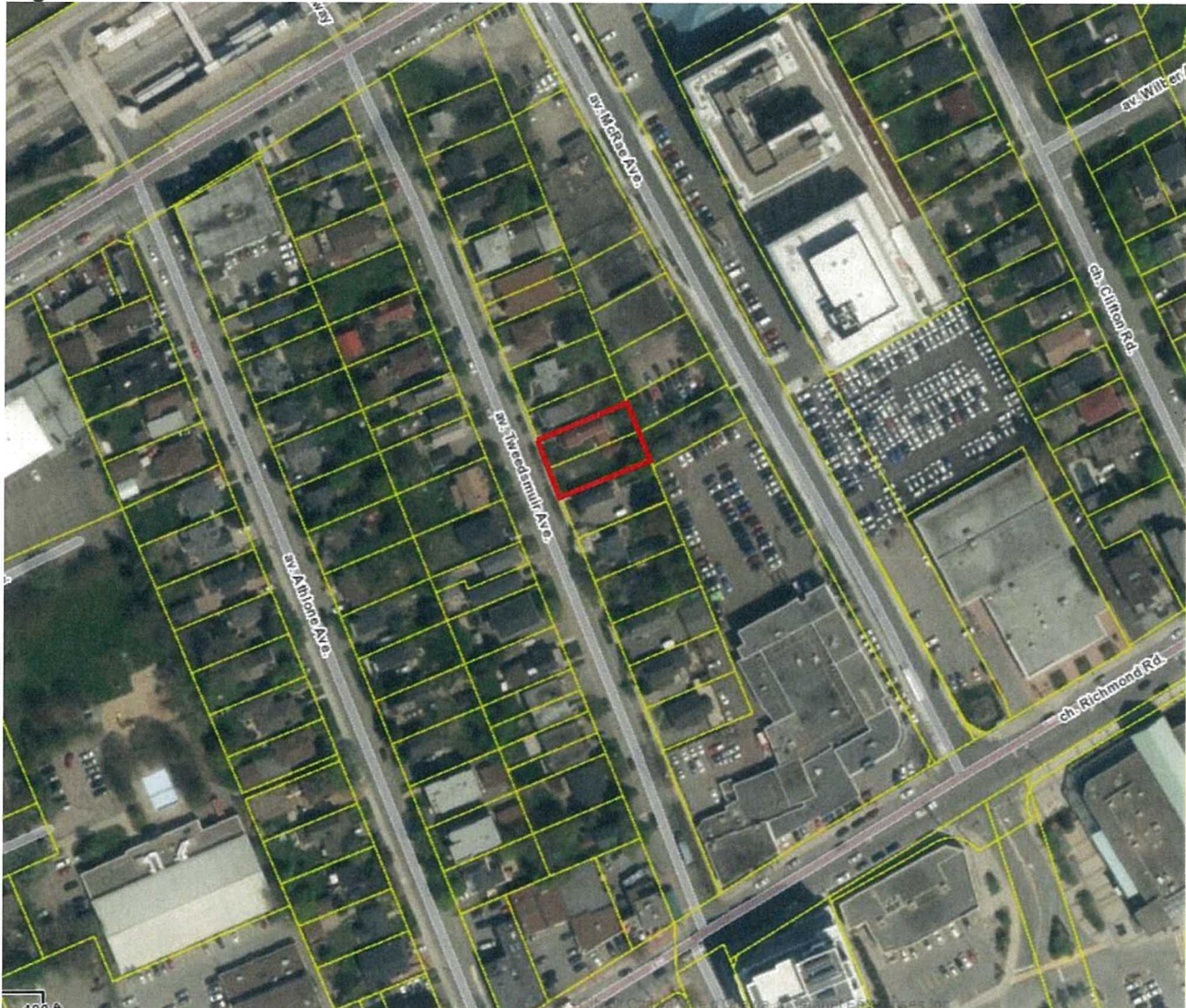


TECHNICAL MEMORANDUM

DATE: JANUARY 18, 2018
TO: MURRAY CHOWN
FROM: MIROSLAV SAVIC
RE: 341 & 343 TWEEDSMUIR AVENUE – SITE SERVICING BRIEF

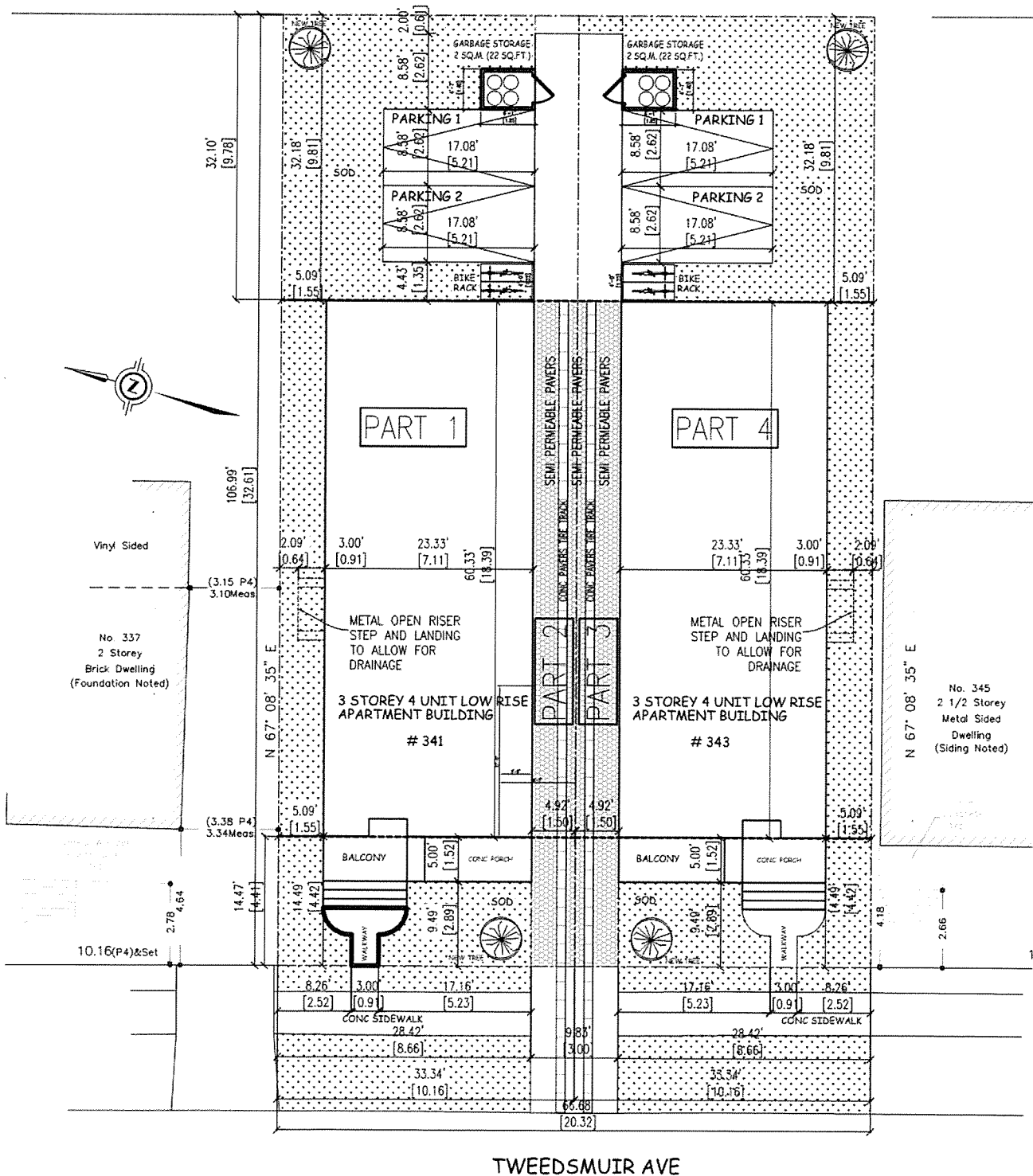
Novatech has been retained to review the adequacy of existing services for the Zoning By-law Amendment and the Site Plan application for the proposed development located at 341 and 343 Tweedsmuir in the City of Ottawa.

Figure 1: Aerial View of The Site



The subject site is currently occupied by two recently constructed triplexes. Each triplex has three two-bedroom units. The proposed development is the establishment of a fourth residential unit in the basement of each triplex. This converts the use of the buildings from a triplex to a low-rise apartment building. Refer to **Figure 2** for the proposed Site Plan.

Figure 2: Site Plan



The purpose of this memo is to review the water, sanitary and storm servicing requirements for the proposed addition of the two units and will provide an analysis on the existing infrastructure surrounding the site to ensure there is adequate capacity.

WATER SERVICING

There is an existing public 152mm diameter watermain in Tweedsmuir Avenue that currently services the the subject site. Refer to **Figure 3 Existing Services**.

Figure 3: Existing Services



The water demands for the proposed development were calculated and provided to the City of Ottawa to obtain boundary conditions to confirm serviceability. The domestic water demand calculations are based on a theoretical population for the proposed apartment units based on criteria provided in the City of Ottawa Water Design Guidelines.

The required fire flow was calculated using the Fire Underwriter's Survey method and is based on 3-storey above ground wood frame construction. The fire area considered includes adjacent two and a half storey wood frame house at 345 Tweedsmuir Avenue that is separated by less than 3m from the proposed apartment buildings.

The water demand calculations, boundary conditions and watermain analysis calculations for the existing public infrastructure are provided in **Appendix A**.

The results of the hydraulic analysis are summarized below in **Table 1**.

Table1: Water Analysis Results Summary

Condition	Water Demand	Min/Max Allowable Operating Pressures	Limits of Design Operating Pressures
High Pressure	0.07 L/s	80 psi (Max)	72.1 psi
Max Day + Fire Flow	167.17 L/s	20 psi (Min)	20.6 psi
Peak Hour	0.38 L/s	40 psi (Min)	63.7 psi

The results of the water analysis show there is adequate flow and pressure in the existing 152mm watermain in Tweedsmuir Avenue to meet the required domestic and fire flow demands.

SANITARY SERVICING

There is an existing 375mm diameter sanitary sewer in Tweedsmuir Avenue that currently services the subject site. Refer to **Figure 3 Existing Services**.

The increase in peak sanitary flow from the two additional units is calculated to be 0.04 L/s. The total peak sanitary flow generated by the proposed units is calculated to be 0.19 L/s. The sanitary flow calculations are based on criteria provided in the City of Ottawa Sewer Design Guidelines. Refer to Appendix B for detailed calculations.

According to the information provided on the GeoOttawa website, the existing 375mm diameter sanitary sewer in Tweedsmuir Avenue at approximately 0.9% slope has a capacity of 176.5 L/s.

Since the addition of two units increases the peak flow by only 0.04 L/s from the existing condition, there are no concerns that the proposed development flows will have any adverse effects on the existing infrastructure.

STORM SERVICING AND STORMWATER MANAGEMENT

The existing 1200mm diameter storm sewer in Tweedsmuir Avenue currently services the subject site. Refer to **Figure 3 Existing Services**. The surface drainage from the site sheet drains towards the existing catchbasing in Tweedsmuir Avenue. The foundation drainage is connected to the Tweedsmuir Avenue storm sewer.

The stormwater management (quantity and quality control) is not required by the City of Ottawa for the proposed development.

CONCLUSION

Based on the foregoing, the existing sanitary sewer, storm sewer and watermain infrastructure can adequately service the proposed development. The stormwater management is not required by the City of Ottawa.

NOVATECH

Prepared by:



Miroslav Savic, P.Eng
Senior Project Manager | Land Development

List of Appendices:

Appendix A: Water Calculations
Appendix B: Sanitary Sewer Calculations

APPENDIX A
Water Calculations

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Miro Savic

From: Buchanan, Richard <Richard.Buchanan@ottawa.ca>
Sent: Tuesday, January 15, 2019 12:06 PM
To: Miro Savic
Subject: 134&136 Willow Street, 341&343 Tweedsmuir Avenue & 211 Loretta Avenue Boundary Conditions
Attachments: 134-136 Willow Jan 2019.pdf; 341-343 Tweedsmuir Jan 2019.pdf; 211 Loretta Jan 2019.pdf

Hi Miro

Boundary Conditions for the three sites requested.

Richard Buchanan, CET

Project Manager, Development Approvals
Planning, Infrastructure and Economic Development Department
Planning & Growth Management Branch
City of Ottawa | Ville d'Ottawa
☎ 613.580.2424 ext./poste 27801
ottawa.ca/planning / ottawa.ca/urbanisme

Subject: 134&136 Willow Street - Boundary Conditions

The following are boundary conditions, HGL, for hydraulic analysis at 134-136 Willow (zone 1W) assumed to be connected to the 305mm on Willow St (see attached PDF for location).

Minimum HGL = 107.5m

Maximum HGL = 115.0m

MaxDay + FireFlow (150 L/s) = 107.0m

Subject: 341&343 Tweedsmuir Avenue

The following are boundary conditions, HGL, for hydraulic analysis at 341-343 Tweedsmuir (zone 1W) assumed to be connected to the 152mm on Tweedsmuir (see attached PDF for location).

Minimum HGL = 108.8m

Maximum HGL = 114.7m

MaxDay + FireFlow (167 L/s) = 78.5m

Subject: 211 Loretta Avenue- Boundary Conditions

The following are boundary conditions, HGL, for hydraulic analysis at 211 Loretta (zone 1W) assumed to be connected to the 203mm on Loretta (see attached PDF for location).

Minimum HGL = 107.3m

Maximum HGL = 114.7m

MaxDay + FireFlow (167 L/s) = 93.0m

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.

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Boundary Condition for 341-343 Tweedsmuir



Legend
Pipe Ownership
Ownership
Private
Public

FUS - Fire Flow Calculations

As per 1999 Fire Underwriter's Survey Guidelines



Engineers, Planners & Landscape Architects

Novatech #: 118190

Project Name: 341-343 Tweedsmuir Avenue

Date: 10-Jan-19

Input By: Miroslav Savic

Reviewed By:

Legend

Input by User

No Information or Input Required

Building Description: 4-unit Apartment Building

Wood frame

Step			Choose	Multiplier Options	Value Used	Total Fire Flow (L/min)	
	Required Fire Flow						
1	Construction Material						
	Coefficient related to type of construction C	Wood frame	Yes	1.5	1.5		
		Ordinary construction		1			
		Non-combustible construction		0.8			
		Fire resistive construction (< 3 hrs)		0.7			
		Fire resistive construction (> 3 hrs)		0.6			
2	Floor Area						
	A	Building Footprint (m ²)	130				
		Number of Floors/Storeys	3				
		Area of structure considered (m ²)			582		
	F	Base fire flow without reductions				8,000	
		F = 220 C (A) ^{0.5}					
	Reductions or Surcharges						
3	Occupancy hazard reduction or surcharge						
	(1)	Non-combustible	Yes	-25%	-25%	6,000	
		Limited combustible		-15%			
		Combustible		0%			
		Free burning		15%			
		Rapid burning		25%			
4	Sprinkler Reduction						
	(2)	Adequately Designed System (NFPA 13)	No	-30%	0		
		Standard Water Supply	No	-10%			
		Fully Supervised System	No	-10%			
		Cumulative Total				0%	
5	Exposure surcharge (cumulative (%))						
	(3)	North Side	0 - 3 m		25%	3,900	
		East Side	10.1 - 20 m		15%		
		South Side	10.1 - 20 m		15%		
		West Side	20.1 - 30 m		10%		
		Cumulative Total			65%		
	(1) + (2) + (3)	Total Required Fire Flow, rounded to nearest 1000L/min			L/min	10,000	
		(2,000 L/min < Fire Flow < 45,000 L/min)			or	L/s	167
					or	USGPM	2,642
		Required Duration of Fire Flow (hours)			Hours	2	
		Required Volume of Fire Flow (m ³)			m ³	1200	

341-343 TWEEDSMUIR AVENUE

WATERMAIN ANALYSIS

WATER DEMAND

NUMBER OF 2 BDR UNITS	8
PERSONS PER 2 BDR UNIT	2.1
TOTAL POPULATION	17
AVERAGE DAY DEMAND	350 L/c/day
AVERAGE DAY DEMAND	0.07 L/s
MAXIMUM DAY DEMAND (2.5 x avg. day)	0.17 L/s
PEAK HOUR DEMAND (2.2 x avg. day)	0.38 L/s

BOUNDARY CONDITIONS

MINIMUM HGL =	108.8 m
MAXIMUM HGL =	114.7 m
MAX DAY + FIRE =	78.5 m

PRESSURE TESTS

AVERAGE GROUND ELEVATION = 64.0 m

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

HIGH PRESSURE = **72.1 PSI**

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

LOW PRESSURE = **63.7 PSI**

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

20.6 PSI

APPENDIX B
Sanitary Sewer Calculations

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341-343 TWEEEDSMUIR AVENUE

SANITARY FLOW

PROPOSED APPARTMENT BUILDINGS

NUMBER OF 2 BDR UNITS	8
PERSONS PER 2 BDR UNIT	2.1
TOTAL POPULATION	17
AVERAGE DAILY FLOW	280 L/c/day
PEAK FACTOR (HARMON FORMULA)	3.51
PEAK SANITARY FLOW	0.19 L/s

EXISTING TRYPLEX BUILDINGS

NUMBER OF 2 BDR UNITS	6
PERSONS PER 2 BDR UNIT	2.1
TOTAL POPULATION	13
AVERAGE DAILY FLOW	280 L/c/day
PEAK FACTOR (HARMON FORMULA)	3.52
PEAK SANITARY FLOW	0.15 L/s