

**SITE SERVICING STRATEGY**

**RESIDENTIAL APARTMENT BUILDING DEVELOPMENT**

**1982 COMMISSIONERS ROAD EAST**

May 2023

Ref. No. – 22.133

**Prepared for:**

**2804904 Ontario Inc.**

509 Commissioners Rd W #425

London, ON N6K 1J5

**Prepared by:**



Eng Plus Ltd.

100-609 William Street

London, ON

N6B 3G1

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## **1.0 INTRODUCTION**

Eng Plus Ltd. has been retained by **2804904 Ontario Inc.** to prepare Servicing Study to support a site plan application for an infill residential townhouse development located at 1982 Commissioners Road E. (the site) in the City of London. **Figure 1** Key Plan shows the site location.

## **2.0 EXISTING CONDITIONS**

The site is adjacent to Commissioners Road East to the south and the new subdivision street, Constance Avenue, is running along the north side of the site. New residential development is on the west of the site.

Currently, there is an existing residential house on the lot with driveway access to Commissioners Rd. E. the site area is 0.313 hectares.

Based on the Ontario Base Mapping, the existing topography of the subject property is slopes north towards the existing water course north of the site.

## **3.0 PROPOSED DEVELOPMENT**

The development proposal is for 2 townhouse building blocks containing total 21 new townhouse units. The preliminary concept plan is shown in **Figure 2 – Concept Plan**.

## **4.0 ROAD ACCESS AND GRADING**

Access from the site will be from Constance Avenue north of the site, this street is part of Phase 6 of the Victoria on the River Subdivision by Sifton. The Constance Avenue road in front of the site is expecting to be fully serviced by fall 2023.

To satisfy City's Conditions, the client has acquired a small block of land (Block 18, Victoria On The River) from Sifton to have access to Constant Avenue. Total site area combine is 3,535m<sup>2</sup>.

As per topographical contours and the profile of Constance Ave., the site is falling ~ 4+m from Commissioners to Constance Avenue. Building layouts and grading on the site will match into the existing surrounding lands and minimize any retaining wall requirements.

## **5.0 WATER SERVICING**

Water service for the development will be provided by connecting to the 250mm diameter watermain on the Constance Avenue north of the site. This watermain shall be constructed as a part of Phase 6 of the Victoria on the River Subdivision.

A new 50mm diameter PVC water service connection to the 250mm main is proposed to service the site. Each unit will be serviced by a 25mm diameter PEX water service.

### **Water Quality:**

The Average Day Water demands are based on the design criteria outlined in the City of London's Design Specifications and Requirements Manual, including a boundary condition of

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301.8m, population density of 2.4 people per unit, and an average domestic flow rate of 255 L/cap/day.

Water quality of the proposed service will be calculated for the Average Day demand to ensure the turnover (water quality) within the pipe is meeting the City's requirements.

### **Water Supply for Fire Fighting**

The proposed residential buildings are part 9 buildings, onsite water supply for firefighting is not required under Ontario Building Code. For fire protection, there are existing fire hydrants on Constance Avenue in front of the site and on Commissioner Road E at the southwest corner of the site, approximately 45 meter west of the site.

## **6.0 SANITARY SERVICING**

The subject site is included as external lands as part of the sanitary area plan for the adjacent Old Victoria East Subdivision-South Parcel (Thames Valley Joint Venture, Plan 33M-735). As set out on the accepted Subdivision drawings, the existing 200mm diameter sanitary sewer on Constance Ave has been extended and stubbed at the limit of the Old Victoria East Subdivision-South Parcel Subdivision. The whole external area (0.8ha.) that includes the subject lands been allocated 72 people (90 person per hectare).

According to the Sheet 3 and Sheet 4 – Victoria On The River – Project No. DEL16-017, the site, 1982 Commissioners Road E, was not included in the sewer design on Constant Avenue, and the total tributary to the existing sewer has already exceeded (1.035 hectares, 76 people).

The proposed development includes 21 townhouse units with total population of 51 persons (2.4 persons per unit). Together with the tributary area above from Victoria On The River, the total tributary area is 1.35 hectares ( = 1.035 +0.313) with population of 127 persons ( = 26 + 51), this is more than the allocated for the site( 0.8 hectares and 72 persons), a review of downstream capacity sewer is needed.

We have reviewed the design sheet for Old Victoria East Subdivision with the new tributary area and additional population above, the sewage flow downstream at the trunk sewer on Hamilton Road is increased 1.34 l/s ( from 6.72 l/s to 7.38 l/s) the capacity of the 200mm diameter sewer at 0.4 % slope is approximately 20.7 l/s. Therefore, the additional flow of the development can be accommodated in the existing sewer system. (Updated design sheet attached.)

A new 150mm diameter PDC at minimum 1% slope is proposed to connect to the new 200mm diameter sanitary sewer on Constance Avenue (constructed as a part of Phase 6 of the Victoria on the River Subdivision). Each individual unit will be serviced by a 100mm diameter service connection at 2% minimum grade.

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## 7.0 STORMWATER SERVICING STRATEGY

As per as-constructed drawing T13502-03, the site is included in the external area of 0.9hectares, and  $C=0.60$ , tributary to the existing 375 mm storm sewer on Constance Avenue. The allocated  $AxC = 0.54$ .

According to the Sheet 2 and Sheet 4 – Victoria On The River – Project No. DEL16-017, the site, 1982 Commissioners Road E, was not included in the sewer design on Constant Avenue, and the total area tributary to the existing sewer is 0.5 hectares, with  $AxC = 0.269$ .

The remainder  $AxC$  for the site is  $0.27 (=0.54-0.27)$  or the site can be developed with the run-off coefficient of  $C = 0.86 (= 0.27/0.313)$ .

### Quantity and Quality Control

As indicated above, post-development run-off from the site has been included in the downstream stormwater management facility SWMF1. Stormwater runoff will be treated in the SWM facility, onsite treatment is not needed.

The site can be develop with the weighted “C” of 0.86 as per above, on-site SWM controls is needed for development above this C value.

### Overland Flow Route

Major overland flow route will be provided through the site to carry flows from major storm events to Constance Avenue and to follow the existing overland flow route.

## 8.0 CONCLUSION

The site can be sufficiently serviced from the new sewer and watermain on Constance Avenue north of the site. This extension of Constance Avenue is part of Phase 6 - Victoria on the River Subdivision by Sifton. Sifton has indicated that construction will be later this summer and the road is expected fully serviced in fall 2023.

We trust the information presented in this preliminary investigation meets your current requirements. Please do not hesitate to contact us should you have any questions or concerns.

Eng Plus Ltd.



Vinh Pham, P.Eng.

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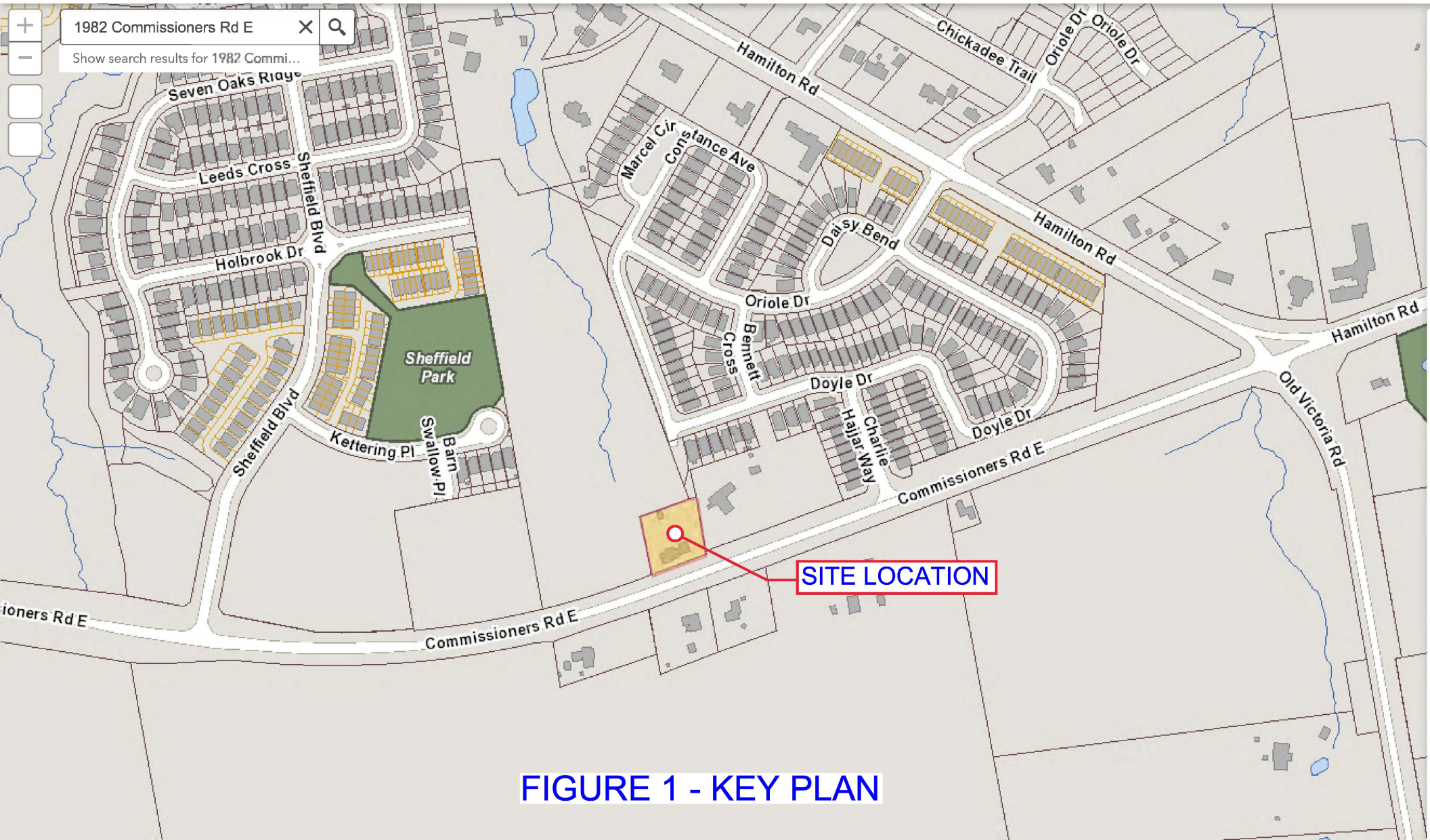
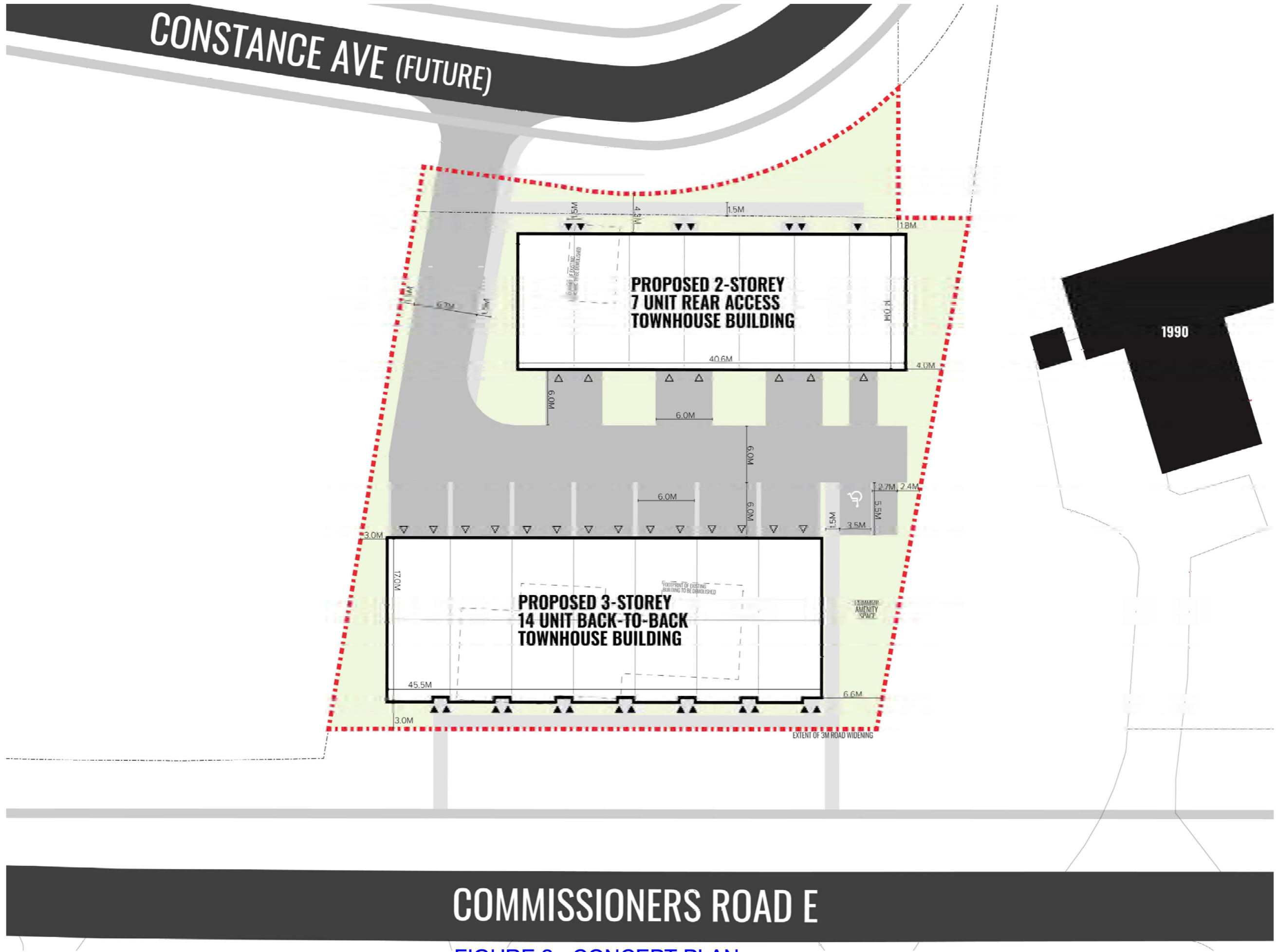


FIGURE 1 - KEY PLAN



**CONCEPT PLAN**

**01**  
DWG

**PROJECT SITE**  
1982 Commissioners Road East



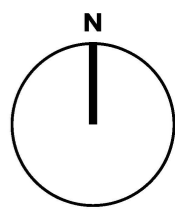
**SITE DATA**

**R5-7**  
ZONE

Regulations	Required	Proposed
<b>Permitted Uses:</b>	Section 9.2	Cluster Townhouse Dwellings Cluster Stacked Townhouse Dwellings
<b>Lot Area:</b>	1,000m <sup>2</sup> (min)	3,535m <sup>2</sup>
<b>Lot Frontage</b>	30.0m (min)	57.8m
<b>Front and Exterior Side Yard:</b>	8.0m (min)	3.0m*
<b>Interior Side Yard and Rear Yard:</b>	6.0m (min)	3.0m*
<b>Landscape OS:</b>	30% (min)	31%
<b>Lot Coverage:</b>	45% (max)	38%
<b>Height:</b>	12.0m	Building A: 9.0m Building B: 12.0m
<b>Density:</b>	60uph (max)	59uph
<b>Parking:</b>	0.5/unit	2.1/unit 44 total

\* Requires Special Provision

<b>Client:</b>	Royal Premier Developments
<b>Date:</b>	[05.24.23]
<b>Drawn By:</b>	D. Murphy
<b>Plan Scale:</b>	nts
<b>File No:</b>	1982CE
<b>Version</b>	1.0



**COMMISSIONERS ROAD E**

**FIGURE 2 - CONCEPT PLAN**

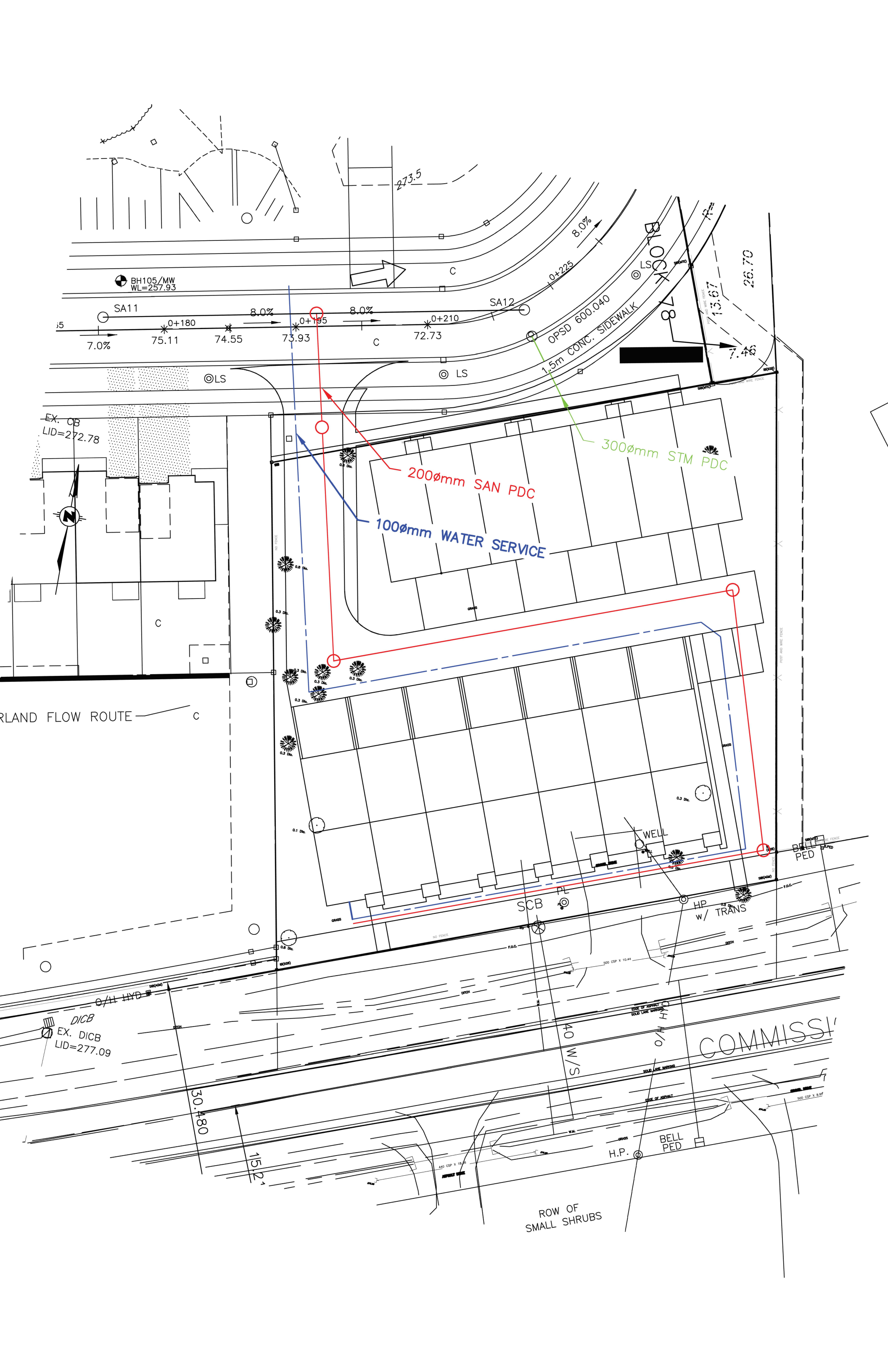
**[siv-ik]** PLANNING DESIGN

Contact Us  
www.siv-ik.ca  
info@siv-ik.ca  
905.921.9029

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**Lot Boundary Disclaimer:** Site dimensions have been derived from publicly available Parcel Data from The City of London. Siv-ik planning and design inc. makes no warranties or guarantees regarding the accuracy of the lot boundaries.





BH105/MW  
WL=257.93

SA11

SA12

7.0%

8.0%

8.0%

8.0%

75.11

74.55

73.93

72.73

0+225

78

13.67

26.70

7.46

EX. CB  
LID=272.78

300ømm STM PDC

200ømm SAN PDC

100ømm WATER SERVICE

LAND FLOW ROUTE

WELL

SCB

HP  
w/  
TRANS

BELL  
PED

DICB  
EX. DICB  
LID=277.09

40 W/S

COMMISSI

30.480

15.24

H.P.

BELL  
PED

ROW OF  
SMALL SHRUBS

**POPULATION DENSITIES**

SINGLE FAMILY	3	PP / UNIT
SEMI DETACHED	3	PP / UNIT
TOWNHOUSES	2.4	PP / UNIT
APARTMENTS- AVERAGE	1.6	PP / UNIT

**ZONING:**

Low density = 30 Units /Hectare @ 3 people/unit = 90 pp/Ha.

Medium Density = 75 Units/Hectare @ 2.4 people/unit = 180 pp/Ha.

**SANITARY SEWER DESIGN SHEET**  
CITY OF LONDON  
**OLD VICTORIA EAST SUBDIVISION - SOUTH PARCEL**  
**1691 HAMILTON ROAD**

PROJECT Cline Crossing Subdivision

FILE No. 11.083 SHEET 1 OF 1

SANITARY AREA 7.93 Ha.

DESIGNED BY VP CHECKED BY VP

DATE 05-29-23

**DESIGN CRITERIA:**

I.C.I. FLOW	100	PP/ HA EQUIVALENT
SCHOOLS- ELEM.	400	PP/ HA EQUIVALENT
INFILTRATION ALLOWANCE	8640	L/ GROSS HA/ DAY
AVERAGE FLOW	230	L/ PP / DAY
PEAKING FACTOR	$M = 1 + \frac{14}{4+p^{0.5}}$	

AREA NO.	SEWER LOCATION			AREA			TOTAL CUM. AREA ha.	RESIDENTIAL AREA & POPULATION					HARMON PEAKING FACTOR	SEWAGE FLOW				SEWER DESIGN					PROFILE						
	STREET	FROM MH	TO MH	NET AREA ha.	GROSS AREA ha.	CUM. AREA ha.		PER ha.	PERS. PER LOT	NO. OF LOTS	Δ POPUL.	TOTAL CUM. POPUL.		INFILT. l/s	SEWAGE l/s	I.C.I. l/s	TOTAL l/s	"n"	CALC. PIPE D mm	NOM. PIPE D mm	PIPE SLOPE %	CAPACITY Q l/s	VELOCITY (0.60 min.) m/s	LENGTH m	SEWER FALL m	DROP IN MANHOLE m	HEADLOSS	INVERT ELEVATION	
																												U.S. m	D.S. m
EXT.2	MN. 1990 COMM. RD.	STUB	S111	1.16			1.16	180.00	(MED. DENSITY)	209	209	4.1410	0.12	2.53		2.65	0.013	60.9	200	3.72	63.27	2.01	9.0	0.333	0.050		260.923	260.590	
B1	DOYLE DRIVE	S100	S111	0.43			0.43		3.0	6	18	4.3864	0.04	0.23		0.27	0.013	25.3	200	4.32	68.18	2.17	86.9	3.753			264.000	260.247	
B2	DOYLE DRIVE	S112	S111	0.37			0.37		3.0	6	18	4.3864	0.04	0.23		0.27	0.013	35.9	200	0.63	26.04	0.83	48.5	0.306	0.050		260.457	260.151	
B3	BENNETT CROSSING	S111	S113	0.26		1.96	2.22		3.0	4	12	4.1063	0.22	3.09		3.31	0.013	84.6	200	1.00	32.80	1.04	54.0	0.540	0.151		260.000	259.460	
B4	BENNETT CROSSING	S113	S114	0.13		0.00	2.35		3.0	1	3	4.1043	0.23	3.12		3.36	0.013	85.1	200	1.00	32.80	1.04	48.0	0.480	0.153		259.307	258.828	
B5	ORIOLE DRIVE	S115	S114	0.15			0.15		3.0	2	6	4.4335	0.02	0.08		0.09	0.013	19.5	200	2.00	46.39	1.48	24.6	0.492			259.249	258.757	
B6	ORIOLE DRIVE	S114	S116	0.20		2.50	2.70		3.0	3	9	4.0943	0.27	3.30		3.57	0.013	75.9	200	2.08	47.30	1.51	43.3	0.900	0.057		258.700	257.800	
B7	ORIOLE DRIVE	S117	S116	0.43			0.43		3.0	6	18	4.3864	0.04	0.23		0.27	0.013	36.3	200	0.63	26.04	0.83	67.9	0.428	0.050		257.714	257.286	
B8	CONSTANCE AVENUE	S116	S118	0.21		3.13	3.34		3.0	4	12	4.0754	0.33	3.64		3.97	0.013	98.5	200	0.64	26.24	0.84	40.0	0.256	0.050		257.236	256.980	
B9	CONSTANCE AVENUE	S118	S119	0.68			4.02		3.0	13	39	4.0524	0.40	4.08		4.48	0.013	91.6	200	1.20	35.93	1.14	74.7	0.897	0.228		256.752	255.855	
B10	CONSTANCE AVENUE	S119	S120	0.13			4.14	90.00	(LOW DENSITY)	12	356	4.0457	0.41	4.22		4.63	0.013	96.0	200	1.00	32.80	1.00	19.0	0.190	0.413		255.442	255.252	
B11	CONSTANCE AVENUE	S120	S107	0.02			4.17		3.0	0	0	4.0457	0.42	4.22		4.63	0.013	78.1	200	3.00	56.83	1.81	16.9	0.507	0.545		254.707	254.200	
EXT.1	FUTURE	PLUG	S100	1.35			1.35				127	127	4.2137	0.13	1.57		1.70	0.013	47.4	200	5.80	79.00	2.51	33.6	1.947	0.450		265.947	264.000
B12	CONSTANCE AVENUE	S100	S101	0.30		0.00	1.65		3.0	5	15	4.1987	0.16	1.75		1.91	0.013	54.2	200	3.58	62.06	1.98	68.0	2.434	0.510		263.490	261.056	
B13	CONSTANCE AVENUE	S101	S103	0.42			2.07		3.0	5	15	4.1845	0.21	1.92		2.13	0.013	60.2	200	2.54	52.26	1.66	95.7	2.429	0.050		261.006	258.577	
B15	CONSTANCE AVENUE	S103	S104	0.17			2.24		3.0	0	0	4.1845	0.22	1.92		2.15	0.013	55.5	200	4.00	65.61	2.09	25.1	1.004	0.327	0.171	258.250	257.246	
B16	CONSTANCE AVENUE	S104	S105	0.36			2.60		3.0	5	15	4.1712	0.26	2.10		2.36	0.013	65.5	200	2.00	46.39	1.48	82.2	1.644	0.497	0.086	256.749	255.105	
B17	CONSTANCE AVENUE	S105	S106	0.28			2.88		3.0	4	12	4.1610	0.29	2.24		2.53	0.013	70.9	200	1.50	40.17	1.28	55.0	0.825	0.116		254.989	254.164	
B18	MARCEL CIRCLE	S121	S122	0.15			0.15		3.0	2	6	4.4335	0.02	0.08		0.09	0.013	23.1	200	0.80	29.34	0.93	10.0	0.080			255.780	255.700	
B19	MARCEL CIRCLE	S122	S123	0.37			0.52		3.0	5	15	4.3776	0.05	0.27		0.32	0.013	31.1	200	1.95	45.84	1.46	58.9	1.150	0.050		255.650	254.500	
B20	MARCEL CIRCLE	S123	S124	0.14			0.66		3.0	2	6	4.3619	0.07	0.34		0.41	0.013	44.1	200	0.50	23.20	0.74	14.5	0.073	0.060		254.411	254.339	
B21	MARCEL CIRCLE	S124	S106	0.04			0.69		3.0	0	0	4.3619	0.07	0.34		0.41	0.013	44.1	200	0.50	23.26	0.74	13.5	0.068	0.050		254.289	254.221	
B22	CONSTANCE AVENUE	S106	S107	0.09		3.57	3.66		3.0	0	0	4.1395	0.37	2.56		2.92	0.013	92.0	200	0.50	23.20	0.74	61.7	0.309	0.164		254.000	253.692	
B23	TEMPORARY ROAD	S107	S125	0.11		7.82	7.93		3.0	1	3	3.9443	0.79	6.58		7.38	0.013	135.8	200	0.40	20.72	0.66	81.5	0.325	0.092		253.600	253.275	
-	TEMPORARY ROAD	S125	EX. 107	0.00			7.93		3.0	0	0	3.9443	0.79	6.58		7.38	0.013	114.3	200	1.00	32.80	1.04	15.9	0.159	0.435		252.840	252.680	

HL=(1.5x0.076)x(1.51<sup>2</sup>/(2\*9.8))=0.013

HL=(1.5x0.514)x(1.48<sup>2</sup>/(2\*9.8))=0.086

HL=(1.5x0.514)x(1.48<sup>2</sup>/(2\*9.8))=0.086

Drop Structure

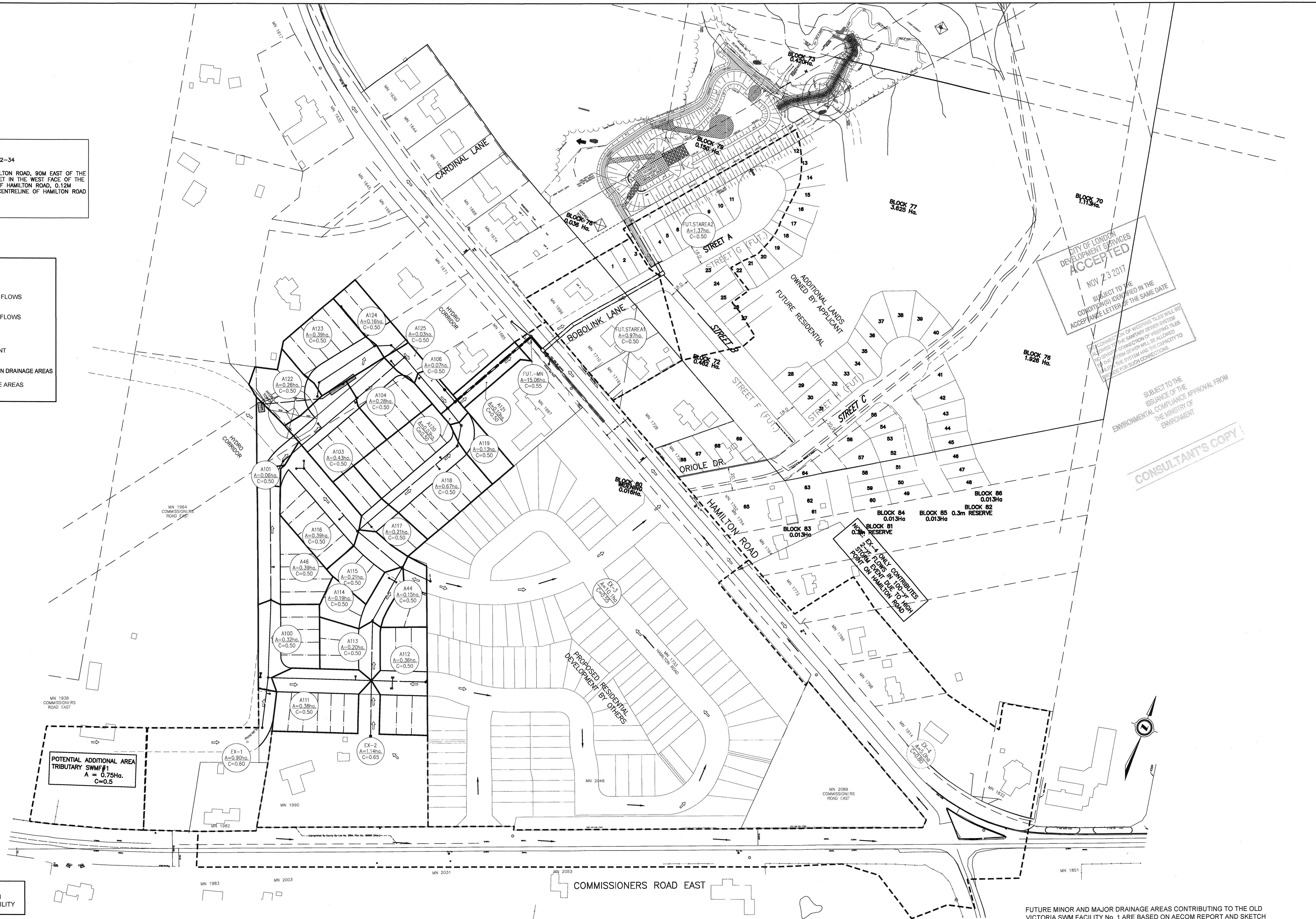
**FIGURE 4 - UPDATED SANITARY DESIGN SHEET**



**BENCHMARK:**  
 CITY OF LONDON GEODETIC BENCHMARK BM02-34  
 TABLET SET IN CONCRETE CULVERT ON HAMILTON ROAD, 90M EAST OF THE CENTRELINE OF OLD VICTORIA ROAD. BOLT SET IN THE WEST FACE OF THE CONCRETE HEADWALL ON THE SOUTH SIDE OF HAMILTON ROAD, 0.12M FROM THE TOP AND 10.9M SOUTH OF THE CENTRELINE OF HAMILTON ROAD  
 GEODETIC ELEVATION: 257.105 METERS

**LEGEND**

- MAJOR STORMWATER FLOWS
- MINOR STORMWATER FLOWS
- AREA No.  
AREA (HECTARES)  
RUNOFF CO-EFFICIENT
- PROPOSED SUBDIVISION DRAINAGE AREAS
- EXTERNAL DRAINAGE AREAS



CITY OF LONDON  
 DEVELOPMENT SERVICES  
**ACCEPTED**  
 NOV 23 2017  
 SUBJECT TO THE  
 CONDITIONS IDENTIFIED IN THE  
 ACCEPTANCE LETTER OF THE SAME DATE

SUBJECT TO THE  
 ISSUANCE OF THE  
 ENVIRONMENTAL COMPLIANCE APPROVAL FROM  
 THE MINISTRY OF  
 ENVIRONMENT

CONSULTANT'S COPY

ONLY CONTRIBUTES  
 FUTURE FLOWS TO CITY  
 POINT OF HAMILTON ROAD

NOTE: ALL DRAINAGE AREA 'C' VALUES  
 INCREASE BY 25% IN 100 YEAR STORM  
 EVENT TO ACCOUNT FOR IMPERMEABILITY

FUTURE MINOR AND MAJOR DRAINAGE AREAS CONTRIBUTING TO THE OLD VICTORIA SWM FACILITY No. 1 ARE BASED ON AECOM REPORT AND SKETCH FIGURE 5 - ULTIMATE DEVELOPMENT STORMWATER SERVICING CONCEPT.

PRINTED ON: Nov 21, 2017 1:28pm FILE NAME: X:\Engineering\11183\_City of London Sub-Committee Sub-Design-302016.dwg LAYOUT: P03-EXT STORM AREA

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT
					DESIGN TK	1	1ST SUB'N MARKUPS & COMMENTS	MAR. 1, 2017	ENG PLUS LTD.
					DRAWN BY TK	2	2ND SUB'N MARKUPS & COMMENTS	JULY 10, 2017	ENG PLUS LTD.
					CHECKED VP	3	FOR ECA APPROVAL	AUG 24, 2017	ENG PLUS LTD.
					APPROVED VP	4	3RD SUB'N MARKUPS & COMMENTS	SEPT. 18, 2017	ENG PLUS LTD.
					DATE			NOV. 2017	
						8	4TH SUB'N MARKUPS & COMMENTS	OCT. 18, 2017	ENG PLUS LTD.
						9	PER CITY COMMENTS-NOV. 07, 2017	NOV. 17, 2017	ENG PLUS LTD.

**ENG PLUS**  
 Engineers  
 Landscape Architects  
 and Building Designers  
 100-609 WILLIAM STREET, LONDON, ON. N6B 3G1  
 tel. 519.438.6994 fax. 519.438.7052

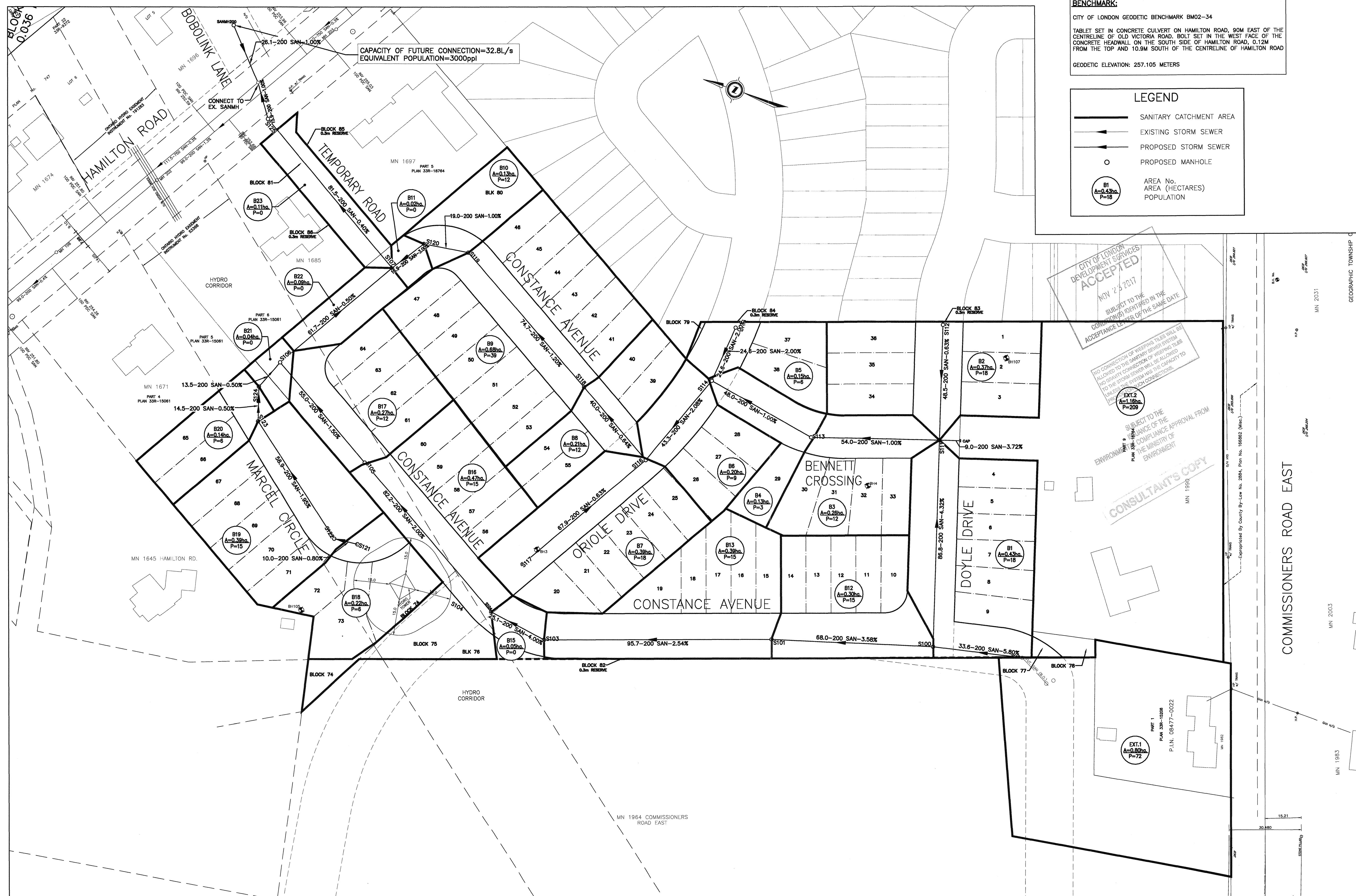
ENGINEER'S STAMP  
 LICENSED PROFESSIONAL ENGINEER  
 Nov. 17, 2017  
 V. PHAM  
 PROVINCE OF ONTARIO

**CORPORATION OF THE CITY OF LONDON**  
 London CANADA

SCALE - 1 : 1500  
 15 0 30m

TITLE  
 OLD VICTORIA EAST SUBDIVISION-SOUTH PARCEL  
 1691 HAMILTON ROAD - THAMES VALLEY JOINT VENTURE  
**EXTERNAL STORM AREA PLAN**  
 PROJECT No. 11.183  
 SHEET No. 3  
 PLAN FILE No.





**BENCHMARK:**  
 CITY OF LONDON GEODETIC BENCHMARK BM02-34  
 TABLET SET IN CONCRETE CULVERT ON HAMILTON ROAD, 90M EAST OF THE CENTRELINE OF OLD VICTORIA ROAD. BOLT SET IN THE WEST FACE OF THE CONCRETE HEADWALL ON THE SOUTH SIDE OF HAMILTON ROAD, 0.12M FROM THE TOP AND 10.9M SOUTH OF THE CENTRELINE OF HAMILTON ROAD  
 GEODETIC ELEVATION: 257.105 METERS

**LEGEND**

- SANITARY CATCHMENT AREA
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- PROPOSED MANHOLE
- B1  
A=0.43ha  
P=18  
AREA No.  
AREA (HECTARES)  
POPULATION

PRINTED ON: Nov 21, 2017 1:28pm FILE NAME: X:\Engineering\11183\_City of London\Sanitary Area\11183-Design-32016.dwg LAYOUT: SAN AREA

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT
					DESIGN	1	1ST SUB'N MARKUPS & COMMENTS	MAR. 1, 2017	ENG PLUS LTD.
					DRAWN BY	2	HYDRO ONE SUBMISSION	APRIL 21, 2017	ENG PLUS LTD.
					CHECKED	3	2ND SUB'N MARKUPS & COMMENTS	JULY 10, 2017	ENG PLUS LTD.
					APPROVED	4	FOR ICK APPROVAL	AUG 24, 2017	ENG PLUS LTD.
					DATE	5	3RD SUB'N MARKUPS & COMMENTS	SEPT. 18, 2017	ENG PLUS LTD.
						6	4TH SUB'N MARKUPS & COMMENTS	OCT. 18, 2017	ENG PLUS LTD.
						7	PER CITY COMMENTS-NOV. 07, 2017	NOV. 17, 2017	ENG PLUS LTD.

**ENG PLUS**  
**Engineers Landscape Architects and Building Designers**  
 100-609 WILLIAM STREET, LONDON, ON. N6B 301  
 tel. 519.438.6994

**ENGINEER'S STAMP**  
 NOV. 27, 2017  
 V. PHAM  
 PROVINCE OF ONTARIO

**CORPORATION OF THE CITY OF LONDON**  
 London CANADA

SCALE  
 1 : 750  
 7.5 0 15m

TITLE  
 OLD VICTORIA EAST SUBDIVISION-SOUTH PARCEL  
 1691 HAMILTON ROAD - THAMES VALLEY JOINT VENTURE  
**SANITARY AREA PLAN**  
 PROJECT No. 11.183  
 SHEET No. 4  
 PLAN FILE No. 11.183.04  
 NOV 22 2017  
 City of London Development Services



**LEGEND**

- ST1 PROPOSED STORM MANHOLE & NUMBER
- ⊙ CBMH1 PROPOSED CATCHBASIN MAINTENANCE HOLE
- ⊙ DICBMH1 PROPOSED DITCH INLET CATCHBASIN MAINTENANCE HOLE
- CB1 PROPOSED STANDARD CATCHBASIN
- TICB1 PROPOSED TWIN INLET CATCHBASIN
- CICB1 PROPOSED CURB INLET CATCHBASIN
- EX. STM MH EXISTING STORM MAINTENANCE HOLE
- ⊙ EX. CBMH1 EXISTING CATCHBASIN MAINTENANCE HOLE
- EX. CB1 EXISTING CATCHBASIN
- EX. 50.0-600 ST-0.25% EXISTING STORM SEWER
- 50.0-600 ST-0.5% PROPOSED STORM SEWER
- - - DRAINAGE AREA BOUNDARY
- DRAINAGE AREA DIRECTED TO OLD VICTORIA SWMF #1
- DRAINAGE AREA DIRECTED TO OLD VICTORIA SWMF #2
- DRAINAGE AREA DIRECTED TO TRIBUTARY 3 (EXTERNAL SOUTH OF COMMISSIONERS RD. VIA SEWER)
- DRAINAGE AREA DIRECTED TO TRIBUTARY 3 (BLOCK 22 PPS CONTROL AND PORTION BLOCK 21 VIA SEWER)
- DRAINAGE AREA DIRECTED TO TRIBUTARY 3 (DIRECT SHEET FLOW)
- DRAINAGE AREA DIRECTED TO TRIBUTARY 3 (PPS CONTROL)
- - - DEVELOPMENT LIMIT

REFERENCE STORM DESIGN SHEET ON SHEET 4

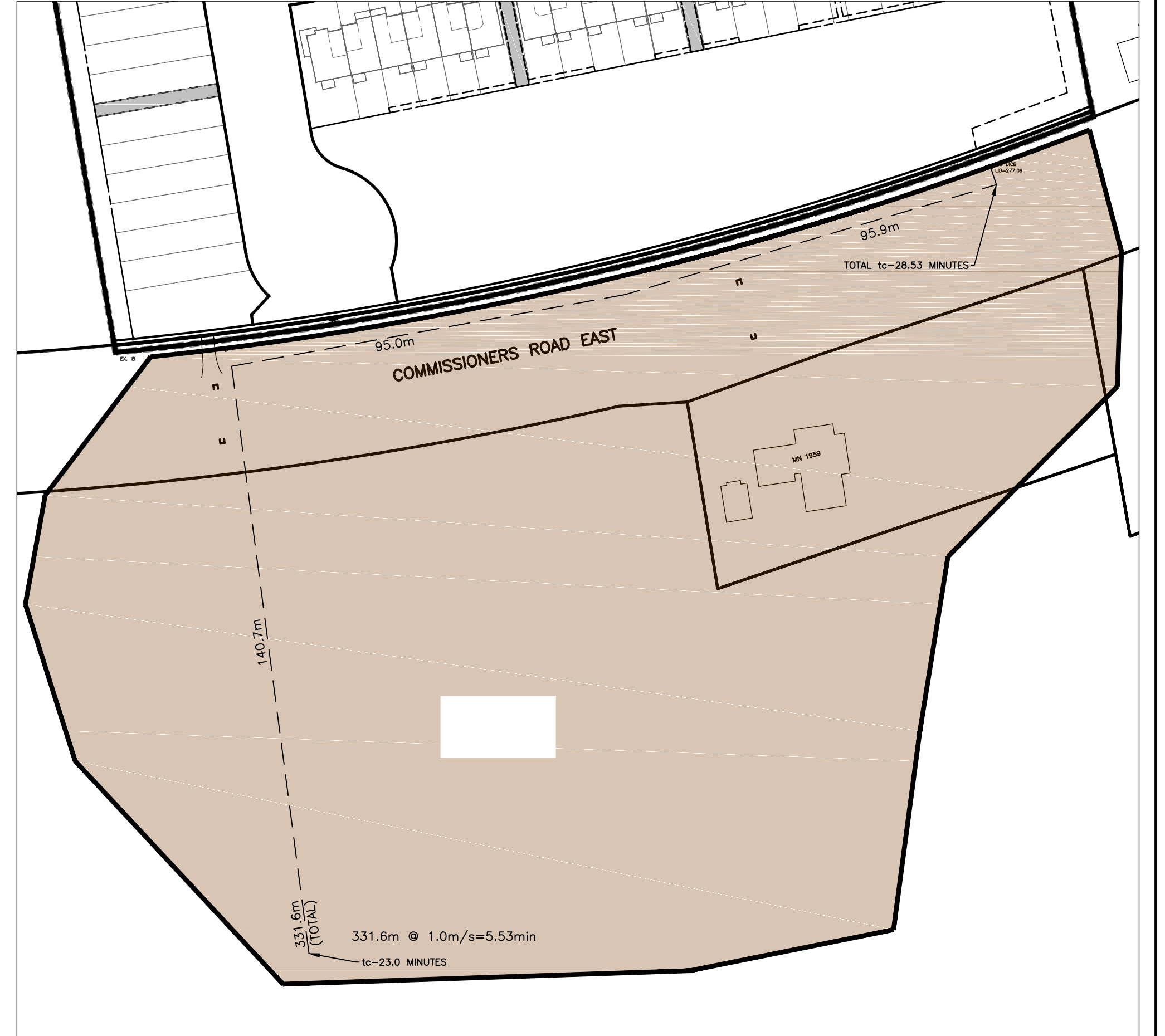
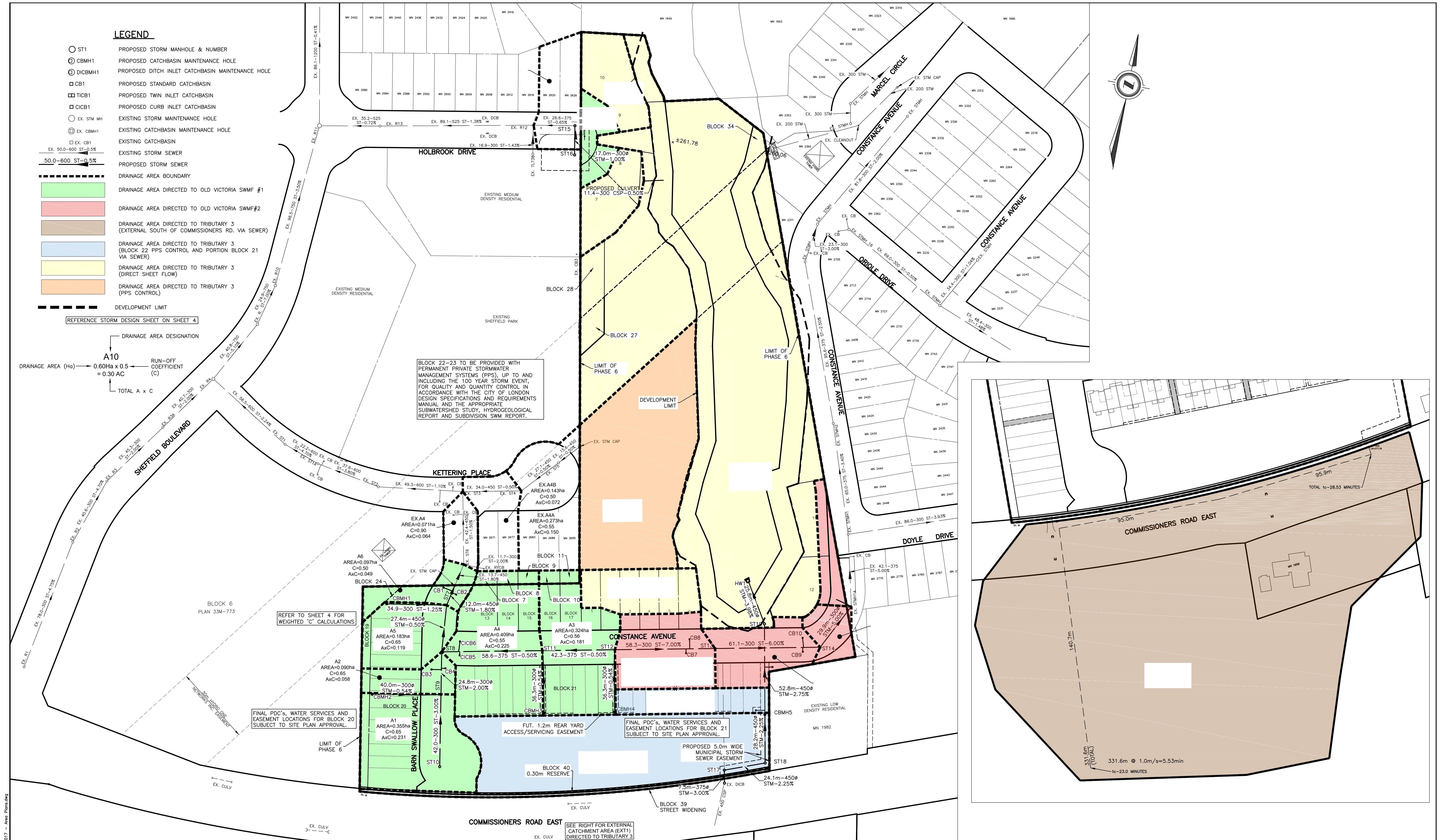
DRAINAGE AREA DESIGNATION

**A10**

DRAINAGE AREA (Ha) →  $0.60Ha \times 0.5$  ← RUN-OFF COEFFICIENT (C)

← TOTAL A x C

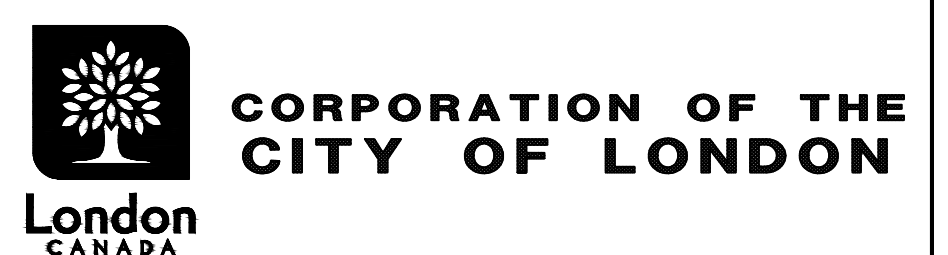
BLOCK 22-23 TO BE PROVIDED WITH PERMANENT PRIVATE STORMWATER MANAGEMENT SYSTEMS (PPS), UP TO AND INCLUDING THE 100 YEAR STORM EVENT, FOR QUALITY AND QUANTITY CONTROL IN ACCORDANCE WITH THE CITY OF LONDON DESIGN SPECIFICATIONS AND REQUIREMENTS MANUAL AND THE APPROPRIATE SUBWATERSHED STUDY, HYDROGEOLOGICAL REPORT AND SUBDIVISION SWM REPORT.



EXISTING SERVICES	DRAWING #, SOURCE	DATE	AS CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT
					DESIGN BY SD DRAWN BY SD/SW CHECKED BY JF/DH F.B.K.	1	1ST ENGINEERING SUBMISSION	DEC. 01/22	BEVING

SEE RIGHT FOR EXTERNAL CATCHMENT AREA (EXT1) DIRECTED TO TRIBUTARY 3

**development engineering**  
CONSULTING CIVIL ENGINEERS



SCALE

SCALE - 1:1000

10 0 20m

**VICTORIA ON THE RIVER - PHASE 6**  
SIFTON PROPERTIES LIMITED

**STORM AREA PLAN**

PROJECT No. **DEL16-017**

SHEET No. **2**

PLAN FILE No.

swheeler Dec.02/22-4:02pm DEL16-017 - Area Plans.dwg

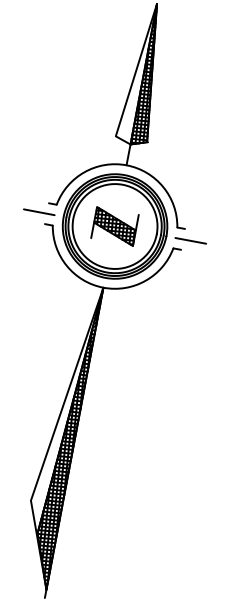


**LEGEND**

- SA1 PROPOSED SANITARY MAINTENANCE HOLE & NUMBER
- EX. SAN MH EXISTING SANITARY MAINTENANCE HOLE
- EX. 50.0-200 SAN-1.0% EXISTING SANITARY SEWER
- 50.0-200 SAN-1.0% PROPOSED SANITARY SEWER
- - - DRAINAGE AREA BOUNDARY
- - - DEVELOPMENT LIMIT

REFERENCE SANITARY DESIGN SHEET ON PLAN 4

- DRAINAGE AREA DESIGNATION
- DRAINAGE AREA
- ↑ NUMBER OF LOTS
- (SF=SINGLE FAMILY)
- ← TOTAL POPULATION
- ← POPULATION PER LOT TYPE



swheeler Dec 02/22-4:02pm DEL16-017 - Area Plans.dwg

EXISTING SERVICES	DRAWING #, SOURCE	DATE	AS CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT	CONSULTANT OR DIVISION	ENGINEER'S STAMP	SCALE	TITLE	PROJECT No.
					DESIGN BY SD DRAWN BY SD/SW CHECKED BY JF/DH F.B.K.	1	1ST ENGINEERING SUBMISSION	DEC. 01/22	DEVENG			SCALE - 1:1000 10 0 20m	VICTORIA ON THE RIVER - PHASE 6 SIFTON PROPERTIES LIMITED	DEL16-017
													SANITARY AREA PLAN	3
														PLAN FILE No.



**RESIDENTIAL POPULATIONS DENSITIES**

**AREA / ZONING BASIS**

LOW DENSITY (SINGLE FAMILY) - 30 UNITS PER HECTARE @ 3 PEOPLE / UNIT  
 MEDIUM DENSITY (MULTI-FAMILY) - 75 UNITS PER HECTARE @ 2.4 PEOPLE / UNIT  
 HIGH DENSITY - 150 TO 300 UNITS PER HECTARE @ 1.8 PEOPLE / UNIT

**LOT BASIS**

SINGLE FAMILY - 3 PEOPLE PER UNIT  
 SEMI DETACHED - 6 PEOPLE PER UNIT

**SANITARY SEWER DESIGN SHEET**  
**CITY OF LONDON**  
 VICTORIA ON THE RIVER PHASE 6

$$Q(\text{peak flow l/s}) = \left( \frac{\text{population} \times \text{per capita flow} \times \text{peaking factor} \times \text{uncertainty}}{24 \times 60 \times 60} \right) + \text{infiltration}$$

Per capita flow = 230 litres/capita/day  
 Peaking Factor = Harmon Formula  $M = 1 + \frac{14}{4 + \text{p.c.s.}}$

Uncertain Development Factor = 1.0 or 1.1 (situation dependent)  
 Infiltration Allowance = 8640 litres/hectare/day (0.100l/ha/s)

SANITARY AREA: 4.81 ha  
 DESIGNED BY: JSC  
 CHECKED BY:

DATE: November 7, 2022  
 FILENAME: DEL16-017 Sanitary Design.xlsx

LOCATION				AREA			POPULATION					SEWAGE FLOW				SEWER DESIGN					PROFILE						
AREA ID	STREET	FROM	TO	NET OR GROSS	Δ AREA Ha	TOTAL AREA Ha	PER Ha	PER LOT	NO. OF LOTS	Δ POP.	TOTAL POP.	INFILTRATION (l/s)	PEAKING FACTOR (M)	SEWAGE (l/s)	TOTAL (l/s)	"n"	SIZE (mm)	DESIGN SLOPE %	CAPACITY (l/s)	VELOCITY (m/s)	LENGTH (m/s)	DROP IN D.S. MH (m)	FALL IN SEWER (m)	HEAD LOSS (m)	INVERT U.S. m	ELEV. D.S. m	
A1	Block 22	CAP	SA9	G	0.773	0.773	75	2.4	58	139	139	0.077	4.201	1.557	1.790	0.013	200	1.00	32.800	1.044	27.1	0.075	0.271		276.211	275.940	
A2	Barn Swallow Place		SA9	G	0.139	0.139			0	0																	
A2	Barn Swallow Place-Block 20	SA9	SA8	G	0.265	1.176	75	2.4	20	48	187	0.118	4.159	2.070	2.395	0.013	200	1.50	40.172	1.279	73.1	0.100	1.096		275.865	274.769	
A3	Constance Avenue		SA10	G	0.395	0.395			3.0	5	15																
A3	Constance Avenue-Block 21	SA10	SA8	G	0.217	0.611	75	2.4	16	39	54	0.061	4.308	0.621	0.744	0.013	200	1.00	32.800	1.044	84.3	0.176	0.843		275.688	274.845	
A4	Barn Swallow Place		SA8	G	0.042	0.042			0	0																	
A4	Barn Swallow Place-Block 20	SA8	SA7	G	0.106	1.935	75	2.4	8	19	260	0.194	4.104	2.844	3.322	0.013	200	1.25	36.672	1.167	22.1	2.389	0.276		274.669	274.393	
A5	Barn Swallow Place		SA7	G	0.099	2.034			0	0	260	0.203	4.104	2.844	3.331	0.013	200	0.50	23.193	0.738	28.3	0.030	0.142		272.004	271.862	
D7	Barn Swallow Place	EX. SA6	EX. SA3	G	0.069	2.103			0	0	260	0.210	4.104	2.844	3.338	0.013	200	0.50	23.193	0.738	38.9	0.030	0.195		271.832	271.637	
A6	Block 23	CAP	EX. SA5	G	0.720	0.720	75	2.4	54	130	130	0.072	4.211	1.455	1.673	0.013	200	0.40	20.745	0.660	12.3	0.030	0.049		272.109	272.060	
D7A	Kettering Place	EX. SA5	EX. SA4	G	0.227	0.947			3.0	2	136	0.095	4.205	1.520	1.767	0.013	200	0.40	20.745	0.660	29.0	0.030	0.116		272.030	271.914	
D7B	Kettering Place	EX. SA4	EX. SA3	G	0.197	1.144			3.0	3	145	0.114	4.196	1.618	1.894	0.013	200	0.65	26.444	0.842	38.0	0.030	0.247		271.884	271.637	
A7	Holbrook Drive	SA15	SA14	G	0.376	0.376			3.0	4	12	0.038	4.407	0.141	0.193	0.013	200	1.00	32.800	1.044	10.3	0.030	0.103		256.819	256.716	
D18	Holbrook Drive	SA14	EX. SA13	G	0.152	0.528			3.0	2	6	0.053	4.386	0.210	0.284	0.013	200	0.75	28.406	0.904	23.4	0.030	0.176		256.686	256.510	
A8	Constance Avenue		SA10E	G	0.423	0.423			3.0	6	18																
A8	Constance Avenue-Block 21	SA10E	SA11	G	0.264	0.686	75	2.4	20	48	66	0.069	4.289	0.748	0.892	0.013	200	5.25	75.154	2.392	90.0	0.300	4.725		276.091	271.366	
A9	Constance Avenue		SA11	G	0.107	0.107			0	0																	
A9	Constance Avenue-Block 21	SA11	SA12	G	0.055	0.849	75	2.4	4	10	76	0.085	4.275	0.860	1.031	0.013	200	6.00	80.343	2.557	48.0	0.319	2.881		271.066	268.185	
A10	Constance Avenue	SA12	SA13	G	0.186	1.035			0	0	76	0.103	4.275	0.860	1.049	0.013	200	5.00	73.343	2.334	28.3	0.311	1.314		267.866	266.552	
	Constance Avenue	SA13	EX. S100	G	0.000	1.035						0.103	4.500	0.000	0.103	0.013	200	5.80	78.993	2.514	38.6	0.000	2.241		266.241	264.000	

EX. SA6 FROM VICTORIA ON THE RIVER PHASE 5 (33M-773) DRAWINGS AS ACCEPTED, DATED OCTOBER 30, 2019.  
 EX. SA13 FROM VICTORIA ON THE RIVER PHASE 3 (33M-707) DRAWINGS AS ACCEPTED, DATED MARCH 6, 2020.  
 EX. S100 FROM OLD VICTORIA EAST (33M-735) DRAWINGS AS ACCEPTED, DATED NOVEMBER 23, 2017

**RUNOFF COEFFICIENT 'C'**

PARKS & PLAYGROUNDS 0.20  
 RESIDENTIAL - SINGLE/SEMI 0.50  
 - ROWHOUSING 0.65  
 - APARTMENTS 0.65 / 0.70  
 COMMERCIAL & INDUSTRIAL 0.70 / 0.90

FLOW Q = 2.78 ACI

Q = PEAK FLOW IN LITRES PER SECOND (l/s)  
 A = AREA IN HECTARES (ha)  
 C = RUNOFF COEFFICIENT  
 i = RAINFALL INTENSITY IN MILLIMETERS PER HOUR (mm/hr)  
 RETURN PERIOD = 5 years

**STORM SEWER DESIGN SHEET**  
**CITY OF LONDON**  
 Victoria on the River Phase 6

DRAINAGE AREA: 3.41 ha  
 DESIGNED BY: JSC  
 CHECKED BY:  
 DATE: November 9, 2022  
 FILENAME: DEL16-017-Storm Design

LOCATION			AREA			A X C						RAINFALL INTENSITY			SEWER DESIGN							PROFILE							
STREET	FROM	TO	ID	DELTA AREA ha	TOTAL AREA ha	'C'	INCR A x C	TOTAL SECTION	TOTAL LATERAL	TOTAL SEWER	TOTAL 2.78 x AxC	TIME ENTRY SECT. min.	ACCUM. min.	INTENS. 'i' mm/hr	Q l/s	PIPE Dia. Mm	DESIGN SLOPE %	n	CAPACITY l/s	PERCENT OF CAPACITY	ACTUAL VELOCITY m/s	LENGTH m	TIME OF FLOW minutes	HEAD LOSSES m	DROP IN MH m	SEWER FALL m	INVERT ELEVATION U.S. m	D.S. m	
Barn Swallow Place	ST10	ST9	A1	0.355	0.355	0.65	0.231	0.000		0.231	0.641			19.00	75.62	48.47	300	3.00	0.013	167.49	28.9%	2.001	42.0	0.35	0.000	0.030	1.261	278.180	276.899
Barn Swallow Place	ST9	ST8	A2	0.090	0.444	0.65	0.058	0.231		0.289	0.803	0.35	19.35	74.80	60.06	300	2.00	0.013	136.75	43.9%	1.853	24.8	0.22	0.000	0.150	0.496	276.869	276.373	
Constance Avenue	ST12	ST11	A3	0.324	0.324	0.56	0.181	0.000		0.181	0.504			19.00	75.62	38.11	375	0.50	0.013	123.96	30.7%	0.962	42.3	0.73	0.000	0.030	0.212	276.911	276.699
Constance Avenue	ST11	ST8	A4	0.409	0.733	0.55	0.225	0.181		0.406	1.130	0.73	19.73	73.93	83.54	375	0.50	0.013	123.96	67.4%	1.221	58.6	0.80	0.153	0.293	0.293	276.669	276.376	
Barn Swallow Place	ST8	ST7	A5	0.183	1.360	0.65	0.119	0.406	0.289	0.814	2.263	TC1	20.13	73.03	165.28	450	0.50	0.013	201.60	82.0%	1.416	27.4	0.32	0.029	0.030	0.137	276.223	276.086	
Barn Swallow Place	ST7	EX. ST6	A6	0.097	1.457	0.50	0.049	0.814		0.863	2.398	0.32	20.45	72.34	173.46	450	1.80	0.013	382.50	45.3%	2.331	25.7	0.18	0.027	0.030	0.463	276.056	275.593	
Barn Swallow Place	EX. ST6	EX. ST3	EX. A4	0.071	1.528	0.90	0.064	0.863		0.927	2.576	0.18	20.63	71.95	185.34	450	1.50	0.013	349.17	53.1%	2.252	42.4	0.31	0.000	0.030	0.636	275.563	274.927	
BLOCK 23	STM CAP	EX. ST5	A9	0.720	0.720	0.48	0.346	0.000		0.346	0.961			19.00	75.62	72.67	450	0.50	0.013	201.60	36.0%	1.135	15.6	0.23	0.000	0.030	0.078	273.073	272.995
Kettering Place	EX. ST5	EX. ST4	EX. A4A	0.273	0.993	0.55	0.150	0.346		0.496	1.378	0.23	19.23	75.08	103.46	450	0.50	0.013	201.60	51.3%	1.286	27.1	0.35	0.097	0.097	0.136	272.965	272.829	
Kettering Place	EX. ST4	EX. ST3	EX. A4B	0.143	1.136	0.50	0.072	0.496		0.567	1.577	0.35	19.58	74.27	117.12	450	0.50	0.013	201.60	58.1%	1.337	34.0	0.42	0.000	0.030	0.170	272.732	272.562	
Holbrook Drive	ST16	ST15	A7	0.084	0.084	0.50	0.042	0.000		0.042	0.117			19.00	75.62	8.85	300	1.00	0.013	96.70	9.1%	0.833	17.0	0.34	0.000	0.075	0.170	257.526	257.356
Holbrook Drive	ST15	EX. R12	EX. A13	0.160	0.244	0.50	0.080	0.042		0.122	0.339	0.34	19.34	74.82	25.36	375	0.65	0.013	141.33	17.9%	0.978	26.6	0.45	0.000	0.030	0.173	257.281	257.108	
Constance Avenue	ST12	ST13	A10	0.238	0.238	0.55	0.131	0.000		0.131	0.364			19.00	75.62	27.53	300	7.00	0.013	255.84	10.8%	2.357	58.3	0.41	0.000	0.150	4.081	276.691	272.610
Constance Avenue	ST13	ST14	A11	0.184	0.422	0.54	0.100	0.131		0.230	0.641	0.41	19.41	74.66	47.86	300	6.00	0.013	236.87	20.2%	2.628	61.1	0.39	0.376	0.376	3.667	272.460	268.793	
Constance Avenue	ST14	EX. STMH1A	A12	0.077	0.500	0.50	0.039	0.230		0.269	0.748	0.39	19.80	73.77	55.18	300	5.00	0.013	216.23	25.5%	2.515	29.9	0.20	0.316	0.316	1.495	268.417	266.922	
Constance Avenue	EX. STMH1A	EX. STMH1		0.000	0.500	0.50	0.000	0.269		0.269	0.748	0.20	20.00	73.32	54.84	375	5.00	0.013	391.98		2.535	42.1	0.28	0.000	0.030	2.104	266.606	264.502	
BLOCK 22	EXT DICB	ST17	EXT1	3.587	3.587	0.27	0.968	0.000		0.968	2.692			28.53	58.53	157.55	375	3.00	0.013	303.63	51.9%	2.799	7.5						