa <k.dsa@novatech-eng.com>

Subject: RE: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)

Hi Francois,

My colleague Farbod Azimi (cc'd) has been assigned to this file. The boundary conditions have been forwarded to him.

[@Azimi, Farbod](#) – please also refer to the emails below. Novatech is looking to confirm if there are any sanitary capacity concerns.

Thank you.

Best Regards,

Mohammed Fawzi, P.Eng.

Senior Project Manager (A), Infrastructure Projects

Development Review – West Branch

Planning, Development and Building Services Department (PDBS) | Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West | 110 Avenue Laurier Ouest

Ottawa, ON K1P 1J1

613.580.2424 ext./poste 70120, Mohammed.Fawzi@ottawa.ca

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

From: Fawzi, Mohammed

Sent: November 28, 2025 9:03 AM

To: Francois Thauvette <f.thauvette@novatech-eng.com>

Cc: Brendan Nichols <b.nichols@novatech-eng.com>; k.dsa <k.dsa@novatech-eng.com>

Subject: RE: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)

Hi Francois,

Thank you for your email and as well for your request for boundary conditions. I am looking to confirm who will be handling this file since I am no longer in the Central group and have moved to the West group.

I'll be in touch soon.

Best Regards,

Mohammed Fawzi, P.Eng.

Senior Project Manager (A), Infrastructure Projects

Development Review – West Branch

Planning, Development and Building Services Department (PDBS)| Direction générale des services de la planification, de l'aménagement et du bâtiment (DGSPAB)

City of Ottawa | Ville d'Ottawa

110 Laurier Avenue West | 110 Avenue Laurier Ouest

Ottawa, ON K1P 1J1

613.580.2424 ext./poste 70120, Mohammed.Fawzi@ottawa.ca

From: Francois Thauvette <f.thauvette@novatech-eng.com>

Sent: November 28, 2025 8:51 AM

To: Fawzi, Mohammed <mohammed.fawzi@ottawa.ca>

Cc: Brendan Nichols <b.nichols@novatech-eng.com>; k.dsa <k.dsa@novatech-eng.com>

Subject: FW: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)

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Hi Mohammed,

We are sending this e-mail to provide the City with the anticipated peak sanitary flows associated with the proposed re-development of the 116 Beech Street property (as requested in the City's pre-consultation meeting minutes). Please see e-mail below and attachments for further details.

Please review and advise if there are any capacity concerns in this part of the City and confirm if we can make a connection to the municipal sanitary sewer in Beech Street.

Regards,

François Thauvette, P. Eng., Sr. Project Manager | Land Development & Public-Sector Engineering

NOVATECH

Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | T: 613.254.9643 Ext: 219 | C: 613.276.0310

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From: Brendan Nichols <b.nichols@novatech-eng.com>

Sent: Thursday, November 27, 2025 3:25 PM

To: Francois Thauvette <f.thauvette@novatech-eng.com>

Subject: 116 Beech Street - Preliminary Sanitary Servicing Calculations and Proposed Servicing (125143)

Hi François,

We are sending this e-mail with the anticipated peak sanitary flows to obtain feedback on the capacity of the nearby sanitary sewer systems and to discuss the proposed sanitary servicing configuration in support of our ZBLA application. The proposed re-development of 116 Beech Street will seek to demolish the existing building, followed by the construction of a 25-storey tower with a podium ranging from 4-6 stories containing a commercial unit at grade with residential units above. Parking will mainly be provided within an underground parking structure, with a few parking spots at grade.

Our preference would be to connect to the 300mm dia. PVC municipal sanitary sewer flowing east in Beech Street assuming there is adequate capacity. This sewer discharges into the 1050mm dia. municipal conc. sanitary trunk sewer flowing north in Champagne Avenue. Based on preliminary calculations, the anticipated peak sanitary flow for the proposed development would be approximately **~7.1 L/s**. Refer to the attached **Sanitary Flows calculation sheet** for details.

We also looked at alternative connections to the other nearby sanitary sewers in Loretta Avenue and Champagne Avenue; however, connections to these sewers may not be possible for the reasons described below:

There is an existing 250mm dia. municipal PVC sanitary sewer partway down Loretta Avenue adjacent to the proposed development that direct flows south (as shown on geoOttawa), however, based on a review of the City as-built plan and profile drawings, we will be unable to connect to this sewer due to crossing constraints related to the existing 1220mm dia. municipal (feeder) watermain.

There is also an existing 1050mm dia. municipal Conc. sanitary trunk sewer in Champagne Avenue that runs adjacent to the proposed development that flows north (as shown on geoOttawa), however the City typically doesn't allow connections to trunk sewers if a local sewer is available.

Thank you,

Brendan Nichols, CAD Technologist

NOVATECH

Engineers, Planners & Landscape Architects

240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6

Tel: 613.254.9643

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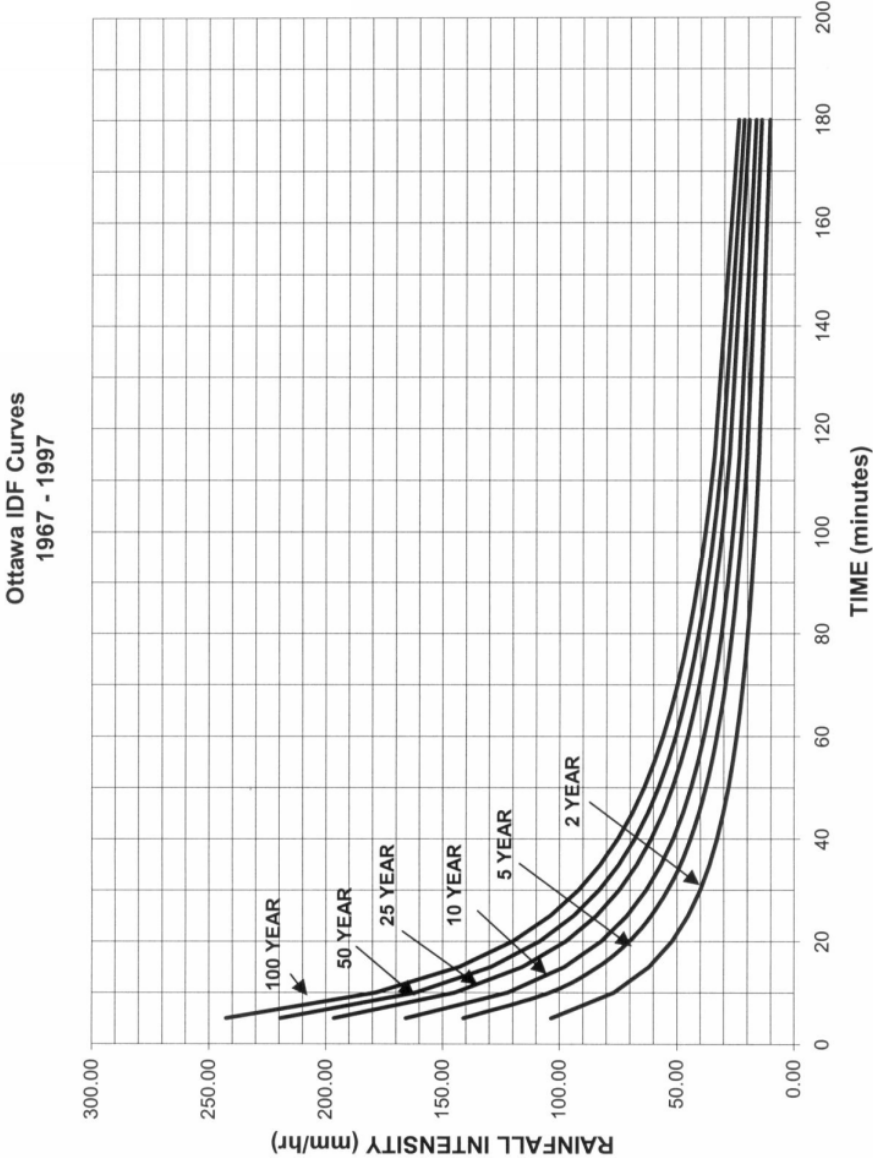
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APPENDIX D
IDF Curves and Preliminary SWM Calculations



Proposed Mixed-Use Development 116 Beech Street

Pre - Development Site Flows											
Description	Area (ha)	$A_{impervious}$ (ha) C=0.9	A_{gravel} (ha) C=0.6	$A_{pervious}$ (ha) C=0.2	Weighted C_{ws}	Weighted C_{w100}	2-Year Flow (L/s)	5-Year Flow (L/s)	100-Year Flow (L/s)	Allowable $C_{w}=0.5$ Max	Allowable Flow
											2-year (L/s)
Subject Site (Excl. Parkland block)	0.449	0.262	0.000	0.187	0.61	0.69	58.3	79.1	153.3	0.50	47.9
City Parkland Block	0.0498	0.048	0.000	0.002	0.88	0.97	9.3	12.6	24.1		5.3
Total Area to be redeveloped	0.499	0.310	0.000	0.189	0.64	0.72	67.6	91.8	177.4		53.2

$T_c = 10$ mins

Post - Development Stormwater Flows - Subject Site																	
Area	Description	Area (ha)	A_{imp} (ha) C=0.9	A_{gravel} (ha) C=0.6	A_{perv} (ha) C=0.2	C_s	C_{100}	Uncontrolled Flow (L/s)			Controlled Flow (L/s)			Storage Required (m ³)			
								2-year	5-year	100-year	2-year	5-year	100-year	2-year	5-year	100-year	
A-1a	Direct Runoff to Loretta Ave.	0.011	0.005	0.000	0.005	0.55	0.63	1.3	1.7	3.4	-	-	-	-	-	-	
A-1b	Direct Runoff to Beech St.	0.010	0.001	0.000	0.009	0.26	0.32	0.6	0.8	1.6	-	-	-	-	-	-	
A-1c	Direct Runoff to Champagne Ave.	0.024	0.020	0.000	0.004	0.79	0.88	4.1	5.5	10.6	-	-	-	-	-	-	
A-2	Controlled Site Flow (Internal SWM Storage)	0.147	0.074	0.000	0.073	0.55	0.63	-	-	-	15.0	15.0	15.0	2.5	5.0	19.3	
A-3	Controlled Building Roof Drains	0.258	0.258	0.000	0.000	0.90	1.00	-	-	-	10.7	11.9	14.3	27.7	43.4	95.0	
Total Flows - Subject Site:								31.6	34.9	44.8							
								$T_c = 10$ mins	Overcontrolled=	16.4	13.1	3.2					

Post - Development Stormwater Flows - City Parkland Block																			
Area	Description	Area (ha)	A_{imp} (ha) C=0.9	A_{gravel} (ha) C=0.6	A_{perv} (ha) C=0.2	C_s	C_{100}	Uncontrolled Flow (L/s)			Controlled Flow (L/s)			Storage Required (m ³)					
								2-year	5-year	100-year	2-year	5-year	100-year	2-year	5-year	100-year			
P-1	Direct Runoff from City Parkland	0.0082	0.001	0.000	0.007	0.26	0.32	0.5	0.6	1.3	-	-	-	-	-	-			
P-2	Controlled City Parkland Flow	0.0416	0.007	0.000	0.034	0.32	0.38	-	-	-	2.3	2.7	3.5	1.0	1.6	4.2			
Total Flows - Parkland Block:								2.8	3.3	4.8									
								$T_c = 10$ mins	Overcontrolled=	2.6	2.0	0.5							
Total Stormwater Flows:								34.3	38.2	49.5									

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:2 YEAR EVENT AREA A-1a Direct Runoff to Loretta Ave.				
OTTAWA IDF CURVE				
Area =	0.011	ha	Qallow =	1.3 L/s
C =	0.55		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	103.57	1.72	0.44	0.13
10	76.81	1.28	0.00	0.00
15	61.77	1.03	-0.25	-0.22
20	52.03	0.86	-0.41	-0.49
25	45.17	0.75	-0.53	-0.79
30	40.04	0.67	-0.61	-1.10
35	36.06	0.60	-0.68	-1.42
40	32.86	0.55	-0.73	-1.75
45	30.24	0.50	-0.77	-2.09
50	28.04	0.47	-0.81	-2.43
55	26.17	0.43	-0.84	-2.78
60	24.56	0.41	-0.87	-3.12
65	23.15	0.38	-0.89	-3.48
70	21.91	0.36	-0.91	-3.83
75	20.81	0.35	-0.93	-4.19
80	19.83	0.33	-0.95	-4.54
85	18.94	0.31	-0.96	-4.90
90	18.14	0.30	-0.97	-5.26

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:5 YEAR EVENT AREA A-1a Direct Runoff to Loretta Ave.				
OTTAWA IDF CURVE				
Area =	0.011	ha	Qallow =	1.7 L/s
C =	0.55		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	141.18	2.35	1.07	0.32
10	104.19	1.73	0.45	0.27
15	83.56	1.39	0.11	0.10
20	70.25	1.17	-0.11	-0.13
25	60.90	1.01	-0.26	-0.40
30	53.93	0.90	-0.38	-0.68
35	48.52	0.81	-0.47	-0.99
40	44.18	0.73	-0.54	-1.30
45	40.63	0.67	-0.60	-1.62
50	37.65	0.63	-0.65	-1.95
55	35.12	0.58	-0.69	-2.29
60	32.94	0.55	-0.73	-2.62
65	31.04	0.52	-0.76	-2.96
70	29.37	0.49	-0.79	-3.31
75	27.89	0.46	-0.81	-3.66
80	26.56	0.44	-0.83	-4.01
85	25.37	0.42	-0.85	-4.36
90	24.29	0.40	-0.87	-4.71

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YEAR EVENT AREA A-1a Direct Runoff to Loretta Ave.				
OTTAWA IDF CURVE				
Area =	0.011	ha	Qallow =	3.4 L/s
C =	0.63		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	242.70	4.58	1.21	0.36
10	178.56	3.37	0.00	0.00
15	142.89	2.70	-0.67	-0.61
20	119.95	2.26	-1.11	-1.33
25	103.85	1.96	-1.41	-2.12
30	91.87	1.73	-1.64	-2.94
35	82.58	1.56	-1.81	-3.80
40	75.15	1.42	-1.95	-4.68
45	69.05	1.30	-2.07	-5.58
50	63.95	1.21	-2.16	-6.49
55	59.62	1.13	-2.24	-7.41
60	55.89	1.05	-2.32	-8.33
65	52.65	0.99	-2.38	-9.27
70	49.79	0.94	-2.43	-10.21
75	47.26	0.89	-2.48	-11.15
80	44.99	0.85	-2.52	-12.10
85	42.95	0.81	-2.56	-13.05
90	41.11	0.78	-2.59	-14.01

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YR + 20% IDF Increase AREA A-1a Direct Runoff to Loretta Ave.				
OTTAWA IDF CURVE				
Area =	0.011	ha	Qallow =	4.0 L/s
C =	0.63		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	291.24	5.50	2.13	0.64
10	214.27	4.04	0.67	0.40
15	171.47	3.24	-0.13	-0.12
20	143.94	2.72	-0.65	-0.78
25	124.62	2.35	-1.02	-1.53
30	110.24	2.08	-1.29	-2.32
35	99.09	1.87	-1.50	-3.15
40	90.17	1.70	-1.67	-4.00
45	82.86	1.56	-1.81	-4.88
50	76.74	1.45	-1.92	-5.76
55	71.55	1.35	-2.02	-6.66
60	67.07	1.27	-2.10	-7.57
65	63.18	1.19	-2.18	-8.49
70	59.75	1.13	-2.24	-9.42
75	56.71	1.07	-2.30	-10.35
80	53.99	1.02	-2.35	-11.28
85	51.54	0.97	-2.40	-12.23
90	49.33	0.93	-2.44	-13.17

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:2 YEAR EVENT AREA A-1b Direct Runoff to Beech St.				
OTTAWA IDF CURVE				
Area =	0.010	ha	Qallow =	0.6 L/s
C =	0.26		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	103.57	0.75	0.19	0.06
10	76.81	0.56	0.00	0.00
15	61.77	0.45	-0.11	-0.10
20	52.03	0.38	-0.18	-0.22
25	45.17	0.33	-0.23	-0.35
30	40.04	0.29	-0.27	-0.48
35	36.06	0.26	-0.30	-0.62
40	32.86	0.24	-0.32	-0.77
45	30.24	0.22	-0.34	-0.91
50	28.04	0.20	-0.35	-1.06
55	26.17	0.19	-0.37	-1.22
60	24.56	0.18	-0.38	-1.37
65	23.15	0.17	-0.39	-1.52
70	21.91	0.16	-0.40	-1.68
75	20.81	0.15	-0.41	-1.83
80	19.83	0.14	-0.41	-1.99
85	18.94	0.14	-0.42	-2.15
90	18.14	0.13	-0.43	-2.30

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:5 YEAR EVENT AREA A-1b Direct Runoff to Beech St.				
OTTAWA IDF CURVE				
Area =	0.010	ha	Qallow =	0.8 L/s
C =	0.26		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	141.18	1.03	0.47	0.14
10	104.19	0.76	0.20	0.12
15	83.56	0.61	0.05	0.04
20	70.25	0.51	-0.05	-0.06
25	60.90	0.44	-0.12	-0.17
30	53.93	0.39	-0.17	-0.30
35	48.52	0.35	-0.21	-0.43
40	44.18	0.32	-0.24	-0.57
45	40.63	0.30	-0.26	-0.71
50	37.65	0.27	-0.28	-0.85
55	35.12	0.26	-0.30	-1.00
60	32.94	0.24	-0.32	-1.15
65	31.04	0.23	-0.33	-1.30
70	29.37	0.21	-0.35	-1.45
75	27.89	0.20	-0.36	-1.60
80	26.56	0.19	-0.37	-1.75
85	25.37	0.18	-0.37	-1.91
90	24.29	0.18	-0.38	-2.06

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YEAR EVENT AREA A-1b Direct Runoff to Beech St.				
OTTAWA IDF CURVE				
Area =	0.010	ha	Qallow =	1.6 L/s
C =	0.32		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	242.70	2.13	0.56	0.17
10	178.56	1.57	0.00	0.00
15	142.89	1.25	-0.31	-0.28
20	119.95	1.05	-0.51	-0.62
25	103.85	0.91	-0.66	-0.98
30	91.87	0.81	-0.76	-1.37
35	82.58	0.73	-0.84	-1.77
40	75.15	0.66	-0.91	-2.18
45	69.05	0.61	-0.96	-2.60
50	63.95	0.56	-1.01	-3.02
55	59.62	0.52	-1.04	-3.45
60	55.89	0.49	-1.08	-3.88
65	52.65	0.46	-1.11	-4.31
70	49.79	0.44	-1.13	-4.75
75	47.26	0.41	-1.15	-5.19
80	44.99	0.40	-1.17	-5.63
85	42.95	0.38	-1.19	-6.07
90	41.11	0.36	-1.21	-6.52

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YR + 20% IDF Increase AREA A-1b Direct Runoff to Beech St.				
OTTAWA IDF CURVE				
Area =	0.010	ha	Qallow =	1.9 L/s
C =	0.32		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	291.24	2.56	0.99	0.30
10	214.27	1.88	0.31	0.19
15	171.47	1.51	-0.06	-0.06
20	143.94	1.26	-0.30	-0.36
25	124.62	1.09	-0.47	-0.71
30	110.24	0.97	-0.60	-1.08
35	99.09	0.87	-0.70	-1.47
40	90.17	0.79	-0.78	-1.86
45	82.86	0.73	-0.84	-2.27
50	76.74	0.67	-0.89	-2.68
55	71.55	0.63	-0.94	-3.10
60	67.07	0.59	-0.98	-3.52
65	63.18	0.55	-1.01	-3.95
70	59.75	0.52	-1.04	-4.38
75	56.71	0.50	-1.07	-4.82
80	53.99	0.47	-1.09	-5.25
85	51.54	0.45	-1.12	-5.69
90	49.33	0.43	-1.13	-6.13

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:2 YEAR EVENT AREA A-1c Direct Runoff to Champagne Ave.				
OTTAWA IDF CURVE				
Area =	0.024	ha	Qallow =	4.1 L/s
C =	0.79		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	103.57	5.49	1.42	0.43
10	76.81	4.07	0.00	0.00
15	61.77	3.27	-0.80	-0.72
20	52.03	2.76	-1.31	-1.57
25	45.17	2.39	-1.68	-2.51
30	40.04	2.12	-1.95	-3.51
35	36.06	1.91	-2.16	-4.53
40	32.86	1.74	-2.33	-5.59
45	30.24	1.60	-2.47	-6.66
50	28.04	1.49	-2.58	-7.75
55	26.17	1.39	-2.68	-8.85
60	24.56	1.30	-2.77	-9.96
65	23.15	1.23	-2.84	-11.08
70	21.91	1.16	-2.91	-12.21
75	20.81	1.10	-2.97	-13.35
80	19.83	1.05	-3.02	-14.49
85	18.94	1.00	-3.07	-15.63
90	18.14	0.96	-3.11	-16.78

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:5 YEAR EVENT AREA A-1c Direct Runoff to Champagne Ave.				
OTTAWA IDF CURVE				
Area =	0.024	ha	Qallow =	5.5 L/s
C =	0.79		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	141.18	7.48	3.41	1.02
10	104.19	5.52	1.45	0.87
15	83.56	4.43	0.36	0.32
20	70.25	3.72	-0.35	-0.42
25	60.90	3.23	-0.84	-1.26
30	53.93	2.86	-1.21	-2.18
35	48.52	2.57	-1.50	-3.15
40	44.18	2.34	-1.73	-4.15
45	40.63	2.15	-1.92	-5.17
50	37.65	1.99	-2.07	-6.22
55	35.12	1.86	-2.21	-7.29
60	32.94	1.75	-2.32	-8.36
65	31.04	1.64	-2.42	-9.45
70	29.37	1.56	-2.51	-10.55
75	27.89	1.48	-2.59	-11.66
80	26.56	1.41	-2.66	-12.78
85	25.37	1.34	-2.72	-13.90
90	24.29	1.29	-2.78	-15.02

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YEAR EVENT AREA A-1c Direct Runoff to Champagne Ave.				
OTTAWA IDF CURVE				
Area =	0.024	ha	Qallow =	10.6 L/s
C =	0.88		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	242.70	14.35	3.79	1.14
10	178.56	10.56	0.00	0.00
15	142.89	8.45	-2.11	-1.90
20	119.95	7.09	-3.47	-4.16
25	103.85	6.14	-4.42	-6.63
30	91.87	5.43	-5.13	-9.23
35	82.58	4.88	-5.68	-11.92
40	75.15	4.44	-6.12	-14.68
45	69.05	4.08	-6.48	-17.49
50	63.95	3.78	-6.78	-20.34
55	59.62	3.53	-7.03	-23.21
60	55.89	3.31	-7.26	-26.12
65	52.65	3.11	-7.45	-29.04
70	49.79	2.94	-7.62	-31.99
75	47.26	2.79	-7.77	-34.95
80	44.99	2.66	-7.90	-37.92
85	42.95	2.54	-8.02	-40.90
90	41.11	2.43	-8.13	-43.90

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YR + 20% IDF Increase AREA A-1c Direct Runoff to Champagne Ave.				
OTTAWA IDF CURVE				
Area =	0.024	ha	Qallow =	12.7 L/s
C =	0.88		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	291.24	17.23	6.66	2.00
10	214.27	12.67	2.11	1.27
15	171.47	10.14	-0.42	-0.38
20	143.94	8.51	-2.05	-2.46
25	124.62	7.37	-3.19	-4.79
30	110.24	6.52	-4.04	-7.27
35	99.09	5.86	-4.70	-9.87
40	90.17	5.33	-5.23	-12.55
45	82.86	4.90	-5.66	-15.28
50	76.74	4.54	-6.02	-18.07
55	71.55	4.23	-6.33	-20.89
60	67.07	3.97	-6.59	-23.74
65	63.18	3.74	-6.82	-26.62
70	59.75	3.53	-7.03	-29.51
75	56.71	3.35	-7.21	-32.43
80	53.99	3.19	-7.37	-35.37
85	51.54	3.05	-7.51	-38.31
90	49.33	2.92	-7.64	-41.27

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:2 YEAR EVENT AREA A-2 Controlled Site Flow (Internal SWM Storage)					
OTTAWA IDF CURVE					
Area =	0.147	ha	Qallow =	15.0	L/s
C =	0.55		Vol(max) =	2.5	m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)	
5	103.57	23.26	8.26	2.48	
10	76.81	17.25	2.25	1.35	
15	61.77	13.87	-1.13	-1.02	
20	52.03	11.68	-3.32	-3.98	
25	45.17	10.14	-4.86	-7.29	
30	40.04	8.99	-6.01	-10.82	
35	36.06	8.10	-6.90	-14.50	
40	32.86	7.38	-7.62	-18.29	
45	30.24	6.79	-8.21	-22.17	
50	28.04	6.30	-8.70	-26.11	
55	26.17	5.88	-9.12	-30.11	
60	24.56	5.51	-9.49	-34.15	
65	23.15	5.20	-9.80	-38.23	
70	21.91	4.92	-10.08	-42.33	
75	20.81	4.67	-10.33	-46.47	
80	19.83	4.45	-10.55	-50.63	
85	18.94	4.25	-10.75	-54.80	
90	18.14	4.07	-10.93	-59.00	

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:5 YEAR EVENT AREA A-2 Controlled Site Flow (Internal SWM Storage)					
OTTAWA IDF CURVE					
Area =	0.147	ha	Qallow =	15.0	L/s
C =	0.55		Vol(max) =	5.0	m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)	
5	141.18	31.70	16.70	5.01	
10	104.19	23.40	8.40	5.04	
15	83.56	18.76	3.76	3.39	
20	70.25	15.77	0.77	0.93	
25	60.90	13.67	-1.33	-1.99	
30	53.93	12.11	-2.89	-5.20	
35	48.52	10.89	-4.11	-8.62	
40	44.18	9.92	-5.08	-12.19	
45	40.63	9.12	-5.88	-15.87	
50	37.65	8.45	-6.55	-19.64	
55	35.12	7.89	-7.11	-23.47	
60	32.94	7.40	-7.60	-27.37	
65	31.04	6.97	-8.03	-31.31	
70	29.37	6.60	-8.40	-35.30	
75	27.89	6.26	-8.74	-39.32	
80	26.56	5.96	-9.04	-43.37	
85	25.37	5.70	-9.30	-47.45	
90	24.29	5.45	-9.55	-51.55	

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YEAR EVENT AREA A-2 Controlled Site Flow (Internal SWM Storage)					
OTTAWA IDF CURVE					
Area =	0.147	ha	Qallow =	15.0	L/s
C =	0.63		Vol(max) =	19.3	m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)	
5	242.70	61.92	46.92	14.08	
10	178.56	45.56	30.56	18.33	
15	142.89	36.46	21.46	19.31	
20	119.95	30.60	15.60	18.72	
25	103.85	26.49	11.49	17.24	
30	91.87	23.44	8.44	15.19	
35	82.58	21.07	6.07	12.74	
40	75.15	19.17	4.17	10.01	
45	69.05	17.62	2.62	7.07	
50	63.95	16.32	1.32	3.95	
55	59.62	15.21	0.21	0.70	
60	55.89	14.26	-0.74	-2.66	
65	52.65	13.43	-1.57	-6.12	
70	49.79	12.70	-2.30	-9.65	
75	47.26	12.06	-2.94	-13.25	
80	44.99	11.48	-3.52	-16.90	
85	42.95	10.96	-4.04	-20.61	
90	41.11	10.49	-4.51	-24.36	

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YR + 20% IDF Increase AREA A-2 Controlled Site Flow (Internal SWM Storage)					
OTTAWA IDF CURVE					
Area =	0.147	ha	Qallow =	15.0	L/s
C =	0.63		Vol(max) =	26.1	m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)	
5	291.24	74.31	59.31	17.79	
10	214.27	54.67	39.67	23.80	
15	171.47	43.75	28.75	25.87	
20	143.94	36.72	21.72	26.07	
25	124.62	31.79	16.79	25.19	
30	110.24	28.13	13.13	23.63	
35	99.09	25.28	10.28	21.59	
40	90.17	23.01	8.01	19.22	
45	82.86	21.14	6.14	16.58	
50	76.74	19.58	4.58	13.74	
55	71.55	18.25	3.25	10.74	
60	67.07	17.11	2.11	7.61	
65	63.18	16.12	1.12	4.36	
70	59.75	15.24	0.24	1.02	
75	56.71	14.47	-0.53	-2.40	
80	53.99	13.77	-1.23	-5.88	
85	51.54	13.15	-1.85	-9.43	
90	49.33	12.59	-2.41	-13.03	

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:2 YEAR EVENT AREA A-3 Controlled Building Roof Drains				
OTTAWA IDF CURVE				
Area =	0.258	ha	Qallow =	10.7 L/s
C =	0.90		Vol(max) =	27.7 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	103.57	66.73	56.08	16.83
10	76.81	49.49	38.84	23.30
15	61.77	39.80	29.15	26.23
20	52.03	33.53	22.88	27.45
25	45.17	29.10	18.45	27.68
30	40.04	25.80	15.15	27.27
35	36.06	23.23	12.58	26.43
40	32.86	21.18	10.53	25.26
45	30.24	19.48	8.83	23.85
50	28.04	18.07	7.42	22.25
55	26.17	16.86	6.21	20.50
60	24.56	15.82	5.17	18.62
65	23.15	14.92	4.27	16.64
70	21.91	14.12	3.47	14.57
75	20.81	13.41	2.76	12.42
80	19.83	12.78	2.13	10.21
85	18.94	12.21	1.56	7.94
90	18.14	11.69	1.04	5.62

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:5 YEAR EVENT AREA A-2 Controlled Building Roof Drains				
OTTAWA IDF CURVE				
Area =	0.258	ha	Qallow =	11.9 L/s
C =	0.90		Vol(max) =	43.4 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	141.18	90.97	80.32	24.09
10	104.19	67.13	56.48	33.89
15	83.56	53.84	43.19	38.87
20	70.25	45.26	34.61	41.54
25	60.90	39.24	28.59	42.88
30	53.93	34.75	24.10	43.37
35	48.52	31.26	20.61	43.28
40	44.18	28.47	17.82	42.77
45	40.63	26.18	15.53	41.93
50	37.65	24.26	13.61	40.83
55	35.12	22.63	11.98	39.54
60	32.94	21.23	10.58	38.08
65	31.04	20.00	9.35	36.47
70	29.37	18.93	8.28	34.76
75	27.89	17.97	7.32	32.94
80	26.56	17.11	6.46	31.03
85	25.37	16.35	5.70	29.05
90	24.29	15.65	5.00	27.00

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YEAR EVENT AREA A-3 Controlled Building Roof Drains				
OTTAWA IDF CURVE				
Area =	0.258	ha	Qallow =	14.3 L/s
C =	1.00		Vol(max) =	95.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	242.70	173.76	159.51	47.85
10	178.56	127.83	113.58	68.15
15	142.89	102.30	88.05	79.25
20	119.95	85.88	71.63	85.95
25	103.85	74.35	60.10	90.14
30	91.87	65.77	51.52	92.74
35	82.58	59.12	44.87	94.23
40	75.15	53.80	39.55	94.92
45	69.05	49.43	35.18	95.00
50	63.95	45.79	31.54	94.61
55	59.62	42.69	28.44	93.84
60	55.89	40.02	25.77	92.76
65	52.65	37.69	23.44	91.42
70	49.79	35.65	21.40	89.86
75	47.26	33.83	19.58	88.12
80	44.99	32.21	17.96	86.21
85	42.95	30.75	16.50	84.16
90	41.11	29.43	15.18	81.98

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YR + 20% IDF Increase AREA A-2 Controlled Building Roof Drains				
OTTAWA IDF CURVE				
Area =	0.258	ha	Qallow =	14.3 L/s
C =	1.00		Vol(max) =	122.1 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	291.24	208.51	194.26	58.28
10	214.27	153.40	139.15	83.49
15	171.47	122.76	108.51	97.66
20	143.94	103.05	88.80	106.56
25	124.62	89.22	74.97	112.45
30	110.24	78.92	64.67	116.41
35	99.09	70.94	56.69	119.06
40	90.17	64.56	50.31	120.74
45	82.86	59.32	45.07	121.69
50	76.74	54.94	40.69	122.08
55	71.55	51.22	36.97	122.01
60	67.07	48.02	33.77	121.57
65	63.18	45.23	30.98	120.82
70	59.75	42.77	28.52	119.80
75	56.71	40.60	26.35	118.56
80	53.99	38.65	24.40	117.13
85	51.54	36.90	22.65	115.53
90	49.33	35.32	21.07	113.77

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:2 YEAR EVENT AREA P-1 Direct Runoff from City Parkland				
OTTAWA IDF CURVE				
Area =	0.008	ha	Qallow =	0.5 L/s
C =	0.26		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	103.57	0.61	0.16	0.05
10	76.81	0.46	0.00	0.00
15	61.77	0.37	-0.09	-0.08
20	52.03	0.31	-0.15	-0.18
25	45.17	0.27	-0.19	-0.28
30	40.04	0.24	-0.22	-0.39
35	36.06	0.21	-0.24	-0.51
40	32.86	0.19	-0.26	-0.62
45	30.24	0.18	-0.28	-0.74
50	28.04	0.17	-0.29	-0.87
55	26.17	0.16	-0.30	-0.99
60	24.56	0.15	-0.31	-1.11
65	23.15	0.14	-0.32	-1.24
70	21.91	0.13	-0.33	-1.37
75	20.81	0.12	-0.33	-1.49
80	19.83	0.12	-0.34	-1.62
85	18.94	0.11	-0.34	-1.75
90	18.14	0.11	-0.35	-1.88

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:5 YEAR EVENT AREA P-1 Direct Runoff from City Parkland				
OTTAWA IDF CURVE				
Area =	0.008	ha	Qallow =	0.6 L/s
C =	0.26		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	141.18	0.84	0.38	0.11
10	104.19	0.62	0.16	0.10
15	83.56	0.50	0.04	0.04
20	70.25	0.42	-0.04	-0.05
25	60.90	0.36	-0.09	-0.14
30	53.93	0.32	-0.14	-0.24
35	48.52	0.29	-0.17	-0.35
40	44.18	0.26	-0.19	-0.46
45	40.63	0.24	-0.21	-0.58
50	37.65	0.22	-0.23	-0.70
55	35.12	0.21	-0.25	-0.82
60	32.94	0.20	-0.26	-0.94
65	31.04	0.18	-0.27	-1.06
70	29.37	0.17	-0.28	-1.18
75	27.89	0.17	-0.29	-1.30
80	26.56	0.16	-0.30	-1.43
85	25.37	0.15	-0.30	-1.55
90	24.29	0.14	-0.31	-1.68

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YEAR EVENT AREA P-1 Direct Runoff from City Parkland				
OTTAWA IDF CURVE				
Area =	0.008	ha	Qallow =	1.3 L/s
C =	0.32		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	242.70	1.74	0.46	0.14
10	178.56	1.28	0.00	0.00
15	142.89	1.02	-0.26	-0.23
20	119.95	0.86	-0.42	-0.50
25	103.85	0.74	-0.53	-0.80
30	91.87	0.66	-0.62	-1.12
35	82.58	0.59	-0.69	-1.44
40	75.15	0.54	-0.74	-1.78
45	69.05	0.49	-0.78	-2.12
50	63.95	0.46	-0.82	-2.46
55	59.62	0.43	-0.85	-2.81
60	55.89	0.40	-0.88	-3.16
65	52.65	0.38	-0.90	-3.52
70	49.79	0.36	-0.92	-3.87
75	47.26	0.34	-0.94	-4.23
80	44.99	0.32	-0.96	-4.59
85	42.95	0.31	-0.97	-4.95
90	41.11	0.29	-0.98	-5.31

Proposed Mixed-Use Development Novatech Project No. 125143 REQUIRED STORAGE - 1:100 YR + 20% IDF Increase AREA P-1 Direct Runoff from City Parkland				
OTTAWA IDF CURVE				
Area =	0.008	ha	Qallow =	1.5 L/s
C =	0.32		Vol(max) =	0.0 m ³
Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m ³)
5	291.24	2.08	0.81	0.24
10	214.27	1.53	0.26	0.15
15	171.47	1.23	-0.05	-0.05
20	143.94	1.03	-0.25	-0.30
25	124.62	0.89	-0.39	-0.58
30	110.24	0.79	-0.49	-0.88
35	99.09	0.71	-0.57	-1.19
40	90.17	0.65	-0.63	-1.52
45	82.86	0.59	-0.69	-1.85
50	76.74	0.55	-0.73	-2.19
55	71.55	0.51	-0.77	-2.53
60	67.07	0.48	-0.80	-2.87
65	63.18	0.45	-0.83	-3.22
70	59.75	0.43	-0.85	-3.57
75	56.71	0.41	-0.87	-3.93
80	53.99	0.39	-0.89	-4.28
85	51.54	0.37	-0.91	-4.64
90	49.33	0.35	-0.93	-5.00

Proposed Mixed-Use Development Storage Calculations Using Average
 Novatech Project No. 125143 Release Rate Equal to 50% of the Qpeak
REQUIRED STORAGE - 1:2 YEAR EVENT
AREA P-2 Controlled City Parkland Flow

OTTAWA IDF CURVE Qpeak = 2.3 L/s
 Area = 0.042 ha Qavg = 1.2 L/s
 C = 0.32 Vol(max) = 1.0 m3
 (Vol calculated for Qallow-avg)

Time (min)	Tributary Ar (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	103.57	3.85	2.70	0.81
10	76.81	2.85	1.70	1.02
15	61.77	2.29	1.14	1.03
20	52.03	1.93	0.78	0.94
25	45.17	1.68	0.53	0.79
30	40.04	1.49	0.34	0.61
35	36.06	1.34	0.19	0.40
40	32.86	1.22	0.07	0.17
45	30.24	1.12	-0.03	-0.07
50	28.04	1.04	-0.11	-0.33
55	26.17	0.97	-0.18	-0.59
60	24.56	0.91	-0.24	-0.86
65	23.15	0.86	-0.29	-1.13
70	21.91	0.81	-0.34	-1.41
75	20.81	0.77	-0.38	-1.70
90	18.14	0.67	-0.48	-2.57
105	16.13	0.60	-0.55	-3.47
120	14.56	0.54	-0.61	-4.39
135	13.30	0.49	-0.66	-5.32
150	12.25	0.45	-0.70	-6.26

Proposed Mixed-Use Development Storage Calculations Using Average
 Novatech Project No. 125143 Release Rate Equal to 50% of the Qpeak
REQUIRED STORAGE - 1:5 YEAR EVENT
AREA P-2 Controlled City Parkland Flow

OTTAWA IDF CURVE Qpeak = 2.7 L/s
 Area = 0.042 ha Qavg = 1.4 L/s
 C = 0.32 Vol(max) = 1.6 m3
 (Vol calculated for Qallow-avg)

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	141.18	5.24	3.89	1.17
10	104.19	3.87	2.52	1.51
15	83.56	3.10	1.75	1.58
20	70.25	2.61	1.26	1.51
25	60.90	2.26	0.91	1.37
30	53.93	2.00	0.65	1.17
35	48.52	1.80	0.45	0.95
40	44.18	1.64	0.29	0.70
45	40.63	1.51	0.16	0.43
50	37.65	1.40	0.05	0.14
55	35.12	1.30	-0.05	-0.15
60	32.94	1.22	-0.13	-0.46
65	31.04	1.15	-0.20	-0.77
70	29.37	1.09	-0.26	-1.09
75	27.89	1.04	-0.31	-1.42
90	24.29	0.90	-0.45	-2.42
105	21.58	0.80	-0.55	-3.46
120	19.47	0.72	-0.63	-4.52
135	17.76	0.66	-0.69	-5.59
150	16.36	0.61	-0.74	-6.68

Proposed Mixed-Use Development Storage Calculations Using Average
 Novatech Project No. 125143 Release Rate Equal to 50% of the Qpeak
REQUIRED STORAGE - 1:100 YEAR EVENT
AREA P-2 Controlled City Parkland Flow

OTTAWA IDF CURVE Qpeak = 3.5 L/s
 Area = 0.042 ha Qavg = 1.8 L/s
 C = 0.38 Vol(max) = 4.2 m3
 (Vol calculated for Qallow-avg)

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	242.70	10.66	8.91	2.67
10	178.56	7.84	6.09	3.65
15	142.89	6.27	4.52	4.07
20	119.95	5.27	3.52	4.22
25	103.85	4.56	2.81	4.22
30	91.87	4.03	2.28	4.11
35	82.58	3.63	1.88	3.94
40	75.15	3.30	1.55	3.72
45	69.05	3.03	1.28	3.46
50	63.95	2.81	1.06	3.18
55	59.62	2.62	0.87	2.87
60	55.89	2.45	0.70	2.54
65	52.65	2.31	0.56	2.19
70	49.79	2.19	0.44	1.83
75	47.26	2.08	0.33	1.46
90	41.11	1.81	0.06	0.30
105	36.50	1.60	-0.15	-0.93
120	32.89	1.44	-0.31	-2.20
135	30.00	1.32	-0.43	-3.51
150	27.61	1.21	-0.54	-4.84

Proposed Mixed-Use Development Storage Calculations Using Average
 Novatech Project No. 125143 Release Rate Equal to 50% of the Qpeak
REQUIRED STORAGE - 1:100 YR + 20% IDF Increase
AREA P-2 Controlled City Parkland Flow

OTTAWA IDF CURVE Qpeak = 3.5 L/s
 Area = 0.042 ha Qavg = 1.8 L/s
 C = 0.38 Vol(max) = 5.6 m3
 (Vol calculated for Qallow-avg)

Time (min)	Intensity (mm/hr)	Q (L/s)	Qnet (L/s)	Vol (m3)
5	291.24	12.79	11.04	3.31
10	214.27	9.41	7.66	4.60
15	171.47	7.53	5.78	5.20
20	143.94	6.32	4.57	5.49
25	124.62	5.47	3.72	5.58
30	110.24	4.84	3.09	5.56
35	99.09	4.35	2.60	5.46
40	90.17	3.96	2.21	5.30
45	82.86	3.64	1.89	5.10
50	76.74	3.37	1.62	4.86
55	71.55	3.14	1.39	4.59
60	67.07	2.95	1.20	4.30
65	63.18	2.77	1.02	3.99
70	59.75	2.62	0.87	3.67
75	56.71	2.49	0.74	3.33
90	49.33	2.17	0.42	2.25
105	43.80	1.92	0.17	1.09
120	39.47	1.73	-0.02	-0.12
135	36.00	1.58	-0.17	-1.37
150	33.13	1.45	-0.30	-2.66