



April 1, 2024

MTE File No.: C52851-200

Catherine Maton
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Planning & Development
City of London
300 Dufferin Avenue
London, ON N6A 4L9

**RE: SANITARY CAPACITY ANALYSIS
FOR SITE DEVELOPMENT AT 279 SARNIA ROAD WEST**

It is proposed to re-develop the existing residential property at 279 Sarnia Road as a residential development consisting of two 3-storey stacked back-to-back townhouse blocks. This letter outlines the downstream sanitary capacity analysis for the development.

1.0 Introduction

MTE was retained by Palumbo Homes to conduct a downstream sanitary capacity analysis in defense of the proposed development of the above noted properties. The property is approximately 0.22 ha in size and located on the north side of Sarnia Road just east of Kininvie Drive. The existing site consists of a single family dwelling unit. It is proposed that the site be re-developed as 20 stacked townhouse units.

2.0 Sanitary Servicing

It is proposed that the re-developed site will connect to the existing 200mm sanitary sewer within the Sarnia Road R.O.W. A downstream capacity analysis has been completed down to the trunk sanitary sewer on Trott Drive to show that there is adequate capacity within the downstream sewers to accommodate the increased flow rate resulting from the proposed re-development.

3.0 Sanitary Capacity Analysis

Wastewater from the site is directed south down Coombs Road to the trunk sanitary sewer at Trott Drive. In consultation with the City, the sanitary sewershed was estimated and peak flows tabulated for each downstream sewer run. Given the number of proposed units (20) and allowing for a population of 2.4 persons per unit, a total population of 48 persons was accounted for.

Allowing for a typical daily consumption rate of 230 L/p/d and a peaking factor of 4.3, a peak flow rate of 0.51 L/s ($48 \times 230 \times 4.3 / 86,400 = 0.55$) is anticipated from the proposed site.

The sewershed area and contributing population used for the analysis has been determined in consultation with City staff. The sewershed area is approximately 42.5ha in area with a total population of 4,216 persons, this is inclusive of future development lands north of Ramsay Road and along Brescia Lane as well as another proposed infill development at 299-307 Sarnia Road. The existing drainage area is indicated on the attached figure.

Using the City's typical design parameters of 230L/cap/day for daily per capita consumption and an Inflow and Infiltration (I&I) rate of 0.1 L/s/ha, it was determined that one section of pipe on Coombs Road downstream of the site would be over capacity (118%). Refer to the attached design sheet and plan view map for the location of the over-capacity sewer run.

At the request of City staff, the downstream sewers were also analyzed using a daily consumption rate of 250 L/cap/day and an I&I rate of 2.0 L/s/ha. Using these parameters it was calculated that thirteen sections of pipe, inclusive of one run of sewer along Sarnia Road and all of the Coombs Road sewers, would be over capacity (up to 331% full flow capacity). Refer to the attached design sheet and plan view map for the location of the over-capacity sewer runs.

In interpreting the result of the two analyses It should be noted that the analyses have accounted for future development on the property of Brescia College which are currently not developed and are partially constrained due to existing tree coverage. Additionally, the City requested the increased I&I rate on the grounds that there may be downspouts connected to the sanitary sewer within the existing residential areas. The analyses do not differentiate between the land uses and thus all areas are accounted for at the same I&I rate regardless of whether they are new development, existing residential, or existing institutional.

4.0 Conclusions

Based on the information compiled by MTE and analyzed in accordance with current City Standards, the existing downstream sewers have sufficient capacity to accommodate sanitary effluent from the proposed site with the exception of one run of sewer on Coombs Road. The design sheet for the downstream sewers prepared by MTE is attached to this letter.

Please contact us should you have any comments or questions.

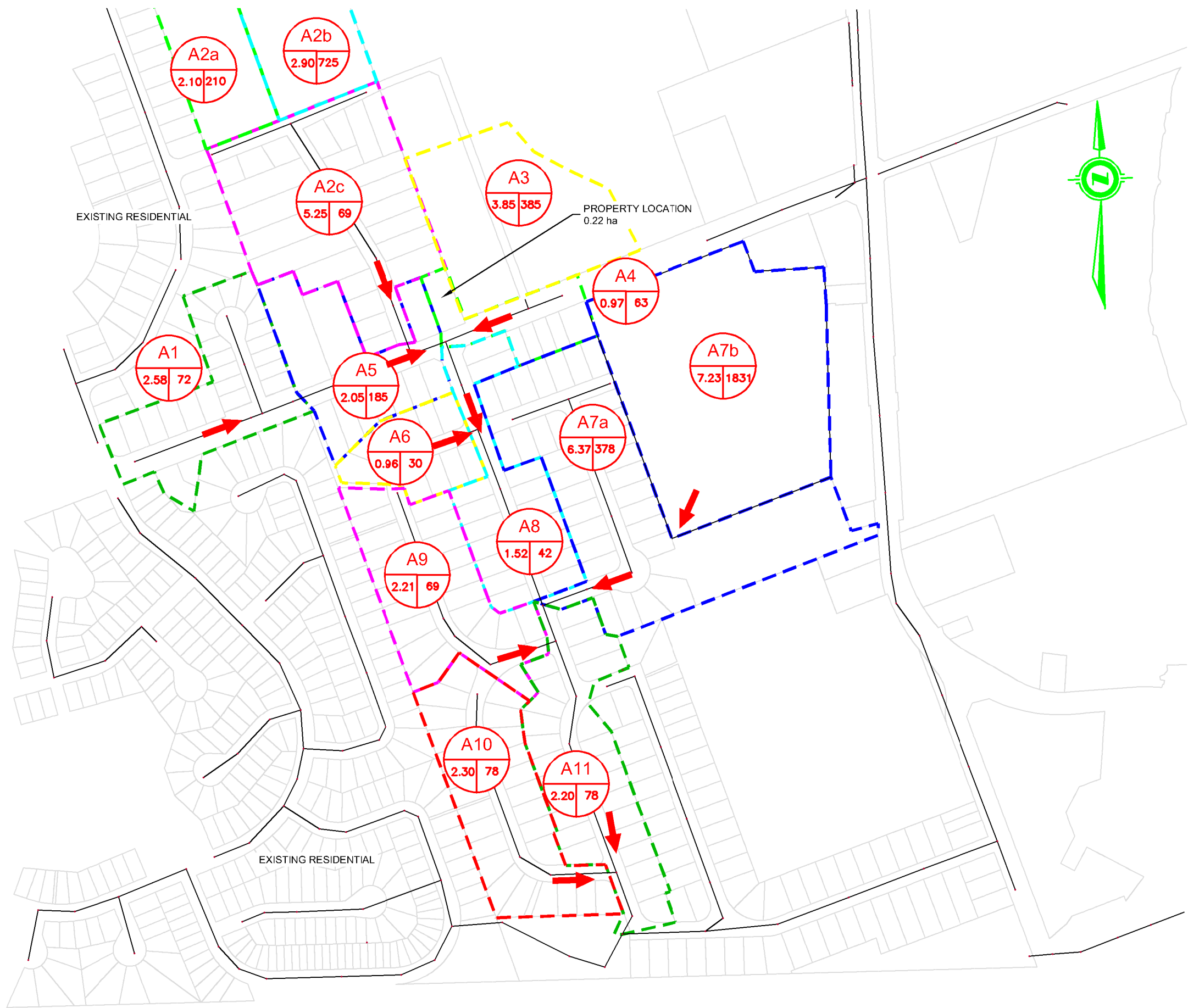
Yours Truly,
MTE Consultants Inc.



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519-204-6510 ext. 2202
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JJM:azp

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KEY

- AREA NUMBER
- POPULATION
- AREA (IN Ha)
- CATCHMENT AREA
- FLOW ROUTE

FIGURE Date: JAN. 04/24
Scale: 1:5000

SANITARY CATCHMENT AREAS

MTE
Engineers, Scientists, Surveyors

Project No.: 52851-200

RESIDENTIAL POPULATION DENSITIES

THE FOLLOWING POPULATION ALLOWANCES WILL APPLY WHEN DESIGNING SANITARY SEWERS:

(A) HECTARE BASIS

- LOW DENSITY (SINGLE FAMILY/SEMI-DETACHED) = 30 UNITS/HA @ 3 PEOPLE/UNIT
- MEDIUM DENSITY (TOWNHOUSES) = 75 UNITS/HA @ 2.4 PEOPLE/UNIT
- HIGH DENSITY (APARTMENTS) = 150-350 UNITS/HA @ 1.6 PEOPLE/UNIT
- COMMERCIAL / INSTITUTIONAL / CHURCH = 100 PEOPLE/HA
- ELEMENTARY SCHOOL = 600 PEOPLE
- SECONDARY SCHOOL = 1500 PEOPLE

(B) LOT BASIS

- SINGLE FAMILY = 3 PEOPLE
- DUPLEX / SEMI = 6 PEOPLE

SANITARY SEWER DESIGN SHEET
CITY OF LONDON
CITY ENGINEER'S DEPARTMENT

[REDACTED] - FUTURE/EXTERNAL/EXISTING DESIGN

PROJECT NAME : 279 Sarnia Road - City Standard Design Parameters

DATE :
 DESIGNED BY :
 CHECKED BY :
 FILE No :
 SHEET :

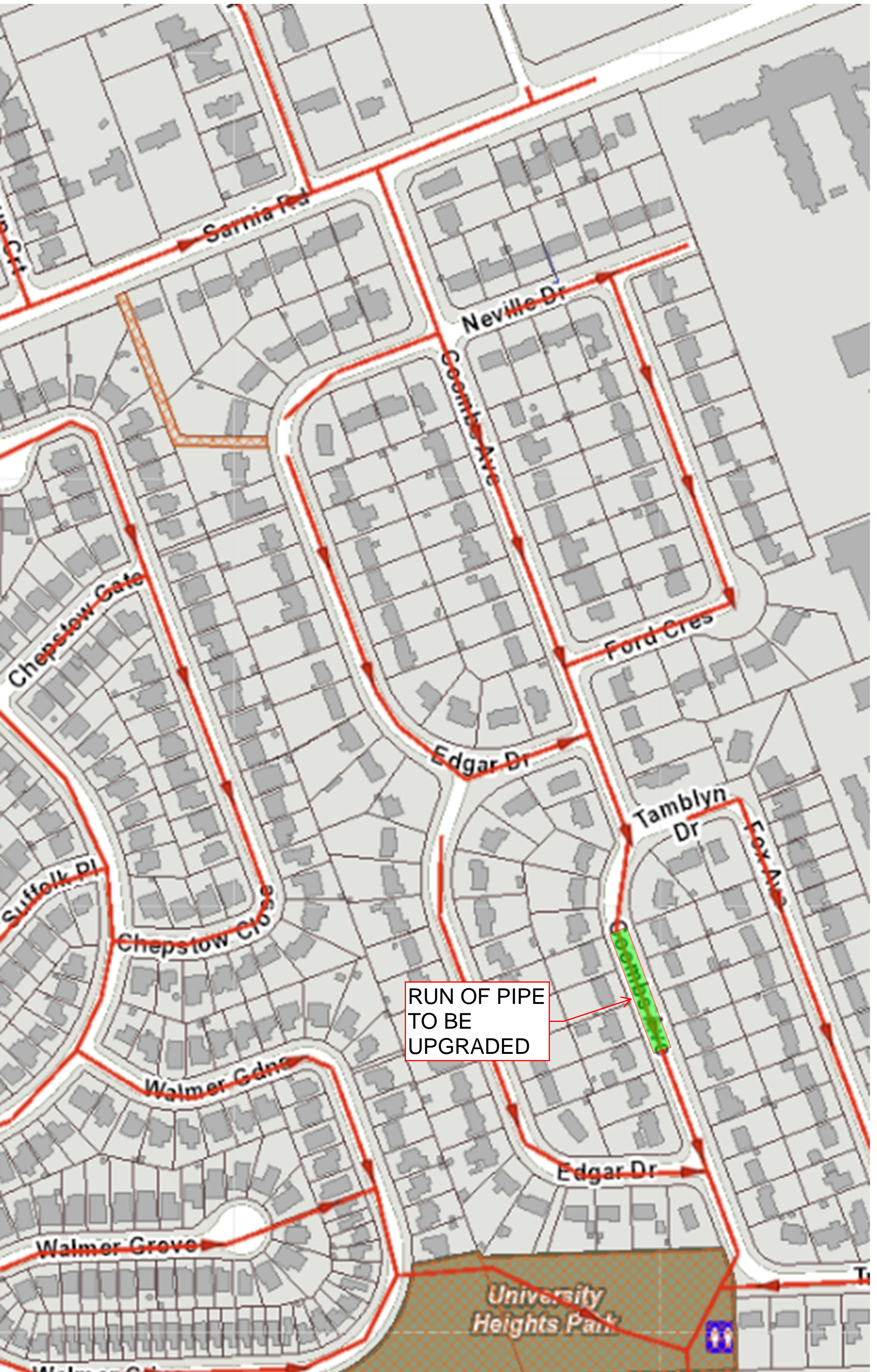
April 2024
 JJM
 52851-200
 1 of 1

DESIGN CRITERIA

SEWAGE = 230 L/DAY/CAP = 0.00266 x 1.1 l/s/person
 INFILTRATION (Existing Residential) = 0.1 L/s/ha
 INFILTRATION (Fut./Prop./Ex. Inst.) = 8640 L/HA/DAY = 0.1 L/s/ha
 PEAKING FACTOR = HARMON FORMULA $M = 1 + \frac{14}{4 + P^{0.5}}$

LOCATION				AREA (HECTARES)				POPULATION					SEWAGE FLOW				SEWER DESIGN					PROFILE											
AREA	STREET	FROM	TO	NET OR	DELTA	Total Ex. Res.	TOTAL	PER	PER	No. OF	DELTA	TOTAL	M	SEWAGE	INFILT.	TOTAL	DIA.	SLOPE	n	VELOCITY	CAP.	LENGTH	FALL IN	Friction Slope		Inverts		HGL					
No.		M.H.	M.H.	GROSS	AREA ha	AREA ha	AREA ha	ha	LOT	LOTS	POP.	POP.	Min.2.0	l/s	l/s	l/s	mm	%		m / s	l / s	M	SEWER	%	U.S.	D.S.	U.S.	D.S.					
A1	Sarnia Road		PC84		2.58	2.58	2.58		3	24	72.00	72		4.28	0.90	0.26	1.16																
A5	299 & 307 Sarnia Rd.		PC84		1.12		1.12		2.4	67	161.00	161		4.18	1.97	0.11	2.08																
A5	Sarnia Road	PC84	PC85		0.93	3.51	4.63		3	8	24.00	257		4.11	3.09	0.46	3.55	200	1.02	0.013	1.05	33.13	79.90	0.815									
	Ramsay Road																																
A2a	Ex Institutional		PC85		2.10		2.10	100			210.00	210		4.14	2.55	0.21	2.76																
A2b	Future Development		PC85		2.90		2.90	250			725.00	725		3.89	8.26	0.29	8.55																
A2c	Ex Residential		PC85		5.25	5.25	5.25		3	23	69.00	69		4.28	0.86	0.53	1.39																
	Sarnia Road	PC85	PC89			8.76	14.88				0.00	1261		3.73	13.77	1.49	15.26	200	1.43	0.013	1.25	39.22	44.10	0.631									
A3	Future Brescia College		PC89		3.85		3.85	100			385.00	385		4.03	4.54	0.39	4.93																
A4	279 Sarnia Road		PC89		0.22		0.22		2.4	20	48.00	48		4.32	0.61	0.02	0.63																
A4	Sarnia Road		PC89		0.75	0.75	0.75		3	5	15.00	15		4.40	0.19	0.08	0.27																
A8	Coombs Road	PC89	PC90		1.52	11.03	21.22		3	14	42.00	1751		3.63	18.61	2.12	20.73	200	3.17	0.013	1.86	58.40	54.40	1.724	0.40%	250.764	249.040	249.457	249.240				
	"	PC90	PC94			11.03	21.22				0.00	1751		3.63	18.61	2.12	20.73	200	3.20	0.013	1.87	58.67	56.80	1.818	0.40%	248.988	247.170	247.597	247.370				
A6	Neville Drive		PC94		0.96	0.96	0.96		3	10	30.00	30		4.35	0.38	0.10	0.48																
	Coombs Road	PC94	PC95			11.99	22.18				0.00	1781		3.62	18.88	2.22	21.10	200	1.58	0.013	1.31	41.23	76.50	1.209	0.41%	246.839	245.630	246.147	245.830				
	"	PC95	PC96			11.99	22.18				0.00	1781		3.62	18.88	2.22	21.10	200	1.65	0.013	1.34	42.13	74.70	1.233	0.41%	245.623	244.390	244.899	244.590				
	"	PC96	PC105			11.99	22.18				0.00	1781		3.62	18.88	2.22	21.10	200	1.65	0.013	1.34	42.13	75.30	1.242	0.41%	244.362	243.120	243.632	243.320				
	Ford Crescent																																
A7b	Western University (Residences)		PC105		2.41		2.41	560			1349.60	1350		3.71	14.66	0.24	14.90																
A7b	Western University (Campus)		PC105		4.82		4.82	100			482.00	482		3.98	5.62	0.48	6.10																
A7a	University Heights Public School		PC105		1.88		1.88				285.00	285		4.09	3.41	0.19	3.60																
A7a	Ex. Residential		PC105		4.49	4.49	4.49		3	31	93.00	93		4.25	1.16	0.45	1.61																
	Coombs Road	PC105	PC111			16.48	35.78		3	0	0.00	3991		3.33	38.91	3.58	42.49																
A9	Edgar Drive		PC111		2.21	2.21	2.21		3	23	69.00	69		4.28	0.86	0.22	1.08																
A11	Coombs Road	PC111	PC112		2.20	20.89	40.19		3	26	78.00	4138		3.32	40.22	4.02	44.24																
	"	PC112	PC113			20.89	40.19				0.00	4138		3.32	40.22	4.02	44.24																
	"	PC113	PC114			20.89	40.19				0.00	4138		3.32	40.22	4.02	44.24																
	"	PC114	PC120			20.89	40.19				0.00	4138		3.32	40.22	4.02	44.24																
A10	Edgar Drive		PC120		2.30	2.30	2.30		3	26	78.00	78		4.27	0.98	0.23	1.21																
	Coombs Road	PC120	PC121		0.00	23.19	42.49				0.00	4216		3.31	40.86	4.25	45.11																
	"	PC121	PC122		0.00	23.19	42.49				0.00	4216		3.31	40.86	4.25	45.11																

350 upha @ 1.6 ppu = 560 ppha
 Institutional = 100 ppha



RUN OF PIPE
TO BE
UPGRADED

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SANITARY SEWER DESIGN SHEET
CITY OF LONDON
CITY ENGINEER'S DEPARTMENT

[REDACTED] - FUTURE/EXTERNAL/EXISTING DESIGN

PROJECT NAME : 279 Sarnia Road - Sewer Engineering Requested Parameters

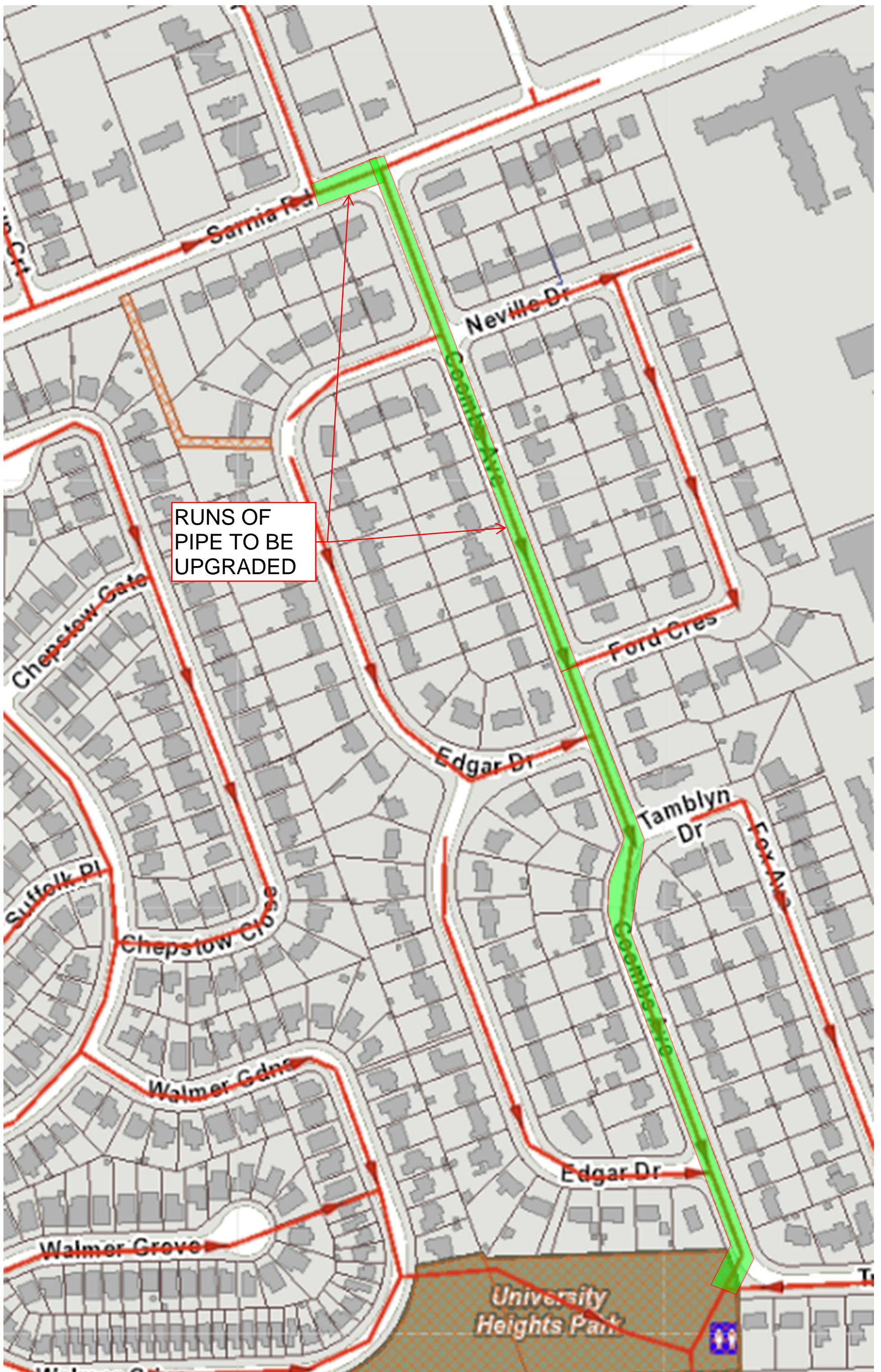
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No.		M.H.	M.H.	GROSS	AREA ha	AREA ha	AREA ha	ha	LOT	LOTS	POP.	POP.	Min.2.0	l/s	l/s	l/s	mm	%		m / s	l / s	M	SEWER	%	U.S.	D.S.	U.S.	D.S.				
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	"	PC90	PC94			11.03	21.22				0.00	1751		3.63	20.23	42.44	62.67	200	3.20	0.013	1.87	58.67	56.80	1.818	3.65%	248.988	247.170	258.270	256.196			
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	Coombs Road	PC94	PC95			11.99	22.18				0.00	1781		3.62	20.52	44.36	64.88	200	1.58	0.013	1.31	41.23	76.50	1.209	3.91%	246.839	245.630	256.196	253.202			
	"	PC95	PC96			11.99	22.18				0.00	1781		3.62	20.52	44.36	64.88	200	1.65	0.013	1.34	42.13	74.70	1.233	3.91%	245.623	244.390	253.202	250.279			
	"	PC96	PC105			11.99	22.18				0.00	1781		3.62	20.52	44.36	64.88	200	1.65	0.013	1.34	42.13	75.30	1.242	3.91%	244.362	243.120	250.279	247.333			
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