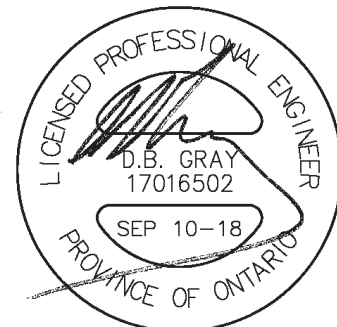


# SERVICING BRIEF & STORMWATER MANAGEMENT REPORT

99 Pinhey Street  
Ottawa, Ontario

Report No. 18036

September 10, 2018



NOT VALID UNLESS  
SIGNED & DATED

## D. B. GRAY ENGINEERING INC.

*Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains*

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# SERVICING BRIEF & STORMWATER MANAGEMENT REPORT

99 Pinhey Street  
Ottawa, Ontario

This report describes the services for a proposed four-storey 24-unit apartment building and addresses the stormwater management requirements of the 644 sq.m. property it is to be located on at 99 Pinhey Street at the corner of Armstrong Street. Two buildings having commercial uses and a garage, all to be demolished, are currently located on the property.

This report forms part of the stormwater management design for the proposed development. Refer to drawing C-1 to C-4 also prepared by D. B. Gray Engineering Inc.

## WATER SUPPLY FOR FIREFIGHTING:

There is an existing fire hydrant in the Armstrong Street right-of-way, located approximately 15m unobstructed distance from the proposed fire department connection. Since the distance is less than the required 45m, an on-site fire hydrant is not required.

Based on the proposed building being of wood framed construction and having an unsupervised sprinkler system, a fire flow of 266.7 l/s (16,000 L/min) is required, as calculated as per the Fire Underwriter Survey "Water Supply For Fire Protection".

The boundary conditions, based on the City of Ottawa computer simulation of the water distribution system in this area, are required to determine if an adequate water supply for firefighting is available. After the boundary conditions are received the hydraulics will be analyzed.

## WATER SERVICE:

As mentioned above the proposed building will have a sprinkler system. To service the sprinkler system a 150mm water service is proposed. The proposed water service will connect to an existing 200 mm municipal watermain in Armstrong Street.

Based on the City of Ottawa Water Distribution Design Guidelines for residential properties (12 one-bedroom apartment units / 1.4 persons per unit and 12 two-bedroom units / 2.1 persons per unit – 350 l/person/day); the daily average flow is 0.2 l/s. Using the Ministry of the Environment Design Guidelines for peaking factors with a maximum daily and maximum hourly demand of 1.5 and 2.3 l/s respectively. Based on these flowrates the 150mm service will be adequate for the domestic demand.

To determine water pressure under these demands, boundary conditions, based on the City of Ottawa computer simulation of the water distribution system, at the subject location, are required. In summary, we have requested the boundary conditions for the subject area based on the following:

- Average daily demand: 0.2 l/s.
- Maximum daily demand: 1.5 l/s.
- Maximum hourly daily demand: 2.3 l/s
- Fire Flow demand: 266.7 l/s
- Fire Flow + Max Day: 268.2 l/s

After the boundary conditions are received the hydraulics will be analyzed to determine if there is an acceptable range of pressures for the proposed development.

#### SANITARY SERVICE:

A 150mm sanitary sewer service is proposed to connect to an existing 300mm municipal sanitary sewer in Armstrong Street.

Based on the City of Ottawa Sewer Design Guidelines for a residential property ((12 one-bedroom apartment units / 1.4 persons per unit and 12 two-bedroom units / 2.1 persons per unit – 280 l/person/day – 3.2 peaking factor); and a 0.33 l/s/ha infiltration flow) the post development flow is calculated to be 0.46 l/s.

This flow will be adequately handled by the proposed sanitary sewer service connection (150mm at 1% - 15.9 l/s capacity). The 0.46 l/s in sanitary flows contributing to the existing 300 mm municipal sanitary sewer is expected to have an acceptable impact given its capacity of 148.3 l/s (300mm at 2.16%).

#### STORMWATER MANAGEMENT:

##### Water Quality:

The building will occupy most of the site and the proposed development does not have surface parking. Roof drainage is typically considered “clean”, therefore as expected the Rideau Valley Conservation Authority (RVCA) does require permanent on-site quality control measures and none are proposed. Specifically, the RVCA has commented: “... *it is our understanding that it will primarily rooftops and landscaping receiving rainwater runoff. Rooftops and landscaped areas are considered clean for the purpose of protecting surface water quality and aquatic habitat. Therefore, provided that there are no surface parking space provided (i.e. more than 6) than no onsite water quality treatment save and except best management practices are required.*”

An erosion and sediment control plan has been developed to be implemented during construction, (see notes 2.1 to 2.5 on drawing C-3). In summary: to filter out construction sediment; sediment capture filter sock inserts will be installed in all existing catch basins adjacent to the site; and material deposited on public road shall be removed by sweeping and shoveling or vacuuming and disposing sediment in a controlled area.

#### Water Quantity:

The stormwater management criteria for quantity control are to control the post development peak flows for the 5-year and 100-year storm events to peak flows during the 5-year storm event using a runoff coefficient of 0.50 and 10-minute time of concentration. Calculations are based on the Rational Method. The runoff coefficients for the 100-year event were increased by 25% to maximum 1.00. Using the Rational Method; the maximum allowable release rate is calculated to be 9.33 l/s for all storm events.

However, it is not practical to control the area around the perimeter of the site, such that during the 100-year event 5.08 l/s drain off the site uncontrolled. As a result, the above maximum allowable release rate of 9.33 l/s cannot be achieved without expensive underground storage. Using flow control roof drains it is proposed that stormwater be stored on the roof of the proposed building. It is calculated that during the 100-year event the maximum release rate will be 11.06 l/s. While this is 19% greater than the maximum allowable, the 11.06 l/s is 65% less than the flow generated from existing conditions because the existing site is all hard surfaces (roof and asphalt). During the 5-year event only 2.63 l/s drain off the site uncontrolled and the maximum release rate is 24% less than the maximum allowable and 58% less than the than the flow generated from existing conditions.

#### Drainage Area I (Uncontrolled Flow Off Site – 142 sq.m.):

The runoff from part of the perimeter of the site will be allowed to flow uncontrolled off the site. The flow from is calculated at 10 minutes concentration.

	100-year	5-year
The maximum flow rate:	5.08 l/s	2.63 l/s

#### Drainage Area II (Roof – 502 sq.m.):

All four roof drains will be flow control types which will restrict the flow and cause the storm water to pond on the roof. The flow control type roof drains shall be installed with a parabolic shaped slotted weir (1 slot per weir drain at 0.0124 l/s per mm per slot - 5 USgpm per inch per slot); Watts roof drain with a Watts Accutrol Weir RD-100-A1 or equal. The roof drains shall be installed at the low points of the roof which shall be 145mm lower than the perimeter of the roof. Scuppers shall be installed 145 mm above the roof drains so that the maximum depth of water on the roof cannot exceed 150 mm as per the Ontario Building Code.

	100-year	5-year
The maximum release rate:	5.99 l/s	4.48 l/s
The maximum ponding depth:	121 mm	90 mm
The maximum stored volume:	12.91 cu.m.	5.41 cu.m.

The unrestricted flowrate resulting from one in five-year storm event will produce a peak flow of 13.7 l/s. However, the flow control roof drains will restrict the flow. The restricted flow calculates to a maximum flow of 4.5 l/s during the one in five-year storm event. The unrestricted flow will be adequately handled by a proposed storm sewer (200mm at 1.00% - 34.2 l/s capacity).

The 4.5 l/s in stormwater flows contributing to the existing 600mm municipal storm sewer (at 0.30% - 350.8 l/s capacity) is expected to have a positive impact since the flows off the site are being reduced by 58% and 65% for the 5 and 100-year storm event respectively.

#### CONCLUSIONS:

1. Boundary conditions are required to determine if there is an adequate water supply for firefighting.
2. We require the boundary conditions to determine if the existing water pressure is adequate for the proposed development.
3. Boundary conditions are required to determine if the water pressure can be above 80 psi and if a pressure reducing valve is required.
4. The proposed water service connection is adequately sized to serve the development.
5. The sanitary sewage flow rate will be adequately handled by the proposed sanitary sewer service connection.
6. The sanitary flow contributing to the existing municipal sanitary sewer is expected to have an acceptable impact.
7. Permanent on-site quality control measures are not required.
8. An erosion and sediment control plan has been developed to be implemented during construction.
9. The maximum release rate will be 65% less than the flow generated from existing conditions during the 100-year event and 58% less during the 5-year event.
10. The restricted flowrate produced by a one in five-year storm event will be adequately handled by the proposed storm sewer connection.
11. The restricted stormwater flow contributing to the existing municipal storm sewer is expected to have a positive impact.

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16-Aug-18

99 Pinhey Street  
Ottawa, Ontario

## Fire Flow Requirements

### 4-Storey 24-Unit Apartment Building Supervised Sprinkler Protection

Fire flow requirement as calculated as per Fire Underwriter Survey "Water Supply For Fire Protection".

$F = 220 C A^{0.5}$  = the required fire flow in litres per minute

F = the required fire flow in litres per minute

C = coefficient related to the type of construction  
= 1.5 Wood Frame Construction

A = total floor area (all storeys excluding basements at least 50% below grade)

1st Floor	467 sq.m.
2nd Floor	500 sq.m.
3rd Floor	500 sq.m.
4th Floor	500 sq.m.
Total area:	1967 sq.m.

F = 14,636 L/min  
= 15,000 L/min (rounded off to the nearest 1,000 L/min)

-15% Change for Limited-combustible Occupancy  
= 12,750 L/min

50% Reduction to above for Supervised Sprinkler Protection  
= 6,375

Increase for Separation Exposed Buildings

			Adjacent Building			Length-Height Factor
			Constuction	Length m	Storeys	
13%	North	10.1 to 20m	W-F	16	3	48
21%	East	0 to 3m	Ord.	15	2	30
17%	South	3.1 to 10m	W-F	13	2	26
12%	West	10.1 to 20m	W-F	9	3	27
<b>63% Total Increase for Exposure (maximum 75%)</b>						
=	8,033 L/min Increase					

= 14,408 L/min  
F = 14,000 L/min (rounded off to the nearest 1,000 L/min)  
= 233.3 l/s

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16-Aug-18

99 Pinhey Street  
Ottawa, Ontario

## Fire Flow Requirements

### 4-Storey 24-Unit Apartment Building Unsupervised Sprinkler Protection

Fire flow requirement as calculated as per Fire Underwriter Survey "Water Supply For Fire Protection".

$F = 220 C A^{0.5}$  = the required fire flow in litres per minute

F = the required fire flow in litres per minute

C = coefficient related to the type of construction  
= 1.5 Wood Frame Construction

A = total floor area (all storeys excluding basements at least 50% below grade)

1st Floor	467 sq.m.
2nd Floor	500 sq.m.
3rd Floor	500 sq.m.
4th Floor	500 sq.m.
Total area:	1967 sq.m.

F = 14,636 L/min  
= 15,000 L/min (rounded off to the nearest 1,000 L/min)

-15% Change for Limited-combustible Occupancy  
= 12,750 L/min

40% Reduction to above for Unsupervised Sprinkler Protection  
= 5,100

Increase for Separation Exposed Buildings

			Adjacent Building			Length- Height Factor
			Constuction	Length m	Storeys	
13%	North	10.1 to 20m	W-F	16	3	48
21%	East	0 to 3m	Ord.	15	2	30
17%	South	3.1 to 10m	W-F	13	2	26
12%	West	10.1 to 20m	W-F	9	3	27
<b>63% Total Increase for Exposure (maximum 75%)</b>						
=	8,033	L/min Increase				

= 15,683 L/min  
F = 16,000 L/min (rounded off to the nearest 1,000 L/min)  
= 266.7 l/s

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16-Aug-18

## 99 Pinhey Street 4-Storey 24-Unit Apartment Building Ottawa, Ontario

### Water Demand

	Number of Units	Persons Per Unit	Population
<b>UNIT TYPE:</b>			
Single Family:	0	3.4	0
Semi- detached:	0	2.7	0
Duplex:	0	2.3	0
Townhouse:	0	2.7	0
<b>APARTMENTS:</b>			
1 Bedroom:	12	1.4	17
2 Bedroom:	12	2.1	25
3 Bedroom:	0	3.1	0
Average Aptarment:	0	1.8	0
<b>TOTAL:</b>	<b>24</b>		<b>42</b>

**DAILY AVERAGE**

	350	litres / person / day	
	10.2	l/min	0.2 l/s
			3 USgpm

**MAXIMUM DAILY DEMAND**

	9.0	(Peaking Factor for a population of 42: Table 3-3 MOE Design Guidelines for Drinking-Water Systems)	
	92.3	l/min	1.5 l/s
			24 USgpm

**MAXIMUM HOURLY DEMAND**

	13.6	(Peaking Factor for a population of 46: Table 3-3 MOE Design Guidelines for Drinking-Water Systems)	
	138.9	l/min	2.3 l/s
			37 USgpm





Douglas Gray &lt;d.gray@dbgrayengineering.com&gt;

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**Boundary Condition Request - 99 Pinhey St**

1 message

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**Douglas Gray** <d.gray@dbgrayengineering.com>  
To: Richard Buchanan <richard.buchanan@ottawa.ca>  
Cc: Lucio Renna <l.renna@dbgrayengineering.com>

Thu, Aug 16, 2018 at 5:42 PM

Hi Richard

We are working on a project at 99 Pinhey St at the corner of Armstrong St. Please provide the boundary conditions at this location. We have calculated the following expected demands for the based on a 4-storey 24-unit apartment building.

Average daily demand: 0.2 l/s.  
Maximum daily demand: 1.5 l/s.  
Maximum hourly daily demand: 2.3 l/s  
Fire Flow demand: 266.7 l/s  
Fire Flow + Max Day: 268.2 l/s

We are looking at an alternative design so please also provide the boundary conditions for a fire flow demand of 233.3 l/s.

Average daily demand: 0.2 l/s.  
Maximum daily demand: 1.5 l/s.  
Maximum hourly daily demand: 2.3 l/s  
Fire Flow demand: 233.3 l/s  
Fire Flow + Max Day: 234.8 l/s

Calculations are attached.

The water service will connect to the watermain in Armstrong St. A location map based from geoOttawa is attached.

Thanks, Doug

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### 4 attachments

 **Gray Eng 99 Pinhey St FUS calcs Unsupervised Sprinkler Aug15-18.pdf**  
17K

 **Gray Eng 99 Pinhey WATER DEMAND calcs Aug16-18.pdf**  
13K

 **Gray Eng 99 Pinhey St FUS calcs Supervised Sprinkler Aug15-18.pdf**  
17K

 **99 Pinhey St.pdf**  
731K

**99 Pinhey Street**  
**4-Storey - 24-Unit Apartment Building**  
**Ottawa, Ontario**  
**Peak Water Demand**

WATER FIXTURE VALUE  
(AWWA Manual M22 - Sizing Water Service Lines and Meters)

	No.	F.V.	Total
Bathtub	31	8	248
Toilet - tank	39	6	234
Toilet - flush valve		24	0
Lavs.	41	1.5	61.5
Bidet		2	0
Urinal - wall flush valve		10	0
Shower		2.5	0
K. Sink	24	1.8	43.2
Dishwasher	24	1.3	31.2
Clothes Washer	24	6	144
Commercial Sink		4	0
J. Sink		4	0
Commercial Dishwasher		4	0
Commercial Washer		4	0
Hose 1/2 in		5	0
Hose 3/4 in	1	12	12
			773.9

Peak Demand (fig 4-2 or 4-3 AWWA M22) 56 USgpm

Pressure @ Meter 414 kPa 60 psi (assumed)

Pressure Factor (table 4-1 AWWA M22) 1.00

Peak Demand 56 USgpm

Irrigation - hose 1/2 in 0 0 USgpm (includes pressure factor)

**TOTAL PEAK DEMAND** **212 l/min** **56 USgpm** **3.5 l/s**

Nominal Size 2.0 in 50 mm  
5.9 ft/s 1.8 m/s



## STORMWATER MANAGEMENT CALCULATIONS

Flow control roof drain calculations are based on the following formula:

$$Q = N \times S \times d \times F$$

where:

Q = flowrate in litres per second

N = number of roof drains

S = slots per weir

d = pond depth at roof drain in mm

F = flowrate through each slot

0.0124 litres per second per mm pond depth (5 USgpm per inch)

Storage calculations on the roof are based on the following formula for volume of a cone:

$$V = (A \times d)/3$$

where:

V = volume in cu.m.

A = ponding area in sq.m.

d = ponding depth in meters

## Summary Table

ONE HUNDRED YEAR EVENT				
Drainage Area	Pre-development Flow Rate	Maximum Allowable Release Rate	Maximum Release Rate	Maximum Volume Stored
	l/s	l/s	l/s	cu.m.
AREA I (Uncontrolled flow off site)	-	-	5.08	-
AREA II (Roof)	-	-	5.99	12.91
TOTAL AREA	31.97	9.33	11.06	12.91

FIVE YEAR EVENT				
Drainage Area	Pre-development Flow Rate	Maximum Allowable Release Rate	Maximum Release Rate	Maximum Volume Stored
	l/s	l/s	l/s	cu.m.
AREA I (Uncontrolled flow off site)	-	-	2.63	-
AREA II (Roof)	-	-	4.48	5.41
TOTAL AREA	16.79	9.33	7.11	5.41

99 Pinhey St  
Ottawa, Ontario

STORM WATER MANAGEMENT CALCULATIONS  
Rational Method

ONE HUNDRED YEAR EVENT

Pre-development Conditions

			C
Roof Area:	490	sq.m.	1.00
Asphalt/Concrete Area:	154	sq.m.	1.00
Landscaped Areas:	<u>0</u>	<u>sq.m.</u>	<u>0.25</u>
Total Catchment Area	644	sq.m.	1.00

Area (A):	644	sq.m.
Time of Concentration:	10	min.
Rainfall Intensity (i):	179	mm/hr (100 year event)
Runoff Coefficient (C):	1.00	(see above)

Pre-development Flow Rate (2.78AiC): 31.97 l/s

Maximum Allowable Release Rate

Area (A):	644	sq.m.
Time of Concentration:	10	min.
Rainfall Intensity (i):	104	mm/hr (5 year event)
Runoff Coefficient (C):	0.50	(See above - use pre conditions not greater than 0.5)

Maximum Allowable Release Rate (2.78AiC): 9.33 l/s

## DRAINAGE AREA I (Uncontrolled Flow Off Site):

			C
Roof Area:	41	sq.m.	1.00
Asphalt/Concrete Area:	48	sq.m.	1.00
Landscaped Areas:	<u>53</u>	<u>sq.m.</u>	<u>0.25</u>
Total Catchment Area	142	sq.m.	0.72
Area (A):	142	sq.m.	
Time of Concentration:	10	min.	
Rainfall Intensity (i):	179	mm/hr (100 year event)	
Runoff Coefficient (C):	0.72		
Flow Rate (2.78AiC):	5.08	l/s	

# DRAINAGE AREA II (Roof):

(ONE HUNDRED YEAR EVENT)

Roof Area:	502	sq.m.	C
Paved Area:	0	sq.m.	1.00
Landscaped Areas:	<u>0</u>	sq.m.	<u>0.25</u>

Total Catchment Area	502	Ave. C	1.00
No. of Roof Drains:	4		
Slots per Wier:	1	0.0124 l/s/mm/slot (5 USgpm/in/slot)	
Depth at Roof Drain:	121	mm	
Maximum Release Rate	5.99	l/s	Pond Area: 321 sq.m.
			Achieved Vol: 12.91 cu.m.
			Max. Vol. Required: 12.91 cu.m.

Time min.	i mm/hr	2.78AiC l/s	Release Rate l/s	Stored Rate l/s	Stored Volume cu.m.
5	243	33.87	5.99	27.89	8.37
10	179	24.92	5.99	18.93	11.36
15	143	19.94	5.99	13.96	12.56
20	120	16.74	5.99	10.75	12.91
25	104	14.49	5.99	8.51	12.76
30	92	12.82	5.99	6.84	12.30
35	83	11.52	5.99	5.54	11.63
40	75	10.49	5.99	4.50	10.80
45	69	9.64	5.99	3.65	9.86
50	64	8.93	5.99	2.94	8.82
55	60	8.32	5.99	2.34	7.71
60	56	7.80	5.99	1.81	6.53
65	53	7.35	5.99	1.36	5.31
70	50	6.95	5.99	0.96	4.04
75	47	6.59	5.99	0.61	2.74
80	45	6.28	5.99	0.29	1.41
85	43	5.99	5.99	0.01	0.05
90	41	5.74	5.74	0.00	0.00
95	39	5.50	5.50	0.00	0.00
100	38	5.29	5.29	0.00	0.00
105	36	5.09	5.09	0.00	0.00
110	35	4.91	4.91	0.00	0.00
115	34	4.75	4.75	0.00	0.00
120	33	4.59	4.59	0.00	0.00
125	32	4.45	4.45	0.00	0.00
130	31	4.31	4.31	0.00	0.00
135	30	4.19	4.19	0.00	0.00
140	29	4.07	4.07	0.00	0.00
145	28	3.96	3.96	0.00	0.00
150	28	3.85	3.85	0.00	0.00
180	24	3.34	3.34	0.00	0.00
210	21	2.95	2.95	0.00	0.00
240	19	2.65	2.65	0.00	0.00
270	17	2.41	2.41	0.00	0.00
300	16	2.22	2.22	0.00	0.00



# FIVE YEAR EVENT

## Pre-development Conditions

			C
Roof Area:	490	sq.m.	0.90
Asphalt/Concrete Area:	154	sq.m.	0.90
Landscaped Areas:	<u>0</u>	<u>sq.m.</u>	<u>0.20</u>
Total Catchment Area	644	sq.m.	0.90

Area (A):	644	sq.m.
Time of Concentration:	10	min.
Rainfall Intensity (i):	104	mm/hr (5 year event)
Runoff Coefficient (C):	0.90	(see above)

Pre-development Flow Rate (2.78AiC): 16.79 l/s

## Maximum Allowable Release Rate

Area (A):	644	sq.m.
Time of Concentration:	10	min.
Rainfall Intensity (i):	104	mm/hr (5 year event)
Runoff Coefficient (C):	0.50	(See above - use pre conditions not greater than 0.5)

Maximum Allowable Release Rate (2.78AiC): 9.33 l/s

## DRAINAGE AREA I (Uncontrolled Flow Off Site):

			C
Roof Area:	41	sq.m.	0.90
Asphalt/Concrete Area:	48	sq.m.	0.90
Landscaped Areas:	<u>53</u>	<u>sq.m.</u>	<u>0.20</u>
Total Catchment Area	142	sq.m.	0.64
Area (A):	142	sq.m.	
Time of Concentration:	10	min.	
Rainfall Intensity (i):	104	mm/hr (5 year event)	
Runoff Coefficient (C):	0.64		
Flow Rate (2.78AiC):	2.63	l/s	

# DRAINAGE AREA II (Roof):

(FIVE YEAR EVENT)

						C
	Roof Area:	502	sq.m.			0.90
	Paved Area:	0	sq.m.			0.90
	Landscaped Areas:	<u>0</u>	sq.m.			<u>0.20</u>
Total Catchment Area		502		Ave. C		0.90
No. of Roof Drains:		4				
Slots per Wier:		1	0.0124 l/s/mm/slot	(5 USgpm/in/slot)		
Depth at Roof Drain:		90	mm			
Maximum Release Rate	4.48	l/s			Pond Area:	180 sq.m.
					Achieved Vol:	5.41 cu.m.
					Max. Vol. Required:	5.41 cu.m.

Time	i	2.78AiC	Release	Stored	Stored
min.	mm/hr	l/s	Rate	Rate	Volume
			l/s	l/s	cu.m.
5	141	17.73	4.48	13.25	3.98
10	104	13.09	4.48	8.61	5.16
15	84	10.49	4.48	6.02	5.41
20	70	8.82	4.48	4.34	5.21
25	61	7.65	4.48	3.17	4.75
30	54	6.77	4.48	2.29	4.13
35	49	6.09	4.48	1.61	3.39
40	44	5.55	4.48	1.07	2.57
45	41	5.10	4.48	0.62	1.69
50	38	4.73	4.48	0.25	0.75
55	35	4.41	4.41	0.00	0.00
60	33	4.14	4.14	0.00	0.00
65	31	3.90	3.90	0.00	0.00
70	29	3.69	3.69	0.00	0.00
75	28	3.50	3.50	0.00	0.00
80	27	3.34	3.34	0.00	0.00
85	25	3.19	3.19	0.00	0.00
90	24	3.05	3.05	0.00	0.00
95	23	2.93	2.93	0.00	0.00
100	22	2.81	2.81	0.00	0.00
105	22	2.71	2.71	0.00	0.00
110	21	2.62	2.62	0.00	0.00
115	20	2.53	2.53	0.00	0.00
120	19	2.45	2.45	0.00	0.00
125	19	2.37	2.37	0.00	0.00
130	18	2.30	2.30	0.00	0.00
135	18	2.23	2.23	0.00	0.00
140	17	2.17	2.17	0.00	0.00
145	17	2.11	2.11	0.00	0.00
150	16	2.06	2.06	0.00	0.00
180	14	1.78	1.78	0.00	0.00
210	13	1.58	1.58	0.00	0.00
240	11	1.42	1.42	0.00	0.00
270	10	1.29	1.29	0.00	0.00
300	9	1.19	1.19	0.00	0.00





Douglas Gray &lt;d.gray@dbgrayengineering.com&gt;

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**RE: 99 Pinhey St**

1 message

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**Jamie Batchelor** <jamie.batchelor@rvca.ca>  
To: Lucio Renna <l.renna@dbgrayengineering.com>  
Cc: Douglas Gray <d.gray@dbgrayengineering.com>

Thu, Aug 30, 2018 at 5:35 PM

Good Afternoon Lucio,

Based on the description below, it is our understanding that it will primarily rooftops and landscaping receiving rainwater runoff. Rooftops and landscaped areas are considered clean for the purpose of protecting surface water quality and aquatic habitat. Therefore provided that there are no surface parking space provided (ie: more than 6) than no onsite water quality treatment save and except best management practices are required.

Jamie Batchelor, MCIP, RPP

Planner

Rideau Valley Conservation Authority

[3889 Rideau Valley Drive](#)

[613-692-3571 ext 1191](#)

[jamie.batchelor@rvca.ca](mailto:jamie.batchelor@rvca.ca)

**From:** Lucio Renna <l.renna@dbgrayengineering.com>  
**Sent:** Thursday, August 16, 2018 9:15 AM  
**To:** Jamie Batchelor <jamie.batchelor@rvca.ca>  
**Cc:** Douglas Gray <d.gray@dbgrayengineering.com>  
**Subject:** 99 Pinhey St

Hi Jamie

We are working on a proposed 467 sq.m. 4-storey 24-unit apartment building located on 644 sq.m. of land at [99 Pinhey St](#) in Ottawa. 7 underground parking spots will be provided.

Attached is a location map.

Please comment concerning the stormwater management for this site.

Regards,

Lucio Renna

## D. B. GRAY ENGINEERING INC.

*Stormwater Management - Grading & Drainage - Storm & Sanitary Sewers - Watermains*

700 Long Point Circle

Tel: 613-425-8044

Ottawa, Ontario K1T 4E9

[d.gray@dbgrayengineering.com](mailto:d.gray@dbgrayengineering.com)

## City of Ottawa Servicing Study Checklist

### General Content

**Executive Summary (for large reports only):** not applicable

**Date and revision number of the report:** see page 1 of Servicing Brief and Stormwater Management Report

**Location map and plan showing municipal address, boundary, and layout of proposed development:** see drawings C-1 to C-4

**Plan showing the site and location of all existing services:** see drawings C-1 to C-4

**Development statistics, land use, density, adherence to zoning and official plan, and reference to applicable subwatershed and watershed plans that provide context to which individual developments must adhere:** not applicable

**Summary of Pre-consultation Meetings with City and other approval agencies:** not available

**Reference and confirm conformance to higher level studies and reports ( Master Servicing Studies, Environmental Assessments, Community Design Plans), or in the case where it is not in conformance, the proponent must provide justification and develop a defensible design criteria:** not applicable

**Statement of objectives and servicing criteria:** see page 2 of Servicing Brief and Stormwater Management Report

**Identification of existing and proposed infrastructure available in the immediate area:** see drawings C-1 to C-4

**Identification of Environmentally Significant Areas, watercourses and Municipal Drains potentially impacted by the proposed development ( Reference can be made to the Natural Heritage Studies, if available).** see drawings C-1 to C-4

**Concept level master grading plan to confirm existing and proposed grades in the development and drainage, soil removal and fill constraints, and potential impacts to neighbouring properties. This is also required to confirm that the proposed grading will not impede existing major system flow paths:** not applicable

**Identification of potential impacts of proposed piped services on private services (such as wells and septic fields on adjacent lands) and mitigation required to address potential impacts:** not applicable

**Proposed phasing of the development, if applicable:** not applicable

**Reference to geotechnical studies and recommendations concerning servicing:** see note 1.5 on drawing C-3

**All preliminary and formal site plan submissions should have the following information:**

- **Metric scale:** included
- **North arrow:** included
  - **(including construction North):** not included
- **Key Plan:** included

- **Name and contact information of applicant and property owner:** not available
- **Property limits:** included
  - **including bearings and dimensions:** not included
- **Existing and proposed structures and parking areas:** included
- **Easements, road widening and rights-of-way:** included
- **Adjacent street names:** included

**Development Servicing Report: Water**

**Confirm consistency with Master Servicing Study, if available:** not applicable

**Availability of public infrastructure to service proposed development:** see page 2 of Servicing Brief and Stormwater Management Report

**Identification of system constraints:** see page 2 of Servicing Brief and Stormwater Management Report

**Confirmation of adequate domestic supply and pressure:** see page 2 of Servicing Brief and Stormwater Management Report

**Confirmation of adequate fire flow protection and confirmation that fire flow is calculated as per the Fire Underwriter's Survey. Output should show available fire flow locations throughout the development:** see page 2 & 6 to 9 of Servicing Brief and Stormwater Management Report

**Provide a check of high pressures. If pressure is found to be high, an assessment is required to confirm the application of pressure reducing valves:** not applicable

**Definition of phasing constraints. Hydraulic modeling is required to confirm servicing for all defined phases of the project including the ultimate design:** not applicable

**Address reliability requirements such as appropriate location of shut-off valves:** not applicable

**Check on the necessity of a pressure zone boundary modification:** not applicable

**Reference to water supply analysis to show that major infrastructure is capable of delivering sufficient water for the proposed land use. This includes data that shows that the expected demands under average day, peak hour and fire flow conditions provide water within the required pressure range:** not applicable

**Description of the proposed water distribution network, including locations of proposed connections to the existing systems, provisions for necessary looping, and appurtenances (valves, pressure reducing valves, valve chambers, and fire hydrants) including special metering provisions:** not applicable

**Description of off-site required feeder mains, booster pumping stations, and other water infrastructure that will be ultimately required to service proposed development, including financing, interim facilities, and timing of implementation:** not applicable

**Confirmation that water demands are calculated based on the City of Ottawa Design Guidelines:** see page 2 of Servicing Brief

**Provision of a model schematic showing the boundary conditions locations, streets, parcels, and building locations for reference:** not applicable



## **Development Servicing Report: Wastewater**

**Summary of proposed design criteria:** see page 3 of Servicing Brief and Stormwater Management Report

**(Note: Wet-weather flow criteria should not deviate from the City of Ottawa Sewer Design Guidelines. Monitored flow data from relatively new infrastructure cannot be used to justify capacity requirements for proposed infrastructure):** not applicable

**Confirm consistency with Master Servicing Study and /or justification for deviations:** not applicable

**Consideration of local conditions that may contribute to extraneous flows that are higher than the recommended flows in the guidelines. This includes groundwater and soil conditions, and age and conditions of sewers:** not applicable

**Descriptions of existing sanitary sewer available for discharge of wastewater from proposed development:** see page 3 of Servicing Brief and Stormwater Management Report

**Verify available capacity in downstream sanitary sewer and / or identification of upgrades necessary to service the proposed development. (Reference can be made to previously completed Master Servicing Study if applicable):** not applicable

**Calculations related to dry-weather and wet-weather flow rates from the development in standard MOE sanitary sewer design table (Appendix C) format.** see page 9 of Servicing Brief

**Description of proposed sewer network including sewers, pumping stations, and forcemains:** see page 3 of Servicing Brief and Stormwater Management Report

**Discussion of previously identified environmental constraints and impact on servicing (environmental constraints are related to limitations imposed on the development in order to preserve the physical condition of watercourses, vegetation, soil cover, as well as protecting against water quantity and quality):** not applicable

**Pumping stations: impacts of proposed development on existing pumping stations or requirements for new pumping station to service development:** not applicable

**Forcemain capacity in terms of operational redundancy, surge pressure and maximum flow velocity:** not applicable

**Identification and implementation of the emergency overflow from sanitary pumping stations in relation to the hydraulic grade line to protect against basement flooding:** not applicable

**Special considerations such as contamination, corrosive environment etc:** not applicable

## **Development Servicing Report: Stormwater Checklist**

**Description of drainage outlets and downstream constraints including legality of outlets (i.e. municipal drain, right-of-way, watercourse, or private property):** see page 4 & 5 of Servicing Brief and Stormwater Management Report

**Analysis of available capacity in existing public infrastructure.** not applicable

**A drawing showing the subject lands, its surroundings, the receiving watercourse, existing drainage patterns, and proposed drainage pattern:** see drawing C-2

**Water quality control objective (e/g/ controlling post-development peak flows to pre-development level for storm events ranging from the 2 or 5 year event (dependent on the receiving sewer design) to 100 year return period); if other objectives are being applied, a rationale must be included with reference to hydrologic analyses of the potentially affected subwatersheds, taking into account long-term cumulative effects:** see Stormwater Management Report Servicing Brief and Stormwater Management Report

**Water Quality control objective (basic, normal or enhanced level of protection based on the sensitivities of the receiving watercourse) and storage requirements:** Servicing Brief and Stormwater Management Report

**Descriptions of the references and supporting information.**  
**Set-back from private sewage disposal systems.** not applicable

**Watercourse and hazard lands setbacks:** not applicable

**Record of pre-consultation with the Ontario Ministry of Environment and the Conservation Authority that has jurisdiction on the affected watershed:** the pre-application consultation record is not yet been issued

**Confirm consistency with sub-watershed and Master Servicing Study, if applicable study exists:** not applicable

**Storage requirements (complete with calculations) and conveyance capacity for minor events (1:5 year return period) and major events (1:100 year return period).** see drawings C-1 to C-4 and Servicing Brief and Stormwater Management Report

**Identification of watercourses within the proposed development and how watercourses will be protected, or , if necessary, altered by the proposed development with applicable approvals.** see drawings C-1 to C-4 and Servicing Brief and Stormwater Management Report

**Calculate pre and post development peak flow rates including a description of existing site conditions and proposed impervious areas and drainage catchments in comparison to existing conditions:** see Servicing Brief and Stormwater Management Report

**Any proposed diversion of drainage catchment areas from one outlet to another. :** not applicable

**Proposed minor and major systems including locations and sizes of stormwater trunk sewers, and stormwater management facilities. :** not applicable

**If quantity control is not proposed, demonstration that downstream system has adequate capacity for the post-development flows up to and including the 100-year return period storm event:** not applicable

**Identification of potential impacts to receiving watercourses:** Servicing Brief and Stormwater Management Report

**Identification of municipal drains and related approval requirements. :** not applicable

**Descriptions of how the conveyance and storage capacity will be achieved for the development:** see page 3 of Servicing Brief and Stormwater Management Report

**100 year flood levels and major flow routing to protect proposed development from flooding for establishing minimum building elevations (MBE) and overall grading:**

**Inclusion of hydraulic analysis including hydraulic grade line elevations. :** not applicable

**Description of approach to erosion and sediment control during construction for the protection of receiving watercourses of drainage corridors:** see notes 2.1 to 2.5 on drawing C-3

**Identification of floodplains – proponent to obtain relevant floodplain information from the appropriate Conservation Authority. The proponent may be required to delineate floodplains elevations to the satisfaction of the Conservation Authority if such information is not available or if information does not match current:** not applicable

**Identification of fill constraints related to floodplain and geotechnical investigation. :** not applicable

#### **Approval and Permit Requirements: Checklist**

**The Servicing Study shall provide a list of applicable permits and regulatory approvals necessary for the proposed development as well as the relevant issues affecting each approval. The approval and permitting shall include but not be limited to the following:**

**Conservation Authority as the designated approval agency for modification of floodplain, potential impact on fish habitat, proposed works in or adjacent to a watercourse, cut/fill permits and Approval under Lakes and Rivers Improvement Act. The Conservation Authority is not approval authority for the Lakes and Rivers Improvement Act. Where there are Conservation Authority regulations in place, approval under the Lakes and Rivers Improvement Act is not required, except in cases of dams as defined in the Act: see page 22 of Servicing Brief and Stormwater Management Report**

**Application for Certificate of Approval (CofA) under the Ontario Water Resources Act:**

**Changes to Municipal Drains. :** not applicable

**Other permits (National Capital commission, Parks Canada, public Works and Government Services Canada, Ministry of transportation etc.) :** not applicable

#### **Conclusion Checklist**

**Clearly stated conclusions and recommendations:** see page 5 of Servicing Brief and Stormwater Management Report

**Comments received from review agencies including the City of Ottawa and information on how the comments were addressed. Final sign-off from the responsible reviewing agency.**

**All draft and final reports shall be signed and stamped by a professional Engineer registered in Ontario:** included