

# Assessment of Adequacy of Public Services Report

1657 - 1673 Carling Ave, Ottawa, ON

Prepared for:

Inside Edge Properties 464 Bank St, Suite 200 Ottawa, ON K2P 1Z3

Attention: Jordan Bianconi

LRL File No.: 220449

July 3<sup>rd</sup>, 2024

## TABLE OF CONTENTS

1	INT	IRODUCTION AND SITE DESCRIPTION	1
2	EX	ISTING SITE AND AVAILABLE SERVICES	1
3	CO	NCEPT DEVELOPMENT	2
4	WA	ATER SUPPLY SERVICING	2
	4.1	Residential Water Demands	3
	4.2	Commercial Water Demands	4
	4.3	Total Water Demands	5
	4.4	Fire Protection	6
5	SA	NITARY SERVICE	7
6	ST	ORMWATER MANAGEMENT	7
	6.1	Existing Stormwater Infrastructure	7
	6.2	Design Criteria	7
	6.3	Proposed Stormwater Management System	8
	6.4	Quality Control	9
7	CO	NCLUSION	9

## **A**PPENDICES

Appendix A	Concept Plan
Appendix B	Water Pressure Map & Fire Hydrants Location
Appendix C	Water Demand & Fire Flow Calculations
Appendix D	Boundary Conditions
Appendix E	Sanitary Calculations & City Correspondence
Appendix F	Stormwater Calculations & City Correspondence

# LIST OF TABLES

Table 1: Conceptual Total Floor Area	2
Table 2: City of Ottawa Design Guidelines – Water Design Parameters	3
Table 3: Development Residential Population Estimate	3
Table 4: Summary of Boundary Conditions	5
Table 5: Fire Protection Summary Table	6
Table 6: Post-development Estimated Area & Runoff Coefficients	B
Table 7: Summary of Post-Development Flow Rates	9

## LIST OF FIGURES

Tigure I – Anar view of oubject Lands
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### **1** INTRODUCTION AND SITE DESCRIPTION

LRL Engineering Ltd. was retained by Inside Edge Properties to prepare a functional serviceability report to support Zoning Bylaw Amendment of the property located at 1657 - 1673 Carling Avenue within the City of Ottawa. The applicant is submitting a Zoning By-law Amendment in order to establish site-specific building height and setback provisions to permit the establishment of a 28-storey (86m) high-rise residential apartment building with ground floor commercial uses. The building will be supported by external and below-grade vehicle and bicycle parking.

The subject site is within the Kitchissippi ward, located on the northwest side of Carling Avenue, and has an approximate area of **0.36 ha**. The property is extended and encompasses 386 Tillbury Avenue, located northwest of 1657 – 1673 Carling Avenue and has an approximate area of **0.02 ha**. The properties are currently zoned AM10. The site at 1657 - 1673 Carling Ave consists of a 2-storey commercial building occupying a majority of the south half of the site. The balance of the site consists of a paved parking lot, driveway, and small grassed areas. The site at 386 Tillbury Avenue consists of residential 2 storey building.

The collective subject site can be seen below in Figure 1.



Figure 1: Arial View of Subject Lands

### 2 EXISTING SITE AND AVAILABLE SERVICES

The site consists of a 2-storey commercial building and an asphalt parking lot at 1657 – 1673 Carling Avenue. The site also consists of a 2-storey residential building with a paved driveway on Tillbury Avenue. There is a landscape buffer surrounding the exterior of the parcels.

Sewer and watermain mapping, along with as-built information collected from the City of Ottawa indicate the following existing infrastructure located within the adjacent rights-of-way:

#### Carling Avenue:

- 300mmØ Concrete Sanitary Sewer
- 610mmØ PVC Watermain
- 225mmØ 375mmØ Concrete Storm Sewer

#### Tillbury Avenue:

- 225mmØ Concrete Sanitary Sewer
- 305mmØ PVC Watermain
- 450mmØ Concrete Storm Sewer

### **3** CONCEPT DEVELOPMENT

The intention of this serviceability report is to review the existing conditions of municipal services & infrastructure to determine the servicing feasibility of a high-density residential/commercial mixed development within the subject property. The contemplated development includes 28 multi-storey high-rise apartment building with surface and underground parking, with access from Carling Avenue and Tillbury Avenue.

The contemplated buildings transition down from 28 storeys at the south portion (bordered by Carling Avenue) to 9 storeys to 6 storeys and 4 storeys. The development contemplates a mixed-use floor area with retail and residential units. The following is a contemplated breakdown of the floor space:

Table 1: Conceptual Total Floor Area

	Building Area (m <sup>2</sup> )
Retail (4 Units)	360.78
Residential (370 Units)	23 152.50
Total`	23 513.28

Refer to the Site Plan SP-01 prepared by Project1 Studio Planning & Design included in **Appendix A.** 

### 4 WATER SUPPLY SERVICING

The subject property lies within the City of Ottawa 1W water distribution network pressure zone. There are currently two existing watermains within servicing range of the site; a 610 mm PVC pipe located on Carling Ave, and a 305 mm PVC pipe located on Tillbury Avenue. There are currently seven (7) existing fire hydrants within a 300m proximity of the subject property. Refer to *Appendix B* for the water pressure zone map and location of fire hydrants.

According to the City of Ottawa Water Distribution Guidelines (Technical Bulletin ISDTB-2014-02), as the subject site is anticipated to house more than 50 residential units, it is required to be serviced by two water service laterals, separated by an isolation valve, for redundancy and to avoid creation of a vulnerable service area. Hence, the contemplated development is anticipated to be serviced via two services connected to either the existing 610mm watermain within Carling Avenue or the existing 305mm watermain located on Tillbury Avenue. The service laterals are to be looped inside the building in coordination with the mechanical engineer at detailed design stage.

Table 2, included below, summarizes the City of Ottawa Design Guidelines design parameters in the preparation of the water demand estimate.

Design Parameter	Value	
Residential Bachelor / 1 Bedroom Apartment	1.4 P/unit	
Residential 2 Bedroom Apartment	2.1 P/unit	
Residential 3 Bedroom Apartment	3.1 P/unit	
Commercial Average Daily Demand	2.8 L/m²/d	
Average Daily Demand	280 L/d/per	
Minimum Depth of Cover	2.4 m from top of watermain to finished grade	
Desired operating pressure range during normal	350 kPa and 480 kPa	
operating conditions		
During normal operating conditions pressure must not	275 kPa	
drop below		
During normal operating conditions pressure shall not	552 kPa	
exceed		
During fire flow operating conditions pressure must not	140 kPa	
drop below		
*Table updated to reflect technical Bulletin ISDTB-2018	-02	

Table 2: City of Ottawa Design Guidelines - Water Design Parameters

## 4.1 Residential Water Demands

Anticipated population demands have been interpreted from the Site Plan SP-02 provided by Project1 Studio Inc. The contemplated development is anticipated to include **370** residential units, which translates to a population of **616** as per the City of Ottawa Water Distribution Design Guidelines. Table 3 below summarizes the proposed population count as interpreted using Table 4.1 of the *City of Ottawa Water Distribution Design Guidelines*.

Table 3: Development Residential Population Estimate

Unit Type	Persons Per Unit	Number of Units	Population
1 Bedroom Apartment / Studio	1.4	230	322
2 Bedroom Apartment	2.1	140	294
		Total	616

The required water supply requirements for the residential units in the proposed subdivision have been calculated using the following formula:

$$Q = (q \times P \times M)$$

Where:

q = average water consumption (L/capita/day)P = design population (capita)M = Peak factor

With reference to *Table 4.2 of the City of Ottawa Water Distribution Design Guidelines*, using an average water consumption rate of 280 L/c/d, a calculated Maximum Daily Demand Factor and Maximum Hour Demand Factor of 2.5 and 2.2, respectively, anticipated demands were calculated as follows:

- Average daily domestic water demand is 2.13 L/s,
- Maximum daily demand is 5.33 L/s, and
- Maximum hourly demand is 11.73 L/s.

## 4.2 Commercial Water Demands

As previously mentioned, the concept plan indicates that a portion of the floor area will be dedicated to commercial space. As per Site Plan SP-02, this commercial space would work out to a GFA of approximately **400**  $m^2$ .

The required water supply requirements for the commercial space within the proposed subdivision have been calculated using the following formula:

Where:

$$Q = (q \times A \times M)$$

q = average water consumption (L/m<sup>2</sup>/day) A = commercial area (m<sup>2</sup>) M = Peak factor

With reference to Table 4.2 of the *City of Ottawa Water Distribution Design Guidelines* and *technical bulletin ISTB-18-02*, using an average water consumption rate of 2.5 L/m<sup>2</sup>/d, a calculated Maximum Daily Demand Factor and Maximum Hour Demand Factor of 1.5 and 1.8, respectively, anticipated commercial demands were calculated as follows:

- Average daily domestic water demand is **0.012** L/s,
- Maximum daily demand is **0.017** L/s, and
- Maximum hourly demand is **0.031** L/s.

### 4.3 Total Water Demands

Based on calculated residential and commercial demands for the concept development, the total anticipated water demands are as follows.

- o Average daily domestic water demand is 2.14 L/s,
- Maximum daily demand is **5.35** L/s, and
- Maximum hourly demand is **11.76** L/s.

For greater detail on Water Demand Calculations, please refer to Appendix C.

The City of Ottawa was contacted to obtain boundary conditions associated with the estimated water demand, as indicated in the boundary request correspondence included in *Appendix D*. It was requested that hydraulic analysis be performed for both Carling Avenue and Tillbury Avenue. At this stage we have requested boundary conditions for the following demands (Table 4), these will be refined further during the site plan control phase.

#### Table 4: Summary of Boundary Conditions

Boundary Conditions – Carling Avenue						
Design Parameter	Anticipated Demand (L/s)	Min Pressure (Psi/kPa)	Max Pressure (Psi/kPa)			
Max Daily Demand	5.35	43.83 / 302.20	51.66 / 356.18			
Max Hourly Demand	11.76	43.39 / 299.16	51.22 / 353.15			
*Carling Ave, Ground Elevation assumed at 77.9m						

Boundary Conditions – Tillbury Ave							
Design Parameter	Anticipated Demand (L/s)	Min Pressure (Psi/kPa)	Max Pressure (Psi/kPa)				
Max Daily Demand	5.35	43.28 / 298.41	51.68 / 356.32				
Max Hourly Demand	11.76	41.97 / 289.37	50.36 / 347.22				
*Carling Ave, Ground Elevation assumed at 77.9m							

As indicated in Table 4, minimum pressures in the maximum daily demand fall below the required pressure range stated in Table 1 as per City of Ottawa Design Guidelines. Means of either decreasing water demands, or increasing water service pressure mechanically, will need to be investigated and implemented to provide sufficient minimum pressure to the proposed development.

Refer to *Appendix D* for Boundary Conditions.

## 4.4 Fire Protection

The estimated fire flow for the proposed building was calculated in accordance with *ISTB-2018-02*. The following parameters were assumed by Project1 Studio:

- Type of construction Fire resistive construction > 2 hrs
- Occupancy type Limited combustibility; and
- Sprinkler protection Automatic Fully Supervised Sprinkler System

Based on the following parameters, it was calculated that the required fire flow for the contemplated building floor plan and layout is **11,000 L/min (183.3 L/s)**.

Through discussion & correspondence with the City of Ottawa asset management department, it was noted that, in order to operate municipal water services at a minimum pressure of 20psi, only the following fire flows were available from municipal services;

- 145 L/s from the Carling Avenue watermain
- 117 L/s from the Tillbury Avenue watermain

Based on the provided, fire flow demands from the current concept building are too great to tie to either the Carling or Tillbury watermain. To ensure that the building can be serviced by one of the watermains during detailed design, the architect will need to investigate further means of decreasing the buildings required fire flow. Fire separation/compartmentation, such as floor assemblies, wall assemblies, etc will need to further be investigated to reduce the fire flow to an acceptable demand.

### Refer to *Appendix D* for Boundary Conditions.

As for aggregate flow available for fire fighting services, there are at least six (7) existing fire hydrants near the contemplated buildings that are available to provide the maximum required fire flow demands of **11,000 L/min (183.3 L/s)**.

Refer to **Appendix D** for fire hydrant locations.

Table 4 below summarizes the aggregate fire flow of the contributing hydrants near the proposed development based on Table 18.5.4.3 of *ISTB-2018-02*.

	Max. Fire Flow	Fire	Fire	Fire	Available
	Demand	Hydrants(s)	Hydrant(s)	Hydrant(s)	Combined Fire
	(L/min)	within 75m	within 150m	within 300m	Flow (L/min)
Contemplated Development	11,000	3	2	2	(3 x 5678) + (2 x 3785) + (2 x 2839) = 30,282

Table 5: Fire Protection Summary Table

The total available fire flow from contributing hydrants is equal to **30,282 L/min** which is sufficient to provide adequate fire flow for the proposed development for fire fighting purposes. A certified

fire protection system specialist will need to be employed to design the building's fire suppression system and confirm the actual fire flow demand.

## 5 SANITARY SERVICE

There are two existing municipal sanitary sewers from which the contemplated development can tie into. The first municipal sanitary sewer is a 300mm concrete sanitary sewer located on Carling Avenue parallel to the southern property line of the subject site. The other sanitary sewer is a 225mm concrete sanitary sewer located on Tillbury Avenue which runs parallel to the northwest property line of 386 Tillbury Avenue.

The total anticipated post development total flow was calculated to be is **6.68 L/s** because of proposed residential population, commercial use and a small portion of infiltration. Refer to **Appendix E** for further information on the calculated sanitary flows.

As per preliminary correspondence with the City of Ottawa, the Tillbury Ave and Carling Ave sanitary sewers do have adequate capacity to accommodate the proposed development. It is still strongly recommended that the sanitary capacity determined during detailed design is to again be reviewed with the City of Ottawa to ensure the existing the City sanitary sewer has adequate capacity for the proposed sanitary flows.

## 6 STORMWATER MANAGEMENT

## 6.1 Existing Stormwater Infrastructure

There are three existing municipal storm sewers nearby the subject property. Two of them are located on Carling Avenue and one on Tillbury Avenue. The ones on Carling Avenue consists of a 225mm concrete storm sewer which is closer to the subject property and a 375mm storm sewer. The storm sewer located on Tillbury Avenue consists of a 450mm concrete pipe.

During this review, it is not confirmed if existing stormwater management exists on the site; however, it is assumed that any collection and conveyance of stormwater in the underground sewers on site is directed to Carling Avenue storm sewers.

## 6.2 Design Criteria

The stormwater management criteria for this development are based on the City of Ottawa Sewer Design Guidelines including City of Ottawa Stormwater Management Design Guidelines, 2012 (City standards), as well as the Ministry of the Environment's Stormwater Planning and Design Manual, 2003 (SWMPD Manual).

The stormwater management are expected to have to meet the following stormwater design criteria;

- Meet an allowable release rate based on the pre-development Rational Method Coefficient or a maximum of 0.50, employing the City of Ottawa IDF parameters for a 5-year storm with a calculated time of concentration equal to or greater than 10 minutes;
- Attenuate all storms up to and including the City of Ottawa 100-year storm event on site, and control the 100-year storm event flow to the 2-year storm event pre-development release rate;
- Provide enhanced quality treatment (80% TSS removal) prior to release from site. Further consultation with the local conservation authority would confirm this; and
- During detailed design, the stormwater system will be designed following the principles of dual drainage, making accommodations for both major and minor flow.

### 6.3 Proposed Stormwater Management System

The contemplated development is anticipated to outlet to either the existing 225mm municipal storm sewer located on Carling Avenue or to the existing 450mm municipal storm sewer located on Tillbury Avenue. It is anticipated that area drains on the surface parking lot along with roof drains on building rooftops will be utilised to collect and direct runoff to a control point on-site, prior to release to either the Carling or Tllbury storm sewer.

Based on stormwater objectives for the subject site, the allowable release rate for the contemplated development is  $\pm$ **41.74** L/s for all storms up to and including the 100-year storms. To meet the stormwater objectives, the contemplated development may contain a combination of roof top flow attenuation along with surface and subsurface storage.

Table 5 below summarizes assumed post-development drainage areas based on the *Site Plan*. Calculations can be seen in *Appendix F*.

Watershed	C=0.2 Pervious Area (ha)	C=0.9 Building Area/Asphalt (ha)	Total Area (ha)	Weighted Runoff Coefficient
Uncontrolled Areas	0.030	0.020	0.050	0.48
Controlled Areas	0.000	0.341	0.341	0.90
TOTAL	0.292	0.906	0.391	0.73

Table 6, below, summarizes post-development flow rates. The following storage requirement estimate conservatively assumes that approximately 12.8% of the development area will be directed to the outlet without flow attenuation. These areas will be compensated for in areas with flow attenuation controls.

Catchment Area	Drainage Area (ha)	100-year Release Rate (L/s)	100-Year Required Storage (m3)
Uncontrolled Areas	0.317	82.94	0
Controlled Areas	0.881	90.56	245.84
TOTAL	1.198	173.50	245.84

Table 7: Summary of Post-Development Flow Rates

It is anticipated that approximately **109.06**  $m^3$  of storage will be required on site to attenuate flow to the established release rate of  $\pm 26.50$  L/s in the 100-year storm; storage calculations are contained within **Appendix F**. It is anticipated that the contemplated development will achieve required storage via a combination of roof top flow attenuation along with surface and subsurface storage. Actual storage volumes will need to be confirmed at the detailed design stage based on a number of factors, including grading constraints and finalized site layout.

As per preliminary correspondence with the City, based on the concept stormwater management calculations provided, the storm sewer along Tillbury Ave does not have sufficient capacity to accommodate site runoff, and there is concern the storm sewer along Carling Ave may have low level of service. The Carling storm sewer capacity would need to be reviewed with the City of Ottawa during detailed design stage to ensure the existing the City storm sewer(s) has adequate capacity for the proposed release rate, and if not, provide the necessary constraint (i.e. maximum allowable release/flow rate) to design site stormwater management accordingly.

### 6.4 Quality Control

It is anticipated that the contemplated development would utilize an Oil/Grit Separator (OGS) to achieve the required 80% TSS removal treatment as specified by Rideau Valley Conservation Authority. The OGS would be required to treat all contaminated runoff collected in the surface parking lot before runoff is discharged into ditch.

### 7 CONCLUSION

This evaluation is limited to assessing the serviceability of the site described within this document to support an Official Plan Amendment and Zoning By-law Amendment.

Based on the Site Plan *SP-01* provided by Project 1, included to **Appendix C**, the following conclusions, in relation to the serviceability of the site, can be made:

### • Water:

- The contemplated development is anticipated to be serviced via a 150mm dual connections to either the existing 610mm watermain within Carling Ave or 152mm watermain within Tillbury Avenue.
- Domestic demands from the proposed concept subdivision are expected to be in the range of 2.14 L/s for the Average daily demand, 5.35 L/s for the maximum daily and 11.76 L/s for maximum hourly.
- The maximum required fire flow was calculated at 11,000 L/min (183.3 L/s) using the FUS method.
- As per the boundary conditions provided by the City of Ottawa, minimum pressures for the maximum daily demand fall below the required pressure range. Means of either decreasing the water demand, or mechanically increasing the water service pressure, will need to be investigated.
- In order to operate municipal water services at 20psi, fire flows of only 145 L/s and 117 L/s were available from the Carling and Tillbury watermains, respectively. As concept required fire flow is too large to be supported by either watermain, the architect will need to investigate further means to reduce required fire flow to acceptable levels.
- There are at least seven (7) existing fire hydrants available for fire fighting to service the proposed development. Hydrants within ±300m will provide a combined fire flow of **30,282 L/min** to the site.

#### • Sanitary:

- The post development total sanitary effluent was calculated to be is **6.68 L/s** considering proposed residential & commercial population and a small portion of infiltration.
- It is anticipated to service the contemplated development via a 200 mm diameter sanitary service lateral to be connected to either the existing 300mm sanitary sewer within Carling Avenue or 225mm sanitary sewer within Tillbury Avenue. As per correspondence with the City of Ottawa, both Carling and Tillbury sanitary sewers have adequate capacity to support concept design sanitary flows.

### • Stormwater:

- It is anticipated that an OGS will be installed to treat all contaminated runoff to an enhanced quality treatment level (80% TSS removal).
- As per correspondence with the City of Ottawa, the Tillbury storm sewer does not have adequate capacity to support stormwater runoff from the concept site, and the Carling storm sewer could potentially have a low level of service. In order to be able to tie the site stormwater outlet to the Carling storm sewer, the City will need to be consulted to review existing site conditions and ensure the existing storm sewer has adequate capacity for the proposed release rate. If not, the City will need to establish a maximum allowable stormwater release rate for the site, to which site stormwater management quantity control will be designed to.

Shall the concept plan change in relation to the number of units, building footprint, or impervious area of the site, the conclusions above would no longer be appropriate. During the detailed design stage of this development, the storm, sanitary and water servicing details will be further defined and confirmed.

Prepared by:

LRL Associates Ltd.

Kyle Herold Civil Designer



Virginia Johnson, P.Eng. Civil Engineer

## **APPENDIX A**

Concept Plan by Project1 Studio





## **APPENDIX B**

Water Pressure Map & Fire Hydrant Locations





# APPENDIX C

Water Demand & Fire Flow Calculations



## Water Demand Calculations

LRL File No.	220449-01
Date	July 3, 2024
Prepared by	Kyle Herold

## Residential Demand (CoO Guidelines Table 4.2)

Unit Type	Persons Per Unit	Number of Units	Population	
1 Bedroom Apartment / Studio	1.4	230	322	
2 Bedroom Apartment	2.1	140	294	
		Total	616	
Population	616	Capita		
Average Water Consumption Rate	280	L/c/d		
Maximum Daily Peak Factor	2.5			
Maximum Hourly Peak Factor	2.2			
Average Domestic Water Demand	172,480	L/d	1.996	L/s
Maximum Daily Domestic Water Demand	431,200	L/d	4.991	L/s
Maximum Hourly Water Demand	948,640	L/d	10.980	L/s
Commercial Demand (CoO Guidelines Table	<u>4.2)</u>	I		
Commercial Area	400	m <sup>2</sup>		
Average Daily Demand	2500	L/(1000m <sup>2</sup> /d)		
Maximum Daily Peak Factor	1.5	. ,		
Maximum Hourly Peak Factor	1.8			
Average Commercial Water Demand	1,000	L/d	0.012	L/s
Maximum Daily Commercial Water Demand	1,500	L/d	0.017	L/s
Maximum Hourly Commercial Water Demand	2,700	L/d	0.031	L/s
Total Wator Domand				
Average Total Water Demand	173 /80	l /d	2 008	l /e
Maximum Daily Total Water Demand	432 700	L/d	5 008	L/3
Maximum Hourly Total Water Demand	951,340	L/d	11.011	L/s



#### **Fire Flow Calculations**

LRL File No.	220449-01
Project	1657 Carling Ave
Date	August 31, 2023
Method	Fire Underwriters Survey (FUS)
Designed by	Kyle Herold

Step	Task	Term	Options	Multiplier	Choose:	Value	unit	Fire Flow
			Structural Framing M	aterial				
	Coefficient C		Wood Frame	1.5				
		Coefficient C	Ordinary Construction	1.0				
1	building	related to the type of	Non-combustible construction	0.8	Fire resistive construction >2 hrs	0.6		
	building	construction	Fire resistive construction <2 hrs	0.7				
			Fire resistive construction >2 hrs	0.6				
			Floor Space Are	a				
			Single family dwelling	0				
2	Choose type of	Type of housing	Townhouse - no. of units	0	Building - no. of units per floor	0	unit(s)	
	nousing		Building - no. of units per floor	0			. ,	
3	Enter area of a unit	Enter floor space area (	100% floors 1-2, 50% floors 3-10)	1	8005.0		sq.m.	
	Obtain fire flow before				05		L/min	12,000
4	reductions	Required fire flow	Fire Flo	Flow = 220 x C x Area <sup>A0.5</sup>			L/s	200.0
			Reductions or surcharge due to fact	ors affecting b	ourning			
			Non-combustible	-0.25	Limited combustible			
			Limited combustible	-0.15				
5	Choose combustibility Occupancy	Occupancy hazard	Combustible	0		-0.15		
	or contents	ents reduction of surcharge	Free burning	0.15			L/min	10,200
			Rapid burning	0.25			L/s	170.0
			Sprinklers (NFPA13)	-0.30	True	-0.3		
6	Choose reduction for sprinklers	Sprinkler reduction	Water supply is standard for both the system and fire department hose lines	-0.10	True	-0.1	L/min	6,000
			Fully supervised system	-0.10	True	-0.1	L/s	100.0
			North side	30.1 to 45m	0.05			
- I		Exposure distance	East side	20.1 to 30m	0.1			
	Choose separation	between units	South side	30.1 to 45m	0.05		L/min	11,000
			West side	3.1 to 10m	0.2	0.4	L/s	183.3
			Net required fire fl	ow				
			· · · · · ·	Minimum	required fire flow rate (rounded to ne	arest 1000)	L/min	11,000
8	Obtain fire flow,				Minimum required f	ire flow rate	L/s	183.3
	duration, and volume				Required duration	n of fire flow	hr	2.5



Pipe Pressure Losses Calculations LRL File No. 220449 Project Proposed MU Development Location: 1657 Carling Ave Date August 31, 2023 Designed: K. Herold

#### Piezometric Head Equation (Derived from Bernoulli's Equation)

$$h = \frac{p}{\gamma} + z$$

Where:

- h = HGL (m)
- p = Pressure (Pa)
- $\gamma =$  Specific weight (N/m3) =
- z = Elevation of centreline of pipe (m) =

9810 77.9

Water Pressure on Carling			
Pressure Pressure			
HGL (M)		kPa	psi
Minimum =	108.8	303.13	43.97
Maximum =	114.3	357.08	51.79

**Hazen Williams Equation** 

$$h_f = \frac{10.67 \times Q^{1.95} \times L}{C^{1.95} \times d^{4.97}}$$

Where:

- $h_{\rm f}=$  Head loss over the length of pipe (m)
- Q = Volumetric flow rate (m<sup>3</sup>/s)
- L = Length of pipe (m)
- C = Pipe roughness coefficient
- d = Pipe diameter (m)

Scenario 1: maximum daily demand



I.D. (mm)	100	
V (m/s)	0.68	1
h <sub>f</sub> (m)	0.09	
Head Loss (psi)	0.13	
Min. Pressure (psi)	43.83	(must not be less than 50psi)
Max. Pressure (psi)	51.66	(must not be more than 80psi)
	*consider pump to a	ccommodate required min. pressure

## Scenario 2: maximum hourly demand

Q (L/s)	11.76	1
С	150	
L (m.)	20	
I.D. (mm)	100	
V (m/s)	1.50	
h <sub>f</sub> (m)	0.40	
Head Loss (psi)	0.57	
Min. Pressure (psi)	43.39	(must not be less than 40psi)
Max. Pressure (psi)	51.22	(must not be more than 80psi)

### Piezometric Head Equation (Derived from Bernoulli's Equation)

$$h = \frac{p}{\gamma} + z$$

Where:

h =	HGL	(m)
-----	-----	-----

p = Pressure (Pa)

 $\gamma =$  Specific weight (N/m3) =

z= Elevation of centreline of pipe (m) =

9810 77.9

Water Pressure on Tillbury			
Pressure Pressure			
HGL (III)		kPa	psi
Minimum =	108.6	301.17	43.68
Maximum =	114.5	359.05	52.08

**Hazen Williams Equation** 

$$h_f = \frac{10.67 \times Q^{1.95} \times L}{C^{1.95} \times d^{4.97}}$$

Where:

 $h_{\rm f}$  = Head loss over the length of pipe (m)

- Q = Volumetric flow rate (m<sup>3</sup>/s)
- L = Length of pipe (m)
- C = Pipe roughness coefficient
- d = Pipe diameter (m)

## Scenario 1: maximum daily demand

-		
Q (L/s)	5.35	
C	150	
L (m.)	60	
I.D. (mm)	100	
V (m/s)	0.68	
h <sub>f</sub> (m)	0.28	
Head Loss (psi)	0.40	
Min. Pressure (psi)	43.28	(must not be less than 50psi)
Max. Pressure (psi)	51.68	(must not be more than 80psi)
	*consider pump to a	ccommodate required min. pressure

## Scenario 2: maximum hourly demand

Q (L/s) C L (m.) I.D. (mm) V (m/s) h <sub>f</sub> (m) Head Loss (psi) Min. Pressure (psi)	11.76 150 60 100 1.50 1.20 1.71 41.97	(must not be less than 40psi)
Min. Pressure (psi)	41.97	(must not be less than 40psi)
Max. Pressure (psi)	50.36	(must not be more than 80psi)

## City of Ottawa Boundary Conditions (Multi Hydrant Analysis)

	Quantity	Max Capacity (L/min)*	Available Fire Flow** (L/min)
Fire Hydrant(s) Within 76m	3	5678	17034
Fire Hydrant(s) Within 76m to 152m	2	3785	7570
Fire Hydrant(s) Within 152m to 305m	2	2839	5678
Available Combined Fire Flow (L/min)			30282
Max Day + Fire Flow Demand (L/min)			11321

\*as per Table 18.5.4.3. of ISTB-2018-02

\*\*assumed class AA hydrants

## **Kyle Herold**

From:	Julien Hebert <hebert@project1studio.ca></hebert@project1studio.ca>
Sent:	June 20, 2023 3:06 PM
То:	Kyle Herold
Cc:	Ryan Koolwine; Scott Alain; Bipin Dhillon; David Hunter; Jordan R. Bianconi; Taylor Hunter; Virginia Johnson
Subject:	RE: 1657 Carling Avenue - ZBLA Application Update (LRL220449)
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Kyle,

- 1. Type I Fire-Resistive Construction (All floors and structural elements will be 2 hours FRR concrete construction)
- 2. The Major Occupancies are 'C' and 'E' (shops/stores) based on table 3, this would be 'Limited to Combustible'.
- 3. The building will be sprinklered and fully supervised.

#### Cheers,

#### Julien Hébert

project1studio | 613 884-3939 x6

From: Kyle Herold <kherold@lrl.ca>
Sent: Tuesday, June 20, 2023 2:11 PM
To: Julien Hebert <hebert@project1studio.ca>
Cc: Ryan Koolwine <koolwine@project1studio.ca>; Scott Alain <alain@fotenn.com>; Bipin Dhillon
<dhillon@fotenn.com>; David Hunter <dhunter@ieproperties.com>; Jordan R. Bianconi <jbianconi@ieproperties.com>; Taylor Hunter <thunter@ieproperties.com>; Virginia Johnson <vjohnson@lrl.ca>
Subject: RE: 1657 Carling Avenue - ZBLA Application Update (LRL220449)

Good afternoon Julien,

Thank you for sending these through!

In order to complete the concept fire flow calculations as per the FUS design methodology (as per City of Ottawa requirements), we will require some further information on the building. Can you please clarify the following?

- Type of construction? (Wood Frame, Ordinary, Non-combustible, Fire resistive construction < 2hrs, Fire resistive construction > 2hrs)
- Combustibility of contents? (Non-combustible, Limited combustible, Combustible, Free Burning, Rapid Burning)
- Sprinklered? Fully supervised system?

#### Please note;

Though most design standards will use the same terminology, it has been noted that the definition of certain terminology within the FUS method does vary from standard OBC-based methodologies.

I would strongly recommend reviewing the FUS while performing this exercise to ensure the correct terminology is used, based on the FUS.

Link to FUS 2020: <u>Downloads (fireunderwriters.ca)</u> (Water Supply for Public Fire Protection)

1) Type of Construction (refer to pages 20-21 of the FUS Water Supply for Public Fire Protection guidelines)

- 2) Combustibility of Contents (refer to pages 24-26 of the FUS Water Supply for Public Fire Protection guidelines)
- 3) Sprinklers (refer to pages 27-29 of the FUS Water Supply for Public Fire Protection guidelines)

If you have any questions, please do not hesitate to reach out.

Thank you,

**Kyle Herold** Civil Engineering Designer **LRL Engineering | <u>Irl.ca</u>** Cell: (613) 915-2988 | <u>kherold@Irl.ca</u>



From: Julien Hebert <<u>hebert@project1studio.ca</u>>

Sent: June 20, 2023 12:50 PM

To: Kyle Herold <<u>kherold@lrl.ca</u>>; Virginia Johnson <<u>vjohnson@lrl.ca</u>>

**Cc:** Ryan Koolwine <<u>koolwine@project1studio.ca</u>>; Scott Alain <<u>alain@fotenn.com</u>>; Bipin Dhillon

<<u>dhillon@fotenn.com</u>>; David Hunter <<u>dhunter@ieproperties.com</u>>; Jordan R. Bianconi <<u>ibianconi@ieproperties.com</u>>; Taylor Hunter <<u>thunter@ieproperties.com</u>>

Subject: RE: 1657 Carling Avenue - ZBLA Application Update (LRL220449)

Hi Kyle,

Please see the link below for updated drawings: https://www.dropbox.com/sh/d8g5utsoqt4y2c0/AADMO7ik cm6L4zol 0RixJ5a?dl=0

Please note that the site plan is not finalized – we have a meeting with the city this week to discuss the vehicular access from Tillbury.

The unit matrix/area calcs are up to date, but still flexible as we continue to refine the massing of the north wing of the building.

Thanks,

Julien Hébert

**project1studio** | 613 884-3939 x6

From: Kyle Herold <<u>kherold@lrl.ca</u>>

Sent: Tuesday, June 20, 2023 12:43 PM

To: Julien Hebert <<u>hebert@project1studio.ca</u>>; Virginia Johnson <<u>vjohnson@lrl.ca</u>>

Cc: Ryan Koolwine <<u>koolwine@project1studio.ca</u>>; Scott Alain <<u>alain@fotenn.com</u>>; Bipin Dhillon

<<u>dhillon@fotenn.com</u>>; David Hunter <<u>dhunter@ieproperties.com</u>>; Jordan R. Bianconi <<u>jbianconi@ieproperties.com</u>>; Taylor Hunter <<u>thunter@ieproperties.com</u>>

Subject: RE: 1657 Carling Avenue - ZBLA Application Update (LRL220449)

Good afternoon Julien,

Just wanted to quickly follow-up on the status of the updated architectural drawings for 1657 Carling Ave.

If you have any questions, or anything to discuss, please do not hesitate to reach out.

Best regards,

**Kyle Herold** Civil Engineering Designer **LRL Engineering | <u>Irl.ca</u>** Cell: (613) 915-2988 | <u>kherold@Irl.ca</u>



From: Julien Hebert <<u>hebert@project1studio.ca</u>>
Sent: June 13, 2023 11:13 AM
To: Virginia Johnson <<u>vjohnson@lrl.ca</u>>
Cc: Kyle Herold <<u>kherold@lrl.ca</u>>; Ryan Koolwine <<u>koolwine@project1studio.ca</u>>; Scott Alain <<u>alain@fotenn.com</u>>; Bipin
Dhillon <<u>dhillon@fotenn.com</u>>; David Hunter <<u>dhunter@ieproperties.com</u>>; Jordan R. Bianconi
<<u>ibianconi@ieproperties.com</u>>; Taylor Hunter <<u>thunter@ieproperties.com</u>>;
Subject: RE: 1657 Carling Avenue - ZBLA Application Update (LRL220449)

Hi Virginia,

We will be sending updated drawings showing a 30-storey building by the end of the week. We will have a better idea of number of units and unit types for your calcs then.

Thanks!

Julien Hébert

project1studio | 613 884-3939 x6

From: Ryan Koolwine <<u>koolwine@project1studio.ca</u>>

Sent: Tuesday, June 13, 2023 11:08 AM

To: Virginia Johnson <<u>vjohnson@lrl.ca</u>>; Scott Alain <<u>alain@fotenn.com</u>>; Bipin Dhillon <<u>dhillon@fotenn.com</u>>; David Hunter <<u>dhunter@ieproperties.com</u>>; Jordan R. Bianconi <<u>jbianconi@ieproperties.com</u>>; Taylor Hunter <<u>thunter@ieproperties.com</u>>; Julien Hebert <<u>hebert@project1studio.ca</u>>
Cc: Kyle Herold <<u>kherold@lrl.ca</u>>
Subject: RE: 1657 Carling Avenue - ZBLA Application Update (LRL220449)

Hi Virginia,

Julien Hebert (cc'd on this email), will be managing the day to day from the architectural side on this project. He will follow-up with you.

Cheers,

### Ryan Koolwine

project1studio | 613 884-3939 x1

From: Virginia Johnson <<u>vjohnson@lrl.ca</u>>
Sent: June 13, 2023 11:00 AM
To: Scott Alain <<u>alain@fotenn.com</u>>; Bipin Dhillon <<u>dhillon@fotenn.com</u>>; Ryan Koolwine
<<u>koolwine@project1studio.ca</u>>; David Hunter <<u>dhunter@ieproperties.com</u>>; Jordan R. Bianconi
<<u>jbianconi@ieproperties.com</u>>; Taylor Hunter <<u>thunter@ieproperties.com</u>>
Cc: Kyle Herold <<u>kherold@lrl.ca</u>>
Subject: RE: 1657 Carling Avenue - ZBLA Application Update (LRL220449)

Hello Team,

I wanted to introduce Kyle to this thread who will be pushing this forward. Ryan, has there been any further advances on the Architectural plans that we should be working off of for our demand calculations?

Can you please circulate the most updated set?

Thank you,

Virginia Johnson, P. Eng. Civil Engineering Manager/Associate LRL Engineering | Irl.ca Cell: (613) 915-9503 | vjohnson@Irl.ca



From: Scott Alain <a>alain@fotenn.com</a>>

Sent: Wednesday, May 24, 2023 3:01 PM

To: Astrid Nielsen <<u>astrid.nielsen@dendronforestry.ca</u>>; Bipin Dhillon <<u>dhillon@fotenn.com</u>>; Ryan Koolwine <<u>koolwine@project1studio.ca</u>>; Andrew Harte <<u>andrew.harte@cghtransportation.com</u>>; John Kingsley <<u>john.kingsley@cghtransportation.com</u>>; David Hunter <<u>dhunter@ieproperties.com</u>>; Jordan R. Bianconi <<u>jbianconi@ieproperties.com</u>>; Karyn Munch <<u>kmunch@patersongroup.ca</u>>; Joshua Foster <<u>joshua.foster@gradientwind.com</u>>; Virginia Johnson <<u>vjohnson@lrl.ca</u>>; Taylor Hunter <<u>thunter@ieproperties.com</u>>;

Kevin Myers <<u>kevin.myers@dendronforestry.ca</u>>

Subject: 1657 Carling Avenue - ZBLA Application Update

Good afternoon team,

Subject to our review of the City of Ottawa's updated development application process, we have determined that submitting our ZBLA prior to June 5 will no longer be critical to the project timeline. We are therefore setting a new

submission date of **July 14, 2023**. This will allow time for all disciplines to contribute to a complete, comprehensive submission package.

Please continue working to advance your materials as applicable. If you have any further questions or concerns, please feel free to reach out directly. We will be in touch leading up to the submission date to ensure we are meeting key milestones.

Have a good day,

#### Scott Alain, RPP, MCIP (he/him)

Senior Planner

#### FOTENN

396 Cooper Street, Suite 300 Ottawa, ON K2P 2H7 T 613.730.5709 ext. 231 fotenn.com

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## APPENDIX D

**Boundary Conditions** 



From: Jhamb, Nishant <<u>nishant.jhamb@ottawa.ca</u>>
Sent: July 18, 2023 1:19 PM
To: Kyle Herold <<u>kherold@lrl.ca</u>>
Subject: RE: LRL220449 - 1657 Carling Avenue - Boundary Condition Request

Hi Kyle

Available fire flow from the Carling 203mm UCI main and 152mm UCI in Tillbury is limited. Please reduce fire flow demand.

The following are boundary conditions, HGL, for hydraulic analysis at 1657 Carling Avenue, (zone 1W) assumed to be connected to BOTH the 203 mm watermain on Carling Avenue and the 152 mm on Tillbury Avenue (see attached PDF for location).

Carling Connection:

Min HGL: 108.8 m Max HGL: 114.3 m Available fire flow at 20 psi: 145 L/s, assuming ground elevation of 77.9 m <u>Tillbury Connection:</u> Min HGL: 108.6 m Max HGL: 114.5 m Available fire flow at 20 psi: 117 L/s, assuming ground elevation of 77.3 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.

Thanks Nishant Jhamb, P.Eng Project Manager |Gestionnaire de projet Planning, Real Estate and Economic Development Department Development Review - Central Branch City of Ottawa | Ville d'Ottawa 110 Laurier Avenue West Ottawa, ON | 110, avenue. Laurier Ouest. Ottawa (Ontario) K1P 1J1 613.580.2424 ext./poste 23112, <u>nishant.jhamb@ottawa.ca</u>

From: Kyle Herold Sent: June 27, 2023 4:11 PM To: <u>Kersten.Nitsche@ottawa.ca</u>; <u>nishant.jhamb@ottawa.ca</u> Subject: LRL220449 - 1657 Carling Avenue - Boundary Condition Request

Good afternoon Kersten & Nishant,

I'm hoping either of you can help me out, or at least direct me to the right contact.

We are currently working on an adequacy of servicing report for a multi-storey residential building concept to be developed at 1657 Carling Avenue. We require the water boundary conditions at the site to proceed with our calculations.

Please use the following data to provide the require boundary conditions: Average Total Daily Demand =2.144 L/s Maximum Daily Demand = 5.348 L/s Maximum Hourly Demand = 11.759 L/s Required Fire Flow = 183.3 L/s

It is requested boundary conditions are provided at Carling Ave and Tillbury Avenue.

For your reference, I have included copies of the Water Supply Calculations, FUS Fire Flow Calculations and concept architectural plans along with this email.

Any questions or concerns, please do not hesitate to reach out.

Thank you,

**Kyle Herold** Civil Engineering Designer **LRL Engineering | <u>Irl.ca</u>** Cell: (613) 915-2988 | <u>kherold@Irl.ca</u>



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# **APPENDIX E**

Sanitary Calculations & City Correspondance

#### LRL Associates Ltd. Sanitary Sewer Design Sheet

	L	LRL D D DWG. Re	File No.: Project: Location: Designed: Checked: Date: eference:	220449 Mixed-Use E 1657-1673 C July 3, 2024	evelop Carling <i>I</i>	ment Ave.			Commercial & Institutional Flow = 28000   Light Industrial Flow = 35000 L/ha/day Heavy Industrial Flow = 55000 L/ha/day Maximum Residential Peak Factor = 4.0 Commercial & Institutional Peak Factor =				<b>Sa</b> 2000 L/ha. ay day 4.0 tor = 1.5	Sanitary Design Parameters ha/day Average Daily Flow = 280 L/p/day Industrial Peak Factor = as per Appendix 4-B Extraneous Flow = 0.33 L/s/ha .5						<b>Pipe Design Parameters</b> Maximum Velocity = 3.00 m/s Minimum Velocity = 0.60 m/s Manning's n = 0.013							
	LOCATION			R	ESIDE	NTIAL			СОММ	ERCIAL	11	NDUSTRIA	L	INSTITU	JTIONAL	C+I+I	IN	FILTRATIO	N	TOTAL				PIPE			
STREET	FROM	то	AREA	POP.	AC AREA	CU.	PEAK FACT.	PEAK FLOW	AREA	ACCU. AREA	AREA	ACCU. AREA	PEAK FACT.	AREA	ACCU. AREA	PEAK FLOW	TOTAL AREA	ACCU. AREA	INFILT. FLOW	FLOW, Q	LENGTH	DIA.	SLOPE	MATERIAL	CAP. Q(FULL)	VEL. V(FULL)	RATIO Q /QFULL
			(Ha)		(Ha)			(L/s)	(Ha)	(Ha)		(Ha)		(Ha)	(Ha)	(L/s)	(Ha)	(Ha)	(L/s)	(L/s)	(m)	(mm)	(%)		(L/s)	(m/s)	
CARLING AVE.	BLDG	Ex. SAN	1.200	616.0	1.200	616.0	3.3	6.67	0.036	0.036	0.00	0.00	0.0	0.0	0.0	0.02	1.200	1.200	0.40	7.08		150	1.00%	PVC	15.23	0.86	0.47
																										I	
																										, I	

Notes: Existing inverts and slopes are estimated. They are to be confirmed on-site.

## **Kyle Herold**

From: Sent:	Jhamb, Nishant <nishant.jhamb@ottawa.ca> August 23, 2023 10:33 AM</nishant.jhamb@ottawa.ca>
То:	Virginia Johnson
Cc:	Maxime Longtin; Kyle Herold
Subject:	RE: LRL220449 - 1657 Carling Avenue - Boundary Condition Request
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hello Virginia

Here is the response I got from Asset management. Can you please provide the predevelopment drainage area plan and related storm flow calculations as requested below.

I checked the sanitary in more detail and Tillbury has capacity for the proposed 6.94 L/s. As for the storm, below is the 2 year HGL along Tillbury and Cole and you can see that it does not even have 2 year capacity. The 2 year flow in Tillbury in front of their property is 219 L/s and they are asking for 42 L/s (20% increase). We therefore need to figure out where the site already drains and if it already has storm pipes. This will help me figure out what is already in the system. Can you ask them where their site currently drains?



Nishant

From: Kyle Herold <kherold@lrl.ca>
Sent: August 18, 2023 10:35 AM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Subject: RE: LRL220449 - 1657 Carling Avenue - Boundary Condition Request
Importance: High

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Good morning Nishant,

1657 Carling Avenue

I would like to request review of adequacy of the existing sewers in comparison to expected flow and release rates for the proposed development.

Review of adequacy will need to be performed for the storm sewers and sanitary sewers within Tillbury Ave and Carling Ave.

Expected Sanitary Total Flow = 6.94 L/s Expected Maximum Allowable Stormwater Release Rate = 41.74 L/s\* \*(assuming control of 100y post to 2yr pre)

If you have any questions, or require additional information, please do not hesitate to reach out.

Thank you,

**Kyle Herold** Civil Engineering Designer **LRL Engineering | <u>Irl.ca</u>** Cell: (613) 915-2988 | <u>kherold@lrl.ca</u>



# APPENDIX F

Stormwater Calculations & City Correspondance

## LRL Associates Ltd. Storm Watershed Summary



#### Pre-Development Catchments (within Development Area)

Watershed	C = 0.20	C = 0.8	C = 0.90	Total Area (ha)	Combined C
EWS-01 (uncontrolled)	0.024	0.000	0.367	0.391	0.86
Total	0.024	0.000	0.367	0.391	0.86

#### Post-Development Catchments (within Development Area)

Watershed	C = 0.20	C = 0.8	C = 0.90	Total Area (ha)	Combined C
WS-01 (controlled)	0.000	0.000	0.341	0.341	0.90
WS-02 (uncontrolled)	0.030	0.000	0.020	0.050	0.48
Total	0.030	0.000	0.361	0.391	0.85

	Project: Adaq	luacy of Servicing	
	Location: 1657	Carling Ave, Ottawa	
	Date: Augu	ist 31, 2023	Stormwater Management
	Designed: K. He	erold	Design Sheet
NGINEERING I INGÉNIERIE	Checked: V. Jo	hnson	
	Drawing Ref.:		

#### STORM - 100 YEAR

Runoff Equation

Q = 2.78CIA (L/s)

- C = Runoff coefficient  $I = Rainfall intensity (mm/hr) = A / (Td + C)^{B}$
- A = Area (ha)

 $T_c$  = Time of concentration (min) Pre-Development Catchments within Development Area

Total Area =	0.391	ha	∑R =	0.86
	0.391	ha	R =	0.86
Total Uncontrolled =	0.391	ha	∑R =	0.86

#### 100 Year Allowable Release Rate (Max C=0.5, 2yr Pre-dev)

l <sub>2</sub> = 732.951 / (Td + 6.199) <sup>0.81</sup>		A = 732.951
C =	0.50	
I =	76.8	mm/hr
Tc =	10	min
A =	0.391	ha
100y Allowable Release Rate =	41.74	L/s

B = 0.81	C = 6.199
max C=0.5 as per City Guidelines	

min 10mins as per City Guidelines

B = 0.820

#### Post-development Stormwater Management

					∑R <sub>2&amp;5</sub>	ΣR <sub>100</sub>
	Total Site Area =	0.391	ha	∑R =	0.85	1.00
Controlled	WS-01	0.341	ha	R =	0.90	1.00
Uncontrolled	WS-02	0.050	ha	R =	0.48	0.60
	Total Controlled =	0.391	ha	∑R =	0.85	1.00

#### 100 Year Post-development Stormwater Management

 $I_{100} = 1735.688 / (Td + 6.014)^{0.820}$ 

A = 1735.688

C = 6.014

				Controlled		
	Intensity	Controlled	Storage	Release	Uncontrolled	Total Release
Time (min)	(mm/hr)	Runoff (L/s)	Volume (m <sup>3</sup> )	Rate (L/s)	Runoff (L/s)	Rate (L/s)
10	178.56	169.27	85.66	26.50	14.89	41.39
15	142.89	135.46	98.06	26.50	14.89	41.39
20	119.95	113.71	104.65	26.50	14.89	41.39
25	103.85	98.44	107.92	26.50	14.89	41.39
30	91.87	87.09	109.06	26.50	14.89	41.39
35	82.58	78.28	108.74	26.50	14.89	41.39
40	75.15	71.24	107.37	26.50	14.89	41.39
45	69.05	65.46	105.19	26.50	14.89	41.39
50	63.95	60.63	102.38	26.50	14.89	41.39
60	55.89	52.99	95.35	26.50	14.89	41.39
70	49.79	47.20	86.94	26.50	14.89	41.39
80	44.99	42.65	77.52	26.50	14.89	41.39
90	41.11	38.97	67.35	26.50	14.89	41.39

#### **Onsite Stormwater Retention**

109.06 m<sup>3</sup> Total Storage Required =

## **Kyle Herold**

From: Sent:	Jhamb, Nishant <nishant.jhamb@ottawa.ca> August 23, 2023 10:33 AM</nishant.jhamb@ottawa.ca>
То:	Virginia Johnson
Cc:	Maxime Longtin; Kyle Herold
Subject:	RE: LRL220449 - 1657 Carling Avenue - Boundary Condition Request
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hello Virginia

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I checked the sanitary in more detail and Tillbury has capacity for the proposed 6.94 L/s. As for the storm, below is the 2 year HGL along Tillbury and Cole and you can see that it does not even have 2 year capacity. The 2 year flow in Tillbury in front of their property is 219 L/s and they are asking for 42 L/s (20% increase). We therefore need to figure out where the site already drains and if it already has storm pipes. This will help me figure out what is already in the system. Can you ask them where their site currently drains?



Nishant

From: Kyle Herold <kherold@lrl.ca>
Sent: August 18, 2023 10:35 AM
To: Jhamb, Nishant <nishant.jhamb@ottawa.ca>
Subject: RE: LRL220449 - 1657 Carling Avenue - Boundary Condition Request
Importance: High

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Good morning Nishant,

1657 Carling Avenue

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Review of adequacy will need to be performed for the storm sewers and sanitary sewers within Tillbury Ave and Carling Ave.

Expected Sanitary Total Flow = 6.94 L/s Expected Maximum Allowable Stormwater Release Rate = 41.74 L/s\* \*(assuming control of 100y post to 2yr pre)

If you have any questions, or require additional information, please do not hesitate to reach out.

Thank you,

**Kyle Herold** Civil Engineering Designer **LRL Engineering | <u>Irl.ca</u>** Cell: (613) 915-2988 | <u>kherold@lrl.ca</u>

