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MEMORANDUM

DATE: 2020-04-24 EMAIL TO: **City of Ottawa IAD Review Officer** SUBJECT: Proposed Amendment to 36 Robinson Servicing and Stormwater Management Report City File Number: D07-12-19-0044 OUR FILE: DSEL Project No.18-1078 ATTACHMENTS: Site Plan, SP-1, by Hobin Architecture, Dated April 20, 2020 • Water Demand Calculation Sheet – Post-development, by DSEL, dated July 29, 2019, Previously Approved Water Demand Calculation Sheet - Post-development, by • DSEL, dated April 2020, Proposed Amendment Wastewater Calculation Sheet - Post-development, by DSEL, dated July 29, 2019, Previously Approved Wastewater Calculation Sheet – Post-development, by • DSEL, dated April 2020, Proposed Amendment Storm Calculation Sheet – Post-development Conditions, by • DSEL, Dated January 7, 2020, Previously Approved Storm Calculation Sheet - Post-development Conditions, by DSEL, Dated April 2020, Proposed Amendment

TCU Development Corporation has provided a revised site plan (*SP-1*) dated April 20, 2020, included at the back of this memo. The updated site plan proposes to amend the previously approved site plan application D07-12-19-0044.

The following memo addresses the impact of the updated site plan on the previously approved functional servicing and stormwater management report dated January 2020. The site plan has been revised with updated unit counts. The revisions of site plan result in a decrease in total apartment units; previously **192 units** with an estimated population of **280** was proposed, the updated plan proposes a total of **153 units** with an estimated population of **272**.

As a result, the previously approved water demand will be lowered by **3%** as shown by the attached water demand calculation sheet. Based on previous City of Ottawa boundary conditions, adequate water supply is available within the municipal watermain system to support the

proposed development within the acceptable pressure range. A pressure check should be conducted at the completion of construction to determine if pressure control is required.

Table 1, below, summarizes the anticipated water supply demand and boundary conditions for the proposed development based on the *Water Supply Guidelines*.

Design Parameter	Anticipated Demand ¹ (L/min) (Previously Approved)	Anticipated Demand ¹ (L/min) (Proposed Amendment)	Boundary Condition ² (m H ₂ O / kPa)
Average Daily Demand	54.4	52.9	55.1 / 540.5
Max Day + Fire Flow	196.0+ 6,650 = 6,846.0	190.4+ 6,650 = 6,840.4	11,400 L/min @ 20 psi / 140 kPa
Peak Hour	294.0	285.6	45.6 / 447.3
2) Boundary conditions s		 See Appendix B for detailed calc e demands indicated in the correspondence 	

Similarly, the anticipated sanitary flows as previously approved will decrease by **3%** as a result of the updated site plan as shown by the attached wastewater calculation sheet; as a result of the reduction, no change is proposed to the previously approved sanitary service. **Table 2**, below, demonstrates the anticipated peak flows from the proposed development.

Design Parameter	Proposed Flow (L/s) (Previously Approved)	Proposed Flow (L/s) (Proposed Amendment)
Estimated Average Dry Weather Flow	0.92	0.89
Estimated Peak Dry Weather Flow	3.20	3.12
Estimated Peak Wet Weather Flow	3.33	3.24

Table 2 – Proposed Condition Wastewater Flows

Table 3 summarizes the previously approved release rates and onsite storage required to meet established target release rates from the existing approved stormwater management plan. The previous established allowable combined release rate was **16.27** *L/s* and the allowable stormwater release rate was equal to **13.07** *L/s*. (16.27 – 3.20= 13.07 L/s).

Control Area	5-Year Release Rate (L/s)	5-Year Storage (m³)	100-Year Release Rate (L/s)	100-Year Storage (m ³)
Unattenuated Areas	3.16	0.00	6.77	0.00
Foundation Drainage	1.04	0.00	1.04	0.00
Attenuated Areas	2.73	33.46	5.26	64.46
Total	6.93	33.46	13.07	64.46

Table 3 - Previously Approved SWM Summary

The attached storm calculation sheets illustrate the previously approved plan and proposed amendment.

Table 4 summarizes the anticipated release rates and onsite storage required to meet established target release rates as proposed by the amendment.

The decrease in the anticipated sanitary flow results in an increase in allowable stormwater flow from the site. The total allowable combined release rate was **16.27** *L/s* and the allowable stormwater release rate was equal to **13.15** *L/s*. (16.27 – 3.12 = 13.15 L/s).

Control Area	5-Year Release Rate (L/s)	5-Year Storage (m³)	100-Year Release Rate (L/s)	100-Year Storage (m³)
Unattenuated Areas	3.16	0.00	6.77	0.00
Foundation Drainage	1.04	0.00	1.04	0.00
Attenuated Areas	2.77	33.29	5.34	64.15
Total	6.97	33.29	13.15	64.15

Table 4 - Proposed Amendment SWM Summary

As demonstrated above, the proposed 100-year stormwater release rate is equal to the allowable of **13.15** *L*/**s**.

Table 5, below, summarizes the pre-development and post-development flow rates to the combined sewershed.

	5-Y	'ear	100-year		
Flow Type	Pre- Development (L/s)	Post- Development (L/s)	Pre- Development (L/s)	Post- Development (L/s)	
Sanitary*	0.14	3.12	0.14	3.12	
Storm**	21.71	6.97	46.50	13.15	
Combined Flow	21.85	10.09	46.64	16.27	
*Infiltration flows have been tak **No foundation drainage in pre		vater calculations. Sanita	ry flow is equal to the pe	ak dry weather flow.	

Table 5 - Summary	of Release Rates to the Combined Sewer
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We trust that the above will be sufficient to support an amendment to the previously approved functional servicing and stormwater management report and allow the proposed development to proceed. Please contact the undersigned if you have any questions.

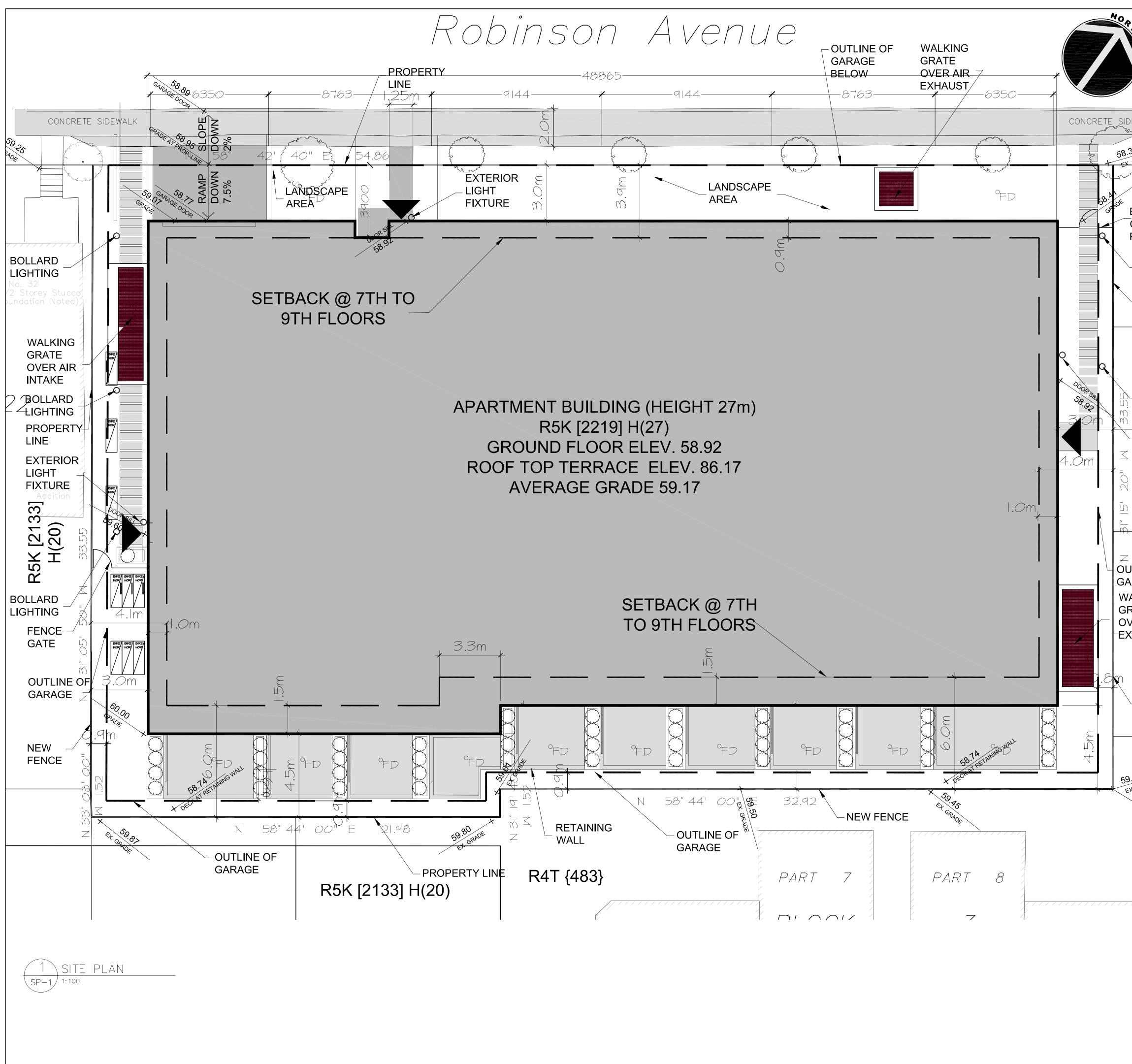
Prepared by, David Schaeffer Engineering Ltd.

Reviewed by, David Schaeffer Engineering Ltd.

Per: Brandon N. Chow



Per: Adam D. Fobert, P.Eng.



·	SITE DATA								
T	<u>SITE STATISTICS</u> GROSS FLOOR AREA 11,367m ²								
	LOT COVERAGE TOTAL LOT AREA: I,875m ²								
/	TOTAL GROSS BUILDING AREA: 1,299m ²								
	TOTAL LOT COVERAGE 69% TOTAL HARD LANDSCAPING AREA: 348m ²								
	TOTAL LOT COVERAGE 18% DRIVEWAY NOT INCLUDED 18%								
EWALK	TOTAL SOFT LANDSCAPING AREA:246m²TOTAL LOT COVERAGE13%								
$\geq_{\underline{\lambda}}$	PARKING (PARKING PROVISIONS 2008-25	O SECTION 100- PROVID							
GRADE	MID-RISE APT. (153-12)x.5=71 Parking Spo UNITS 153 Dwelling Unit								
کری کر	Visitor Parking (153–12)x.1=14 Visitor Park PARKING Spaces/Dwelling		Parking 14	/					
/	SPACES Total Required = 85		rovided = 87 (ed, 52 Standarc ons)						
B.F. FENCE	BICYCLE <u>REQUIRED</u> PARKING 0.5 x 153 UNITS = 77 SPA	CFS 77 SPACE	<u>D</u> ES PROVIDED						
GATE WITH		51 HORIZ.	& 17 VERT. SPACE OR SPACES TOTAL	ES					
PUSH BAR	SOLID WASTE STORAGE & DISPOSAL								
BOLLARD	APARTMENT REQUIRED: GARBAGE STORAGE COMPACTED - 5x4 yd. FIBRE (PAPER) STORAGE - 3x4 yd.	GARBAGE STORA	PROVIDED: GE COMPACTED ER) STORAGE	–5x4 yd. - 3x4 yd.					
LIGHTING	G.M.P. STORAGE - Ix3 yd. GREEN WASTE STORAGE - 4x240 L	G.M.P. STOR		- 1x3 yd. - 4x240 L					
	SURVEY INFORMATION								
\varkappa	PLAN OF SURVEY OF PART OF LANE 22) REGISTERED PLAN 190 CITY C		LOTS 15, 16, 18	, 19, 21 AND					
		F UTANA							
PROPERTY LINE	GRAPHIC SCALE			1:100					
LINI	Im 2m 3m 4m 5	5m		Om ∃	17	20/04/24		TE PLAN CONTRO	
	SITE STATISTICS				16 15	20/01/30 20/01/28		FOUNDATION PER	
BOLLARD	PLANNED UNIT DEVELOPMENT ZONING ME	CHANISM			14 13	20/01/27		TE PLAN CONTRO	
LIGHTING	ZONING: R5K [2219] H(27) DWELLING TYPE: MID RISE APARTMENT (153	UNITS)	REQUIRED	PROPOSED	12	19/11/25		TE PLAN CONTRO	
EXTERIO	MIN. WIDTH OF PRIVATE DRIVEWAY		6.Om	6.Om	 0	19/11/22 19/11/15	ISSUED FOR	REVIEW TE PLAN CONTRO	
LIGHT	MIN. WIDTH OF DRIVE AISLE WIDTH			6.0m STOREY SETBACK	9	19/10/23		TE PLAN CONTRO	
	SETBACKS (AS PER ZONING MAP) FRONT YARD - NORTH		REQUIRED 1 to 6 7 to 9 3.0m 4.0m		8	19/08/12 19/07/30		TE PLAN CONTRO	
{483}	INTERIOR SIDE YARD - EAST INTERIOR SIDE YARD - WEST REAR YARD - SOUTH		3.0m 4.0m 3.0m 4.0m 4.5m 6.0m		6	19/03/07		SITE PLAN CONT	
	MIN. LOT WIDTH MIN. LOT AREA		15.0m 450m ²	54.83m 1,875m ²	5	19/03/05 19/02/28		CONSULTANT REV	
R4T	MAX. BUILDING HEIGHT MAX. FLOOR SPACE INDEX		27m 2.0	27m 1.48m	3	19/02/26		CONSULTANT REV	
	MIN. PERCENTAGE OF LANDSCAPED ARE ABUTTING A STREET (m)	AS	30% NO MIN.	31.68% NO MIN.	2	19/02/25 19/01/30		CONSULTANT REV	
	OTHER CASES (m)		NO MIN.	NO MIN.	no.	. date	revision		
TLINE OF	MIN. TOTAL AMENITY AREA (m²) APARTM STOREYS AND 153 UNITS	ENT OF 9	6m² PER DWELLING 918m²	l,186m ²				the appropria	
RAGE	MIN. COMMUNAL AMENITY AREA (m²)		50% OF THE REQUIRED TOTAL AMENITY COMMUNAL	776.26m ²	sio	ns on site		verify all dime all errors and tect.	
ALKING	PERMITTED PROJECTIONS PROVISIONS IN THE CASE OF ANY YARDS		I.5m BUT NO CLOSER THAN Im	I.5m BUT NO CLOSER THAN IM	All	contractor	s must com	ply with all	
RATE /ER AIR	DRIVEWAY SLOPE FIRST 6 METRES		TO LOT LINE MAX 6%	TO LOT LINE 7.5%		not scale	es and by-la drawings.	uws.	
HAUST	DUE TO SLOPE GREATER AND 6% DE WILL NEED TO BE HEATED.	RIVEWAY					may not be until signed.	used for	
						pyright res	Ũ		
	ARCHITECT	CIVIL ENG							
	HOBIN ARCHITECTURE INC. 63 PAMILLA STREET,	DSEL 120 IBER RD, S							
-NEW	OTTAWA, ON KIS 3K7	ON K25 IE9 CONTACT:							
FENCE	BILL RITCEY TEL. 613-236-7200	STEVE MERRIC TEL. 613-836-0							
	FAX. 613-265-2005 TRAFFIC PLANNING	URBAN PL	ANNING						
	CGH TRANSPORTATION OTTAWA, ON	FOTENN 223 MCLEOD S OTTAWA, ON K							
.07	CONTACT: ANDREW HARTE	CONTACT: JAMIE POSEN				Hobin Archite	ecture		
K. GRADE	TEL. 613-697-3797 EMAIL:	TEL. 613-730-5 FAX. 613-730-				I ncorporated 53 Pamilla Stre	et		
		SURVETO				Ottawa, Ontario Canada K1S 3K	7		
	GEOTECHNICAL GHD. 179 COLONNADE ROAD #400,	ANNIS, O'SULLI' 14 CONCOURSE OTTAWA, ON \$	GATE, SUITE 5			T: 613-238-7200			
	OTTAWA, ON K2E 7J4	CONTACT:				≕ 613-235-2005 E: mail@hobinar		OBIN	J
	CONTACT: BAHAREH VAZHBAKHT TEL. 613-727-051	V. ANDREW SH TEL. 613-727-0 FAX. 613-727-1	0850			hobinarc.co		RCHITECTURE	•
	GEOTECHNICAL	SOUND & I				oject title			
	PATERSON GROUP INC. 154 COLONNADE ROAD	GRADIENT WIN 127 WALGREEN				ROE	BINSON V		
	OTTAWA, ON K2E 7J5 CONTACT:	CONTACT: Joshua Foster				APA	RTMENT B 36 ROBINSON AVEN OTTAWA, ONTARI	UE	
/	CARLOS DASILVA TEL. 613-226-7381	613-836-0934			dro	awing title	2		
	LANDSCAPE ARCHITECT					SI	ΤΕ ΡΙ	AN	
	JAMES B. LENNOX & ASSOCIATES INC. 1419 CARLING AVENUE OTTAWA, ON KIZ 7L6					~ •	· • •		
	CONTACT:				KG	, ا	ate AN, 10/2019	scale : 00	
	JAMES LENNOX TEL. 613-722-5168 FAX. 1-866-343-3942							project	
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36 ROBINSON - PROJECT STATS

OVERALL STATS

OVERALL STATS

EXTERIOR FACE OF EXTERIOR WALLS

Level	Name	Number	Area			
Not Placed	Area	P1-14	0.00 m ²			
Level 1	L1-GROSS	1-00	1,296.59 m ²			
Level 2	L2-GROSS	2-00	1,294.46 m ²			
Level 3			1,323.60 m ²			
Level 4			1,323.60 m ²			
Level 5			1,323.60 m ²			
Level 6			1,323.60 m ²			
Level 7			1,192.91 m ²			
Level 8			1,133.49 m ²			
Level 9			1,152.09 m ²			
Level 10			884.87 m ²			
Grand total			12,248.81 m ²			

01b-UNIT DISTRIBUTION Name Count IBED 81					
	01b-UNIT DISTRIBUTION				
1BED 81	Name	Count			
1BED 81					
	1BED	81			
2BED 32	2BED	32			
3BED 20	3BED	20			
BACH 20	BACH	20			
Grand total 153	Grand total	153			

02a-BICYCLE PARKING				
Family	Count			
10-BIKE STORAGE-wall	17			
10-BIKE STORAGE & EXTERIOR	52			
Grand total	77			

02b-VEHICLE PARKING	
Family and Type	Count
00-Parking Space: 4600 x 2400mm - 90 deg	2
00-Parking Space: 4600 x 2600mm - 90 deg	27
00-Parking Space: 5200 x 2400mm - 90 deg	1
00-Parking Space: 5200 x 2600mm - 90 deg	54
00-Parking Space: 5200 x 3660mm - 90 deg	3
Grand total	87



INTERIOR OF OUTSIDE WALLS WITH EXCLUSIONS

007400		Zoning Bylaw	City of Ottawa (ZBL)
Level	Name	Area	Area Type
Level 1			
Level 1	COMMON AREA	3277.92 SF	Building Common Area
Level 1	SUITES	5901.60 SF	Floor Area
Level 1	SUITES	2833.71 SF	Floor Area
Level 1: 3		12013.24 SF	
Level 2			
Level 2	COMMON AREA	991.74 SF	Building Common Area
Level 2	SUITES	11734.36 SF	Floor Area
Level 2: 2 Level 3- Lev	el 6	12726.09 SF	
Level 3	COMMON	1038.19 SF	Building Common Area
Level 3	SUITES	11955.02 SF	Floor Area
Level 3: 2	1	12993.21 SF	ļ
Level 7			
Level 7	COMMON AREA	913.00 SF	Building Common Area
Level 7	SUITES	10328.72 SF	Floor Area
Level 7: 2		11241.71 SF	
Level 8 Level 8	COMMON AREA	909.39 SF	Building Common Area
Level 8	SUITES	10346.74 SF	Floor Area
Level 8: 2 Level 9		11256.13 SF	
Level 9	COMMON AREA	887.29 SF	Building Common Area
Level 9	COMMON AREA	810.40 SF	Building Common Area
Level 9	SUITES	9558.45 SF	Floor Area
Level 9: 3		11256.13 SF	
Level 10		505 05 05	
Level 10	ELEV. LOBBY	595.35 SF	Floor Area
Level 10	MECHANICAL	1565.23 SF	Store Area
Level 10		165.18 SF	Store Area
Level 10	ELECTRICAL	250.68 SF	Store Area
Level 10: 4		2576.44 SF	

36 ROBINSON AVENUE

00-Area Schedule (Rentable - Client)				
Level	Name	Area	Count	
Level 1				
Level 1	1BED	4,243.08 SF	7	
Level 1	2BED	3,294.92 SF	4	
Level 1	3BED	950.86 SF	1	
Level 1	BACH	517.22 SF	1	
Level 1		9,006.08 SF	13	
Level 2				
Level 2	1BED	6,013.64 SF	10	
Level 2	2BED	831.20 SF	1	
Level 2	3BED	4,020.93 SF	4	
Level 2	BACH	1,388.86 SF	3	
Level 2		12,254.63 SF	18	
Level 3				
Level 3	1BED	6,013.64 SF	10	
Level 3	2BED	1,692.14 SF	2	
Level 3	3BED	4,020.90 SF	4	
Level 3		949.19 SF	2	
	BACH			
Level 3		12,675.87 SF	18	
Level 4	1	1	-	
Level 4	1BED	6,013.64 SF	10	
Level 4	2BED	1,696.15 SF	2	
Level 4	3BED	3,939.10 SF	4	
Level 4	BACH	895.60 SF	2	
Level 4		12,544.49 SF	18	
Level 5				
Level 5	1BED	6,013.64 SF	10	
Level 5	2BED	2,783.53 SF	3	
Level 5	3BED	2,016.67 SF	2	
Level 5	BACH	1,730.65 SF	3	
Level 5		12,544.49 SF	18	
Level 6				
Level 6	1BED	6,013.64 SF	10	
Level 6	2BED	1,696.15 SF	2	
Level 6	3BED	3,939.10 SF	4	
Level 6	BACH	895.60 SF	2	
Level 6	12	12,544.49 SF	18	
Level 7				
	1BED	1 288 80 65	8	
Level 7	_	4,288.89 SF	-	
Level 7	2BED	5,491.56 SF	7	
Level 7 Level 7	BACH	980.06 SF 10,760.52 SF	2 17	
		.,		
Level 8		A 077 57 0F	0	
Level 8	1BED	4,277.57 SF	8	
Level 8	2BED	5,430.36 SF	7	
Level 8 Level 8	BACH	979.90 SF 10,687.83 SF	2	
FEAGI 0		10,007.00 OF	17	
Level 9	4050	4 077 04 07		
Level 9	1BED	4,277.04 SF	8	
Level 9	2BED	3,137.28 SF	4	
Level 9	3BED	941.29 SF	1	
Level 9	BACH	1,386.82 SF	3	
Level 9		9,742.44 SF	16	
Grand tot	al	102,760.83 SF	153	

Section x-1.00 April 20, 2020

TC United Development Corporation 36 Robinson Avenue Proposed Conditions (Previously Approved)

Water Demand Design Flows per Unit Count City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Рор
Single Family	3.4	-	0
Semi-detached	2.7	-	0
Townhouse	2.7	-	0
Apartment			0
Bachelor	1.4	58	82
1 Bedroom	1.4	121	170
2 Bedroom	2.1	13	28
3 Bedroom	3.1	-	0
Average	1.8	-	0

	Рор	Avg. Daily		Max Day		Peak Hour	
		m³/d	L/min	m³/d	L/min	m³/d	L/min
Total Domestic Demand	280	78.4	54.4	282.2	196.0	423.4	294.0

Institutional / Commercial / Industrial Demand

			Avg. [Daily	Max	Day	Peak I	Hour
Property Type	Unit Rate	Units	m³/d	L/min	m³/d	L/min	m³/d	L/min
Commercial floor space	2.5 L/m ² /d	-	0.00	0.0	0.0	0.0	0.0	0.0
Office	75 L/9.3m ² /d	-	0.00	0.0	0.0	0.0	0.0	0.0
Restaurant*	125 L/seat/d	-	0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d	-	0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d	-	0.00	0.0	0.0	0.0	0.0	0.0
	Total I/	CI Demand	0.0	0.0	0.0	0.0	0.0	0.0
	Tot	al Demand	78.4	54.4	282.2	196.0	423.4	294.0

* Estimated number of seats at 1 seat per 9.3m²



TC United Development Corporation 36 Robinson Avenue **Proposed Conditions** (Proposed Amendment)

Water Demand Design Flows per Unit Count City of Ottawa - Water Distribution Guidelines, July 2010

Domestic Demand

Type of Housing	Per / Unit	Units	Рор
Single Family	3.4	-	0
Semi-detached	2.7	-	0
Townhouse	2.7	-	0
Apartment			0
Bachelor	1.4	20	28
1 Bedroom	1.4	81	114
2 Bedroom	2.1	32	68
3 Bedroom	3.1	20	62
Average	1.8	-	0

	Рор	Avg. Daily		Max Day		Peak Hour	
		m³/d	L/min	m³/d	L/min	m³/d	L/min
Total Domestic Demand	272	76.2	52.9	274.2	190.4	411.3	285.6

Institutional / Commercial / Industrial Demand

			Avg. [Daily	Max	Day	Peak I	Hour
Property Type	Unit Rate	Units	m³/d	L/min	m³/d	L/min	m³/d	L/min
Commercial floor space	2.5 L/m ² /d	-	0.00	0.0	0.0	0.0	0.0	0.0
Office	75 L/9.3m ² /d	-	0.00	0.0	0.0	0.0	0.0	0.0
Restaurant*	125 L/seat/d	-	0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Light	35,000 L/gross ha/d	-	0.00	0.0	0.0	0.0	0.0	0.0
Industrial - Heavy	55,000 L/gross ha/d	-	0.00	0.0	0.0	0.0	0.0	0.0
	Total I/	CI Demand	0.0	0.0	0.0	0.0	0.0	0.0
	Tot	al Demand	76.2	52.9	274.2	190.4	411.3	285.6

* Estimated number of seats at 1 seat per 9.3m²



Site Area

TC United Development Corporation 36 Robinson Avenue **Proposed Development** (Previously Approved)

Wastewater Design Flows per Unit Count City of Ottawa Sewer Design Guidelines, 2012



0.188 ha

Extraneous Flow Allowances	
Infiltration / Inflow (Dry)	0.01 L/s
Infiltration / Inflow (Wet)	0.05 L/s
Infiltration / Inflow (Total)	0.06 L/s

Extraneous Flow Allowances

Extraheous riow Anowances					
	Infiltration / Inflow		0.06 L/s		
Domestic Contributions					
Unit Type	Unit Rate	Units	Рор		
Single Family	3.4		0		
Semi-detached and duplex	2.7		0		
Townhouse	2.7		0		
			0		
Apartment					
Bachelor	1.4	58	82		
1 Bedroom	1.4	121	170		
2 Bedroom	2.1	13	28		
3 Bedroom	3.1		0		
Average	1.8		0		

Total Pop	280
Average Domestic Flow	0.91 L/s
Peaking Factor	3.47
Peak Domestic Flow	3.15 L/s

Institutional / Commercial / Industrial Contributions

Institutional / Commercial /	Industrial Contributions		
Property Type	Unit Rate	No. of Units	Avg Wastewater (L/s)
Dining room	125 L/seat/d		0.00
Commercial floor space	28,000.0 L/ha/d		0.00
Water Closets**	150 L/hr		0.00
Laundry Facility	1,200 L/unit/d		0.00
	Α	Verage I/C/I Flow	0.00
	Peak Institutional /	Commercial Flow	0.00
		Peak I/C/I Flow	0.00

Total Estimated Average Dry Weather Flow Rate	0.92 L/s
Total Estimated Peak Dry Weather Flow Rate	3.20 L/s
Total Estimated Peak Wet Weather Flow Rate	3.33 L/s

Site Area

TC United Development Corporation 36 Robinson Avenue **Proposed Development** (Proposed Amendment)

2020-04-22

Wastewater Design Flows per Unit Count City of Ottawa Sewer Design Guidelines, 2012



0.188 ha

Extraneous Flow Allowances	
Infiltration / Inflow (Dry)	0.01 L/s
Infiltration / Inflow (Wet)	0.05 L/s
Infiltration / Inflow (Total)	0.06 L/s

Extraneous Flow Allowances

Extrancous riow Allowalle	03		
	Infiltra	tion / Inflow	0.06 L/s
Domestic Contributions			
Unit Type	Unit Rate	Units	Рор
Single Family	3.4		0
Semi-detached and duplex	2.7		0
Townhouse	2.7		0
			0
Apartment			
Bachelor	1.4	20	28
1 Bedroom	1.4	81	114
2 Bedroom	2.1	32	68
3 Bedroom	3.1	20	62
Average	1.8		0

Total Pop	272
Average Domestic Flow	0.88 L/s
Peaking Factor	3.48
Peak Domestic Flow	3.06 L/s

Institutional / Commercial / Industrial Contributions Unit Rate No. of Units Avg Wastewater **Property Type** (L/s) 125 L/seat/d Dining room Commercial floor space 28,000.0 L/ha/d Water Closets** 150 L/hr 1,200 L/unit/d Laundry Facility Average I/C/I Flow Peak Institutional / Commercial Flow Peak I/C/I Flow

Total Estimated Average Dry Weather Flow Rate	0.89 L/s
Total Estimated Peak Dry Weather Flow Rate	3.12 L/s
Total Estimated Peak Wet Weather Flow Rate	3.24 L/s

0.00

0.00

0.00

0.00

0.00

0.00

0.00

Stormwater - Proposed Development City of Ottawa Sewer Design Guidelines, 2012

Area

0.188 ha

DEEL

Target Flow Rate

С	0.40 Rational I	Method runoff coefficient
t _c	10.0 min	
	2-year	
i	76.8 mm/hr	
Q	16.0 L/s	
Ex. Sanitary Flow Total Combined	0.27 L/s	*Based on 2 single family homes & 0.0114 ha of commercial building dry weather release. See Appendix C for ca
Allowable Release	16.27 L/s	< 2-Year Release (16.0 L/s) + Ex. Sanitary Flow (0.27 L/s)
Foundation Drainage	1.04 L/s	*Based on Geotechnical foundation drainage estimation of 90m ³ /day
Proposed Sanitary Total Allowable	3.20 L/s	*Based on an 192 proposed units, dry weather release rate. See Appendix C for Calculations
Stormwater		
Release	13.07 L/s	< Total Combined Release (16.27 L/s) - Proposed Sanitary Flow (3.20 L/s)

Estimated Post Development Peak Flow from Unattenuated Areas (U1 & U2)

Total Area 0.039 ha

C 0.28 Rational Method runoff coefficient

	5-year					100-year				
t _c	i	Q _{actual}	Q _{release}	Q _{stored}	V _{stored}	i / // `	Q _{actual} *	Q _{release}	Q _{stored}	V _{stored}
(min)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m³)
10.0	104.2	3.2	3.2	0.0	0.0	178.6	6.8	6.8	0.0	0.0

Note:

C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Total Area 0.149 ha

C 0.88 Rational Method runoff coefficient

	5-year					100-year				
t _c	i	Q _{actual}	Q _{release}	Q _{stored}	V _{stored}	i	Q _{actual}	Q _{release}	Q _{stored}	V _{stored}
(min)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)
10	104.2	37.9	2.7	35.2	21.1	178.6	73.9	5.3	68.6	41.2
15	83.6	30.4	2.7	27.7	25.0	142.9	59.1	5.3	53.9	48.5
20	70.3	25.6	2.7	22.9	27.5	120.0	49.6	5.3	44.4	53.3
25	60.9	22.2	2.7	19.5	29.2	103.8	43.0	5.3	37.7	56.6
30	53.9	19.6	2.7	16.9	30.5	91.9	38.0	5.3	32.8	59.0
35	48.5	17.7	2.7	15.0	31.4	82.6	34.2	5.3	28.9	60.7
40	44.2	16.1	2.7	13.4	32.1	75.1	31.1	5.3	25.8	62.0
45	40.6	14.8	2.7	12.1	32.6	69.1	28.6	5.3	23.3	63.0
50	37.7	13.7	2.7	11.0	33.0	64.0	26.5	5.3	21.2	63.6
55	35.1	12.8	2.7	10.1	33.2	59.6	24.7	5.3	19.4	64.1
60	32.9	12.0	2.7	9.3	33.4	55.9	23.1	5.3	17.9	64.3
65	31.0	11.3	2.7	8.6	33.5	52.6	21.8	5.3	16.5	64.5
70	29.4	10.7	2.7	8.0	33.5	49.8	20.6	5.3	15.3	64.5
75	27.9	10.2	2.7	7.4	33.4	47.3	19.6	5.3	14.3	64.3
80	26.6	9.7	2.7	6.9	33.3	45.0	18.6	5.3	13.4	64.1
85	25.4	9.2	2.7	6.5	33.2	43.0	17.8	5.3	12.5	63.8
90	24.3	8.8	2.7	6.1	33.0	41.1	17.0	5.3	11.8	63.5
95	23.3	8.5	2.7	5.8	32.8	39.4	16.3	5.3	11.1	63.0
100	22.4	8.2	2.7	5.4	32.5	37.9	15.7	5.3	10.4	62.6
105	21.6	7.9	2.7	5.1	32.3	36.5	15.1	5.3	9.8	62.0
110	20.8	7.6	2.7	4.8	32.0	35.2	14.6	5.3	9.3	61.4

Note:

C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

5-year Q_{attenuated} 5-year Max. Storage Required

2.73 L/s 33.5 m³ 100-year Q_{attenuated}5.26 L/s100-year Max. Storage Required64.5 m³

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage
	(L/s)	(m ³)	(L/s)	(m ³)
Unattenuated	3.16	0.00	6.77	0.00
Areas				
Foundation	1.04	0.00	1.04	0.00
Drainage				
Attenutated Areas	2.73	33.46	5.26	64.46
Total	6.93	33.46	13.07	64.46

Stormwater - Proposed Development City of Ottawa Sewer Design Guidelines, 2012

Area

0.188 ha

DEEL

Target Flow Rate

С	0.40 Rational I	Method runoff coefficient
t _c	10.0 min	
	2	
	2-year	
i	76.8 mm/hr	
Q	16.0 L/s	
Ex. Sanitary Flow	0.27 L/s	*Based on 2 single family homes & 0.0114 ha of commercial building dry weather release. See Appendix C for ca
Total Combined		
Allowable Release	16.27 L/s	< 2-Year Release (16.0 L/s) + Ex. Sanitary Flow (0.27 L/s)
Foundation Drainage	1.04 L/s	*Based on Geotechnical foundation drainage estimation of 90m ³ /day
Proposed Sanitary	3.12 L/s	*Based on 153 proposed units, dry weather release rate. See Appendix C for Calculations
Total Allowable	00	
Stormwater		
Release	13.15 L/s	< Total Combined Release (16.27 L/s) - Proposed Sanitary Flow (3.12 L/s)

Estimated Post Development Peak Flow from Unattenuated Areas (U1 & U2)

Total Area 0.039 ha

C 0.28 Rational Method runoff coefficient

	5-year					100-year				
t _c	i	Q _{actual}	Q _{release}	Q _{stored}	V _{stored}	i / // `	Q _{actual} *	Q _{release}	Q _{stored}	V _{stored}
(min)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m³)
10.0	104.2	3.2	3.2	0.0	0.0	178.6	6.8	6.8	0.0	0.0

Note:

C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

Estimated Post Development Peak Flow from Attenuated Areas

Total Area 0.149 ha

C 0.88 Rational Method runoff coefficient

	5-year					100-year				
t _c	i	Q _{actual}	$\mathbf{Q}_{release}$	Q _{stored}	V _{stored}	i	Q _{actual}	Q _{release}	Q _{stored}	V _{stored}
(min)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)	(mm/hr)	(L/s)	(L/s)	(L/s)	(m ³)
10	104.2	37.9	2.7	35.2	21.1	178.6	73.9	5.3	68.6	41.1
15	83.6	30.4	2.7	27.7	24.9	142.9	59.1	5.3	53.8	48.4
20	70.3	25.6	2.8	22.8	27.4	120.0	49.6	5.3	44.3	53.2
25	60.9	22.2	2.8	19.4	29.1	103.8	43.0	5.3	37.6	56.5
30	53.9	19.6	2.8	16.9	30.4	91.9	38.0	5.3	32.7	58.8
35	48.5	17.7	2.8	14.9	31.3	82.6	34.2	5.3	28.8	60.6
40	44.2	16.1	2.8	13.3	32.0	75.1	31.1	5.3	25.8	61.8
45	40.6	14.8	2.8	12.0	32.5	69.1	28.6	5.3	23.2	62.7
50	37.7	13.7	2.8	10.9	32.8	64.0	26.5	5.3	21.1	63.4
55	35.1	12.8	2.8	10.0	33.1	59.6	24.7	5.3	19.3	63.8
60	32.9	12.0	2.8	9.2	33.2	55.9	23.1	5.3	17.8	64.1
65	31.0	11.3	2.8	8.5	33.3	52.6	21.8	5.3	16.4	64.2
70	29.4	10.7	2.8	7.9	33.3	49.8	20.6	5.3	15.3	64.1
75	27.9	10.2	2.8	7.4	33.2	47.3	19.6	5.3	14.2	64.0
80	26.6	9.7	2.8	6.9	33.1	45.0	18.6	5.3	13.3	63.7
85	25.4	9.2	2.8	6.5	33.0	43.0	17.8	5.3	12.4	63.4
90	24.3	8.8	2.8	6.1	32.8	41.1	17.0	5.3	11.7	63.0
95	23.3	8.5	2.8	5.7	32.6	39.4	16.3	5.3	11.0	62.6
100	22.4	8.2	2.8	5.4	32.3	37.9	15.7	5.3	10.3	62.1
105	21.6	7.9	2.8	5.1	32.0	36.5	15.1	5.3	9.8	61.5
110	20.8	7.6	2.8	4.8	31.7	35.2	14.6	5.3	9.2	60.9

Note:

C value for the 100-year storm is increased by 25%, to a maximum of 1.0 per Ottawa Sewer Design Guidelines (5.4.5.2.1)

5-year Q_{attenuated} 5-year Max. Storage Required

2.77 L/s 33.3 m³ 100-year Q_{attenuated}5.34 L/s100-year Max. Storage Required64.2 m³

Summary of Release Rates and Storage Volumes

Control Area	5-Year Release Rate	5-Year Storage	100-Year Release Rate	100-Year Storage
	(L/s)	(m ³)	(L/s)	(m ³)
Unattenuated	3.16	0.00	6.77	0.00
Areas				
Foundation	1.04	0.00	1.04	0.00
Drainage				
Attenutated Areas	2.77	33.29	5.34	64.15
Total	6.97	33.29	13.15	64.15