44 ECCLES STREET
OTTAWA, ONTARIO

SERVICING BRIEF AND STORMWATER MANAGEMENT REPORT

Prepared for:

CORNERSTONE HOUSING FOR WOMEN
c/o Cahdco
Suite 200, 415 Gilmour Street
Ottawa, Ontario
K2P 2M8

Prepared by:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

February 2, 2022
(Revised April 4, 2022)

Ref: R-2022-011
Novatech File: 121255

NOVATECH
Engineers, Planners & Landscape Architects

April 4, 2022

City of Ottawa
Planning and Growth Management Department
Development Review (Central Unit)
110 Laurier Avenue West, 4th Floor
Ottawa, Ontario K1P 1J1

Attention: Seana Turkington, MCIP, RPP
Planner

Dear Madam:

Re: 44 Eccles Street, Ottawa, Ontario
Servicing Brief and Stormwater Management Report
Novatech File No.: 121255 / City File No.: D07-12-20-0024

Enclosed herein is the Servicing Brief and Stormwater Management Report for the proposed development located at 44 Eccles Street. This report is submitted in support of the Site Plan Control Application for the proposed retrofit of the existing building and surface parking lot.

This report addresses the approach to site servicing and stormwater management for the subject site, which have been developed based on the requirements of the City of Ottawa and Rideau Valley Conservation Authority.

If you have any questions, please contact the undersigned.

Yours truly,

NOVATECH

Bassam Bahia, M.Eng., P.Eng.
Senior Project Manager I Land Development

/bs

cc: Kyla Tanner, Cahdco
Anthony Leaning, CSV Architects

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1.0. INTRODUCTION

Novatech has been retained to prepare a Servicing Brief and Stormwater Management Report for the property located at 44 Eccles Street (Subject Site) within the City of Ottawa in support of a Site Plan Control Application. ***Figure 1*** is a Key Plan showing the site location. The purpose of this report is to demonstrate that the Subject Site can be serviced with the existing municipal infrastructure surrounding the property.

2.0. EXISTING DEVELOPMENT

The Subject Site's area is approximately 0.26 hectares. There is currently an existing four-storey institutional building located on the property, with two site accesses on both the east and west side of the building for the surface parking located in the rear yard. The property is bound by Eccles Street to the north, and adjacent residential dwellings to the east, south, and west. The topography of the Subject Site slopes east to west and north to south. ***Figure 2*** shows the existing site conditions.

3.0. PROPOSED DEVELOPMENT

It is proposed to take advantage of the existing building, with minor retrofits to accommodate the proposed development. Retrofits will include, but are not limited to, the following:

- Conversion of the existing building into forty-six (46) apartment units and a small office space for ten (10) employees;
- Conversion of the western site access into an accessible entrance;
- Proposed retrofit of existing building with a sprinkler system;
- Proposed addition on southwest corner of existing building for elevator; and
- Proposed addition on southeast corner of existing building for balconies.

Figure 3 shows a concept of the proposed development.

4.0. PRE-APPLICATION CONSULTATION INFORMATION

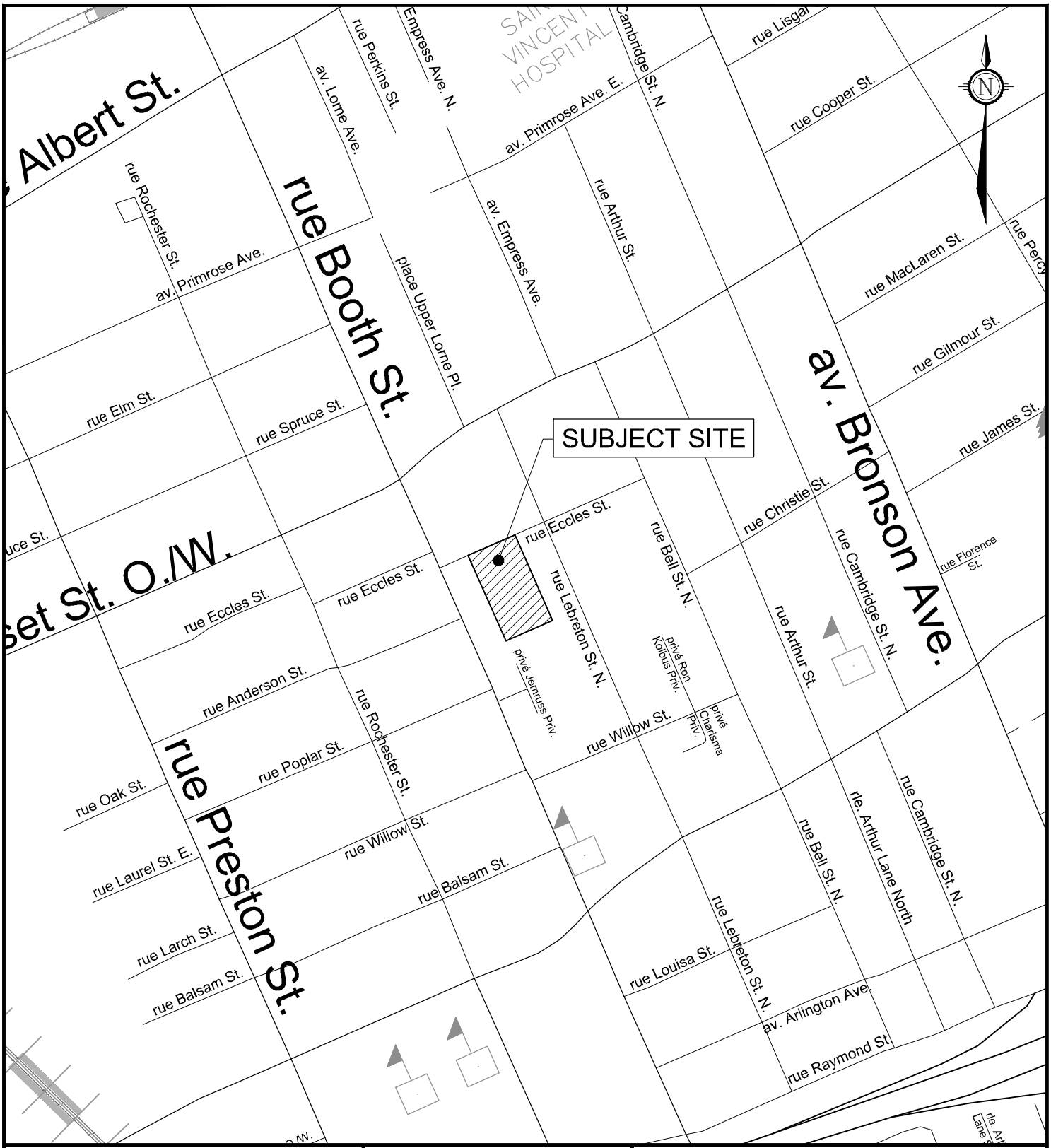
A pre-application consultation meeting was held with the City of Ottawa on October 12, 2021, at which time the client was advised of the general submission requirements. Refer to **Appendix A** for a copy of the correspondence from the City of Ottawa.

As outlined within the meeting minutes, a Ministry of the Environment, Conservation and Parks (MECP) Environmental Compliance Approval (ECA) is not required for this development.

5.0. REFERENCES AND SUPPORTING DOCUMENTS

The following guidelines and supporting documents were utilized in the preparation of this report:

- **City of Ottawa Official Plan** (OP)
  City of Ottawa, adopted by Council May 2003 (comprehensive review in 2013 and 2016).



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

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

KEY PLAN

CITY OF OTTAWA

44 ECCLES STREET

DATE	JOB	FIGURE
APR 2022	121255	1

M:\2021\121255\CAD\Design\Figures\Design Brief\Figure 1 - Key Plan.dwg, 8x11 Keyplan, Mar 29, 2022 - 1:28pm, anikitchyn

SHT8X11.DWG - 216mmx279mm

EX. 5" (125mm) WATER (ABANDONED)
EX. SIDEWALK
EX. 5" (125mm) WATER (ABANDONED)
EX. SIDEWALK
EX. BELL
EX. BELL
ECCLES STREET
B. CONCR. SEWER
EX. 12" (300mm) COMB SEWER
ANDONED
AIN
EX. 2" (50mm) GAS ABANDONED
EX.150mm WATERMAIN
EX. CB244
& CB243
EX. SIDEWALK
HYDRO
S
EX. HYDRO
EX. HYD
TOP OF
SPINDLE=70.66
EX. 2" (50mm) GAS
EX. 250mm
HYDRO
EX. STEP (1R)
EX. STEP (1R)
EX. STEP (4R)
EX. WEEPING TILE
EX. STEP (2R)
CONCRETE
RETAINING WALL
GATES
EX.METAL
STAIRCASE
1 STOREY CONCRETE
ENTRANCE
EX. WEEPING TILE
DRIVEWAY
EX. CB1
T/G=68.72
GM
AC
AC
EX. CB2
T/G=68.35
SHED
EX. HYDRO
KIOSK
EX. RETAINING WALL

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

44 ECCLES STREET

EXISTING CONDITIONS PLAN

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

DATE	JOB	FIGURE
APR 2022	121255	2

SHT11X17.DWG - 279mmX432mm

M:\2021\121255\CAD\Design\Figures\Design Brief\Figure 2 - Existing Conditions Plan.dwg, 11x17 portrait, Mar 29, 2022 - 1:38pm, anikitchyn

EX. 5" (125mm) WATER (ABANDONED)
EX. SIDEWALK
EX. 5" (125mm) WATER (ABANDONED)
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EX. 250mm
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EX. 2" (50mm) GAS
EX. STEP (1R)
EX. STEP (1R)
STEP (2R)
EX. STEP (4R)
WATER
ENTRY
ROOM
EX. WEEPING TILE
STEP (1R)
EX. STEP (2R)
CONCRETE
RETAINING WALL
GATES
STEP (3R)
4 STOREY
PROPOSED 46 UNIT
APARTMENT BUILDING
BASEMENT LEVEL FF (68.57m)
EXISTING / PROPOSED USF (68.27m)
PROPOSED BUILDING
ADDITION / RETROFIT
EX. WEEPING TILE
DRIVEWAY
PROPOSED BUILDING
ADDITION / RETROFIT
CONCRETE
PAD
EX. CB1
T/G=68.72
LOWER
PATIO
GM
MECHANICAL
BARRIER
CURB
WASTE ENCLOSURE
WITH CANOPY
RAISED
PATIO
EX. CB2
T/G=68.35
6
1
4
3
BARRIER
CURB
18
20
DC
BARRIER
CURB
17
7
DC
LANDSCAPE
SPACE
SHED
EX. HYDRO
KIOSK
EX. RETAINING WALL

NOVATECH
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Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

44 ECCLES STREET

CONCEPTUAL SITE PLAN

SCALE 1 : 250 (0 2 4 6 8 10)
DATE APR 2022
JOB 121255
FIGURE 3

SHT11X17.DWG - 279mmX432mm

M:\2021\121255\CAD\Design\Figures\Design Brief\Figure 3 - Conceptual Site plan.dwg, 11x17 portrait, Mar 29, 2022 - 2:49pm, anikitchyn

- **City of Ottawa Infrastructure Master Plan** (IMP)
  City of Ottawa, November 2013.
- **City of Ottawa Water Distribution Guidelines** (OWDG)
  City of Ottawa, July 2010.
- **Revisions to OWDG** (ISTB-2010-01, ISTB-2014-02, ISTB-2018-02, ISTB-2018-04)
  City of Ottawa, December 2010, May 2014, March 2018, and June 2018.
- **City of Ottawa Sewer Design Guidelines** (OSDG)
  City of Ottawa, October 2012.
- **Revisions to OSDG** (ISTB-2016-01, ISTB-2018-01, ISTB-2018-03)
  City of Ottawa, September 2016 and March 2018.
- **Design Guidelines for Sewage Works and Drinking Water System** (MECP Guidelines)
  Ontario's Ministry of the Environment, 2008.
- **Stormwater Management Planning and Design Manual** (MECP SWM Guidelines)
  Ontario's Ministry of the Environment, 2003.

6.0. WATER SERVICING

There is an existing 150mm diameter watermain located in the Eccles Street right-of-way which will provide service for the Subject Site.

The Subject Site will be serviced by a new 150mm diameter water service with a connection to the existing 150mm diameter watermain along Eccles Street. The proposed water service has been sized to provide both the required domestic water demand and fire flow. A shut-off valve will be provided on the proposed service at the property line and a water meter and remote water meter will be provided. The existing 50mm diameter water service is to be blanked at the existing watermain.

The existing building will be retrofitted with a sprinkler system and siamese connections for fire fighting purposes. The sprinkler system design is to be completed by a Mechanical or Fire Protection Engineer under separate cover.

Refer to the General Plan of Services (Drawing 121255-GP) included in the enclosed drawing set for additional details.

Water demand and fire flow calculations have been prepared based on the proposed development. The water demands are calculated from criteria in Section 4 of the OWDG and Table 3-3 from the MECP Guidelines. The water demands are based on a total population seventy-five (75) people from a total of forty-six (46) one-bedroom units, and ten (10) employees. Fire flows are calculated using the Fire Underwriters Survey and Ontario Building Code methods. Detailed water demand and fire flow calculations are provided in **Appendix B** for reference. A summary of the water demand and fire flows are provided in **Table 6.1** below.

Table 6.1 Water Demand Summary

Ave. Daily Demand (L/s)	Max. Daily Demand (L/s)	Peak Hour Demand (L/s)	Fire Flow (L/s)
0.22	0.78	1.17	167 (FUS) / 90 (OBC)

This water demand information was submitted to the City of Ottawa for boundary conditions provided from the City's water model. The boundary conditions will determine whether the existing watermain infrastructure in Eccles Street has capacity for the proposed development. The boundary conditions are provided in **Table 6.2**.

Table 6.2 Water Boundary Conditions

Criteria	Head (m)
Connection Eccles Street	
Minimum HGL	107.2
Maximum HGL	115.3
Max Day + Fire Flow HGL	99.7

These boundary conditions were used to analyze the performance of the watermain for three theoretical conditions: 1) High Pressure check under Average Day conditions 2) Peak Hour demand 3) Maximum Day + Fire Flow demand. The following **Table 6.3** summarizes the results from the hydraulic water analysis.

Table 6.3 Water Analysis Results Summary

Condition	Demand (L/s)	Min/Max Allowable Operating Pressures (psi)	Limits of Design Operating Pressures (psi)
High Pressure	0.22	80psi (Max)	52.9
Max Day + Fire Flow	167.78	20psi (Min)	42.2
Peak Hour	1.17	40psi (Min)	64.4

The above hydraulic water analysis was based on a ground elevation of 70.00m at the connection to the existing 150mm diameter watermain along Eccles Street. The resulting loses from the connection to the existing building is considered negligible and will not have a significant impact on the system pressures.

Based on the proceeding analysis it can be concluded that the watermain will provide adequate flow and pressures for the fire flow + maximum day demand and peak hour demand. The existing fire hydrants along Eccles Street will provide fire protection for the proposed

development. Refer to **Appendix B** for hydraulic calculations and City of Ottawa boundary conditions.

7.0. SANITARY SERVICING

There is an existing 300mm diameter combined sewer located in the Eccles Street right-of-way which will service the proposed development. The existing combined sewer flows to the west along Eccles Street where it connects into a 300mm diameter combined sewer at Booth Street.

The two existing services to the existing building are to be abandoned as part of the proposed servicing works. For background, the existing combined service at the western corner of the existing building (currently in use) was the original service when the building was constructed in 1936; the existing service at the building central entrance (not in use) was installed as part of the City's Eccles Street reconstruction project in 2003. Currently, both the sanitary and storm flows from the Subject Site are directed to the existing combined service at the western corner of the existing building through the building internal plumbing. As part of the proposed servicing works, and per good engineering practice, separate sanitary and storm services will be provided.

The Subject Site will be serviced by a new 150mm diameter sanitary service with a connection to the existing combined sewer mentioned above. A backwater valve will be provided within the building internal plumbing.

Refer to the General Plan of Services (Drawing 121255-GP) included in the enclosed drawing set for additional details.

Sanitary flows for the proposed development are calculated from criteria in Section 4 of the OSDG and are based on a total population seventy-five (75) people from a total of forty-six (46) one-bedroom units, and ten (10) employees. The peak sanitary flow was calculated to be 0.91 L/s based on an average domestic demand of 280 L/day/person. Sanitary flow calculations are provided in **Appendix C** for reference.

Under the current use, the peak sanitary flows are calculated to be 0.17 L/s based on the site area of 0.26 ha, institutional average flow of 28,000 L/gross ha/day, and infiltration allowance of 0.33 L/s/gross ha. This results in an additional flow of 0.74 L/s to the existing combined sewer along Eccles Street. As the capacity of the existing combined sewer is 137.3 L/s (300mm diameter at 2.02% slope) and this single sewer run services a small area, the additional flow will have a negligible impact on the existing system.

8.0. STORM SERVICING & STORMWATER MANAGEMENT

Stormwater from the Subject Site is currently collected by catchbasins in the Eccles Street right-of-way, catchbasins in the rear yard of the Subject Site, and roof drains on the existing building. All of which outlet to an existing 300mm diameter combined sewer located in the Eccles Street right-of-way. The existing combined sewer flows to the west along Eccles Street where it connects into a 300mm diameter combined sewer at Booth Street.

Currently, the catchbasins in the rear yard of the Subject Site, roof drains on the existing building, and the building's weeping tile are all directed to the building internal plumbing before outletting to the existing combined service. In addition, the existing catchbasin in the rear yard

is not providing an acceptable level of service and is prone to blockages. As mentioned in **Section 7.0** above, the existing combined service of the existing building will be separated as part of the proposed servicing works, and per good engineering practice.

The Subject Site will be serviced by a new 250mm storm sewer and 150mm diameter storm service with connections to the existing combined sewer mentioned above. The 250mm diameter sewer will convey uncontrolled flows from the roof, and controlled flows from the rear yard. The 150mm diameter service will convey uncontrolled flows from the foundation drain system.

As part of the pre-application consultation meeting with City Staff, it was determined that a detailed stormwater management report would not be required for the Subject Site as the majority of the changes will be within the existing building interior. To demonstrate that the proposed development will not have a negative impact on the existing combined sewer, the following stormwater management design criteria was used:

- Quantity control for post-development flows to match pre-development flows.
- Quality control of stormwater is not required as the new storm service outlets to a combined sewer.

Preliminary stormwater management calculations have been completed for the proposed development. The pre-development flows for the 2-year and 100-year were calculated to be 38.8 L/s and 99.7 L/s, respectively. To ensure the post-development flows match the pre-development, stormwater quantity control will be provided using inlet control devices (ICD) and surface storage. Stormwater runoff from the Subject Site will consist of both uncontrolled and controlled flows.

Refer to the Storm Drainage Area Plan (Drawing 121255-STM) for details on the drainage areas. A description of each area is as follows:

- *A-1 (Uncontrolled Area):*
  Area A-1 consists of the landscaped area in front of the existing building. Stormwater runoff from this area will flow overland uncontrolled to the existing road catchbasins and into the existing combined sewer along Eccles Street per existing conditions.
- *A-2 (Uncontrolled Area):*
  Area A-2 consists of the area in between the existing retaining walls and the adjacent property boundary. Stormwater runoff from this area will flow overland uncontrolled into the adjacent properties per existing conditions.
- *A-3 (Uncontrolled Area):*
  Area A-3 consists of the rooftop area. Stormwater runoff from this area will flow uncontrolled via the down spouts to the new storm service. The down spouts will run within the building internal before connecting to the new storm service.
- *A-4 (Controlled Areas – Surface Storage):*
  Area A-4 consists of the site access / surface parking lot areas. Stormwater runoff will be collected in the catchbasin and conveyed to the new storm service. Quantity control of stormwater will be provided using an ICD to control the release rates and utilize surface storage.

- *A-5 to A-7, inclusive (Uncontrolled Area):*
  Areas A-5 and A-7 consists of the accessible entrance and amenity areas along the western side and rear yard. Stormwater runoff will be collected in the rear yard catchbasin and trench drains and conveyed to the new storm service. These areas will be left uncontrolled.

Table 8.1 below summarizes the total post-development flow (uncontrolled + controlled) from the Subject Site for the 2-year and 100-year design events, storage required, and storage provided for each catchment area. Refer to **Appendix D** for complete preliminary stormwater management calculations.

Table 8.1 Stormwater Management Summary

Area ID	Area (ha)	1:5 Year Weighted Cw	Outlet Location	Orifice	2-Year Storm Event			100-Year Storm Event		
					Flow (L/s)	Required Vol (cu.m)	Max. Vol. Provided (cu.m.)	Flow (L/s)	Required Vol (cu.m)	Max. Vol. Provided (cu.m.)
A-1	0.011	0.30	Eccles Street	N/A	0.7	N/A	N/A	1.9	N/A	N/A
A-2	0.003	0.90	Adjacent Properties	N/A	0.6	N/A	N/A	1.4	N/A	N/A
A-3	0.064	0.90	Eccles Street	N/A	12.2	N/A	N/A	31.6	N/A	N/A
A-4	0.147	0.90	Eccles Street	LMF 105	10.5	11.04	50.93	11.0	47.92	50.93
A-5	0.016	0.90	Eccles Street	N/A	3.1	N/A	N/A	8.1	N/A	N/A
A-6	0.014	0.90	Eccles Street	N/A	2.7	N/A	N/A	6.9	N/A	N/A
A-7	0.003	0.90	Eccles Street	N/A	0.6	N/A	N/A	1.4	N/A	N/A
Total Flow (Post-Development)					**30.4**			**62.3**		
Allowable Flow (Pre-Development)					**38.8**			**99.7**		

As this results in a decrease in post-development flows to the existing combined sewer along Eccles Street of 8.4 L/s and 37.4 L/s in the 2-year and 100-year, respectively, there will be no impact on the existing system.

During storms in excess of the 100-year storm event, site grading will provide emergency overland flow relief to; the Eccles Street right-of way, for stormwater runoff in front of the existing building, and to the adjacent properties to the south and west, for stormwater runoff in the rear yard. This matches the existing conditions of the Subject Site.

Refer to the Grading Plan (Drawing 121255-GR) included in the enclosed drawing set for additional details.

9.0. EROSION AND SEDIMENT CONTROL MEASURES

Temporary erosion and sediment control measures will be required on-site during construction in accordance with the Best Management Practices for Erosion and Sediment Control. This includes the following temporary measures:

- Filter bags will be placed under the grates of nearby catchbasins, manholes and will remain in place until vegetation has been established and construction is completed;
- Silt fencing will be placed per OPSS 577 and OPSD 219.110 along the surrounding construction limits;
- Street sweeping, and cleaning will be performed, as required, to suppress dust and to provide safe and clean roadways adjacent to the construction site;
- On-site dewatering is to be directed to a sediment trap and/or gravel splash pad and discharged safely to an approved outlet as directed by the engineer; and

The erosion and sediment control measures will need to be installed to the satisfaction of the Engineer, the City, the MECP, and the Rideau Valley Conservation Authority (RVCA), prior to construction and will remain in place during all phases of construction. Regular inspection and maintenance of the erosion control measures will be undertaken.

Refer to the Erosion and Sediment Control Plan (Drawing 121255-ESC) included in the enclosed drawing set for additional details.

10.0. NEXT STEPS, COORDINATION, AND APPROVALS

The proposed municipal infrastructure may be subject, but not limited to the following approvals:

- Commence Work Notification. Provided by: City of Ottawa. Proponent: Cahdco; and
- Road Cut Permit. Submitted to: City of Ottawa. Proponent: Cahdco, or its contractor/agent.

11.0. CONCLUSIONS AND RECOMMENDATIONS

The conclusions of this report are as follows:

- Water servicing, including both domestic and fire protection, can be provided by connection to the existing watermain infrastructure within Eccles Street. Fire protection can be provided from the existing fire hydrants along Eccles Street.
- Sanitary servicing can be provided from the existing combined sewer in Eccles Street and there is adequate capacity for the proposed development.
- Given the existing imperviousness of the Subject Site will be reduced as part of the proposed retrofits, quantity control for post-development flows are to match pre-development flows. Quality control of stormwater is not required as the new storm service outlets to a combined sewer.
- Emergency overland flow relief will be provided to the Eccles Street right-of way for stormwater runoff in front of the existing building, and to the adjacent properties to the south and west for stormwater runoff in the rear yard (per existing conditions).
- Erosion and sediment control measures will be required during construction.

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

NOVATECH

Prepared by:

Ben Sweet, P.Eng.
Project Coordinator I Land Development

Reviewed by:

Bassam Bahia, M.Eng., P.Eng.
Senior Project Manager I Land Development

APPENDIX A
Correspondence

Pre-Application Consultation Meeting Notes

44 Eccles Street
File Number: PC2021-0339
Tuesday October 12, 2021, Microsoft Teams

Attendees:

City of Ottawa:
Seana Turkington, File Lead
Margot Linker, Student Planner
Greg MacPherson, Heritage
Christopher Moise, Urban Design
Reza Bakhit, Project Manager
Mary Dickinson, Housing Developer
Craig Hamilton, Committee of Adjustment Planner
Ryan Klemencic, Affordable Housing Assistant

Applicant Team:
Justyna Garbos, Applicant
Anthony Leaning
Ellen McGowan
Jessie Smith
Kyla Tanner
Sam Bahia
Michael Powell

Community Association Representative:
David Seaborn

Other:
Eric Lalande, RVCA

Regret(s):
Wally Dubyk, Transportation Planner
Mark Richardson, Forester

Subject: 44 Eccles Street

Meeting Notes:

Opening & attendee introduction

- Introduction of meeting attendees.
- Planning staff can confirm that an NDA has been signed. The applicant may wish to waive the NDA if there will be a presentation to the broader Community Association.

Proposal Overview

- **Cornerstone as an organization**

    - Emergency shelter and housing services for women, services to provide permanent housing. Hundreds of women experiencing homelessness every year.
    - Rapid housing initiative, close proximity to Cornerstone's Booth Street residence and other Cornerstone services.
    - Existing facility on booth street (one block south of Somerset).
        - Running for approximately 8 years. Seamlessly fits into the neighbourhood.
        - This area is attractive for the proposal as it provides for functional advantage. Functions as a hub for a healthy community.
- Design
    - Former school building on this site. Parking in rear.
    - Proposal is to take advantage of the existing site by maintaining the building as is, with minor changes.
    - There are two driveways – one on either side of the building. Each is 4 metres in width and exceeds municipal requirement of 3 metres.
    - There is a slight slope on the site from west to east.
    - There is an asphalt surface parking lot in the back of the property.
    - Proposing to reduce parking in rear to 20 spaces.
    - Looking to create a balance of area at the back of the property – a portion is proposed to be amenity space with part of it paved and part landscaped.
    - First main floor is 3m+ above ground level.
        - To make the building accessible, proposing to convert driveway on left side into a sidewalk that slopes gently to an entrance door on the side of the building that will lead to an elevator lobby.
        - Will be proposing a canopy over the entrance on side of building. Canopy will also cover door at rear of property.
    - Elevator will give access to all floors from main entrance.
    - Basement level would contain the majority of the shared uses within the building
    - Elevations - Strategy that maintains the building in general. Proposing to change the windows, but maintain the overall character – Glazing around windows to achieve a look that is still opaque and well insulated.

Question Is there no longer an entrance at front of building?

- Response: This is not currently used as an entrance. Will not be proposing for it to be an entrance.

Question Two entrances on either side of the central entrance on the front facade. What is the plan for those two?

- Response: Those will be controlled exits. The existing windows above those doors will not be changed.

Preliminary Comments from Staff

<u>Transportation (Wally)</u>

- The Screening Form has indicated that no TIA Triggers have been met. The development site proposes 46 units and 20 parking spaces. This development would not

generate sufficient traffic to warrant a TIA report. Submission of TDM checklists is encouraged even if a TIA study report is not considered to be required.
- Eccles Street is classified as a Local road. There are no additional protected ROW limits identified in the OP.
- Please keep in mind that on street parking is not a viable option for tenants. Ensure that potential tenants are aware that there is no provision for parking.
- The consultant should review the sight distance to the access and any obstructions that may hinder the view of the driver.
- The closure of an existing westerly private approach shall reinstate the sidewalk, shoulder, curb and boulevard to City standards.
- Bicycle parking spaces are required as per Section 111 of the Ottawa Comprehensive Zoning By-law. Bicycle parking spaces should be located in safe, secure places near main entrances and preferably protected from the weather.

Civil Engineering (Reza)

General:

- 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.
- Please note that the **ECA** application is not required for this development.

- Reference documents for information purposes:
    - Ottawa Sewer Design Guidelines (October 2012)
    - Technical Bulletin PIEDTB-2016-01
    - Technical Bulletins ISTB-2018-01, ISTB-2018-02 and ISTB-2018-03.
    - Ottawa Design Guidelines - Water Distribution (2010)
    - Geotechnical Investigation and Reporting Guidelines for Development Applications in the City of Ottawa (2007)
    - City of Ottawa Environmental Noise Control Guidelines (January 2016)
    - City of Ottawa Accessibility Design Standards (2012) (City recommends development be in accordance with these standards on private property)
    - Ottawa Standard Tender Documents (latest version)
    - Ontario Provincial Standards for Roads & Public Works (2013)
    - 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) 580-424 x.44455).

Please note that this is the applicant responsibility to refer to the latest applicable guidelines while preparing reports and studies.

Disclaimer:
The City of Ottawa does not guarantee the accuracy or completeness of the data and information contained on the above image(s) and does not assume any responsibility or liability with respect to any damage or loss arising from the use or interpretation of the image(s) provided. This image is for schematic purposes only.

Stormwater Management Criteria and Information:

- Since no new structure proposed and most of the work is internal conversion , a detailed SWM report is not required. However, the designer should discuss this matter is the servicing (Adequacy of public services) report and provide professional justification . The study defines the water, sanitary, and stormwater services to be accepted for operation by the City.

  The following describes some of the minimal requirements to be included in the Adequacy of Servicing Report:

- Discuss if there is an existing storm lateral that drains the foundation weeping tile, if currently installed. If weeping tile is connected to the sanitary lateral, it must be disconnected and drained via separate lateral to the storm sewer system.
- Discuss the condition of the existing services. Include description of the current sewer laterals servicing the building, including size and material type, and street location of connection to the City main.
- Include description of lot topography, surface drainage patterns, and ground cover (grass, hard landscaping, asphalt, etc.).

- Development statistics (i.e., number of apartment units and bedrooms in each unit pre vs. post development), lot area, building area.
- Include a description of any proposed exterior changes – this includes landscaping changes, amenity areas, bicycle racks, driveway reinstatement.
- Please discuss the grading and drainage pattern of the site confirm the proposal does not have any adverse impact on neighboring properties. (Describe the overland flow path of drainage over the entire site.).
- Identify and describe any roof drainage outlets (roof drains, eavestrough, downspouts, etc.) and describe how they outlet to the storm sewer. If roof drainage is connected to the sanitary system, it must be disconnected and drained via direct lateral to the storm sewer system or via overland flow.

Combined sewer:

- A 300mm dia. PVC Combined sewer (2003) is available within **Eccles St.**

Sanitary:

- Sanitary sewer **monitoring maintenance hole** is required to be installed at the property line (on the private side of the property) as per City of Ottawa Sewer-Use By-Law 2003-514 (14) Monitoring Devices.
- Please provide the new Sanitary sewer discharge **(An analysis and demonstration that there is sufficient/adequate residual capacity to accommodate any increase in wastewater flows in the receiving and downstream wastewater system is required to be provided. Needs to be demonstrated that there is adequate capacity to support any increase in wastewater flow.)**
- Please apply the wastewater design flow parameters in **Technical Bulletin PIEDTB-2018-01**.
- A backwater valve is required on the sanitary service for protection.

Water:

- A 152mm dia. PVC watermain (2004) is available within **Eccles St**.
- Existing residential service to be blanked at the main. (This has to be shown and noted on the servicing plans) . If its proposed to reuse the **existing services**, a CCTV inspection and report to ensure existing services to be re-used are in good working order and meet current minimum size requirements. Located services to be placed on site servicing plans. In addition, the servicing report should discuss the CCTV findings and provide justifications that the existing services can be used. (A memo from the engineer may be required).
- **Water Supply Redundancy:** Residential buildings with a basic day demand greater than 50m^3/day (0.57 L/s) are required to be connected to a minimum of two water services separated by an isolation valve to avoid a vulnerable service area as per the *Ottawa Design Guidelines - Water Distribution, WDG001, July 2010 Clause 4.3.1 Configuration.* The basic day demand for this site not expected to exceed 50m^3/day.
- Please **review Technical Bulletin ISTB-2018-0**, maximum fire flow hydrant capacity is provided in Section 3 Table 1 of Appendix I. A **hydrant coverage figure** shall be provided and **demonstrate there is adequate fire protection for the proposal**. Two or more public hydrants are anticipated to be required to handle fire flow.
- Boundary conditions are required to confirm that the require fire flows can be achieved as well as availability of the domestic water pressure on the City street in front of the development. Use Table 3-3 of the MOE Design Guidelines for Drinking-Water System to determine Maximum Day and Maximum Hour peaking factors for 0 to 500 persons

and use Table 4.2 of the Ottawa Design Guidelines, Water Distribution for 501 to 3,000 persons. Please provide the following information to the City of Ottawa via email to request water distribution network boundary conditions for the subject site. Please note that once this information has been provided to the City of Ottawa it takes approximately 5-10 business days to receive boundary conditions.

- Type of Development and Units
- Site Address
- A plan showing the proposed water service connection location.
- **Average Daily Demand** (L/s)
- **Maximum Daily Demand** (L/s)
- **Peak Hour Demand** (L/s)
- **Fire Flow** (L/min)

[*Fire flow demand requirements shall be based on* ***Fire Underwriters Survey (FUS)*** *Water Supply for Public Fire Protection 1999*]

Exposure separation distances shall be defined on a figure to support the FUS calculation and required fore flow (RFF).

- **Hydrant capacity shall be assessed to demonstrate the RFF can be achieved**. Please identify which hydrants are being considered to meet the RFF on a fire hydrant coverage plan as part of the boundary conditions request.

Road Reinstatement (If applicable)

Where servicing involves three or more service trenches (including cuts for blanking existing) , either a full road width or full lane width 40 mm asphalt overlay will be required, as per amended Road Activity By-Law 2003-445 and City Standard Detail Drawing R10. The amount of overlay will depend on condition of roadway and width of roadway(s).

Required Engineering Plans and Studies:

PLANS:

- Existing Conditions and Removals Plan (If its proposed to alter existing condition on site)
- Site Servicing Plan
- Grade Control and Drainage Plan (If its proposed to alter the existing conditions such as landscaping, etc.)
- Erosion and Sediment Control Plan (If its proposed to alter the existing conditions such as landscaping, etc.)
- Topographical survey

REPORTS:

- Assessment of Adequacy of Public Services / Site Servicing Study
- Noise Control Study (Stationary)

Please refer to the **City of Ottawa Guide to Preparing Studies and Plans [Engineering]:**

Specific information has been incorporated into both Guide to Preparing Studies and Plans the for a site plan. The guide outlines the requirement for a statement to be provided on the plan about where the property boundaries have been derived from.

Added to the general information for servicing and grading plans is a note that an **O.L.S**. should be engaged when reporting on or relating information to property boundaries or existing conditions. The importance of engaging an **O.L.S.** for development projects is emphasized.

Noise Study:

- A **Stationary Noise Assessment** is required in order to assess the noise impact of the proposed sources of stationary noise (mechanical HVAC system/equipment) of the development onto the surrounding residential area to ensure the noise levels do not exceed allowable limits specified in the City Environmental Noise Control Guidelines.

https://documents.ottawa.ca/sites/default/files/documents/enviro_noise_guide_en.pdf

Gas pressure regulating station

- A gas pressure regulating station may be required depending on HVAC needs (typically for 12+ units). Be sure to include this on the Grading, Site Servicing, SWM and Landscape plans. This is to ensure that there are no barriers for overland flow routes (SWM) or conflicts with any proposed grading or landscape features with installed structures and has nothing to do with supply and demand of any product.

Gas Pressure Regulating Station.pdf

Construction approach – Please contact the Right-of-Ways Permit Office TMconstruction@ottawa.ca early in the Site Plan process to determine the ability to construct site and copy File Lead Seana.Turkington@ottawa.ca on this request.

Housing (Mary)

- Flagging that the project will fall into category for high social impact.
- Funded through rapid housing initiative.
    - **The potential RHI funding for this project needs to remain confidential at this time.**
- The building will have to be occupied by Oct 15, 2022, as per requirements.
- CMHC funding deadlines – formal confirmation that project is accepted will be coming this week.
- Question: Can development charges be waived?
    - ResponseWill be addressed through contribution agreement.

Urban Design (Christopher)

- Entrance facing the street: How can you make the new side facing entrance function and read as a main entrance as seen from the street?
    - Response: Objective is not to change the existing functional entrance. Will be looking at landscape space in front. A canopy will be used as a signifier of main entrance on the side. Confident that they can redirect people and move the perceived entrance.
- How will the current main entrance feature be designed into the new use?
    - Are the stairs going to be removed? Can this space be repurposed to provide some function to the new residents?

    - There are currently a number of access points to the building from the street and we recommend these be consolidated for clarity while adding new soft landscaping to the front yard.
- Use of rear yard – Happy to see reduction in parking. There is proposed greenspace and you've indicated some potential trees. Can the large asphalt area in the rear yard be landscaped further?
    - Response: – have changes to accommodate SWM at rear. Not sure how much asphalt to remove. Any residual asphalt that's left can be used for something such as a play area. Not sure the extent to which they'll improve the area.
- We recommend new trees be added to the rear yard for screening and improving the amenity spaces while contributing to the middle of the block condition.

<u>Committee of Adjustment Planner (Craig)</u>

- A variance will be required as follows (based on plans provided to date).
    - To permit a reduced two-way traffic driveway width providing access to parking lot of 3.4m whereas the By-law requires a minimum width of 6m [S.107(a)(ii)].
    - To permit a reduced landscaping area width abutting a residential zone of 0.00m whereas the By-law requires a minimum width of 3m [S.187(h)(ii)].
    - To permit an external waste storage structure whereas the By-law requires waste structures to be contained within the principal building [S.187(4)]
- There are unknowns remaining in the plan which is standard at this stage. Once dimensions and design elements have been finalized I am happy review the list of variances again to help capture any remaining non-compliances if they exist. Some of the unknowns that will have to be reviewed by the applicant prior to submission for minor variances (and shown on plans) include:
    - Walkway widths.
    - % of parking area that is landscaped (not incl. amenity area).
    - Building height shown on elevation.
    - Size of additional structures (ex. Waste enclosure).
    - Height of screening around waste storage.
- Please do not hesitate to reach out should you have any questions regarding the minor variances.
- Any written community support for the variances that can be included in the rationale of the application would likely be of great assistance.
- In terms of timing for the Minor Variance application, staff have no concern with an earlier application submission for this. Staff would be pleased to review a site plan prior to MV application submission to ensure any and all variances are addressed. Factor in an additional month on your minor variance timeline (to take into account decision and appeal timelines)

<u>Planning (Seana)</u>

- This proposal would be considered a high social impact project (HSIP). Tight timeline including for planning approvals. Approval via letter of undertaking (LOU).
- Draft of new OP is going to review this week and council at end of October. If a formal submission is made within the next month or so (prior to formal adoption of the OP by the MMAH), the planning rational should speak to both the current OP and the new OPNo secondary plan or CDP applicable.

- Any landscaping you can add to the greatest extent possible will be appreciated.
- Function from operations perspective – reduce parking a little further down from 20, to 18 or less to give you additional amenity area.
    - Double check s. 137 of zoning by-law with respect to amenity area requirements.
    - Area is very walkable and bikeable, transit nearby don't need parking for first 12 dwelling units.
    - Please ensure that vehicular and bicycle parking on site meet the requirements under Part 4 of the Zoning By-law.
- If you do submit a formal Site Plan Control (SPC) application, it will be considered complex. Owners within 120 m of property would be circulated and on-site sign will be posted. Required studies and plans will be posted on devapps. Potential for public comment.
- Please consider planting species native to area and pollinator species. For further information, please visit: https://ottawa.ca/en/living-ottawa/environment-conservation-and-climate/wildlife-and-plants/plants

Heritage (Greg)

General Comments:

- 44 Eccles is listed on the City of Ottawa's municipal heritage register as a non-designated property. As a property listed on the heritage register, heritage permits are not required to make alterations to the building.
- Heritage staff are satisfied that the building is proposed to be retained and adapted to a new use.

Preliminary Comments:

- Heritage staff have some concerns regarding the infilling of existing entrances on the front façade of the building. The elevations provided show the central entrance filled with brick matching that of the building's front façade. The two side entrances appear to be converted to windows. Staff recommend that any existing entrances be retained where possible. Where doors are required to be filled, staff recommend that either a panel which gives the appearance of a door is installed, or that a masonry panel such as that shown in the central door is installed. Staff also request further clarification regarding the alterations to the side entrances.
- Approximately half of the windows on the front façade appear to be filled with an unidentified material. Heritage staff recommend that as many operable windows as possible be retained on the front façade.
- Windows, window openings and other details on the front façade above the existing side entrances are not shown on the site plan. Heritage staff recommends that these openings and other details be retained as part of the proposed alterations.
- Several decorative features, such as the relief moldings depicting a child reading, are not illustrated on the provided elevations. Staff recommend that all decorative elements on the front façade be retained.

Forester (Mark)

TCR requirements:

- a Tree Conservation Report (TCR) must be supplied for review along with the suite of other plans/reports required by the City.
    - an approved TCR is a requirement of Site Plan approval.
    - The TCR may be combined with the LP provided all information is supplied.
- As of January 1 2021, any removal of privately-owned trees 10cm or larger in diameter, or publicly (City) owned trees of any diameter requires a tree permit issued under the Tree Protection Bylaw (Bylaw 2020 – 340); the permit will be based on an approved TCR and made available at or near plan approval.
- The Planning Forester from Planning and Growth Management as well as foresters from Forestry Services will review the submitted TCR.
    - If tree removal is required, both municipal and privately-owned trees will be addressed in a single permit issued through the Planning Forester.
    - Compensation may be required for city owned trees – if so, it will need to be paid prior to the release of the tree permit.
- 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, co-owned (trees on a property line).
- the TCR must list all trees on adjacent sites if they have a critical root zone that extends onto the development site.
- 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 a plan.
    - show the critical root zone of the retained trees.
    - if excavation will occur within the critical root zone, please show the limits of excavation.
- 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:

For additional information on the following please contact tracy.smith@Ottawa.ca

Minimum Setbacks

- Maintain 1.5m from sidewalk or MUP/cycle track.
- 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.
- 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 ensure adequate soil volumes are 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 note that these soil volumes are not applicable in cases with Sensitive Marine.

Sensitive Marine Clay

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

Dalhousie Community Association

David

- Less parking is better since this is a downtown neighbourhood.
- Asphalt should be greened or could be used as an activity area. Consider planting additional trees to add to the urban tree canopy.
- The Dalhousie Community Association has no issues at this time with driveway to be less than standard width.

- Suggestion - make a rockgraden down the existing steps.

Next Steps:

- Meeting notes and required plans and studies will be sent by the end of this week.
    - Cultural heritage impact statement not required
    - Design brief is usually required. Could combine this with planning rationale and speak to some of the heritage components.

APPLICANT'S STUDY AND PLAN IDENTIFICATION LIST

Legend: **S** indicates that the study or plan is required with application submission.
A indicates that the study or plan may be required to satisfy a condition of approval/draft approval.

For information and guidance on preparing required studies and plans refer here:

S/A	Number of copies	ENGINEERING		S/A	Number of copies
S	15	**1. Site Servicing Plan**	**2. Site Servicing Study / Assessment of Adequacy of Public Services**	S	3
S	15	**3. Grade Control and Drainage Plan**	**4. Geotechnical Study / Slope Stability Study**	S	3
	2	5. Composite Utility Plan	6. Groundwater Impact Study		3
	3	7. Servicing Options Report	8. Wellhead Protection Study		3
	9	9. Transportation Impact Assessment (TIA)	**10.Erosion and Sediment Control Plan / Brief**	S	3
S	3	**11.Storm water Management Report / Brief**	12.Hydro geological and Terrain Analysis		3
	3	13.Hydraulic Water main Analysis	**14.Noise / Vibration Study**	S	3
	PDF only	15.Roadway Modification Functional Design	16.Confederation Line Proximity Study		3

S/A	Number of copies	PLANNING / DESIGN / SURVEY		S/A	Number of copies
	15	17.Draft Plan of Subdivision	18.Plan Showing Layout of Parking Garage		2
	5	19.Draft Plan of Condominium	**20.Planning Rationale**	S	3
S	15	**21.Site Plan**	22.Minimum Distance Separation (MDS)		3
	15	23.Concept Plan Showing Proposed Land Uses and Landscaping	24.Agrology and Soil Capability Study		3
	3	25.Concept Plan Showing Ultimate Use of Land	26.Cultural Heritage Impact Statement		3
S	15	**27.Landscape Plan**	28.Archaeological Resource Assessment Requirements: **S** (site plan) **A** (subdivision, condo)		3
S	2	**29.Survey Plan**	30.Shadow Analysis		3
S	3	**31.Architectural Building Elevation Drawings (dimensioned)**	**32.Design Brief (includes the Design Review Panel Submission Requirements) (Can be combined with Planning Rationale)**	S	Available online
	3	33.Wind Analysis			

S/A	Number of copies	ENVIRONMENTAL		S/A	Number of copies
	3	34.Phase 1 Environmental Site Assessment	35.Impact Assessment of Adjacent Waste Disposal/Former Landfill Site		3
	3	36.Phase 2 Environmental Site Assessment (depends on the outcome of Phase 1)	37.Assessment of Landform Features		3
	3	38.Record of Site Condition	39.Mineral Resource Impact Assessment		3
S	3	**40.Tree Conservation Report (Can be combined with Landscape Plan)**	41.Environmental Impact Statement / Impact Assessment of Endangered Species		3
	3	42.Mine Hazard Study / Abandoned Pit or Quarry Study	43.Integrated Environmental Review (Draft, as part of Planning Rationale)		3

S/A	Number of copies	ADDITIONAL REQUIREMENTS		S/A	Number of copies
	1	44. Applicant's Public Consultation Strategy (may be provided as part of the Planning Rationale)	45.Site Lighting Plan and Certification Letter		3

Meeting Date: October 12, 2021

Application Type: *Site Plan Control, Complex*

File Lead (Assigned Planner): Seana Turkington

Infrastructure Approvals Project Manager: Reza Bakhit

Site Address (Municipal Address): 44 Eccles Street

*Preliminary Assessment: 1☐ 2☐ 3☐ 4☐ 5

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

It is important to note that the need for additional studies and plans may result during application review. If following the submission of your application, it is determined that material that is not identified in this checklist is required to achieve complete application status, in accordance with the Planning Act and Official Plan requirements, the* Planning, Infrastructure and Economic Development Department *will notify you of outstanding material required within the required 30 day period. Mandatory pre-application consultation will not shorten the City's standard processing timelines, or guarantee that an application will be approved. It is intended to help educate and inform the applicant about submission requirements as well as municipal processes, policies, and key issues in advance of submitting a formal development application. This list is valid for one year following the meeting date. If the application is not submitted within this timeframe the applicant must again pre-consult with the Planning, Infrastructure and Economic Development Department.

APPENDIX B
Watermain Servicing Information


Boundary Conditions for 44 Eccles Street
rue Eccles St.
rue Eccles St.
rue Booth St.
rue Lebreton St. N.
rue Lebreton
N
152
102
203
409
55
52
52 1/2
54
56
58
60
60A
66
315
319
323
325
329
333
44
Legend
PRIVATE
PUBLIC
City of Ottawa

Ben Sweet

From: Sam Bahia
Sent: Thursday, November 11, 2021 2:20 PM
To: Ben Sweet
Subject: FW: 211100 Cornerstone Housing 44 Eccles
Attachments: 44 Eccles Street July 2021.pdf

Sam Bahia, P.Eng., Senior Project Manager | Land Development
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x 285 | Fax: 613.254.5867

From: Bakhit, Reza <reza.bakhit@ottawa.ca>
Sent: Monday, August 9, 2021 7:07 AM
To: Sam Bahia <s.bahia@novatech-eng.com>; Kyla Tanner <Kyla.Tanner@ccochousing.org>
Cc: Anthony Leaning <leaning@csv.ca>; Jessie Smith <smith@csv.ca>; Turkington, Seana <Seana.Turkington@ottawa.ca>
Subject: RE: 211100 Cornerstone Housing 44 Eccles

Good morning Sam,

The following are boundary conditions, HGL, for hydraulic analysis at 44 Eccles Street (zone 1W) assumed to be connected to the 152 mm watermain on Eccles Street (see attached PDF for location).
Minimum HGL: 107.2 m
Maximum HGL: 115.3 m
Max Day + FF (167 L/s): 99.7 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.

Regards,

Reza Bakhit, P.Eng, C.E.T
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Centeral Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2400 ext./poste 19346, reza.bakhit@ottawa.ca

Please note: Given the current pandemic, I will be working from home until further notice; reaching me by email is the easiest. I will be checking my voicemail, just not as frequently as I normally would be.

From: Sam Bahia <s.bahia@novatech-eng.com>
Sent: Thursday, July 29, 2021 1:24 PM
To: Bakhit, Reza <reza.bakhit@ottawa.ca>; Kyla Tanner <Kyla.Tanner@ccochousing.org>
Cc: Anthony Leaning <leaning@csv.ca>; Jessie Smith <smith@csv.ca>; Turkington, Seana <Seana.Turkington@ottawa.ca>
Subject: RE: 211100 Cornerstone Housing 44 Eccles

Hi Reza
The development is that of an existing 4 storey building (originally designed as a school, currently used as office space), which will be converted to 50 supportive housing suites with an office area for 10 daytime employees. The building is unpillared, but may be as part of the renovation.

Please find attached Summary Domestic Water and Fire Demand, along with sketch and connection location (matching existing); along with FUS and OBC (unpsprinklered) calcs.

For the connection to combined sewer, there will be an increase in flow from the 50 units. We would be looking at adding 0.25L/s of average flow or **0.8L/s** of peak domestic flow. In lieu of us completing a local sewer analysis to the Preston Trunk, would you be able to confirm with AMB if the receiving sewers would able to accommodate this peak flow addition.

Thanks
Sam Bahia, P.Eng., Senior Project Manager | Land Development
NOVATECH Engineers, Planners & Landscape Architects
240 Michael Cowpland Drive, Suite 200, Ottawa, ON, K2M 1P6 | Tel: 613.254.9643 x 285 | Fax: 613.254.5867

From: Bakhit, Reza <reza.bakhit@ottawa.ca>
Sent: Thursday, July 29, 2021 10:29 AM
To: Kyla Tanner <Kyla.Tanner@ccochousing.org>
Cc: Anthony Leaning <leaning@csv.ca>; Jessie Smith <smith@csv.ca>; Turkington, Seana <Seana.Turkington@ottawa.ca>; Sam Bahia <s.bahia@novatech-eng.com>
Subject: RE: 211100 Cornerstone Housing 44 Eccles

Hi Kyla,

I will provide you and Sam with detailed engineering requirements after the meeting. These requirements will be sent to you by Seana along with all other comments.

Please note that I will be the contact for all your engineering inquiries, and you don't need to contact asset management directly.

One of the requirements that you need the asset management input would be the boundary condition for the fire flow calculations. To request the boundary condition for you. I need the following information as well as a simple sketch that shows the approximate location of the connection to the City water system. Once have the info I will send the request to the water resources team to calculate the boundary condition. It could take up to ten day for them to get back to us.

Type of Development:
Location of Service:
Amount of Fire Flow Required (FUS):
Amount of Fire Flow Required (OBC):
Average Daily Demand (L/sec):
Maximum Daily Demand (L/sec):
Maximum Hourly Demand (L/sec):

Kind regards,

Reza Bakhit, P.Eng, C.E.T
Project Manager
Planning, Infrastructure and Economic Development Department - Services de la planification, de l'infrastructure et du développement économique
Development Review - Centeral Branch
City of Ottawa | Ville d'Ottawa
110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1
613.580.2400 ext./poste 19346, reza.bakhit@ottawa.ca
Please note: Given the current pandemic, I will be working from home until further notice; reaching me by email is the easiest. I will be checking my voicemail, just not as frequently as I normally would be.

From: Kyla Tanner <Kyla.Tanner@ccochousing.org>
Sent: Thursday, July 29, 2021 10:14 AM
To: Bakhit, Reza <reza.bakhit@ottawa.ca>
Cc: Anthony Leaning <leaning@csv.ca>; Jessie Smith <smith@csv.ca>; Turkington, Seana <Seana.Turkington@ottawa.ca>; Sam Bahia <s.bahia@novatech-eng.com>
Subject: RE: 211100 Cornerstone Housing 44 Eccles

Hi Reza,

I'm emailing in advance our meeting this afternoon at 3:00 to discuss the 44 Eccles site on behalf of Cornerstone Housing for Women.

Sam Bahia, cc-ed here, is our civil engineer on the project and will be joining the meeting with us. We're wondering if you might be able to put Sam in touch with someone at Asset Management to determine the type of capacity review they would require up to the Preston Combined Trunk or if they have something on file to compare the unit potential proposed. The latter would really save time/efforts.

It would also be helpful to know if this requires SWM, as 44 Eccles is an existing developed site.

If we're able to get this information in advance of our meeting this afternoon, that would be greatly appreciated!

Thank you,
Kyla

Kyla Tanner
Project Manager
613-234-4065 ext 269
www.cahdco.org
www.ccochousing.org

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This e-mail originates from the City of Ottawa e-mail system. Any distribution, use or copying of this e-mail or the information it contains by other than the intended recipient(s) is unauthorized. Thank you.

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'

Project: 44 Eccles Street
Proj. No.: 121255
Design: SB/BS

Reference: City of Ottawa Water Distribtuion Guidelines, 2010

Residential Water Demand (Eccles - Connection 1)

Type of Units	=	46 single room units + office space of 10 employees			
No. of 1 Bedroom Units	=	46			
	=	1.4	persons/unit		
Employees	=	10			
	=	1	persons/unit		
Flow/capita	=	280	L/day/person	75	L/day/employee
Domestic Flow Daily	=	18782	L/day	(No. Units x No. People x Residential Flow)	
	=	0.217	L/s	Greater than 50m³	NO
Max Daily	=	67615.2	L/day	(3.6 x Domestic)	
	=	0.783	L/s		
Max Hour	=	4226	L/hour	(5.4 x Domestic / 24)	
	=	1.174	L/s		
Fire Demand (Governing FUS)	=	10000	L/min		
	=	167	L/s	Refer to FUS calculation sheet	
Fire Demand (Governing OBC)	=	5400	L/min		
	=	90	L/s	Refer to OBC calculation sheet	

Refer to Table 3-3 of the MOE Design Guidelines for Drinking-Water Systems for Max Daily and Max Hour peaking factors for 0 to 500 persons.

CALCULATED WATER DEMANDS:

PROPOSED DEVELOPMENT

AVERAGE DAY =	0.22	L/s
MAXIMUM DAY =	0.78	L/s
PEAK HOUR =	1.17	L/s
MAX DAY + FIRE =	167.78	L/s

CITY OF OTTAWA BOUNDARY CONDITIONS:

BOUNDAY CONDITIONS BASED ON CONNECTION TO 150mm DIA. WATERMAIN ON ECCLES STREET.

MINIMUM HGL =	107.2	m
MAXIMUM HGL =	115.3	m
MAX DAY + FIRE =	99.7	m

WATERMAIN ANALYSIS:

44 ECCLES STREET WATERMAIN CONNECTIONS

FINSIHED FLOOR GROUND ELEVATION = 70.00 m

HIGH PRESSURE TEST = MAX HGL - AVG GROUND ELEV x 1.42197 PSI/m < 80 PSI

HIGH PRESSURE = 64.4 PSI

LOW PRESSURE TEST = MIN HGL - AVG GROUND ELEV x 1.42197 PSI/m > 40 PSI

LOW PRESSURE = 52.9 PSI

MAX DAY + FIRE TEST = MAX DAY + FIRE - AVG GROUND ELEV x 1.42197 PSI/m > 20 PSI

LOW PRESSURE = 42.2 PSI

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines

NOVATECH
Engineers, Planners & Landscape Architects

Novatech Project #: 121255
Project Name: 44 Eccles Street
Date: 1/26/2022
Input By: Ben Sweet
Reviewed By: Sam Bahia

Legend: Input by User; No Information or Input Required

Building Description: Low Rise Existing Building
(Brick veneer, steel structure, 3 floors + basement <50% embedded, vertical sepeation TBC)

Step			Input		Value Used	Total Fire Flow (L/min)
Base Fire Flow						
1	**Construction Material**			**Multiplier**		
	Coefficient related to type of construction **C**	Wood frame		1.5	0.6	
		Ordinary construction		1		
		Non-combustible construction		0.8		
		Modified Fire resistive construction (2 hrs)	Yes	0.6		
		Fire resistive construction (> 3 hrs)		0.6		
2	**Floor Area**					
	A	Building Footprint (m^2)	650			
		Number of Floors/Storeys	4			
		Area of structure considered (m^2)			**2,600**	
	F	**Base fire flow without reductions**				**7,000**
		F = 220 **C** (**A**)$^{0.5}$				
Reductions or Surcharges						
3	**Occupancy hazard reduction or surcharge**			**Reduction/Surcharge**		
	(1)	Non-combustible		-25%	-15%	**5,950**
		Limited combustible	Yes	-15%		
		Combustible		0%		
		Free burning		15%		
		Rapid burning		25%		
4	**Sprinkler Reduction**			**Reduction**		
	(2)	Adequately Designed System (NFPA 13)	Yes	-30%	-30%	**-2,380**
		Standard Water Supply	Yes	-10%	-10%	
		Fully Supervised System	No	-10%		
				Cumulative Total	**-40%**	
5	**Exposure Surcharge (cumulative %)**				**Surcharge**	
	(3)	North Side	20.1 - 30 m		10%	**3,868**
		East Side	0 - 3 m		25%	
		South Side	30.1- 45 m		5%	
		West Side	0 - 3 m		25%	
				Cumulative Total	**65%**	
Results						
6	**(1) + (2) + (3)**	**Total Required Fire Flow, rounded to nearest 1000L/min**			**L/min**	**7,000**
		(2,000 L/min < Fire Flow < 45,000 L/min)		or	L/s	**117**
				or	USGPM	1,849
7	**Storage Volume**	Required Duration of Fire Flow (hours)			Hours	2
		Required Volume of Fire Flow (m^3)			m^3	840

OBC Water Supply for Firefighting Calculation

Based on OBC 2012 (Div. B, Article 3.2.5.7)

References: Ontario Fire Marshal - OBC Fire Fighting Water Supply
Ontario Building Code 2012, Appendix A, Vol 2., A-3.2.5.7

Novatech Project #: 121255
Project Name: 44 Eccles Street
Date: 1/26/2022
Input By: Ben Sweet
Reviewed By: Sam Bahia

Legend
Input by User
No Input Required

Building Description: Low Rise Existing Building
(Brick veneer, steel structure, 3 floors + basement <50% embedded, vertical sepeation TBC)

Unsprinklered

Step		Calculation Inputs		Calculation Notes	Value
Minimum Fire Protection Water Supply Volume					
1	**Water Supply Coefficient**				
	Building Classification =	A-2 / C / D		From Table 3.1.2.1	
	Water Supply Coefficient - K =			From Table 1 (A3.2.5.7)	**10**
2	**Total Building Volume**				
	Building Width - W	19.50	m		
	Building Length - L	33.30	m	Area (W * L) = 649 m	
	Building Height - H	13.50	m		
	Total Building Volume - V =			W * L * H	**8766 m³**
3	**Spatial Coefficient Value**				
	Exposure Distances: (Exterior building face to property/lot line, to street centre, or to mid-point between proposed building and another building on same lot)			**Spatial Coefficients:** From Figure 1 (Spatial Coefficient vs Exposure Distance)	
	North	15.00	m	Sside 1 = **0.00**	
	East	3.00	m	Sside 2 = **0.50**	
	South	33.00	m	Sside 3 = **0.00**	
	West	3.00	m	Sside 4 = **0.50**	
	Total of Spacial Coefficient Values - S-Tot as obtained from the formula =			1.0 + (Sside 1 + Sside 2 + Sside 3 + Sside 4) (Max. value = 2.0)	**2.00**
4	**Minimum Fire Protection Water Supply Volume**				
	Q =			$K * V * S_{Tot}$	**175,325 L**
Required Minimum Water Supply Flow Rate					
5	**Minimum Water Supply Flow Rate =**			From Table 2 (For water supply from a municipal or industrial water supply system, min. pressure is 140 kPa)	**5,400 L/min** or **90 L/s**
Minimum Fire Protection Water Supply Volume for 30 minutes					
6	**Q =**			= Minimum Water Supply Flow Rate (L/min) * 30 minutes	**162,000 L**
Required Fire Protection Water Supply Volume					
7	**Q =**			Highest volume out of (4) and (6)	**175,325 L**
Notes					

APPENDIX C
Sanitary Servicing Information

PROJECT #: 121255
PROJECT NAME: 44 ECCLES STREET
LOCATION: OTTAWA

NOVATECH
Engineers, Planners & Landscape Architects

DATE PREPARED: JANUARY 2022

44 ECCLES STREET SANITARY FLOWS

LOCATION			RESIDENTIAL							INFILTRATION				PIPE					
			Unit Type			TOTAL													
AREA	FROM	TO	1 Bed Units	Employee	Pop.	Pop.	Accum. Pop.	Peak Factor	Peak Flow (l/s)	Total Area (ha)	Accum. Area (ha)	Infilt. Flow (l/s)	Total Flow (l/s)	Size (mm)	Slope (%)	Length (m)	Capacity (l/s)	Full Flow Vel. (m/s)	Q/Q_{full} (%)
	BLDG	EX	46	10	74.4	74.4	74.4	3.4	0.82	0.260	0.260	0.09	0.91	150	1.00	14.2	15.2	0.86	6.0%
Existing Sewer Capacity														300	2.02	89.2	137.3	1.94	

Design Parameters:

- 1 Bed Apartment = 1.4 persons/unit
- Employee = 1.0 persons

Section 4.0 Ottawa Sewer Design Guidelines

- Average Domestic Flow 280 L/person/day
- Extraneous Flows 0.33 l/s/ha

Residential Peaking Factor Harmon Equation

APPENDIX D
Storm Servicing and Stormwater Management Calculations

PROJECT #: 121255
PROJECT NAME: 44 ECCLES STREET
LOCATION: OTTAWA

NOVATECH
Engineers, Planners & Landscape Architects

DATE PREPARED: JANUARY 2022

TABLE 1A: Pre-Development Runoff Coefficient "C" - PRE

Area	Surface	Ha	"C"	C_{avg}	$*C_{100}$
Total	Hard	0.249	0.90	0.87	0.97
0.258	Soft	0.009	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff

TABLE 1B: Pre-Development Flows

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Eccles Street	0.258	0.87	15	**38.8**	**52.4**	**99.7**

Time of Concentration	Tc=	15	min
Intensity (2 Year Event)	I_2=	61.77	mm/hr
Intensity (5 Year Event)	I_5=	83.56	mm/hr
Intensity (100 Year Event)	I_{100}=	142.89	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$

Equations:
Flow Equation
Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

TABLE 2A: Post-Development Runoff Coefficient "C" - A-1

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.002	0.90	0.30	0.35
0.011	Soft	0.009	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

TABLE 2B: Post-Development A-1 Flows

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Eccles Street (combined sewer)	0.011	0.30	10	**0.7**	**0.9**	**1.9**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$

Equations:
Flow Equation
Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

PROJECT #: 121255
PROJECT NAME: 44 ECCLES STREET
LOCATION: OTTAWA

NOVATECH
Engineers, Planners & Landscape Architects

DATE PREPARED: JANUARY 2022

TABLE 3A: Post-Development Runoff Coefficient "C" - A-2

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.003	0.90	0.90	1.00
0.003	Soft	0.000	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

TABLE 3B: Post-Development A-2 Flows

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Adjacent Properties (surface drainage)	0.003	0.90	10	**0.6**	**0.8**	**1.4**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$

Equations:
Flow Equation
Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

PROJECT #: 121255
PROJECT NAME: 44 ECCLES STREET
LOCATION: OTTAWA

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Engineers, Planners & Landscape Architects

DATE PREPARED: JANUARY 2022

TABLE 4A: Post-Development Runoff Coefficient "C" - A-3

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.064	0.90	0.90	1.00
0.064	Soft	0.000	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

TABLE 4B: Post-Development A-3 Flows

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Eccles Street (combined sewer)	0.064	0.90	10	**12.2**	**16.6**	**31.6**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$

Equations:
Flow Equation
Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

TABLE 5A: Post-Development Runoff Coefficient "C" - A-4

			5 Year Event		100 Year Event	
Area		Ha	"C"	C_{avg}	"C" + 25%	$^*C_{avg}$
Total	Hard	0.147	0.90	0.90	1.00	1.00
0.147	Soft	0.000	0.20		0.25	

TABLE 5B: 2 YEAR EVENT QUANTITY STORAGE REQUIREMENT - A-4

0.147 =Area (ha)
0.90 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
2 YEAR	5	103.57	38.17	10.5	27.67	8.30
	10	76.81	28.31	10.5	17.81	10.68
	15	**61.77**	**22.76**	**10.5**	**12.26**	**11.04**
	20	52.03	19.18	10.5	8.68	10.41
	25	45.17	16.65	10.5	6.15	9.22

TABLE 5C: 5 YEAR EVENT QUANTITY STORAGE REQUIREMENT - A-4

0.147 =Area (ha)
0.90 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
5 YEAR	10	104.19	38.40	10.8	27.60	16.56
	15	83.56	30.79	10.8	19.99	18.00
	20	**70.25**	**25.89**	**10.8**	**15.09**	**18.11**
	25	60.90	22.44	10.8	11.64	17.46
	30	53.93	19.87	10.8	9.07	16.33

TABLE 5D: 100 YEAR EVENT QUANTITY STORAGE REQUIREMENT - A-4

0.147 =Area (ha)
1.00 = C

Return Period	Time (min)	Intensity (mm/hr)	Flow Q (L/s)	Allowable Runoff (L/s)	Net Flow to be Stored (L/s)	Storage Req'd (m^3)
100 YEAR	20	119.95	49.12	11.0	38.12	45.74
	25	103.85	42.52	11.0	31.52	47.29
	30	**91.87**	**37.62**	**11.0**	**26.62**	**47.92**
	35	82.58	33.82	11.0	22.82	47.91
	40	75.15	30.77	11.0	19.77	47.45

Equations:

Flow Equation

$Q = 2.78 \times C \times I \times A$

Where:

C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

Runoff Coefficient Equation

$C_5 = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

$C_{100} = (A_{hard} \times 1.0 + A_{soft} \times 0.25)/A_{Tot}$

TABLE 5E: Structure information

Structures	Size Dia.(mm)	Area (m^2)	T/G	Inv IN	Inv OUT
CB2	610 x 610	0.37	68.35	N/A	67.22

TABLE 5F: Storage Provided - A-4

Area A-01: Storage Table				
Elevation (m)	Depth (m)	Structure Volume (m^3)	Surface Ponding Volume (m^3)	Total Volume (m^3)
67.22	0.00	0.00	0.00	0.00
68.35	1.13	0.42	0.00	0.42
68.45	1.23	0.42	2.03	2.45
68.55	1.33	0.42	14.73	15.15
68.65	1.43	0.42	50.51	50.93

TABLE 5G: Orfice Sizing information - A-4

Control Device					
Tempest LMF			105 mm		
Design Event	**Flow (L/S)**	**Head (m)**	**Elev (m)**	**Outlet dia. (mm)**	**Volume (m^3)**
1:2 Year	10.5	1.15	68.52	300.00	11.04
1:5 Year	10.8	1.19	68.56	300.00	18.11
1:100 Year	11.0	1.27	68.64	300.00	47.92

**The design Head is calculated based on the centre of the pipe

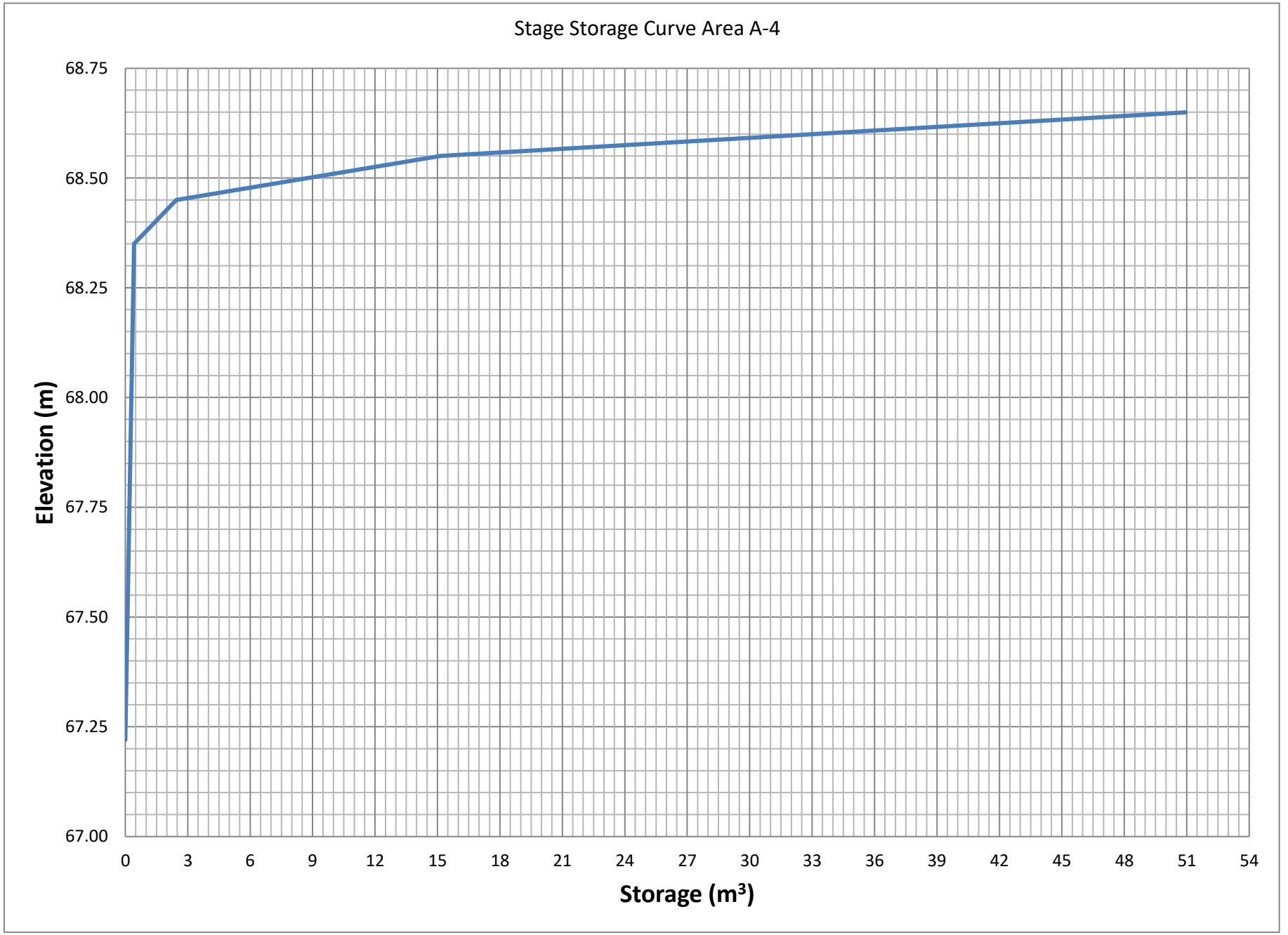

Stage Storage Curve Area A-4
68.75
68.50
68.25
68.00
67.75
67.50
67.25
67.00
Elevation (m)
0
3
6
9
12
15
18
21
24
27
30
33
36
39
42
45
48
51
54
Storage (m³)

TABLE 6A: Post-Development Runoff Coefficient "C" - A-5

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.016	0.90	0.90	1.00
0.016	Soft	0.000	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

TABLE 6B: Post-Development A-5 Flows

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Eccles Street (combined sewer)	0.016	0.90	10	**3.1**	**4.2**	**8.1**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$

Equations:
Flow Equation
Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

TABLE 7A: Post-Development Runoff Coefficient "C" - A-6

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.014	0.90	0.90	1.00
0.014	Soft	0.000	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

TABLE 7B: Post-Development A-6 Flows

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Eccles Street (combined sewer)	0.014	0.90	10	**2.7**	**3.6**	**6.9**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$

Equations:
Flow Equation
Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

PROJECT #: 121255
PROJECT NAME: 44 ECCLES STREET
LOCATION: OTTAWA

NOVATECH
Engineers, Planners & Landscape Architects

DATE PREPARED: JANUARY 2022

TABLE 8A: Post-Development Runoff Coefficient "C" - A-7

Area	Surface	Ha	"C"	C_{avg}	*C_{100}
Total	Hard	0.003	0.90	0.90	1.00
0.003	Soft	0.000	0.20		

Runoff Coefficient Equation

$C = (A_{hard} \times 0.9 + A_{soft} \times 0.2)/A_{Tot}$

* Runoff Coefficient increases by 25% up to a maximum value of 1.00 for the 100-Year event

TABLE 8B: Post-Development A-7 Flows

Outlet Options	Area (ha)	C_{avg}	Tc (min)	$Q_{2\ Year}$ (L/s)	$Q_{5\ Year}$ (L/s)	$Q_{100\ Year}$ (L/s)
Eccles Street (combined sewer)	0.003	0.90	10	**0.6**	**0.8**	**1.4**

Time of Concentration	Tc=	10	min
Intensity (2 Year Event)	I_2=	76.81	mm/hr
Intensity (5 Year Event)	I_5=	104.19	mm/hr
Intensity (100 Year Event)	I_{100}=	178.56	mm/hr

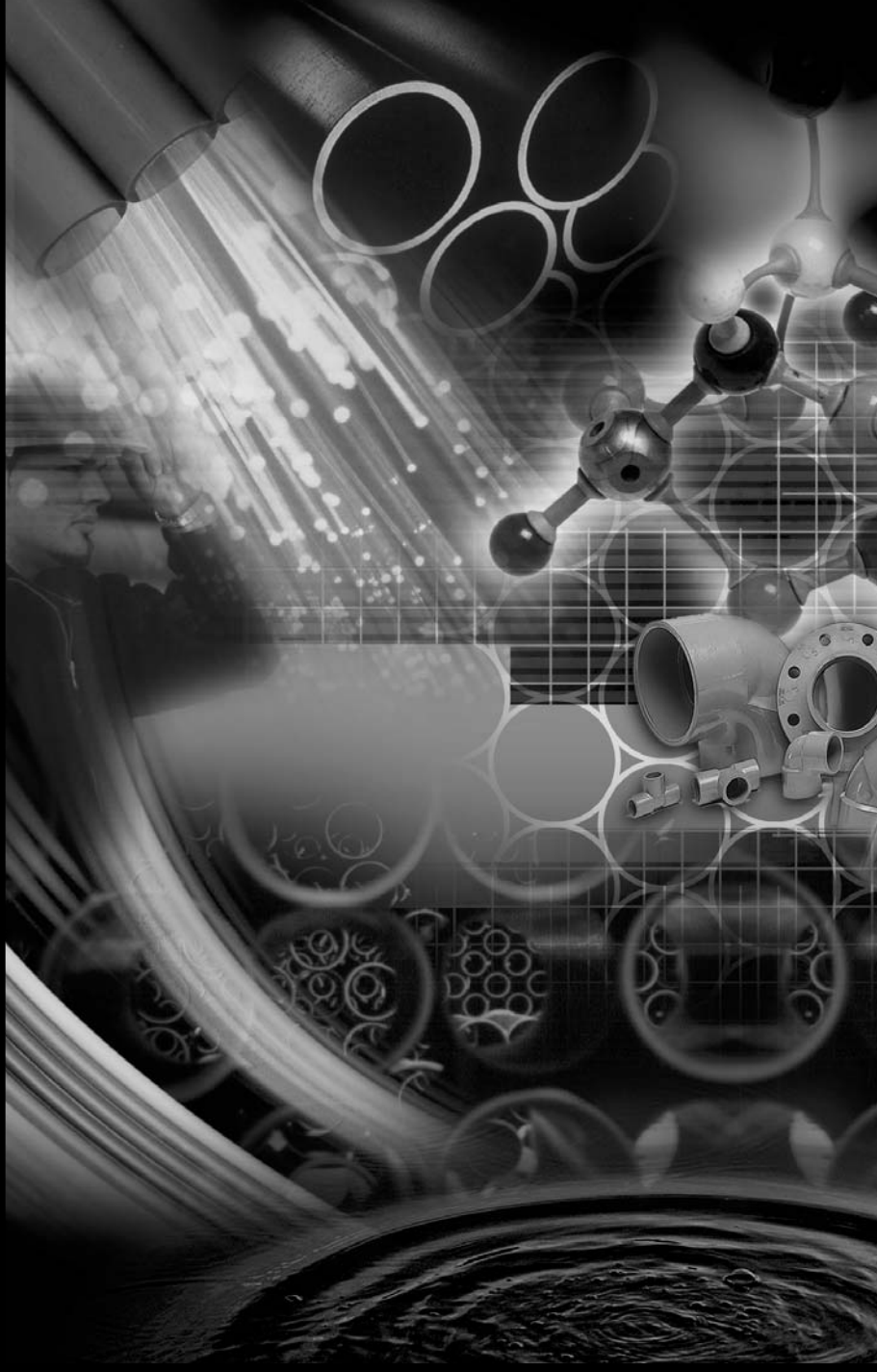
100 year Intensity = 1735.688 / (Time in min + 6.014) $^{0.820}$
5 year Intensity = 998.071 / (Time in min + 6.053) $^{0.814}$
2 year Intensity = 732.951 / (Time in min + 6.199) $^{0.810}$

Equations:
Flow Equation
Q = 2.78 x C x I x A
Where:
C is the runoff coefficient
I is the rainfall intensity, City of Ottawa IDF
A is the total drainage area

Table 9: Post-Development Stormwater Mangement Summary

Area ID	Area (ha)	1:5 Year Weighted Cw	Oulet Location	Orifice	2 Year Storm Event				5 Year Storm Event				100 Year Storm Event			
					Release (L/s)	Head (m)	Req'd Vol (cu.m)	Max. Vol. Provided (cu.m.)	Release (L/s)	Head (m)	Req'd Vol (cu.m)	Max. Vol. Provided (cu.m.)	Release (L/s)	Head (m)	Req'd Vol (cu.m)	Max. Vol. Provided (cu.m.)
A-1	0.011	0.30	Eccles Street	N/A	0.7	N/A	N/A	N/A	0.9	N/A	N/A	N/A	1.9	N/A	N/A	N/A
A-2	0.003	0.90	Adjacent Properties	N/A	0.6	N/A	N/A	N/A	0.8	N/A	N/A	N/A	1.4	N/A	N/A	N/A
A-3	0.064	0.90	Eccles Street	N/A	12.2	N/A	N/A	N/A	16.6	N/A	N/A	N/A	31.6	N/A	N/A	N/A
A-4	0.147	0.90	Eccles Street	LMF 105	10.5	1.15	11.04	50.93	10.8	1.19	18.11	50.93	11.0	1.27	47.92	50.93
A-5	0.016	0.90	Eccles Street	N/A	3.1	N/A	N/A	N/A	4.2	N/A	N/A	N/A	8.1	N/A	N/A	N/A
A-6	0.014	0.90	Eccles Street	N/A	2.7	N/A	N/A	N/A	3.6	N/A	N/A	N/A	6.9	N/A	N/A	N/A
A-7	0.003	0.90	Eccles Street	N/A	0.6	N/A	N/A	N/A	0.8	N/A	N/A	N/A	1.4	N/A	N/A	N/A
Total					**30.4**				**37.7**				**62.3**			
Allowable					**38.8**				**52.4**				**99.7**			

Volume III: TEMPEST™ INLET CONTROL DEVICES



Municipal Technical Manual Series

SECOND EDITION

LMF (Low to Medium Flow) ICD

HF (High Flow) ICD

MHF (Medium to High Flow) ICD

IPEX

PRODUCT INFORMATION: TEMPEST LOW, MEDIUM FLOW (LMF) ICD

Purpose

To control the amount of storm water runoff entering a sewer system by allowing a specified flow volume out of a catch basin or manhole at a specified head. This approach conserves pipe capacity so that catch basins downstream do not become uncontrollably surcharged, which can lead to basement floods, flash floods and combined sewer overflows.

Product Description

Our LMF ICD is designed to accommodate catch basins or manholes with sewer outlet pipes 6" in diameter and larger. Any storm sewer larger than 12" may require custom modification. However, IPEX can custom build a TEMPEST device to accommodate virtually any storm sewer size.

Available in 14 preset flow curves, the LMF ICD has the ability to provide flow rates: 2lps – 17lps (31gpm – 270gpm)

Product Function

The LMF ICD vortex flow action allows the LMF ICD to provide a narrower flow curve using a larger orifice than a conventional orifice plate ICD, making it less likely to clog. When comparing flows at the same head level, the LMF ICD has the ability to restrict more flow than a conventional ICD during a rain event, preserving greater sewer capacity.

Product Construction

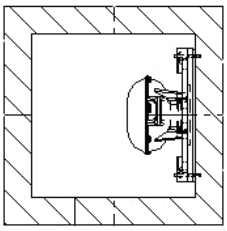
Constructed from durable PVC, the LMF ICD is light weight 8.9 Kg (19.7 lbs).

Product Applications

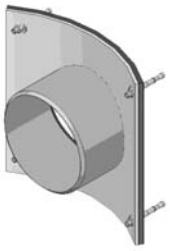
Will accommodate both square and round applications:

Square Application

Universal Mounting Plate



Round Application



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Spigot CB Wall Plate

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Universal Mounting Plate Hub Adapter

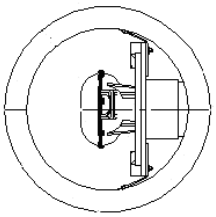


Chart 1: LMF 14 Preset Flow Curves

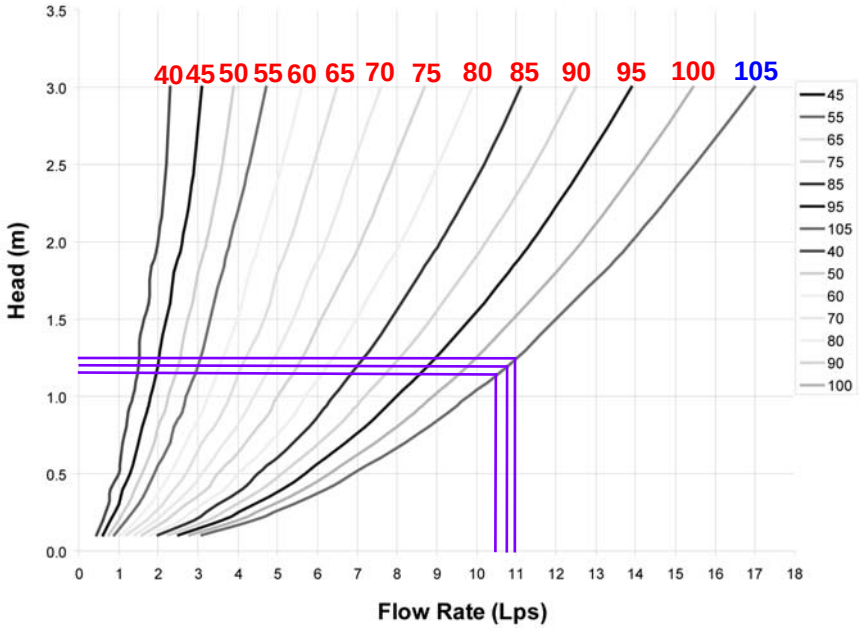
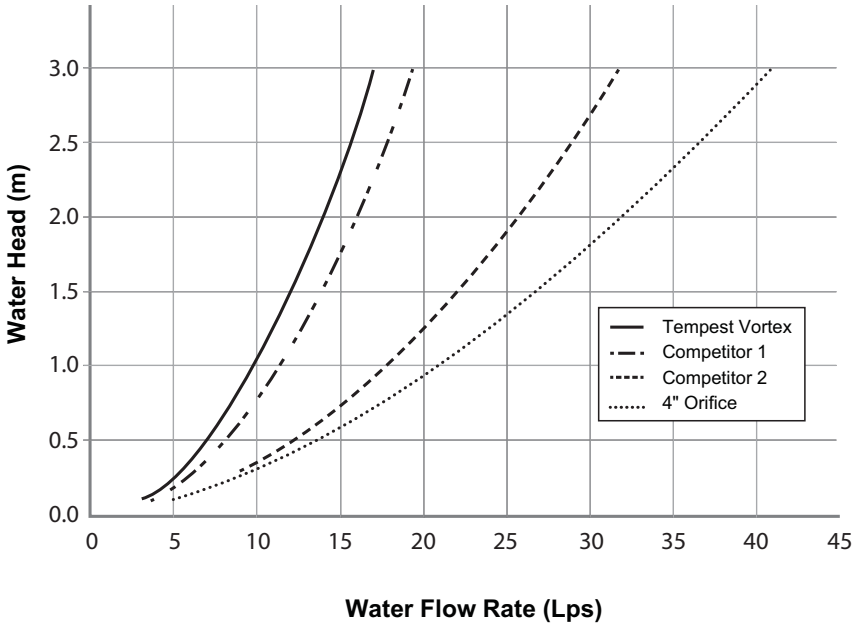


Chart 2: LMF Flow vs. ICD Alternatives



PRODUCT INSTALLATION

Instructions to assemble a TEMPEST LMF ICD into a Square Catch Basin:

STEPS:

1. Materials and tooling verification:
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level, and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers, (4) nuts, universal mounting plate, ICD device.
2. Use the mounting wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a minimum of 1-1/2" depth up to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the universal mounting plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the wall mounting plate and the catch basin wall.
6. From the ground above using a reach bar, lower the ICD device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the universal mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut down the pipe flush to the catch basin wall.
- Call your IPEX representative for more information or if you have any questions about our products.

Instructions to assemble a TEMPEST LMF ICD into a Round Catch Basin:

STEPS:

1. Materials and tooling verification.
   - Tooling: impact drill, 3/8" concrete bit, torque wrench for 9/16" nut, hand hammer, level and marker.
   - Material: (4) concrete anchor 3/8 x 3-1/2, (4) washers and (4) nuts, spigot CB wall plate, universal mounting plate hub adapter, ICD device.
2. Use the spigot catch basin wall plate to locate and mark the hole (4) pattern on the catch basin wall. You should use a level to ensure that the plate is at the horizontal.
3. Use an impact drill with a 3/8" concrete bit to make the four holes at a depth between 1-1/2" to 2-1/2". Clean the concrete dust from the holes.
4. Install the anchors (4) in the holes by using a hammer. Thread the nuts on the top of the anchors to protect the threads when you hit the anchors with the hammer. Remove the nuts from the ends of the anchors.
5. Install the CB spigot wall plate on the anchors and screw the 4 nuts in place with a maximum torque of 40 N.m (30 lbf-ft). There should be no gap between the spigot wall plate and the catch basin wall.
6. Apply solvent cement on the hub of the universal mounting plate, hub adapter and the spigot of the CB wall plate, then slide the hub over the spigot. Make sure the universal mounting plate is at the horizontal and its hub is completely inserted onto the spigot. Normally, the corners of the universal mounting plate hub adapter should touch the catch basin wall.
7. From ground above using a reach bar, lower the ICD device by hooking the end of the reach bar to the handle of the ICD device. Align the triangular plate portion into the mounting wall plate. Push down the device to be sure it has centered in to the mounting plate and has created a seal.

⚠ WARNING

- Verify that the outlet pipe doesn't protrude into the catch basin. If it does, cut back the pipe flush to the catch basin wall.
- The solvent cement which is used in this installation is to be approved for PVC.
- The solvent cement should not be used below 0°C (32°F) or in a high humidity environment. Refer to the IPEX solvent cement guide to confirm the required curing time or visit the IPEX Online Solvent Cement Training Course available at www.ipexinc.com.
- Call your IPEX representative for more information or if you have any questions about our products.

PRODUCT TECHNICAL SPECIFICATION

General

Inlet control devices (ICD's) are designed to provide flow control at a specified rate for a given water head level and also provide odour and floatable control. All ICD's will be IPEX Tempest or approved equal.

All devices shall be removable from a universal mounting plate. An operator from street level using only a T-bar with a hook will be able to retrieve the device while leaving the universal mounting plate secured to the catch basin wall face. The removal of the TEMPEST devices listed above must not require any unbolting or special manipulation or any special tools.

High Flow (HF) Sump devices will consist of a removable threaded cap which can be accessible from street level with out entry into the catchbasin (CB). The removal of the threaded cap shall not require any special tools other than the operator's hand.

ICD's shall have no moving parts.

Materials

ICD's are to be manufactured from Polyvinyl Chloride (PVC) or Polyurethane material, designed to be durable enough to withstand multiple freeze-thaw cycles and exposure to harsh elements.

The inner ring seal will be manufactured using a Buna or Nitrile material with hardness between Duro 50 and Duro 70.

The wall seal is to be comprised of a 3/8" thick Neoprene Closed Cell Sponge gasket which is attached to the back of the wall plate.

All hardware will be made from 304 stainless steel.

Dimensioning

The Low Medium Flow (LMF), High Flow (HF) and the High Flow (HF) Sump shall allow for a minimum outlet pipe diameter of 200mm with a 600mm deep Catch Basin sump.

Installation

Contractor shall be responsible for securing, supporting and connecting the ICD's to the existing influent pipe and catchbasin/manhole structure as specified and designed by the Engineer.