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December 17, 2021

SBM-20-3418

Oxford West Gateway (c/o York Developments)
303 Richmond Street #201
London, Ontario

Attn: Mr. Carlos Ramirez

Re: Sanitary Servicing Feasibility Study
Proposed 10 Story Apartment Building
1856 - 1870 Oxford Street West, London, ON

1. INTRODUCTION

This Sanitary Servicing Feasibility Study (Study) has been prepared by Strik, Baldinelli, Moniz Ltd. (SBM) for York Developments to address the sanitary servicing feasibility for the proposed 10 story apartment building development located at 1856 & 1870 Oxford Street West in London, Ontario.

The subject site is 3.282 ha in size and approximately 2.7 ha has already been developed into commercial lands with 8 existing commercial buildings with parking lot areas. The 10-story apartment building is proposed to be located on the southeast corner of the subject site. The property borders the Oxford Street West Right of Way (ROW) to the north, the Westdel Bourne ROW to the west, the Riverbend Road ROW to the east, a stormwater management facility parcel to the south (2080 Upperpoint Blvd), as well as an undeveloped parcel to the south (1175 Riverbend Rd). The proposed development includes 223 residential units and 7 commercial retail units with a total floor area of 854m^2. Please refer to the proposed Overall Site Plan and Zoning Chart prepared by SBM dated March 11, 2021 attached to this Study.

This Study is to determine the adequacy of the existing Wharbler Woods Phase 1 (33M-711) sanitary sewer system in support of a Zoning By-Law Amendment (ZBA) for the proposed development.

Design requirements have been based on the City of London Design Specifications & Requirements Manual (DS&RM), updated March 2021.

2. SANITARY SERVICING

2.1 Assessment of Westdel Bourne Sanitary Outlet

As per the attached City of London Wharbler Woods Phase 1 Sanitary Drainage Area Plan by Stantec Sheet 5 Dated November 22, 2016 and the City of London Wharbler Woods Phase 1 Sanitary Design Sheets by Stantec Sheets 12/13 Dated November 22, 2016, the subject site has an existing 300mm diameter sanitary sewer stub the southwest corner of the site which connects to the existing sanitary manhole S111 located within the Westdel Bourne ROW. The subject site is indicated as sanitary drainage area A140A on the above noted plans. The subject site and the currently undeveloped parcel to the south (to be developed in the future) noted as sanitary drainage area A140B are both proposed to be serviced via the existing 300mm sanitary stub. As indicated on the drainage area drawing, a possible easement is identified to show the potential alignment of the sanitary sewer through the subject site and connecting to the future development parcel to the south.

As the purpose of this study is to determine the adequacy of the existing sanitary sewer which is a part of the Wharbler Woods Ph 1 development in support of a Zoning By-Law Amendment (ZBA) for the proposed development. For the purposes of this Study, the following assumptions have been made:

- The subject site area (and sanitary drainage area in consideration) is 3.282 ha and consists of the proposed 223-unit, 10 story apartment building containing 7 commercial units with a floor area of 854 m^2, and 8 existing commercial buildings per the Site Plan prepared by SBM.
- The site's occupancy load of 432 people has been calculated per:
    - High density residential classification for the proposed apartment building of 1.6 people/unit (223 units * 1.6 ppl/unit = 357 ppl).
    - A commercial density of 100 ppl/ha for the associated floor areas of the existing commercial buildings (100ppl/ha * (280.92+260.42+827.15+835.96+410.12+119.01+287.94+1167.15*3)/10000)ha = 66 ppl). See attached Markup of Site Plan by SBM.
    - A commercial density of 100 ppl/ha for the commercial floor area of the 7 commercial units within the proposed apartment building (100ppl/ha * 0.085 ha = 9 ppl)
- The area considered in this Study is limited to the areas located in between sanitary MH S114 on Westdel Bourne and MH EX.S3 on Riverbend Road as shown in the Sanitary Drainage Area Plan and the Sanitary Design Sheets by Stantec attached.
- The City of London Wharbler Woods Phase 1 Sanitary Drainage Area Plan by Stantec Sheet 5 dated November 22, 2016 and the City of London Wharbler Woods Phase 1 Sanitary Design Sheets by Stantec Sheets 12/13 dated November 22, 2016 were used to determine the upstream and downstream sanitary catchment areas and associated areas, populations, and existing storm sewer specifications. It is assumed that the drawings are representative of the latest sanitary drainage area parameters and sanitary sewer specifications including but not limited to drainage areas, populations, sewage flows, pipe diameters, and pipe slopes.
- Detailed design of the site's proposed servicing will take place at the time of Site Plan Approval application.
- A flow criterion of 230 L/capita/day has been used to quantity sewage flows for the proposed development and all other sanitary drainage areas.
- There appears to be a discrepancy in the calculated sewage flows for the three "Existing" drainage areas downstream of the subject site between manholes S101 and EX S3. The sewage flow values appear to be calculated with a per capita flow of 250 L/s and not 230 L/s as noted in the design sheet and as per the City of London DS&RM. See the markups on the attached Sanitary Drainage Area drawing indicating the discrepancies. The City of London shall confirm the expected per capita flows to be included for the three (3) "Existing" downstream drainage areas between manholes S101 and EX S3.
- An uncertainty factor of 1.1 has been applied to all sanitary sewage calculations in this study.
- An infiltration allowance of 8640 L/ha/day was included as per the DS&RM.
- Only dry weather flows were considered in this Study. Evaluation of wet weather flows was not included and is considered outside the scope of this Study.

The proposed flows from the subject site are shown on the Sanitary Sewer Design Sheet attached to this Study. Using a flow of 230 L/capita/day as per the DS&RM for the site's occupancy load of 432 people, the anticipated peak sanitary flow for the proposed development is 7.46 L/s. When combined with infiltration, this results in a total peak flow of 7.88 L/s. The existing 300mm sanitary sewer stub at 0.2% located on the southwest corner of the subject site has adequate capacity for these flows.

As shown on the Sanitary Sewer Design Sheet, the existing 300mm sanitary sewers with slopes of 0.2% located within the Future Park/Development/Resilient spaces indicated as sanitary drainage areas A152-A155 do not have adequate capacity to convey the increase in flows from the proposed development with all sewers in this area at a capacity of greater than or equal to 100.6%.

Based on the above, the City's existing sanitary sewer infrastructure within the study area does not have sufficient capacity to accommodate the proposed development.

2.2 Assessment of Riverbend Road Sanitary Outlet

As the proposed sanitary outlet for the site does not have sufficient capacity, SBM has investigated discharging sanitary flows from the proposed development to the existing 300mm sanitary sewer located within the Riverbend Road ROW as shown in the attached City of London Wharbler Woods West Phase 2 Subdivision Sanitary & Storm Design Sheets by Stantec Sheet 7 Dated December 2014 and the City of London Wharbler Woods West Phase 2 Subdivision Sanitary Drainage Area

Plan by Stantec Sheet 3 Dated December 2014. The proposed development is suggested to have a 200mm sanitary pipe which connects and discharges to the existing S9 Sanitary Manhole as shown on the attached Sanitary Drainage Area Plan.

Below outlines the assumptions made to support the sanitary capacity analysis (for Zoning By-Law Amendment (ZBA) for the proposed development) of the existing sanitary sewer within the Riverbend Road ROW which is a part of the Wharbler Wood West Phase 2 Subdivision:

- The subject site is 3.282 ha in area and consists of the proposed 223-unit, 10 story apartment building containing 7 commercial units with a floor area of 854 m^2, and 8 existing commercial buildings per the Site Plan prepared by SBM.
- The proposed sanitary drainage area for the proposed apartment building development (A8(1)) is 0.89 ha in area, and consists of the proposed 223-unit, 10 story apartment containing 7 commercial units with a floor area of 854 m^2. See attached Sanitary Drainage Area Plan markups.
- The site's occupancy load of 366 people has been calculated per:
    - High density residential classification for the proposed apartment building of 1.6 people/unit (223 units * 1.6 ppl/unit = 357 ppl).
    - A commercial density of 100 ppl/ha for the commercial floor area of the 7 commercial units within the proposed apartment building (100ppl/ha * 0.085 ha = 9 ppl)
- The area considered in this Study is limited to the areas located in between sanitary MH S10 on Riverbend Road and EX. MH104 on Riverbend Road as shown in the Sanitary Drainage Area Plan and the Sanitary Design Sheets attached.
- The City of London Wharbler Woods West Phase 2 Subdivision Sanitary & Storm Design Sheets by Stantec Sheet 7 Dated December 2014 and the City of London Wharbler Woods West Phase 2 Subdivision Sanitary Drainage Area Plan by Stantec Sheet 3 Dated December 2014 were used to determine the upstream and downstream sanitary catchment areas and associated areas, populations, and existing storm sewer specifications. It is assumed that the drawings are representative of the latest sanitary drainage area parameters and sanitary sewer specifications including but not limited to drainage areas, populations, sewage flows, pipe diameters, and pipe slopes.
- Detailed design of the site's proposed servicing will take place at the time of Site Plan Approval application.
- A flow criterion of 230 L/capita/day has been used to quantity sewage flows for the proposed development and all other sanitary drainage areas.
- An uncertainty factor of 1.1 has been applied to all sanitary sewage calculations in this study.
- An infiltration allowance of 8640 L/ha/day was included as per the DS&RM.

The proposed flows from the subject site are shown on the Sanitary Sewer Design Sheet attached to this Study. Using a flow of 230 L/capita/day as per the DS&RM for the site's occupancy load of 432 people, the anticipated peak sanitary flow for the proposed development is 4.33 L/s. When combined with infiltration, this results in a total peak flow of 4.42 L/s. The proposed 200mm sanitary sewer at 1.0% connecting to existing manhole S9 within the Riverbend Road ROW has adequate capacity for these flows.

As shown on the Sanitary Sewer Design Sheet, the existing 300mm sanitary sewers downstream of the proposed development all have adequate capacity to convey the increase in flows from the proposed development with the limiting pipe having a capacity of 95%.

3. LIMITATIONS

This Study was prepared by SBM for Oxford West Gateway (c/o York Developments) and the City of London. Use of this Study by any third party, or any reliance upon its findings, is solely the responsibility of that party. SBM accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions undertaken as a result of this Study. Third party use of this Study, without the express written consent of the Consultant, denies any claims, whether in contract, tort, and/or any other cause of action in law, against the Consultant.

All findings and conclusions presented in this Study are based on site conditions as they appeared in the information presented to SBM and related to in this document. This Study is not intended to be exhaustive in scope, or to imply a risk-free development. It should be recognized that the passage of time may alter the opinions, conclusions, and recommendations provided herein, as well as any changes in the layout of the development.

The design was limited to the documents referenced herein and SBM accepts no responsibility for the accuracy of the information provided by others. All designs and recommendations presented in this Study are based on the information available at the time of the review.

This document is deemed to be the intellectual property of SBM in accordance with Canadian copyright law.

4. CLOSURE

We trust this Study meets your satisfaction. Should you have any questions or require further information, please do not hesitate to contact us.

Respectfully submitted,

Strik, Baldinelli, Moniz Ltd.

Planning • Civil • Structural • Mechanical • Electrical

LICENSED PROFESSIONAL ENGINEER
N.A. GUIOT RUBIANO
100147337
DECEMBER 17, 2021
PROVINCE OF ONTARIO

Nelson Guiot, P.Eng., Associate II
Civil Department Manager

Kurtis Caron, EIT
Civil EIT II

Encl: Overall Site Plan and Zoning Chart prepared by SBM dated March 11, 2021.
Overall Key Plan & Main Floor/Parking Plan prepared by Patrick David Trottier dated November 29, 2021.
City of London Wharbler Woods Phase 1 Sanitary Design Sheets by Stantec Sheets 12/13 Dated November 22, 2016
City of London Wharbler Woods Phase 1 Sanitary Drainage Area Plan by Stantec Sheet 5 Dated November 22, 2016
Assessed Westdel Bourne Sanitary Service Design Sheet by SBM Dated December 2021.
City of London Wharbler Woods West Phase 2 Subdivision Sanitary & Storm Design Sheets by Stantec Sheet 7 Dated December 2014
City of London Wharbler Woods West Phase 2 Subdivision Sanitary Drainage Area Plan by Stantec Sheet 3 Dated December 2014
Proposed Riverbend Road Outlet Sanitary Service Design Sheet by SBM Dated December 2021.

ZONING DATA CHART

GROSS SITE AREA: 32816 m² | ASPHALT AREA: 16003 m²
BUILDING AREA: 7564 m² | LANDSCAPED AREA: 9249 m²

ITEM	CSA5(6)*	REQUIRED	PROVIDED
1	PERMITTED USES	SEE PERMITTED USE NOTE ON SHEET SP1	SEE PERMITTED USE NOTE ON SHEET SP1
2	LOT FRONTAGE (m MIN)	100.0	128.3
3	LOT DEPTH (m MIN)	75.0	270.9
4	FRONT YARD AND EXTERIOR SIDE YARD SETBACK (m MIN)	0.0	1.51
5	REAR YARD AND INTERIOR SIDE YARD SETBACK (m MIN)	15.0 3.0 ABUTTING RESIDENTIAL ABUTTING OPEN SPACE	2.0* 10.08
6	LANDSCAPED OPEN SPACE (%) MINIMUM	10	28.2
7	LOT COVERAGE (%) MAX	30	23.0
8	HEIGHT MAXIMUM (m)	12	*37
9	GROSS FLOOR AREA (m² MAX)	30 000	9927
11	LOADING SPACE REQUIREMENTS	SEE LOADING REQUIREMENTS NOTE	SEE LOADING REQUIREMENTS NOTE
12	BIKE SPACE REQUIREMENTS	SEE PARKING REQUIREMENTS NOTE	SEE PARKING REQUIREMENTS NOTE
13	VEHICLE PARKING	SEE PARKING REQUIREMENTS NOTE	SEE PARKING REQUIREMENTS NOTE

*SITE SPECIFIC PROVISION REQUIRED

PERMITTED USES

CSA5(6) ZONE (SITE SPECIFIC BY-LAW No. Z-1-152386):

- ASSEMBLY HALLS;
- AUTOMOTIVE USES, RESTRICTED;
- BAKE SHOPS;
- CLINICS;
- COMMERCIAL PARKING STRUCTURES AND/OR LOTS;
- COMMERCIAL RECREATIONAL ESTABLISHMENTS;
- CONVENIENCE SERVICE ESTABLISHMENTS;
- DAY CARE CENTRES;
- DUPLICATING SHOPS;
- FINANCIAL INSTITUTIONS;
- HOME AND AUTO SUPPLY STORES;
- INSTITUTIONS;
- MEDICAL/DENTAL OFFICES;
- OFFICES;
- PATIENT TESTING CENTRE LABORATORIES;
- PERSONAL SERVICE ESTABLISHMENTS;
- PRIVATE CLUBS;
- RESTAURANTS;
- RETAIL STORES;
- SERVICE AND REPAIR ESTABLISHMENTS;
- STUDIOS;
- SUPERMARKETS;
- TAVERNS;
- VIDEO RENTAL ESTABLISHMENTS;
- BREWING ON PREMISES ESTABLISHMENT
- CINEMAS
- COMMERCIAL SCHOOLS
- PRIVATE SCHOOLS
- *APARTMENT BUILDINGS

PARKING REQUIREMENTS

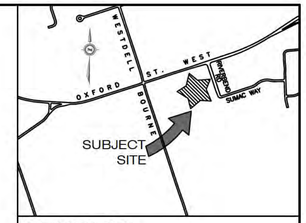
MINIMUM PARKING SPACE DIMENSIONS 2.7mX5.5m
TYPE A 3.4mX5.5m
TYPE B 2.4mX5.5m

APARTMENT PARKING REQUIRED:	1.25/UNIT	194 UNITS	= 243 SPACES
OFFICE-BUSINESS, SERVICE & PROFESSIONAL	1/40m²	2,000m²	= 50 SPACES
COMMERCIAL PARKING REQUIRED:	1/20m²	4544m²	= 228 SPACES
TOTAL PARKING REQUIRED:			= 521 SPACES
TOTAL PARKING PROVIDED:			= 474* SPACES
BUILDING PARKING			= 132 SPACES
SURFACE PARKING			= 342 SPACES
BICYCLE PARKING REQUIRED: 7% OF TOTAL SPACES			= 38 SPACES
BICYCLE PARKING PROVIDED			=136 SPACES
B/F PARKING REQUIRED: 2+2% OF TOTAL PARKING REQUIRED			= 13 SPACES
PROVIDED			= 21 SPACES 11 TYPE 'A', 10 TYPE 'B'

*SITE SPECIFIC PROVISION REQUIRED

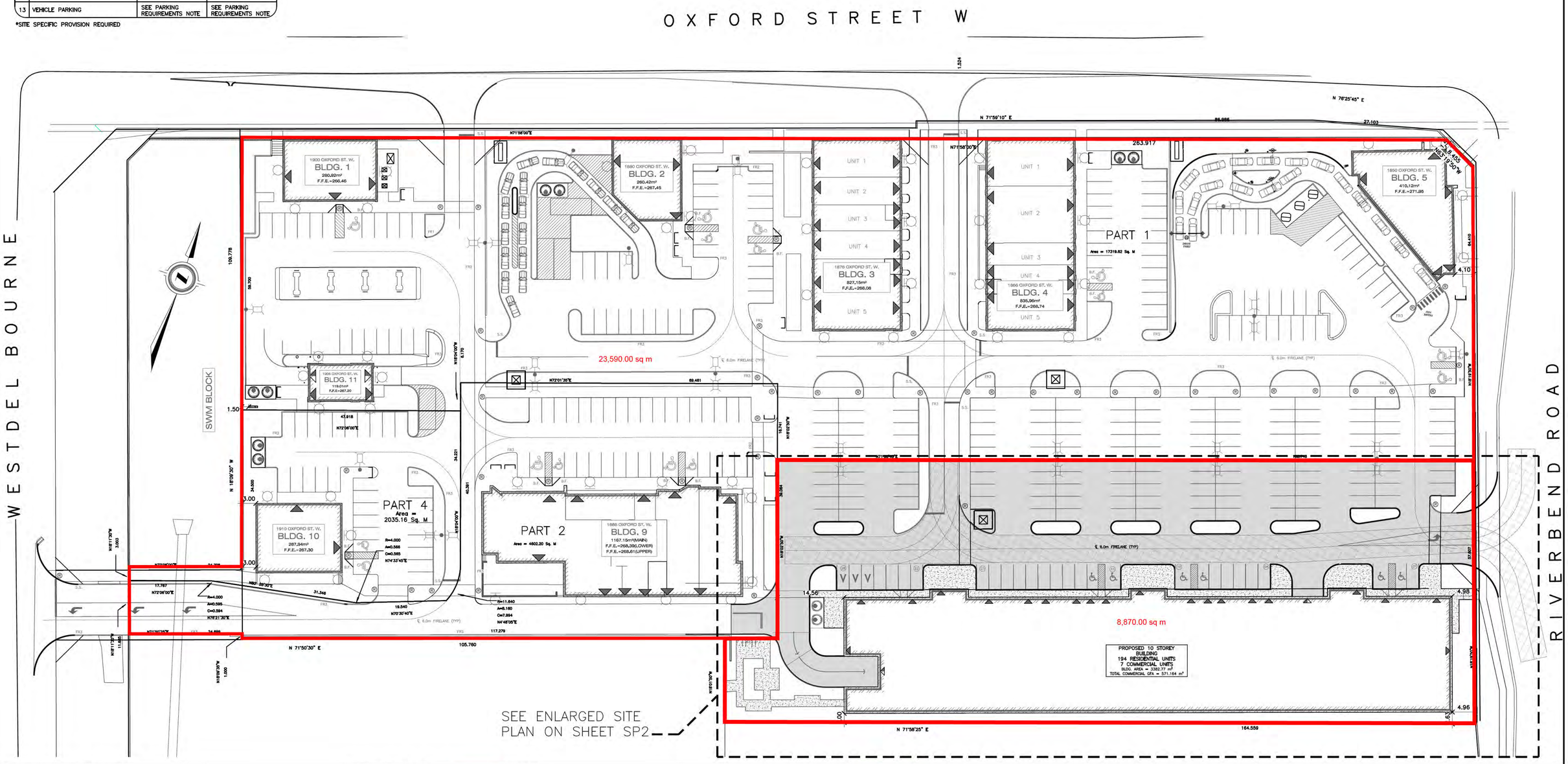
LEGEND:

- BUILDING ENTRANCE
- OVERHEAD DOOR
- PROPOSED LIGHT-DUTY ASPHALT
- PROPOSED CONCRETE
- EXISTING BUILDING
- PROPOSED BUILDING
- LIMITS OF SUBJECT PROPERTY
- VISITOR PARKING
- FIRE ROUTE
- FR-3 FIRE ROUTE SIGNAGE



KEY PLAN

N.T.S.



AS CONSTRUCTED SERVICES	COMPLETION				D/M/Y	BY
		DESIGN BG	1	FOR INTERNAL REVIEW	26/02/21	BG
		DRAWN BG	2	ISSUED FOR CLIENT REVIEW	11/03/21	FS
		CHECKED ND				
		APPROVED JSC				
		DATE 10/03/2021				
		CAD 20-3418				

CONSULTANT:

STRIK BALDINELLI MONIZ
PLANNING • CIVIL • STRUCTURAL • MECHANICAL • ELECTRICAL
1599 Adelaide St. N, Unit 301, London, Ontario, N5X 4E8
Tel: (519) 471-6667 Fax: (519) 471-0034
Email: sbm@sbmltd.ca

SEALED FOR GENERAL CONFORMANCE WITH THE OBC AND MUNICIPAL SITE PLAN CONTROLS AND ZONING BY-LAWS

CLIENT:

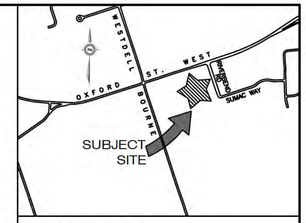
YORK DEVELOPMENTS
303 RICHMOND ST #201
LONDON, ONTARIO N6B 2H8

SCALE: SCALE – 1:400 (4.0 0 8.0m)

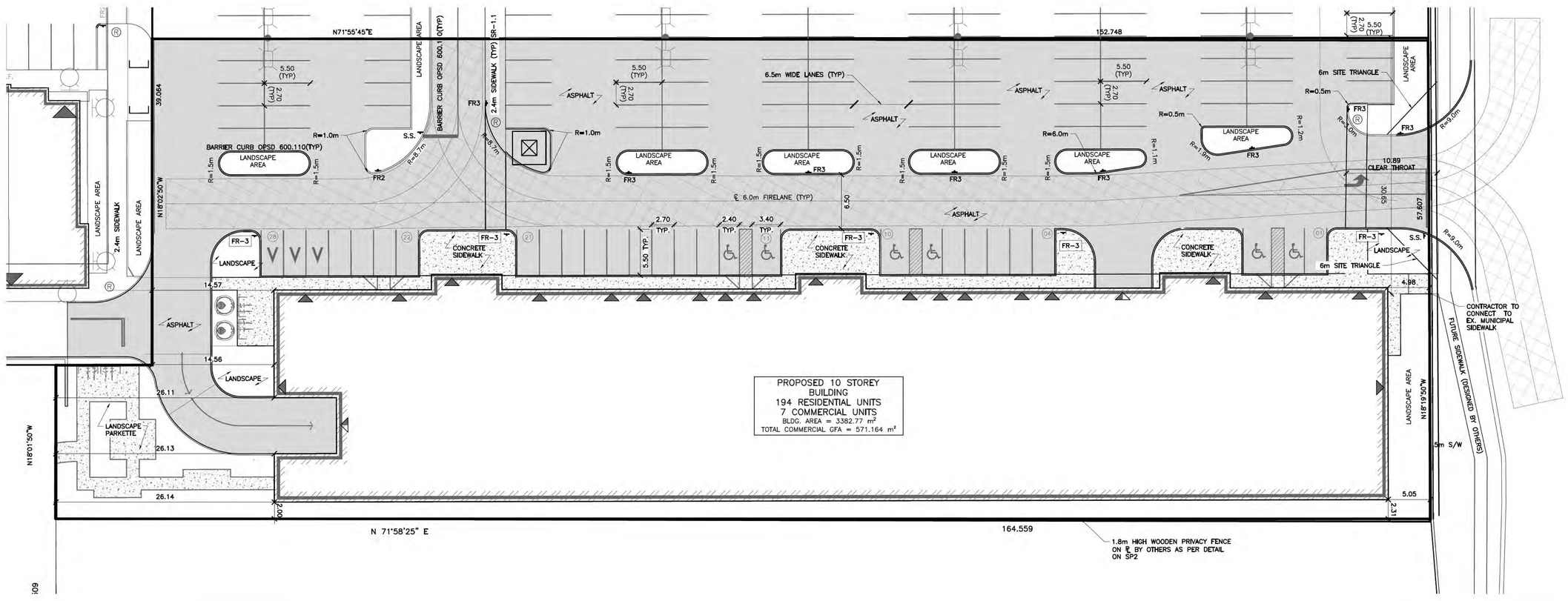
TITLE: OVERALL SITE PLAN & ZONING CHART

PROJECT LOCATION: PROPOSED COMMERCIAL DEVELOPMENT
1826 & 1854 OXFORD STREET WEST
LONDON, ON.

PROJECT No.: SBM-20-3418
SHEET No.: SP1
PLAN FILE No.: –



KEY PLAN
N.T.S.



AS CONSTRUCTED SERVICES	COMPLETION				D/M/Y	BY
		DESIGN BG	1	FOR INTERNAL REVIEW	26/02/21	BG
		DRAWN BG	2	ISSUED FOR CLIENT REVIEW	11/03/21	FS
		CHECKED NO				
		APPROVED JSE				
		DATE 10/03/2021				
		CAD 20-3418				

CONSULTANT:

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Tel: (519) 471-6667 Fax: (519) 471-0034
Email: sbm@sbmltd.ca

SEALED FOR GENERAL CONFORMANCE WITH THE OBC AND MUNICIPAL SITE PLAN CONTROLS AND ZONING BY-LAWS

CLIENT:

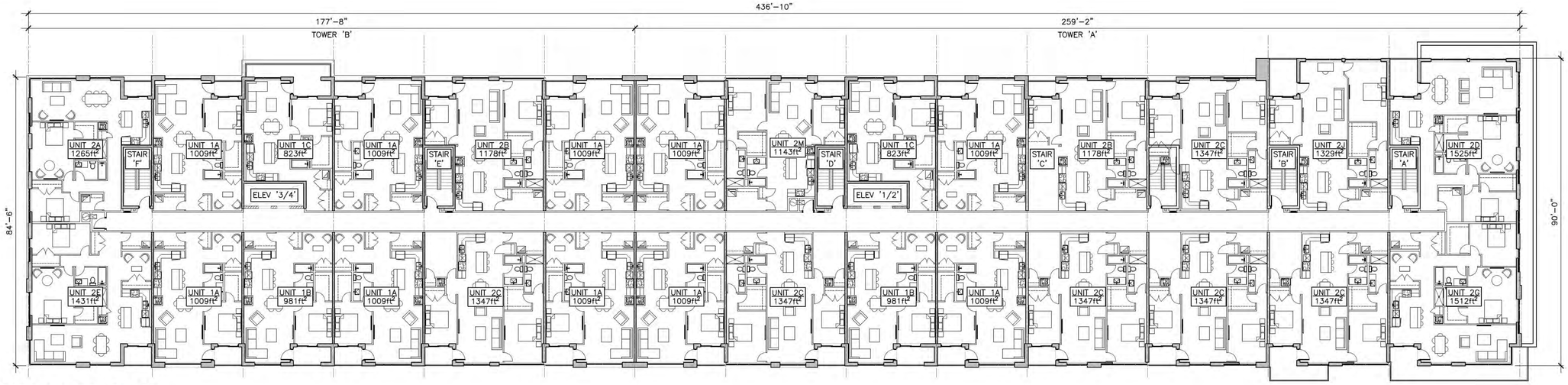
YORK DEVELOPMENTS
303 RICHMOND ST #201
LONDON, ONTARIO N6B 2H8

SCALE: SCALE – 1:250 (2.5 0 5.0m)

TITLE: ENLARGED SITE PLAN

PROJECT LOCATION:
PROPOSED COMMERCIAL DEVELOPMENT
1826 & 1854 OXFORD STREET WEST
LONDON, ON.

PROJECT No.: SBM-20-3418
SHEET No.: SP2
PLAN FILE No.: –



OVERALL KEY PLAN

SCALE: 1/16"=1'-0"

INLCUDE MECHANICAL PENTHOUSE APPROX 995ft² COMBINED WITH ELEVATOR OVERUN FOR EA. BLDG

PARKING REQUIREMENTS:

APARTMENT:
1.25 SPACES PER UNITS

COMMERCIAL/RETAIL:
1 SPACES PER 20m²

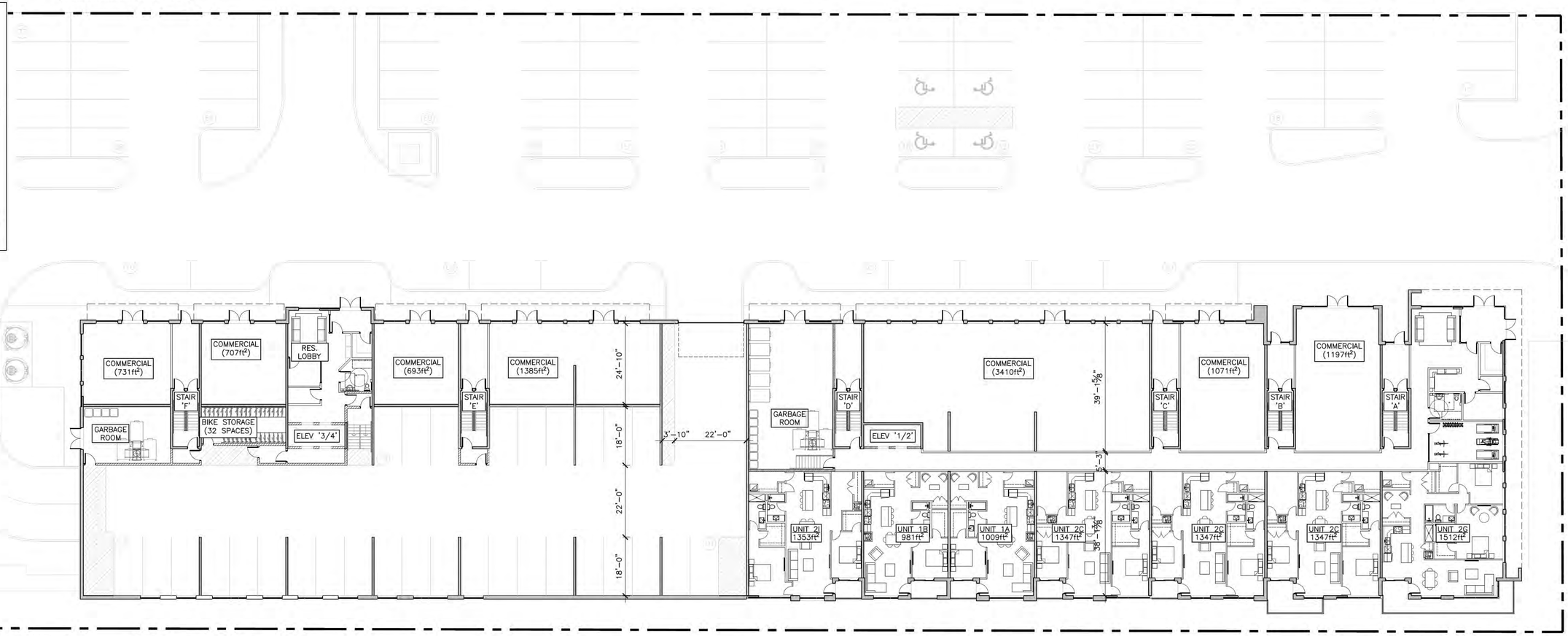
ON-SITE PARKING REQUIRED:
TOTAL APARTMENT SPACES = 223 UNITS x 1.25 = 279 SPACES
TOTAL RETAIL SPACES = 854m² / 20m² = 43 SPACES

BARRIER FREE REQUIRED:
= 3% OF THE REQUIRED PARKING + 1 SPACE
= 322 SPACES x 3% + 1 = 11 SPACES

TOTAL PARKING REQUIRED = 312 PARKING SPACES (INCLUDING 11 BARRIER FREE SPACES)

ON-SITE PARKING PROVIDED:
245 STANDARD SPACES + 12 BARRIER FREE PARKING SPACES = 256 PARKING SPACES TOTAL*

TOTAL SITE PARKING REQ'D: 605, PROVIDED: 534



MAIN FLOOR/PARKING PLAN

SCALE: 1/16"=1'-0"

#	ISSUED FOR	DATE
01	ISSUED FOR CLIENT REVIEW	2020.11.13
02	ISSUED FOR CLIENT REVIEW	2020.12.15
03	ISSUED FOR CLIENT REVIEW	2021.02.24
04	ISSUED FOR CLIENT REVIEW	2021.06.03
05	ISSUED FOR CLIENT REVIEW	2021.07.07
06	ISSUED FOR CLIENT REVIEW	2021.10.18
07	ISSUED FOR CLIENT REVIEW	2021.10.29
08	ISSUED FOR CLIENT REVIEW	2021.11.29

DO NOT SCALE DRAWINGS. CONTRACTOR SHALL VERIFY ALL DIMENSIONS & REPORT DISCREPANCIES TO THE ARCHITECT PRIOR TO WORK. DRAWINGS REMAIN PROPERTY OF PDTARCHITECT.

PROJECT:
11 STOREY MULTI-USE BLDG
1856, 1860, & 1870 OXFORD ST. W.
LONDON, ON

CLIENT:

Name: York Developements
Address: 303 Richmond St. Unit 201, London ON
Phone: 519-433-7587
Fax: 519-433-4469
E-mail: info@yorkdev.ca

York DEVELOPMENTS

PATRICK DAVID TROTTIER
ARCHITECT
266 DUFFERIN AVE, BRANTFORD, ON N3T 4S2 (226) 208-1543c patrick@pdtarch.ca

DRAWING DESCRIPTION

OVERALL KEY PLAN &
MAIN FLOOR/PARKING PLAN

PROJECT #XX-XX PDTA
SBM-20-3418
SCALE: AS INDICATED
REVIEWED: PDTA
DRAWN: OMP DWG #

A3

SANITARY SEWER DESIGN SHEET
CITY OF LONDON

RESIDENTIAL COMMERCIAL AND INSTITUTIONAL POPULATION DENSITIES

THE FOLLOWING POPULATION ALLOWANCES WILL APPLY WHEN DESIGNING SANITARY SEWERS:

LOW DENSITY (SINGLE-FAMILY / SEMI-DETACHED)	= 30 UNITS / HECTARE @ 3 PEOPLE / UNIT
MEDIUM DENSITY (MULTI-FAMILY / TOWNHOUSE / ROWHOUSE)	= 75 UNITS / HECTARE @ 2.4 PEOPLE / UNIT
HIGH DENSITY (APARTMENTS)	= 150 - 300 UNIT / HECTARE @ 1.6 PEOPLE / UNIT
COMMERCIAL / INSTITUTIONAL	= 100 PEOPLE / HECTARE
SECONDARY SCHOOL	= 1500 PEOPLE
ELEMENTARY SCHOOL	= 600 PEOPLE

DESIGN CRITERIA
SEWAGE = 230 LITRE / CAPITA / DAY
INFILTRATION = 8640 LITRES / HECTARE / DAY
PEAKING FACTOR: $1 + \frac{14}{4 + P^{0.5}}$

PROJECT NAME: WARBLER WOODS - PHASE 1

DATE: September, 2016
DESIGNED BY: BDH

PROJECT FILE NO. 1614-13130

RECEIVED BY
DEC 20 2016
CITY OF LONDON
DEVELOPMENT SERVICES

CITY OF LONDON
DEVELOPMENT SERVICES
ACCEPTED
DEC 20 2016
SUBJECT TO THE
CONDITION(S) IDENTIFIED IN THE
ACCEPTANCE LETTER OF THE SAME DATE

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

NO CONNECTION OF WEEPING TILES WILL BE ALLOWED TO THE SANITARY SEWER SYSTEM
NO GRAVITY CONNECTION OF WEEPING TILES TO THE STORM SEWER WILL BE ALLOWED UNLESS THE SYSTEM HAS THE CAPACITY TO PROVIDE FOR SUCH CONNECTIONS.

LOCATION				AREA			POPULATION						SEWAGE FLOWS			SEWER DESIGN						PROFILE				
																									INVERT ELEVATION		
AREA No.	STREET NAME	FROM MANHOLE	TO MANHOLE	NET OR GROSS	DELTA HECTARES	TOTAL HECTARES	PER HECTARE	PER LOT	NO. OF LOTS	DELTA POP.	TOTAL POP.	PEAKING FACTOR	INFILT L / s	SEWAGE L / s	Q TOTAL L / s	PIPE SIZE mm	n	SLOPE %	CAP L / s	VELOCITY m / s	LENGTH m	FALL IN SEWER	HEADLOSS IN U.S. MH	DROP IN MANHOLE	U.S.	D.S.	
A113	UPPER WEST / WALKWAY		S53	N	0.11	0.11		0	0	0	0	4.50	0.01	0.00	0.01												
EXT 1	UPPER WEST AVENUE	STUB	S53	N	1.50	1.50		0	0	102	102	4.24	0.15	1.27	1.42	200	0.013	4.50	69.57	2.21	10.0	0.450	0.000	0.000	293.537	293.087	
A112	UPPER WEST AVENUE	S53	S52	N	0.55	2.16		3	6	18	120	4.22	0.22	1.48	1.70	200	0.013	2.50	51.86	1.65	66.5	1.663	0.021	0.030	293.057	291.395	HL=.100x1.5x1.65x1.65/19.62=.021
A111	UPPER WEST AVENUE	S52	S51	N	0.57	2.73		3	6	18	138	4.20	0.27	1.70	1.97	200	0.013	1.60	41.49	1.32	66.5	1.064	0.000	0.030	291.365	290.301	
A110	UPPER WEST AVENUE	S51	S50	N	0.38	3.11		3	4	12	150	4.19	0.31	1.84	2.15	200	0.013	1.60	41.49	1.32	36.1	0.578	0.000	0.030	290.271	289.693	
A109	UPPER WEST AVENUE	S50	S49	N	0.61	3.72		3	6	18	168	4.17	0.37	2.05	2.43	200	0.013	1.60	41.49	1.32	66.2	1.059	0.000	0.030	289.663	288.604	
A108	UPPER WEST AVENUE	S49	S48	N	0.20	3.92		3	2	6	174	4.17	0.39	2.12	2.52	200	0.013	2.00	46.38	1.48	15.0	0.300	0.088	0.088	288.516	288.216	HL=.526x1.5x1.48x1.48/19.62=.088
A107	UPPER WEST AVENUE	S48	S47	N	0.12	4.04		3	1	3	177	4.17	0.40	2.16	2.56	200	0.013	3.25	59.16	1.88	15.0	0.488	0.129	0.129	288.088	287.600	HL=.474x1.5x1.88x1.88/19.62=.129
A106	UPPER WEST AVENUE	S47	S46	N	0.13	4.17		3	1	3	180	4.16	0.42	2.19	2.61	200	0.013	5.00	73.33	2.33	33.4	1.670	0.219	0.219	287.381	285.711	HL=.526x1.5x2.33x2.33/19.62=.219
A105	WARBLER WOODS WALK	S46	S45	N	0.30	4.47		0	0	0	180	4.16	0.45	2.19	2.64	200	0.013	0.50	23.19	0.74	49.7	0.249	0.000	0.030	285.681	285.432	
A104	WARBLER WOODS WALK	S45	S44	N	0.07	4.54		0	0	0	180	4.16	0.45	2.19	2.65	200	0.013	0.50	23.19	0.74	37.6	0.188	0.000	0.030	285.402	285.214	
A103	WARBLER WOODS WALK	S44	S43	N	0.28	4.82		3	2	6	186	4.16	0.48	2.27	2.75	200	0.013	0.50	23.19	0.74	32.8	0.164	0.000	0.030	285.184	285.020	
A102	WARBLER WOODS WALK	S43	S42	N	0.44	5.26		3	4	12	198	4.15	0.53	2.41	2.93	200	0.013	0.80	29.35	0.93	96.9	0.776	0.000	0.030	284.990	284.214	
A101	WARBLER WOODS WALK	S41	S42	N	0.74	0.74		3	5	15	15	4.40	0.07	0.19	0.27	200	0.013	3.00	56.81	1.81	28.8	0.864	0.000	0.000	287.200	286.336	
A100	WARBLER WOODS WALK	S42	EX.S4	N	0.12	6.12		3	1	3	216	4.14	0.61	2.62	3.23	200	0.013	3.95	65.14	2.07	15.9	0.627	0.113	0.280	283.934	283.307	HL=.343x1.5x2.07x2.07/19.62=.113
EXISTING	WARBLER WOODS WALK	EX.S4	EX.S5	N	0.41	6.53		3	3	9	225	4.13	0.65	2.72	3.37	200	0.013	3.74	63.43	2.02	68.2	2.551	0.000	0.280	285.858	283.307	
A125	BOARDWALK WAY		S32	N	0.10	0.10		0	0	0	0	4.50	0.01	0.00	0.01												
EXT 2	TRAILSWAY AVENUE	STUB	S32	N	3.26	3.26		0	0	181	181	4.16	0.33	2.21	2.53	200	0.013	0.50	23.19	0.74	13.0	0.065	0.000	0.000	292.101	292.036	
A124	TRAILSWAY AVENUE	S32	S31	N	0.57	3.93		3	8	24	205	4.14	0.39	2.49	2.88	200	0.013	2.00	46.38	1.48	64.8	1.296	0.007	0.100	291.936	290.640	HL=.040x1.5x1.48x1.48/19.62=.007
A123	TRAILSWAY AVENUE	S31	S30	N	0.55	4.48		3	8	24	229	4.13	0.45	2.77	3.21	200	0.013	5.50	76.92	2.45	66.3	3.647	0.000	0.030	290.610	286.963	
A122	TRAILSWAY AVENUE	S30	S29	N	0.34	4.82		3	5	15	244	4.12	0.48	2.94	3.42	200	0.013	5.00	73.34	2.33	35.8	1.790	0.071	0.071	286.892	285.102	HL=.170x1.5x2.33x2.33/19.62=.071
A121	TRAILSWAY AVENUE	S29	S28	N	0.43	5.25		3	6	18	262	4.10	0.53	3.15	3.67	200	0.013	2.32	49.99	1.59	62.8	1.459	0.019	0.030	285.072	283.614	HL=.100x1.5x1.59x1.59/19.62=.019
A200	PARK		S46	N	0.34	0.34		0	0	0	0	4.50	0.03	0.00	0.03												
A120	UPPER WEST AVENUE	S46	S28	N	0.21	0.55		3	2	6	6	4.43	0.06	0.08	0.13	200	0.013	4.90	72.60	2.31	49.1	2.406	0.000	0.000	286.037	283.631	
A126	UPPER WEST AVENUE	S28	S24	N	0.35	6.15		3	3	9	277	4.09	0.62	3.32	3.93	200	0.013	2.95	56.29	1.79	87.0	2.563	0.364	0.371	283.243	280.680	HL=1.483x1.5x1.79x1.79/19.62=.365
EXT 3	FUTURE DEVELOPMENT	STUB	S24	N	2.19	2.19		0	0	140	140	4.20	0.22	1.72	1.94	200	0.013	2.00	46.38	1.48	23.1	0.462	0.000	0.000	281.323	280.861	
A127	RIVERBEND ROAD	S24	S23	N	0.45	8.79		3	6	18	435	4.00	0.88	5.10	5.98	200	0.013	2.00	46.38	1.48	59.4	1.188	0.219	0.219	280.461	279.273	HL=1.305x1.5x1.48x1.48/19.62=.219
A128	RIVERBEND ROAD	S23	S22	N	0.25	9.04		3	3	9	444	4.00	0.90	5.20	6.10	200	0.013	3.50	61.36	1.95	20.9	0.732	0.076	0.076	279.197	278.466	HL=.260x1.5x1.58x1.58/19.62=.050
A129	RIVERBEND ROAD	S22	S21	N	0.86	9.90		3	13	39	483	3.98	0.99	5.63	6.62	200	0.013	2.70	53.89	1.72	98.0	2.646	0.079	0.079	278.387	275.741	HL=.350x1.5x1.72x1.72/19.62=.079
A130	RIVERBEND ROAD	S21	S20	N	0.21	10.11		0	0	0	483	3.98	1.01	5.63	6.64	200	0.013	2.70	53.89	1.72	57.9	1.563	0.122	0.122	275.619	274.056	HL=.542x1.5x1.72x1.72/19.62=.122
A202	PARK		S20	N	0.16	0.16		0	0	0	0	4.50	0.02	0.00	0.02												
A131	RIVERBEND ROAD	S20	S19	N	0.19	10.46		0	0	0	483	3.98	1.05	5.63	6.68	200	0.013	3.30	59.58	1.90	92.3	3.046	0.094	0.500	273.556	270.510	HL=.343x1.5x1.90x1.90/19.62=.094
A133	MEDIUM DENSITY	STUB	S19	N	0.72	0.72	180	0	0	0	130	4.21	0.07	1.60	1.67	200	0.013	2.01	46.50	1.48	8.9	0.179	0.000	0.030	270.689	270.510	
A132	RIVERBEND ROAD	S19	STUB	N	0.10	11.28		0	0	0	613	3.93	1.13	7.04	8.17	200	0.013	0.37	19.95	0.64	39.7	0.147	0.000	1.500	269.010	268.863	
A132	RIVERBEND ROAD	STUB	EX.S10	N	0.00	11.28		0	0	0	613	3.93	1.13	7.04	8.17	200	0.013	0.37	19.95	0.64	11.5	0.043	0.000	0.000	268.863	268.821	
A134 / A140B	MEDIUM / HIGH DENSITY	STUB	EX.S10	N	2.12	2.12	180	0	0	0	382	4.03	0.21	4.51	4.72	200	0.013	0.50	23.19	0.74	12.3	0.061	0.000	0.200	270.211	270.150	
EXISTING	SUMAC WAY	EX.S11	EX.S10	N	0.62	4.18		0	0	0	409	4.02	0.42	5.23	5.65	200	0.013	1.00	32.80	1.04	77.3	0.773	-	-	269.527	268.754	
EXISTING	RIVERBEND ROAD	EX.S10	EX.S9	N	0.13	17.71		0	0	0	1403	3.70	1.77	16.53	18.30	200	0.013	0.48	22.63	0.72	52.6	0.250	0.000	0.202	268.528	268.278	

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	BDH
DRAWN BY	BDH
CHECKED	CJH
APPROVED	CJH
DATE	2016-02-03
161413130_C-DS.dwg	

No.	REVISIONS	DATE	CONSULTANT
1	REVISED PER CITY COMMENTS	2016-07-06	STANTEC
2	2nd SUBMISSION CITY COMMENTS	2016-09-09	STANTEC
3	3rd SUBMISSION CITY COMMENTS	2016-11-22	STANTEC

CONSULTANT OR DIVISION

Stantec

600 - 171 Queens Avenue
London, ON, N6A 5J7
www.stantec.com

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ENGINEER'S STAMP

LICENSED PROFESSIONAL ENGINEER
C. J. HENDRIKSEN
100125181
NOV 22/16
PROVINCE OF ONTARIO

London CANADA

CORPORATION OF THE
CITY OF LONDON

SCALE
NOT TO SCALE

TITLE
WARBLER WOODS PHASE 1
SIFTON PROPERTIES LIMITED

SANITARY DESIGN SHEETS
PART 1

PROJECT No. 1614-13130

SHEET No. 12 of 58

PLAN FILE No.

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11/22/2016 1:44:43 PM by:Chris, Hansen

RECEIVED BY
DEC 20 2016
CITY OF LONDON
DEVELOPMENT SERVICES

CITY OF LONDON
DEVELOPMENT SERVICES
ACCEPTED
DEC 20 2016
SUBJECT TO THE
CONDITION(S) IDENTIFIED IN THE
ACCEPTANCE LETTER OF THE SAME DATE

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

NO CONNECTION OF WEEPING TILES WILL BE ALLOWED TO THE SANITARY SEWER SYSTEM
NO GRAVITY CONNECTION OF WEEPING TILES TO THE STORM SEWER WILL BE ALLOWED UNLESS THE SYSTEM HAS THE CAPACITY TO PROVIDE FOR SUCH CONNECTIONS.

SANITARY SEWER DESIGN SHEET
CITY OF LONDON

RESIDENTIAL COMMERCIAL AND INSTITUTIONAL POPULATION DENSITIES

THE FOLLOWING POPULATION ALLOWANCES WILL APPLY WHEN DESIGNING SANITARY SEWERS:

LOW DENSITY (SINGLE-FAMILY / SEMI-DETACHED)	= 30 UNITS / HECTARE @ 3 PEOPLE / UNIT
MEDIUM DENSITY (MULTI-FAMILY / TOWNHOUSE / ROWHOUSE)	= 75 UNITS / HECTARE @ 2.4 PEOPLE / UNIT
HIGH DENSITY (APARTMENTS)	= 150 - 300 UNIT / HECTARE @ 1.6 PEOPLE / UNIT
COMMERCIAL / INSTITUTIONAL	= 100 PEOPLE / HECTARE
SECONDARY SCHOOL	= 1500 PEOPLE
ELEMENTARY SCHOOL	= 600 PEOPLE

DESIGN CRITERIA
SEWAGE = 230 LITRE / CAPITA / DAY
INFILTRATION = 8640 LITRES / HECTARE / DAY
PEAKING FACTOR: $1 + \frac{14}{4 + P^{0.5}}$

PROJECT NAME: WARBLER WOODS - PHASE 1

DATE: September, 2016
DESIGNED BY: BDH
PROJECT FILE NO. 1614-13130

LOCATION				AREA			POPULATION						SEWAGE FLOWS			SEWER DESIGN						PROFILE					
																									INVERT ELEVATION		
AREA No.	STREET NAME	FROM MANHOLE	TO MANHOLE	NET OR GROSS	DELTA HECTARES	TOTAL HECTARES	PER HECTARE	PER LOT	NO. OF LOTS	DELTA POP.	TOTAL POP.	PEAKING FACTOR	INFILT L / s	SEWAGE L / s	Q TOTAL L / s	PIPE SIZE mm	n	SLOPE %	CAP L / s	VELOCITY m / s	LENGTH m	FALL IN SEWER	HEADLOSS IN U.S. MH	DROP IN MANHOLE	U.S.	D.S.	
EXT 4A	FUTURE DEVELOPMENT	STUB	S118	N	14.26	14.26		0	0	1042	1042	3.79	1.43	11.56	12.99	250	0.013	1.00	59.47	1.21	23.0	0.230	0.000	0.000	271.894	271.664	** Denotes Benching to Crown
A141	UPPERPOINT BLVD	S118	S117	N	0.27	14.53		0	0	0	1042	3.79	1.45	11.56	13.01	250	0.013	3.00	103.00	2.10	26.1	0.783	0.224	0.250	271.414	270.631	**HL=1.0x1.0x2.10x2.10/19.62=.224
A203	PARK	EXT	S117	N	1.74	16.27		0	0	0	1042	3.79	1.63	11.56	13.19												
A142	UPPERPOINT BLVD	S117	S116	N	0.20	16.47		0	0	0	1042	3.79	1.65	11.56	13.21	250	0.013	4.70	128.95	2.63	96.2	4.523	0.035	0.035	270.596	266.072	**HL=.100x1.0x2.63x2.63/19.62=.035
EXT 4C	FUT. HIGH DENSITY	STUB	S116	N	2.33	2.33		0	0	560	560	3.95	0.23	6.47	6.71	250	0.013	2.00	84.10	1.71	10.6	0.212	0.000	0.030	266.312	266.100	
A143	UPPERPOINT BLVD	S116	S115	N	0.11	18.91		0	0	0	1602	3.66	1.89	17.16	19.05	250	0.013	0.50	42.05	0.86	32.8	0.164	0.000	0.030	266.042	265.878	
EXT 4B	FUTURE DEVELOPMENT	STUB	S119	N	10.92	10.92		0	0	1410	1410	3.70	1.09	15.27	16.36	250	0.013	0.50	42.05	0.86	4.5	0.023	0.000	0.000	266.008	265.985	
EXT 4B	FUTURE DEVELOPMENT	S119	S115	N	0.00	10.92		0	0	0	1410	3.70	1.09	15.27	16.36	250	0.013	0.50	42.05	0.86	15.4	0.077	0.000	0.030	265.955	265.878	
A144	UPPERPOINT BLVD	S115	S114	N	0.15	29.98		0	0	0	3012	3.44	3.00	30.35	33.35	300	0.013	1.00	96.70	1.37	21.4	0.214	0.078	0.122	265.756	265.542	**HL=.818x1.0x1.37x1.37/19.62=.078
A145	WESTDEL BOURNE	S114	S113	N	0.21	30.19		0	0	0	3012	3.44	3.02	30.35	33.37	300	0.013	0.60	74.90	1.06	58.0	0.348	0.000	0.030	265.512	265.164	
A146	WESTDEL BOURNE	S113	S112	N	0.35	30.54		0	0	0	3012	3.44	3.05	30.35	33.40	300	0.013	1.40	114.33	1.62	99.0	1.384	0.000	0.030	265.134	263.750	
A147	WESTDEL BOURNE	S112	S111	N	0.26	30.80		0	0	0	3012	3.44	3.08	30.35	33.43	300	0.013	4.74	210.53	2.98	72.6	3.441	0.000	0.030	263.720	260.279	
A140A/B	FUTURE COMMERCIAL	STUB	S111	N	4.18	4.18		0	0	546	546	3.95	0.42	6.32	6.74	300	0.013	0.20	43.24	0.61	28.1	0.056	0.000	0.030	260.335	260.279	
A148	WESTDEL BOURNE	S111	S110A	N	0.09	35.07		0	0	0	3558	3.38	3.51	35.20	38.71	300	0.013	0.20	43.24	0.61	26.4	0.053	0.000	0.030	260.249	260.196	
A148A	WESTDEL BOURNE	S110A	S110	N	0.31	35.38		0	0	0	3558	3.38	3.54	35.20	38.74	300	0.013	0.20	43.24	0.61	97.5	0.195	0.000	0.030	260.166	259.971	
EXT 5	WESTEDEL BOURNE	EXT	S110	N	8.72	8.72		3	22	66	66	4.29	0.87	0.83	1.70												
A149	OXFORD STREET	S110	S109	N	0.10	44.20		0	0	0	3624	3.37	4.42	35.78	40.20	300	0.013	0.20	43.46	0.61	31.6	0.064	0.000	0.030	259.941	259.877	
EXT 6	OXFORD STREET	EXT	S109	N	0.95	0.95		0	0	0	0	4.50	0.10	0.00	0.10												
A150	FUT. RESILIENT SPACE	S109	S108	N	0.05	45.20		0	0	0	3624	3.37	4.52	35.78	40.30	300	0.013	0.20	43.24	0.61	70.5	0.141	0.000	0.030	259.847	259.706	
EXT 7	FUT. RESLIENT SPACE	EXT	S108	N	1.55	1.55	100	0	0	155	155	4.19	0.16	1.90	2.06												
A151	FUT. RESILIENT SPACE	S108	S107	N	0.05	46.80		0	0	0	3779	3.36	4.68	37.13	41.81	300	0.013	0.20	43.24	0.61	75.0	0.150	0.000	0.030	259.676	259.526	
EXT 8	FUT. RESILIENT SPACE	EXT	S107	N	0.81	0.81	100	0	0	81	81	4.27	0.08	1.01	1.09												
A152	FUTURE DEVELOPMENT	S107	S106	N	0.09	47.70		0	0	0	3860	3.35	4.77	37.83	42.60	300	0.013	0.20	43.24	0.61	76.0	0.152	0.000	0.030	259.496	259.344	
A153	FUTURE DEVELOPMENT	S106	S105	N	0.09	47.79		0	0	0	3860	3.35	4.78	37.83	42.61	300	0.013	0.20	43.24	0.61	75.0	0.150	0.000	0.030	259.314	259.164	
EXT 9	FUTURE PARK	EXT	S105	N	0.33	0.33		0	0	0	0	4.50	0.03	0.00	0.03												
A154	FUTURE PARK	S105	S104	N	0.10	48.22		0	0	0	3860	3.35	4.82	37.83	42.65	300	0.013	0.20	43.24	0.61	85.0	0.170	0.000	0.030	259.134	258.964	
EXT 10	FUTURE DEVELOPMENT	EXT	S104	N	0.70	0.70		0	0	0	0	4.50	0.07	0.00	0.07												
A155	FUTURE PARK	S104	S103	N	0.03	48.95		0	0	0	3860	3.35	4.90	37.83	42.73	300	0.013	0.20	43.24	0.61	33.6	0.067	0.000	0.030	258.934	258.867	
EXT 11	FUTURE DEVELOPMENT	EXT	S103	N	0.52	0.52		0	0	74	74	4.28	0.05	0.93	0.98												
EXT 12	FUTURE DEVELOPMENT	EXT	S103	N	1.71	1.71		0	0	351	351	4.05	0.17	4.16	4.33												
EXT 13	FUTURE DEVELOPMENT	EXT	S103	N	1.16	1.16		0	0	439	439	4.00	0.12	5.15	5.26												
A156	FUT. STREET ONE	S103	S102	N	0.31	52.65		0	0	0	4724	3.27	5.27	45.20	50.47	300	0.013	0.30	52.96	0.75	61.0	0.183	0.000	0.030	258.837	258.654	
A157	FUT. STREET ONE	S102	S101	N	0.22	52.87		0	0	0	4724	3.27	5.29	45.20	50.49	300	0.013	0.30	52.96	0.75	95.0	0.285	0.000	0.030	258.624	258.339	
EXISTING	RIVERBEND ROAD	S101	EX.S4	N	0.00	52.87		0	0	0	4724	3.27	5.29	49.13	54.42	300	0.013	0.38	59.61	0.84	9.0	0.034	0.000	0.030	258.309	258.275	
EXISTING	RIVERBEND ROAD	EX.S5	EX.S4	N	0.15	26.14		0	0	0	1680	3.64	2.61	19.48	22.10	200	0.013	0.60	25.40	0.81	63.6	0.382	0.000	0.000	261.769	261.387	
EXISTING	RIVERBEND ROAD	EX.S4	EX.S3	N	0.11	79.12		0	0	0	6404	3.14	7.91	64.08	71.99	300	0.013	0.75	83.74	1.18	42.5	0.319	0.000	0.030	258.245	257.925	

Q = 4724 * 230 * 3.27 * 1.1 / (24*60*60) = 45.2 Q = 4724 * 250 * 3.27 * 1.1 / (24*60*60) = 49.1
Q = 1680 * 230 * 3.64 * 1.1 / (24*60*60) = 17.9 Q = 1680 * 250 * 3.64 * 1.1 / (24*60*60) = 19.5
Q = 6404 * 230 * 3.14 * 1.1 / (24*60*60) = 58.9 Q = 6404 * 250 * 3.14 * 1.1 / (24*60*60) = 64.0

[ ] - Includes Elementary School Equivalent Population: 235 people @ 230L/person/day = 600 people @ 90L/person/day

City of London to confirm per Capita flow of 230 L/s or 250 L/s for highlighted areas.

EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	BDH
DRAWN BY	BDH
CHECKED	CJH
APPROVED	CJH
DATE	2016-02-03
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No.	REVISIONS	DATE	CONSULTANT
1	REVISED PER CITY COMMENTS	2016-07-08	STANTEC
2	2nd SUBMISSION CITY COMMENTS	2016-09-09	STANTEC
3	3rd SUBMISSION CITY COMMENTS	2016-11-22	STANTEC

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100125161
NOV 22/16
PROVINCE OF ONTARIO

London CANADA
CORPORATION OF THE CITY OF LONDON

SCALE: NOT TO SCALE

TITLE
WARBLER WOODS PHASE 1
SIFTON PROPERTIES LIMITED
SANITARY DESIGN SHEETS
PART 2

PROJECT No. 1614-13130
SHEET No. 13 of 58
PLAN FILE No.

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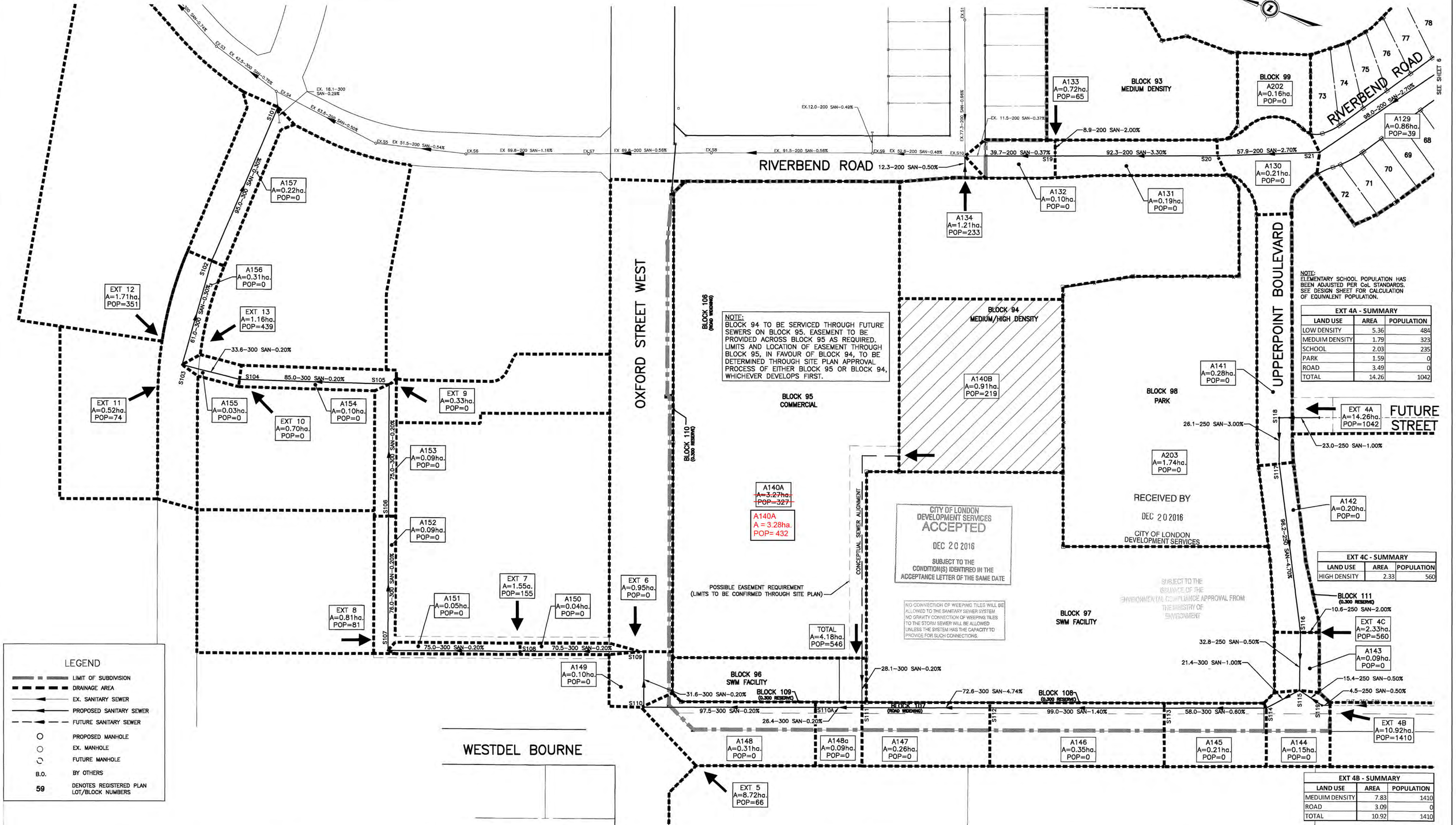
11/22/2016 1:44:53 PM by:Chris, Jason



EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS		No.	REVISIONS	DATE	CONSULTANT
DESIGN	BDH	1	REVISED PER CITY COMMENTS	2016-07-06	STANTEC
DRAWN BY	BDH	2	2nd SUBMISSION CITY COMMENTS	2016-09-09	STANTEC
CHECKED	CJH	3	3rd SUBMISSION CITY COMMENTS	2016-11-22	STANTEC
APPROVED	CJH				
DATE	2015-05-25				
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10 0 20m

TITLE
WARBLER WOODS PHASE 1
SIFTON PROPERTIES LIMITED

SANITARY DRAINAGE AREA PLAN
PART 1

PROJECT No. 1614-13130

SHEET No. 5 of 58

PLAN FILE No.

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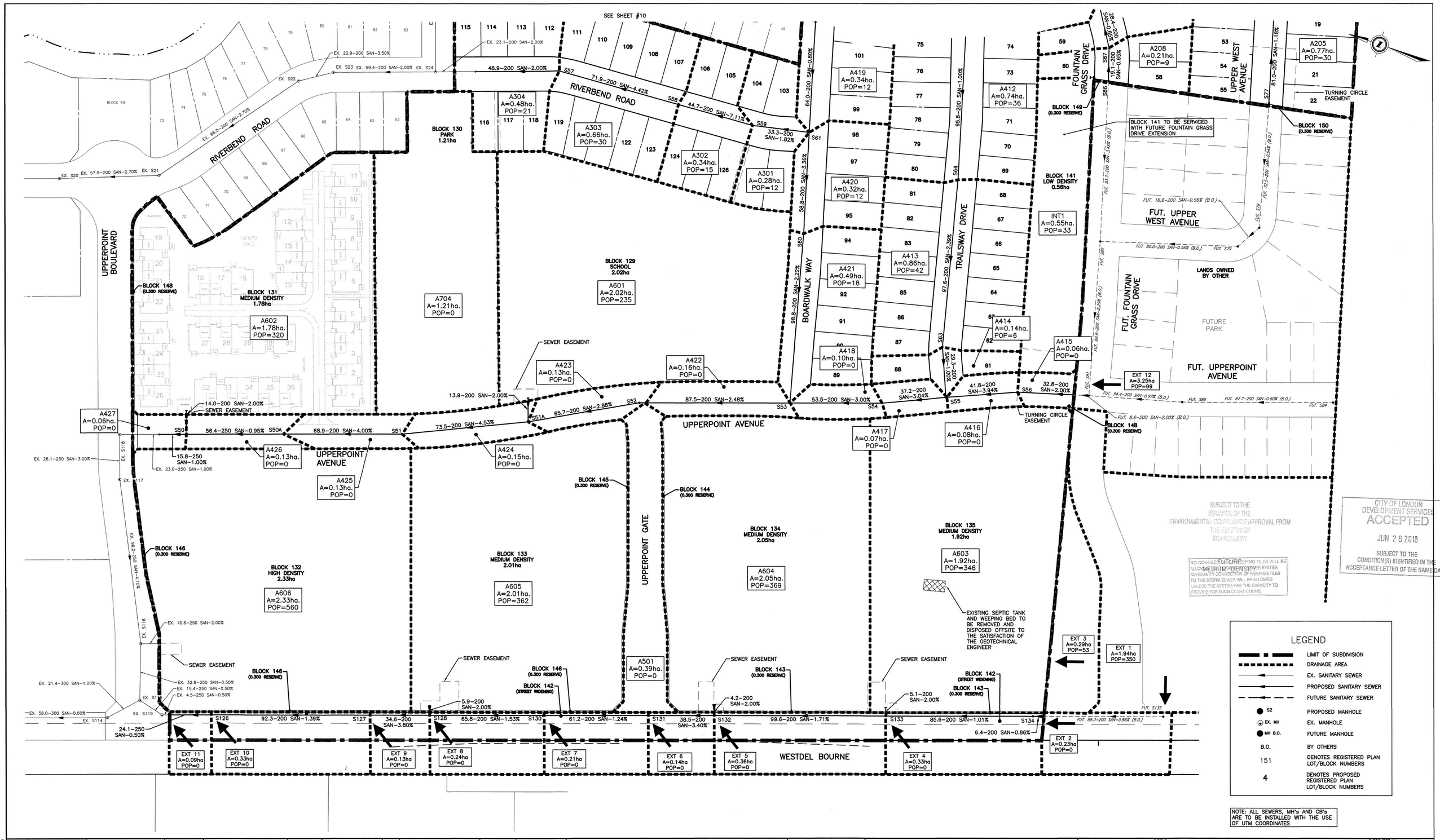
11/22/2016 1:42:40 PM by:Chris. Jason



EXISTING SERVICES	DRAWING #, SOURCE	DATE	CONSTRUCTED SERVICES	COMPLETION

DETAILS	
DESIGN	JAC
DRAWN BY	JAC
CHECKED	BDH
APPROVED	CJH
DATE	2017-03-24

No.	REVISIONS	DATE	CONSULTANT
1.	AS PER 1ST SUBMISSION COMMENTS	2017-12-19	STANTEC
2.	AS PER 2ND SUBMISSION COMMENTS	2018-03-08	STANTEC
3.	AS PER 3RD SUBMISSION COMMENTS	2018-05-09	STANTEC

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London CANADA
CORPORATION OF THE CITY OF LONDON

SCALE
HORZ - 1 : 1000
10 0 20m

TITLE
WARBLER WOODS PHASE 2
SIFTON PROPERTIES LIMITED
SANITARY DRAINAGE AREA PLAN
PART 1

T/6502

PROJECT No. 1614-13471
SHEET No. 9 of 38
PLAN FILE No.

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5/10/2018 9:57:03 AM by:bhale, jacson

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1599 Adelaide St. N., Units 301 & 203
London, ON N5X 4E8
P: 519-471-6667

KITCHENER LOCATION
1415 Huron Rd., Unit 225
Kitchener, ON N2R 0L3
P: 519-725-8093

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sbm@sbmltd.ca

Sanitary Service Design Sheet (Assessed Westdel Bourne Outlet)

City of London

Date: December 17, 2021
Job Number: SBM-20-3418
Client: Oxford West Gateway (c/o York Developments
Project: Proposed 10 Story Apartment Building
Location: 1856 - 1870 Oxford Street West, London, ON
Designed By: KJC
Reviewed By: JE

Residential Population Densities

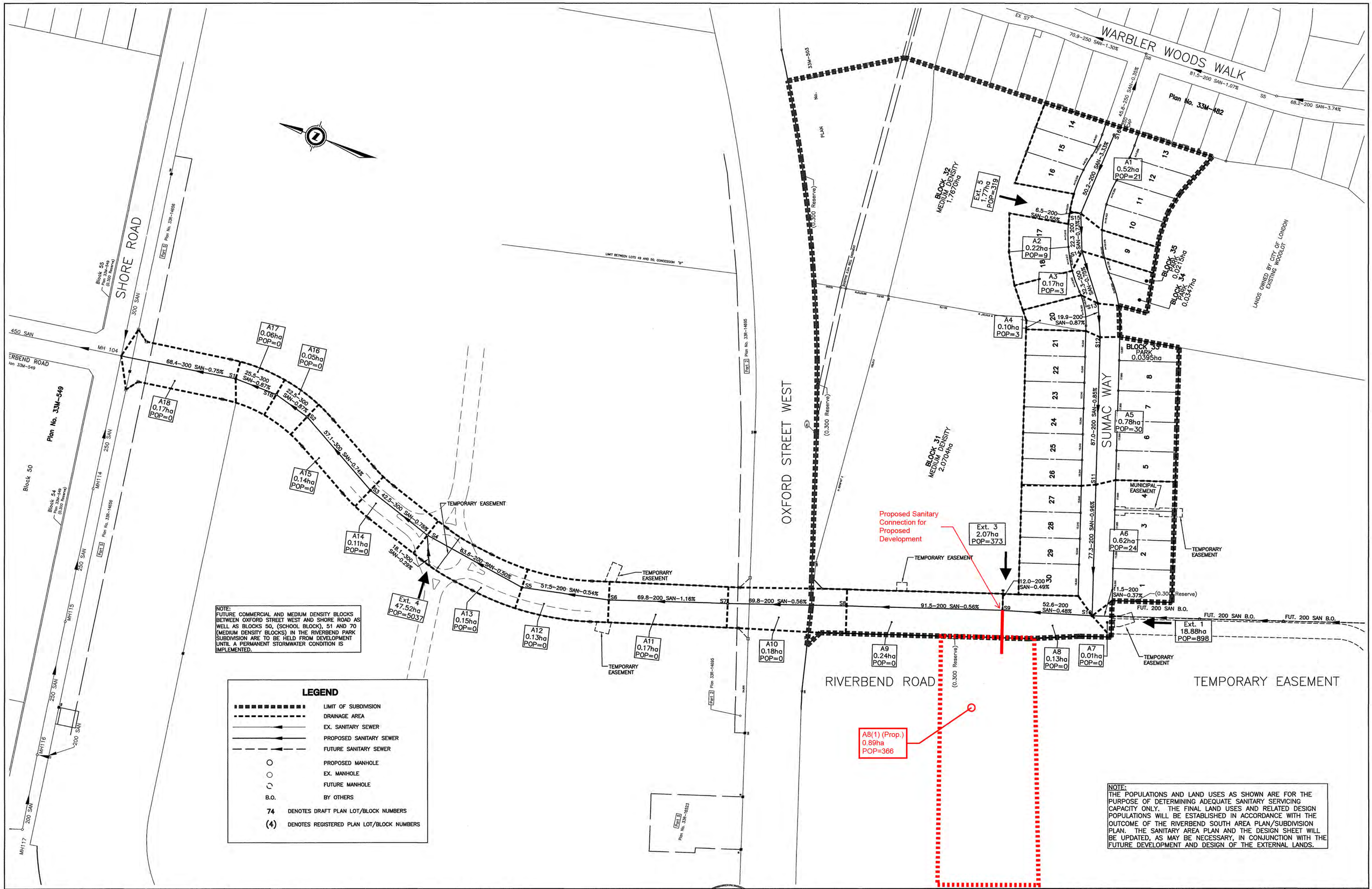
(A) Area Basis

Low Density Residential (Single Family/Semi-Detached)	= 30 Units/hectare @ 3 people/unit
Medium Density Residential (Multi-Family/Townhouse)	=75 Units/hectare @ 2.4 people/unit
High Density Residential (Apartment Buildings)	=150-300 Units/hectare @ 1.6 people/unit
Commercial = 100 people/hectare	

Daily Flow (L/cap/day)	230
Sewage Infiltration (Litres/hectare/day)	8640
Harmon Formula (Peaking Factor), M = (1 + 14/(4+P^0.5))	
Uncertainty Factor	1.1

Location				Area			Population					Sewage Flows				Sewer Design					
Area No.	Street Name	From MH	To MH	Net or Gross	Delta Hectare	Total Hectare	People Per Hectare	People Per Lot	No. of Lots	Delta Pop.	Total Pop. (230 L/day)	Harmon Peaking Factor	Infilt. L/S	Sewage L/S	Total L/S	Dia. mm	n	Pipe Slope %	Capacity L/S	Velocity m/s	Percentage Full %
Proposed Development																					
Ex. Buildings 1-5, 9-11	-	-	-	-	0.652 *	-	100	-	-	66											
Proposed 10 Story Building	-	-	-	-	-	-	-	1.6	223	357											
Prop. 7 Comm. Units	-	-	-	-	0.09 **	-	100	-	-	9											
Total	Oxford Street West	-	-	-	-	3.28	-	-	-	432	432										
A140B	Future Development	-	-	-	0.91	0.91	-	-	-	219	219										
Total A140A/B	Oxford Street West	Stub	S111	N	0.00	4.19	-	-	-	-	651	3.91	0.42	7.46	7.88	300	0.013	0.20%	43.27	0.61	18.2
A145	Westdel Bourne	S114	S113	N	0.21	30.19		0.0	0.0	0	3012	3.44	3.02	30.35	33.37	300	0.013	0.60%	74.95	1.06	44.5
A146	Westdel Bourne	S113	S112	N	0.35	30.54		0.0	0.0	0	3012	3.44	3.05	30.35	33.40	300	0.013	1.40%	114.49	1.62	29.2
A147	Westdel Bourne	S112	S111	N	0.26	30.80		0.0	0.0	0	3012	3.44	3.08	30.35	33.43	300	0.013	4.74%	210.66	2.98	15.9
A140A/B	Oxford Street West	Stub	S111	N	4.19	4.19		0.0	0.0	651	651	3.91	0.42	7.46	7.88	300	0.013	0.20%	43.27	0.61	18.2
A148	Westdel Bourne	S111	S110A	N	0.09	35.08		0.0	0.0	0	3663	3.37	3.51	36.12	39.63	300	0.013	0.20%	43.27	0.61	91.6
A148A	Westdel Bourne	S110A	S110	N	0.31	35.39		0.0	0.0	0	3663	3.37	3.54	36.12	39.66	300	0.013	0.20%	43.27	0.61	91.6
EXT5	Westdel Bourne	EXT	S110	N	8.72	8.72		3.0	22.0	66	66	4.29	0.87	0.83	1.70						
A149	Oxford Street	S110	S109	N	0.10	44.21		0.0	0.0	0	3729	3.36	4.42	36.69	41.11	300	0.013	0.20%	43.27	0.61	95.0
EXT6	Oxford Street	S110	S109	N	0.95	0.95		0.0	0.0	0	0	4.50	0.10	0.00	0.10						
A150	Fut. Resilient Space	S109	S108	N	0.05	45.21		0.0	0.0	0	3729	3.36	4.52	36.69	41.21	300	0.013	0.20%	43.27	0.61	95.2
EXT 7	Fut. Resilient Space	EXT	S108	N	1.55	1.55	100.0	0.0	0.0	155	155	4.19	0.16	1.90	2.06						
A151	Fut. Resilient Space	S109	S108	N	0.05	46.81		0.0	0.0	0	3884	3.34	4.68	38.04	42.72	300	0.013	0.20%	43.27	0.61	98.7
EXT 8	Fut. Resilient Space	EXT	S107	N	0.81	0.81	100	0.0	0.0	81	81	4.27	0.08	1.01	1.09						
A152	Future Development	S107	S106	N	0.09	47.71		0.0	0.0	0	3965	3.34	4.77	38.74	43.51	300	0.013	0.20%	43.27	0.61	100.6
A153	Future Development	S106	S105	N	0.09	47.80		0.0	0.0	0	3965	3.34	4.78	38.74	43.52	300	0.013	0.20%	43.27	0.61	100.6
EXT 9	Future Park	EXT	S105	N	0.33	0.33		0.0	0.0	0	0	4.50	0.03	0.00	0.03						
A154	Future Park	S105	S104	N	0.10	48.23		0.0	0.0	0	3965	3.34	4.82	38.74	43.56	300	0.013	0.20%	43.27	0.61	100.7
EXT 10	Future Development	EXT	S104	N	0.70	0.70		0.0	0.0	0	0	4.50	0.07	0.00	0.07						
A155	Future Park	S104	S103	N	0.03	48.96		0.0	0.0	0	3965	3.34	4.90	38.74	43.64	300	0.013	0.20%	43.27	0.61	100.9
EXT11	Future Development	EXT	S103	N	0.52	0.52		0.0	0.0	74	74	4.28	0.05	0.93	0.98						
EXT 12	Future Development	EXT	S103	N	1.71	1.71		0.0	0.0	351	351	4.05	0.17	4.16	4.33						
EXT 13	Future Development	EXT	S103	N	1.16	1.16		0.0	0.0	439	439	4.00	0.12	5.15	5.27						
A156	Fut. Street One	S103	S102	N	0.31	52.66		0.0	0.0	0	4829	3.26	5.27	46.08	51.35	300	0.013	0.30%	53.00	0.75	96.9
A157	Fut. Street One	S102	S101	N	0.22	52.88		0.0	0.0	0	4829	3.26	5.29	46.08	51.37	300	0.013	0.30%	53.00	0.75	96.9
Existing	Riverbend Road	S101	EX S4	N	0.00	52.88		0.0	0.0	0	4829	3.26	5.29	46.08 *	51.37	300	0.013	0.38%	59.65	0.84	86.1
Existing	Riverbend Road	EX S5	EX S4	N	0.15	26.14		0.0	0.0	0	1680	3.64	2.61	17.92 *	20.53	200	0.013	0.60%	25.42	0.81	80.8
Existing	Riverbend Road	EX S4	EX S3	N	0.11	79.13		0.0	0.0	0	6509	3.14	7.91	59.79 *	67.70	300	0.013	0.75%	83.80	1.19	80.8

* Floor area of existing commercial buildings including 3 storey Bldg. 9.
**Commercial area comprises of commercial floor area within the proposed 10 story building to develop an equivalent commercial population. Refer to Overall Key Plan & Main Floor/Parking Plan prepared by Patrick David Trottier dated November 29, 2021.
*** City of London to confirm per capita flow of 230 L/s or 250 L/s
Design Parameters obtained from Section 3.8 in the City of London DS&RM
Refer to Overall Site Plan and Zoning Chart prepared by SBM dated March 11, 2021.
Refer to City of London Wharbler Woods Phase 1 Sanitary Design Sheets by Stantec Sheets 12/13 Dated November 22, 2016
Refer to City of London Wharbler Woods Phase 1 Sanitary Drainage Area Plan by Stantec Sheet 5 Dated November 22, 2016



AS CONSTRUCTED NOTES	AS CONSTRUCTED SERVICES	COMPLETION
	SAN SEWERS, PDC's & M.H.'s	JUNE 2014
	STM SEWERS, PDC's & M.H.'s	JUNE 2014
	W.M. & W.S	JUNE 2014
	GRANULAR BASE	JUNE 2014
	CURB & GUTTERS & SIDEWALKS	OCT 2014
	PAVING – I BASE	OCT 2014
	II SURFACE	

DESIGN	JKA/SGWB
DRAWN	JKA/SGWB
CHECKED	AG
APPROVED	AG
DATE	AUG '10

No.	REVISIONS	DATE	BY
1	REVISIONS AS PER CITY COMMENTS	NOV 15/10	SGWB
2	REVISIONS AS PER CITY COMMENTS	MAR 8/11	CH/SB
3	REVISIONS AS PER CITY COMMENTS	MAR 30/11	SGWB
4	REVISED WATER SERVICING	JAN 11/12	CHK
5	REVISED AS PER CITY COMMENTS	MAR 2012	CJH
6	REVISED AS PER CITY COMMENTS	JUN 2012	CJH
7	AS-CONSTRUCTED	DEC 2014	PS

CONSULTANT OR DIVISION

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London CANADA

CORPORATION OF THE CITY OF LONDON

SCALE 1 : 1000 (10 0 20m)

TITLE
WARBLER WOODS WEST PHASE 2 SUBDIVISION
SIFTON PROPERTIES LIMITED

SANITARY DRAINAGE AREA PLAN

PROJECT No. 33M-638

SHEET No. 3 of 25

PLAN FILE No. 25250

STORM SEWER DESIGN SHEET
CITY OF LONDON

RUNOFF COEFFICIENT 'C' VALUES

THE FOLLOWING 'C' VALUES WILL APPLY WHEN DESIGNING STORM SEWERS:

PARKS, OPEN SPACE	0.20
SINGLE FAMILY / SEMI DETACHED	0.50 - 0.55
TOWNHOUSE / ROWHOUSE	0.65
APARTMENTS	0.65 - 0.70
COMMERCIAL, INSTITUTIONAL & INDUSTRIAL	0.70 - 0.90
DENSELY BUILT, PAVED	0.90

DESIGN SHEET FOR ISSUANCE OF WARBLER WOODS WEST PHASE 2 SUBDIVISION CERTIFICATE OF APPROVAL

PROJECT NAME: WARBLER WOODS WEST PHASE 2 SUBDIVISION

FLOW Q - 2.78 x C x A x I
WHERE Q=PEAK FLOW IN LITRES PER SECOND (L / s)
A=AREA IN HECTARES (Ha)
C=RUNOFF COEFFICIENT
I=RAINFALL INTENSITY (mm / hr)
RETURN PERIOD = 2 YEARS

DATE: Aug-08
DESIGNED BY: CDS/CJH

PROJECT FILE NO. 1614-03223

LOCATION				AREA		TOTAL (A x C)						RAINFALL INTENSITY			Q	SEWER DESIGN							PROFILE					
												TIME ENTRY mm														INVERT ELEVATION		
AREA No.	STREET	FROM MANHOLE	TO MANHOLE	DELTA HECTARE	TOTAL HECTARES	'C'	AxC	TOTAL SECTION	TOTAL LATERAL	TOTAL SEWER	TOTAL 2.78AxC	SECTION	ACCUM.	INTENSITY mm/hr	L / s	PIPE SIZE mm	n	SLOPE %	CAP L / s	VELOCITY m / s	LENGTH m	TIME OF FLOW	FALL IN SEWER	HEADLOSS IN U.S. MH	DROP IN MANHOLE	U.S.	D.S.	HL=KLx1.5xV²/2g
A1	SUMAC WAY	R18	R18A	0.30	0.30	0.50	0.150	0.000	0.000	0.150	0.417	0.00	19.0	76.0	31.7	300	0.013	3.00	167.5	2.37	19.1	0.13	0.573	0.000	0.000	276.381	275.808	
A1-A	SUMAC WAY	R18A	R17	0.15	0.45	0.50	0.075	0.150	0.000	0.225	0.626	0.13	19.1	75.7	47.4	300	0.013	3.00	167.5	2.37	20.9	0.15	0.627	0.021	0.345	275.463	274.836	HL=0.05*1.5*2.37^2/19.62= 0.021
EXT.1	SUMAC WAY	STUB	R17	1.77	1.77	0.65	1.151	0.000	0.000	1.151	3.198	0.00	16.1	83.8	268.0	525	0.013	0.45	288.5	1.33	10.3	0.13	0.046	0.000	0.000	272.156	272.110	
A2	SUMAC WAY	R17	R16	0.29	2.51	0.50	0.145	0.225	1.151	1.521	4.227	0.15	16.2	83.6	353.4	525	0.013	0.75	372.4	1.72	27.1	0.26	0.203	0.091	2.756	272.080	271.877	HL=0.40*1.5*1.79^2/19.62= 0.091
A3	SUMAC WAY	R16	R15	0.10	2.61	0.50	0.050	1.521	0.000	1.571	4.366	0.26	16.5	82.6	360.6	525	0.013	0.80	384.6	1.78	27.5	0.26	0.220	0.080	0.080	271.797	271.577	HL=0.33*1.5*1.79^2/19.62= 0.080
EXT.2	SUMAC WAY	EXT.2	DICB 4	0.52	0.52	0.20	0.104	0.000	0.000	0.104	0.289	0.00	-	-	-													
A4	SUMAC WAY	DICB 4	R15	0.06	0.58	0.20	0.012	0.104	0.000	0.116	0.322	0.00	14.3	88.9	28.7	300	0.013	4.80	211.9	3.00	29.9	0.17	1.435	0.000	0.000	273.784	272.349	
A5	SUMAC WAY	R15	R14	0.10	3.29	0.50	0.050	1.571	0.116	1.737	4.827	0.26	16.8	82.0	395.9	525	0.013	1.00	430.0	1.99	22.1	0.19	0.221	0.078	0.078	271.499	271.278	HL=0.26*1.5*1.99^2/19.62= 0.078
EXT.3	SUMAC WAY	CB9	600 ST	0.79	0.79	0.20	0.158	0.000	0.000	0.158	0.439	0.00	14.9	87.4	38.4	300	0.013	0.69	80.3	1.14	10.9	0.16	0.075	0.000	0.000	271.425	271.350	
A6	SUMAC WAY	R14	R13	0.74	4.82	0.50	0.370	1.737	0.158	2.265	6.295	0.19	17.0	81.3	511.8	600	0.013	0.85	566.1	2.00	88.3	0.74	0.751	0.000	0.075	271.203	270.452	
A7	SUMAC WAY	R13	R12	0.15	4.97	0.50	0.075	2.265	0.000	2.340	6.504	0.74	17.7	79.5	517.1	600	0.013	1.00	614.0	2.17	13.5	0.10	0.135	0.000	0.215	270.237	270.102	
INT.1	SUMAC WAY	TEMP.DICBMH2	R20	5.20	5.20	0.20	1.040	0.000	0.000	1.040	2.891	0.00	16.8	81.5	235.6	450	0.013	1.00	285.1	1.79	3.0	0.03	0.030	0.000	0.000	271.000	270.970	
	SUMAC WAY	R20	R12	0.00	5.20	0.20	0.000	1.040	0.000	1.040	2.891	0.03	16.8	81.5	235.6	450	0.013	1.00	285.1	1.79	42.0	0.39	0.420	0.000	0.030	270.940	270.520	
A8	SUMAC WAY	R12	R11	0.47	5.44	0.50	0.235	2.340	0.000	2.575	7.157	0.10	17.8	79.2	566.8	675	0.013	0.72	713.2	1.99	65.2	0.55	0.469	0.000	0.282	269.820	269.351	
INT.2	RIVERBEND ROAD	TEMP. DICB3	CAP	1.53	1.53	0.20	0.306	0.000	0.000	0.306	0.851	0.00	14.5	88.4	75.2	375	0.013	0.60	135.8	1.23	6.0	0.08	0.036	0.000	0.000	269.974	269.938	
EXT.4	RIVERBEND ROAD	EXT.4	CAP	5.07	5.07	0.47	2.383	0.000	0.000	2.383	6.624	0.00	-	-	-													
A9	RIVERBEND ROAD	CAP	R11	0.01	5.08	0.90	0.009	2.383	0.000	2.392	6.649	0.00	28.7	56.4	375.0	900	0.013	0.60	1402.2	2.20	12.8	0.10	0.077	0.000	0.000	269.538	269.462	
A10	RIVERBEND ROAD	R11	R10	0.14	10.66	0.90	0.126	2.392	2.575	5.092	14.157	0.10	28.8	56.4	798.4	975	0.013	0.60	1735.8	2.32	58.6	0.42	0.352	0.413	0.475	268.987	268.635	HL=1.0*1.5*2.20^2/19.62= 0.413
EXT.5	RIVERBEND ROAD	STUB	R10	2.07	2.07	0.65	1.346	0.000	0.000	1.346	3.740	0.00	16.2	83.6	312.7	525	0.013	1.00	430.0	1.99	12.8	0.11	0.128		0.000	268.788	268.660	
A11	RIVERBEND ROAD	R10	R9	0.16	12.89	0.90	0.144	5.092	1.346	6.582	18.298	0.42	29.2	55.1	1008.8	1050	0.013	0.50	1930.8	2.23	62.5	0.47	0.313	0.000	0.500	268.135	267.823	
A12	RIVERBEND ROAD	R9	R8	0.11	13.00	0.90	0.099	6.582	0.000	6.681	18.573	0.47	29.7	54.1	1005.4	*1350*	0.013	1.25	5967.2	4.17	40.9	0.16	0.511	0.000	0.300	267.523	267.011	
A13	RIVERBEND ROAD	R8	R7	0.30	13.30	0.90	0.270	6.681	0.000	6.951	19.324	0.16	29.8	53.6	1036.4	*1350*	0.013	1.25	5967.2	4.17	124.7	0.50	1.559	0.000	0.200	266.811	265.253	
INT.3	RIVERBEND ROAD	TEMP. DICB1	1050 ST	0.86	0.86	0.20	0.172	0.000	0.000	0.172	0.478	0.00	13.9	90.4	43.2	300	0.013	0.54	71.1	1.01	20.5	0.34	0.111	0.000	0.000	264.573	264.462	
A14	RIVERBEND ROAD	R7	R6	0.12	14.28	0.90	0.108	6.951	0.172	7.231	20.102	0.50	30.3	52.4	1053.0	1050	0.013	0.50	1930.8	2.23	52.1	0.39	0.261	0.027	1.218	264.035	263.774	HL=0.07*1.5*2.23^2/19.62= 0.027
A15	RIVERBEND ROAD	R6	R5	0.12	14.40	0.90	0.108	7.231	0.000	7.339	20.402	0.39	30.7	51.4	1048.3	1050	0.013	0.50	1930.8	2.23	49.2	0.37	0.246	0.125	1.500	262.274	262.028	HL=0.33*1.5*2.23^2/19.62= 0.125
A16	RIVERBEND ROAD	R5	R4	0.14	14.54	0.90	0.126	7.339	0.000	7.465	20.752	0.37	31.1	51.4	1066.3	1050	0.013	0.50	1930.8	2.23	58.5	0.44	0.293	0.084	0.700	261.328	261.036	HL=0.22*1.5*2.23^2/19.62= 0.084
A17	RIVERBEND ROAD	R4	R3	0.14	14.68	0.90	0.126	7.465	0.000	7.591	21.103	0.44	31.5	51.4	1084.3	1050	0.013	0.55	2025.1	2.34	56.9	0.41	0.313	0.092	0.465	260.570	260.257	HL=0.22*1.5*2.34^2/19.62= 0.092
A18	RIVERBEND ROAD	R3	R2A	0.05	14.73	0.90	0.045	7.591	0.000	7.636	21.228	0.41	31.9	51.4	1090.8	1050	0.013	0.55	2025.1	2.34	21.9	0.16	0.120	0.109	0.590	259.667	259.547	HL=0.26*1.5*2.34^2/19.62= 0.109
A18A	RIVERBEND ROAD	R2A	R2	0.07	14.80	0.90	0.063	7.636	0.000	7.699	21.403	0.16	32.1	51.4	1099.8	1050	0.013	0.55	2025.1	2.34	21.9	0.16	0.120	0.125	0.590	258.957	258.836	HL=0.30*1.5*2.34^2/19.62= 0.125
A19	RIVERBEND ROAD	R2	R1	0.12	14.92	0.90	0.108	7.699	0.000	7.807	21.703	0.16	32.1	51.4	1115.2	1050	0.013	0.55	2025.1	2.34	62.0	0.44	0.341	0.071	0.590	258.246	257.905	HL=0.17*1.5*2.34^2/19.62= 0.071
A20	RIVERBEND ROAD	R1	STUB	0.02	14.94	0.90	0.018	7.807	0.000	7.825	21.753	0.44	32.5	51.4	1117.8	1200	0.013	0.75	3522.3	2.99	4.7	0.03	0.035	0.470	0.620	257.285	257.250	HL=0.69*1.5*2.99^2/19.62= 0.470
Existing	Riverbend Road	Stub	Ex MH22	0.00	14.94	0.90	0.000	7.825	0.000	7.825	21.753	0.03	32.6	51.4	1117.75	1200	0.013	0.75	3522.3	2.99	16.4	0.09	0.123	0.000	0.000	257.250	257.127	
Existing	Riverbend Road	Ex MH22	Ex MH21	0.19	15.13	0.90	0.171	7.825	0.000	7.996	22.229	0.09	32.7	51.4	1142.18	1200	0.013	0.75	3522.3	2.99	73.6	0.41	0.552	0.000	0.000	257.127	256.575	
Existing	Riverbend Road	Ex MH21	Ex MH20	0.16	15.29	0.90	0.144	7.996	0.000	8.140	22.629	0.41	33.1	51.4	1162.75	1200	0.013	0.75	3522.3	2.99	76.0	0.42	0.570	0.000	0.000	256.575	256.005	
Existing	Riverbend Road	Ex MH20	Ex MH19	0.16	15.45	0.90	0.144	8.140	0.000	8.284	23.029	0.42	33.5	51.4	1183.32	1350	0.013	0.40	3521.5	2.36	74.7	0.53	0.299	0.000	0.150	255.855	255.556	
EXT.6	RIVERBEND ROAD	STUB	Ex MH19	13.75	13.75	0.69	9.488	0.000	0.000	9.488	26.375	0.00	18.1	78.2	2062.5	600	0.013	0.60	475.6	1.68	16.5	0.16	0.099	0.000	3.860	255.800	255.701	
Existing	Riverbend Road	Stub	Ex MH23	0.35	0.35	0.90	0.315	0.000	0.000	0.315	0.876	0.00	10.5	103.0	90.21	375	0.013	0.80	163.6	1.42	5.3	0.06	0.042	0.000	0.000	256.957	256.915	
Existing	Riverbend Road	Ex MH23	Ex MH19	0.11	0.46	0.90	0.099	0.315	0.000	0.414	1.151	0.06	10.6	102.8	118.28	375	0.013	0.96	179.2	1.56	45.7	0.49	0.439	0.000	0.045	256.870	256.430	
Existing	Park Block	Ex MH19	Ex MH26	0.19	20.85	0.90	0.171	8.284	9.803	18.257	50.756	0.00	24.0	64.5	3273.73	1350	0.013	0.51	3976.3	2.66	73.8	0.46	0.375	0.000	0.000	257.250	257.152	

- INTERIM DRAINAGE AREAS (NOT USED IN MAINLINE SEWER DESIGN)
- EXISTING SEWER DESIGN

1350 NOTE: THE 1350mm DIA. SEWERS ARE TO CONVEY THE MAJOR STORM EVENTS (50yr) FROM THE HOPEDALE SITE UNDER OXFORD STREET AND ARE CONSIDERED TEMPORARY

STORM SEWER DESIGN SHEET
CITY OF LONDON

RUNOFF COEFFICIENT 'C' VALUES

THE FOLLOWING 'C' VALUES WILL APPLY WHEN DESIGNING STORM SEWERS:

PARKS, OPEN SPACE	0.20
SINGLE FAMILY / SEMI DETACHED	0.50 - 0.55
TOWNHOUSE / ROWHOUSE	0.65
APARTMENTS	0.65 - 0.70
COMMERCIAL, INSTITUTIONAL & INDUSTRIAL	0.70 - 0.90
DENSELY BUILT, PAVED	0.90

DESIGN SHEET FOR THE ULTIMATE DRAINAGE AREA TO THE WARBLER WOODS WEST PHASE 2 SUBDIVISION

PROJECT NAME: WARBLER WOODS WEST PHASE 2 SUBDIVISION

FLOW Q - 2.78 x C x A x I
WHERE Q=PEAK FLOW IN LITRES PER SECOND (L / s)
A=AREA IN HECTARES (Ha)
C=RUNOFF COEFFICIENT
I=RAINFALL INTENSITY (mm / hr)
RETURN PERIOD = 2 YEARS

DATE: Aug-08
DESIGNED BY: CDS/CJH

PROJECT FILE NO. 1614-03223

LOCATION				AREA		TOTAL (A x C)						RAINFALL INTENSITY			Q	SEWER DESIGN							PROFILE					
												TIME ENTRY mm														INVERT ELEVATION		
AREA No.	STREET	FROM MANHOLE	TO MANHOLE	DELTA HECTARE	TOTAL HECTARES	'C'	AxC	TOTAL SECTION	TOTAL LATERAL	TOTAL SEWER	TOTAL 2.78AxC	SECTION	ACCUM.	INTENSITY mm/hr	L / s	PIPE SIZE mm	n	SLOPE %	CAP L / s	VELOCITY m / s	LENGTH m	TIME OF FLOW	FALL IN SEWER	HEADLOSS IN U.S. MH	DROP IN MANHOLE	U.S.	D.S.	HL=KLx1.5xV²/2g
A1	SUMAC WAY	R18	R18A	0.30	0.30	0.50	0.150	0.000	0.000	0.150	0.417	0.00	19.0	76.0	31.7	300	0.013	3.00	167.5	2.37	19.1	0.13	0.573	0.000	0.000	276.381	275.808	
A1-A	SUMAC WAY	R18A	R17	0.15	0.45	0.50	0.075	0.150	0.000	0.225	0.626	0.13	19.1	75.7	47.4	300	0.013	3.00	167.5	2.37	20.9	0.15	0.627	0.021	0.345	275.463	274.836	HL=0.05*1.5*2.37^2/19.62= 0.021
EXT.1	SUMAC WAY	STUB	R17	1.77	1.77	0.65	1.151	0.000	0.000	1.151	3.198	0.00	16.1	83.8	268.0	525	0.013	0.45	288.5	1.33	10.3	0.13	0.046	0.000	0.000	272.156	272.110	
A2	SUMAC WAY	R17	R16	0.29	2.51	0.50	0.145	0.225	1.151	1.521	4.227	0.15	16.2	83.6	353.4	525	0.013	0.75	372.4	1.72	27.1	0.26	0.203	0.091	2.756	272.080	271.877	HL=0.40*1.5*1.79^2/19.62= 0.091
A3	SUMAC WAY	R16	R15	0.10	2.61	0.50	0.050	1.521	0.000	1.571	4.366	0.26	16.5	82.6	360.6	525	0.013	0.80	384.6	1.78	27.5	0.26	0.220	0.080	0.080	271.797	271.577	HL=0.33*1.5*1.79^2/19.62= 0.080
EXT.2	SUMAC WAY	EXT.2	DICB 4	0.52	0.52	0.20	0.104	0.000	0.000	0.104	0.289	0.00	-	-	-													
A4	SUMAC WAY	DICB 4	R15	0.06	0.58	0.20	0.012	0.104	0.000	0.116	0.322	0.00	14.3	88.9	28.7	300	0.013	4.80	211.9	3.00	29.9	0.17	1.435	0.000	0.000	273.784	272.349	
A5	SUMAC WAY	R15	R14	0.10	3.29	0.50	0.050	1.571	0.116	1.737	4.827	0.26	16.8	82.0	395.9	525	0.013	1.00	430.0	1.99	22.1	0.19	0.221	0.078	0.078	271.499	271.278	HL=0.26*1.5*1.99^2/19.62= 0.078
EXT.3	SUMAC WAY	CB9	600 ST	0.79	0.79	0.20	0.158	0.000	0.000	0.158	0.439	0.00	14.9	87.4	38.4	300	0.013	0.69	80.3	1.14	10.9	0.16	0.075	0.000	0.000	271.425	271.350	
A6	SUMAC WAY	R14	R13	0.74	4.82	0.50	0.370	1.737	0.158	2.265	6.295	0.19	17.0	81.3	511.8	600	0.013	0.85	566.1	2.00	88.3	0.74	0.751	0.000	0.075	271.203	270.452	
A7	SUMAC WAY	R13	R12	0.15	4.97	0.50	0.075	2.265	0.000	2.340	6.504	0.74	17.7	79.5	517.1	600	0.013	1.00	614.0	2.17	13.5	0.10	0.135	0.000	0.215	270.237	270.102	
INT.1	SUMAC WAY	TEMP.DICBMH2	R20	5.20	5.20	0.20	1.040	0.000	0.000	1.040	2.891	0.00	16.8	81.5	235.6	450	0.013	1.00	285.1	1.79	3.0	0.03	0.030	0.000	0.000	271.000	270.970	
	SUMAC WAY	R20	R12	0.00	5.20	0.20	0.000	1.040	0.000	1.040	2.891	0.03	16.8	81.5	235.6	450	0.013	1.00	285.1	1.79	42.0	0.39	0.420	0.000	0.030	270.940	270.520	
A8	SUMAC WAY	R12	R11	0.47	5.44	0.50	0.235	2.340	0.000	2.575	7.157	0.10	17.8	79.2	566.8	675	0.013	0.72	713.2	1.99	65.2	0.55	0.469	0.000	0.282	269.820	269.351	
INT.2	RIVERBEND ROAD	TEMP. DICB3	CAP	1.53	1.53	0.20	0.306	0.000	0.000	0.306	0.851	0.00	14.5	88.4	75.2	375	0.013	0.60	135.8	1.23	6.0	0.08	0.036	0.000	0.000	269.974	269.938	
~~FUT. EXT.4~~	~~RIVERBEND ROAD~~	~~EXT.~~	~~CAP~~	~~11.32~~	~~11.32~~	-	-	-	-	-	-	-	-	-	-													
EXT.4	RIVERBEND ROAD	EXT.	CAP	5.07	5.07	-	-	-	-	-	-	-	-	-	-													
EXT.4 (TOTAL)	RIVERBEND ROAD	EXT.	CAP	16.39	16.39	0.47	7.703	0.000	0.000	7.703	21.415	0.00	-	-	-													
A9	RIVERBEND ROAD	CAP	R11	0.01	16.40	0.90	0.009	7.703	0.000	7.712	21.440	0.00	28.7	56.4	1209.2	900	0.013	0.60	1402.2	2.20	12.8	0.10	0.077	0.000	0.000	269.538	269.462	
A10	RIVERBEND ROAD	R11	R10	0.14	21.98	0.90	0.126	7.712	2.575	10.413	28.948	0.10	28.8	56.4	1632.6	975	0.013	0.60	1735.8	2.32	58.6	0.42	0.352	0.413	0.475	268.987	268.635	HL=1.0*1.5*2.20^2/19.62= 0.413
EXT.5	RIVERBEND ROAD	STUB	R10	2.07	2.07	0.65	1.346	0.000	0.000	1.346	3.740	0.00	16.2	83.6	312.7	525	0.013	1.00	430.0	1.99	12.8	0.11	0.128		0.000	268.788	268.660	
A11	RIVERBEND ROAD	R10	R9	0.16	24.21	0.90	0.144	10.413	1.346	11.902	33.088	0.42	29.2	55.1	1824.3	1050	0.013	0.50	1930.8	2.23	62.5	0.47	0.313	0.000	0.500	268.135	267.823	
A12	RIVERBEND ROAD	R9	R8	0.11	24.32	0.90	0.099	11.902	0.000	12.001	33.364	0.47	29.7	54.1	1806.1	*1350*	0.013	1.25	5967.2	4.17	40.9	0.16	0.511	0.000	0.300	267.523	267.011	
A13	RIVERBEND ROAD	R8	R7	0.30	24.62	0.90	0.270	12.001	0.000	12.271	34.114	0.16	29.8	53.6	1829.7	*1350*	0.013	1.25	5967.2	4.17	124.7	0.50	1.559	0.000	0.200	266.811	265.253	
INT.3	RIVERBEND ROAD	TEMP. DICB1	1050 ST	0.86	0.86	0.20	0.172	0.000	0.000	0.172	0.478	0.00	13.9	90.4	43.2	300	0.013	0.54	71.1	1.01	20.5	0.34	0.111	0.000	0.000	264.573	264.462	
A14	RIVERBEND ROAD	R7	R6	0.12	25.60	0.90	0.108	12.271	0.172	12.551	34.893	0.50	30.3	52.4	1827.8	1050	0.013	0.50	1930.8	2.23	52.1	0.39	0.261	0.027	1.218	264.035	263.774	HL=0.07*1.5*2.23^2/19.62= 0.027
A15	RIVERBEND ROAD	R6	R5	0.12	25.72	0.90	0.108	12.551	0.000	12.659	35.193	0.39	30.7	51.4	1808.3	1050	0.013	0.50	1930.8	2.23	49.2	0.37	0.246	0.125	1.500	262.274	262.028	HL=0.33*1.5*2.23^2/19.62= 0.125
A16	RIVERBEND ROAD	R5	R4	0.14	25.86	0.90	0.126	12.659	0.000	12.785	35.543	0.37	31.1	51.4	1826.3	1050	0.013	0.50	1930.8	2.23	58.5	0.44	0.293	0.084	0.700	261.328	261.036	HL=0.22*1.5*2.23^2/19.62= 0.084
A17	RIVERBEND ROAD	R4	R3	0.14	26.00	0.90	0.126	12.785	0.000	12.911	35.893	0.44	31.5	51.4	1844.3	1050	0.013	0.55	2025.1	2.34	56.9	0.41	0.313	0.092	0.465	260.570	260.257	HL=0.22*1.5*2.34^2/19.62= 0.092
A18	RIVERBEND ROAD	R3	R2A	0.05	26.05	0.90	0.045	12.911	0.000	12.956	36.019	0.41	31.9	51.4	1850.8	1050	0.013	0.55	2025.1	2.34	21.9	0.16	0.120	0.109	0.590	259.667	259.547	HL=0.26*1.5*2.34^2/19.62= 0.109
A18A	RIVERBEND ROAD	R2A	R2	0.07	26.12	0.90	0.063	12.956	0.000	13.019	36.194	0.16	32.1	51.4	1859.8	1050	0.013	0.55	2025.1	2.34	21.9	0.16	0.120	0.125	0.590	258.957	258.836	HL=0.30*1.5*2.34^2/19.62= 0.125
A19	RIVERBEND ROAD	R2	R1	0.12	26.24	0.90	0.108	13.019	0.000	13.127	36.494	0.16	32.1	51.4	1875.2	1050	0.013	0.55	2025.1	2.34	62.0	0.44	0.341	0.071	0.590	258.246	257.905	HL=0.17*1.5*2.34^2/19.62= 0.071
A20	RIVERBEND ROAD	R1	STUB	0.02	26.26	0.90	0.018	13.127	0.000	13.145	36.544	0.44	32.5	51.4	1877.7	1200	0.013	0.75	3522.3	2.99	4.7	0.03	0.035	0.470	0.620	257.285	257.250	HL=0.69*1.5*2.99^2/19.62= 0.470
Existing	Riverbend Road	Stub	Ex MH22	0.00	26.26	0.90	0.000	13.145	0.000	13.145	36.544	0.03	32.6	51.4	1877.75	1200	0.013	0.75	3522.3	2.99	16.4	0.09	0.123	0.000	0.000	257.250	257.127	
Existing	Riverbend Road	Ex MH22	Ex MH21	0.19	26.45	0.90	0.171	13.145	0.000	13.316	37.019	0.09	32.7	51.4	1902.18	1200	0.013	0.75	3522.3	2.99	73.6	0.41	0.552	0.000	0.000	257.127	256.575	
Existing	Riverbend Road	Ex MH21	Ex MH20	0.16	26.61	0.90	0.144	13.316	0.000	13.460	37.420	0.41	33.1	51.4	1922.75	1200	0.013	0.75	3522.3	2.99	76.0	0.42	0.570	0.000	0.000	256.575	256.005	
Existing	Riverbend Road	Ex MH20	Ex MH19	0.16	26.77	0.90	0.144	13.460	0.000	13.604	37.820	0.42	33.5	51.4	1943.32	1350	0.013	0.40	3521.5	2.36	74.7	0.53	0.299	0.000	0.150	255.855	255.556	
EXT.6	RIVERBEND ROAD	STUB	Ex MH19	13.75	13.75	0.69	9.488	0.000	0.000	9.488	26.375	0.00	18.1	78.2	2062.5	600	0.013	0.60	475.6	1.68	16.5	0.16	0.099	0.000	3.860	255.800	255.701	
Existing	Riverbend Road	Stub	Ex MH23	0.35	0.35	0.90	0.315	0.000	0.000	0.315	0.876	0.00	10.5	103.0	90.21	375	0.013	0.80	163.6	1.42	5.3	0.06	0.042	0.000	0.000	256.957	256.915	
Existing	Riverbend Road	Ex MH23	Ex MH19	0.11	0.46	0.90	0.099	0.315	0.000	0.414	1.151	0.06	10.6	102.8	118.28	375	0.013	0.96	179.2	1.56	45.7	0.49	0.439	0.000	0.045	256.870	256.430	
Existing	Park Block	Ex MH19	Ex MH26	0.19	41.17	0.90	0.171	13.604	9.803	23.578	65.546	0.00	25.9	60.7	3978.66	1350	0.013	0.51	3976.3	2.66	73.8	0.46	0.375	0.000	0.000	257.250	257.152	

- INTERIM DRAINAGE AREAS (NOT USED IN MAINLINE SEWER DESIGN)
- EXISTING SEWER DESIGN
- ~~EXT.4-A~~ - FUTURE EXTERNAL AREA 4 IS FOR ANALYSIS PURPOSES ONLY AND NOT FOR APPROVAL

1350 NOTE: THE 1350mm DIA. SEWERS ARE TO CONVEY THE MAJOR STORM EVENTS (50yr) FROM THE HOPEDALE SITE UNDER OXFORD STREET AND ARE CONSIDERED TEMPORARY

SANITARY SEWER DESIGN SHEET
CITY OF LONDON

RESIDENTIAL COMMERCIAL AND INSTITUTIONAL POPULATION DENSITIES

THE FOLLOWING POPULATION ALLOWANCES WILL APPLY WHEN DESIGNING SANITARY SEWERS:

LOW DENSITY (SINGLE-FAMILY / SEMI-DETACHED)	= 30 UNITS / HECTARE @ 3 PEOPLE / UNIT
MEDIUM DENSITY (MULTI-FAMILY / TOWNHOUSE / ROWHOUSE)	= 75 UNITS / HECTARE @ 2.4 PEOPLE / UNIT
HIGH DENSITY (APARTMENTS)	= 150 - 300 UNIT / HECTARE @ 1.6 PEOPLE / UNIT
COMMERCIAL / INSTITUTIONAL	= 100 PEOPLE / HECTARE
SECONDARY SCHOOL	= 1500 PEOPLE
ELEMENTARY SCHOOL	= 400 PEOPLE

DESIGN CRITERIA
SEWAGE = 250 LITRE / CAPITA / DAY
INFILTRATION = 8640 LITRES / HECTARE / DAY
PEAKING FACTOR $1 + \frac{14}{4 + P^{0.5}}$

DATE: Aug-08
DESIGNED BY: CDS/CJH

PROJECT NAME: WARBLER WOODS WEST PHASE 2 SUBDIVISION

PROJECT FILE NO. 1614-03223

LOCATION				AREA			POPULATION						SEWAGE FLOWS			SEWER DESIGN						PROFILE				
																									INVERT ELEVATION	
AREA No.	STREET	FROM MANHOLE	TO MANHOLE	NET OR GROSS	DELTA HECTARES	TOTAL HECTARES	PER HECTARE	PER LOT	NO. OF LOTS	DELTA POP.	TOTAL POP.	PEAKING FACTOR	INFILT L/s	SEWAGE L/s	Q TOTAL L/s	PIPE SIZE mm	n	SLOPE %	CAP L/s	VELOCITY m/s	LENGTH m	FALL IN SEWER	HEADLOSS IN U.S. MH	DROP IN MANHOLE	U.S.	D.S.
A1	SUMAC WAY	S16	S15	N	0.52	0.52		3	7	21	21	4.38	0.05	0.29	0.34	200	0.013	3.50	61.36	1.95	50.2	1.757	0.000	0.000	275.786	274.029
EXT5	SUMAC WAY	STUB	S15	N	1.77	1.77	180			319	319	4.07	0.18	4.12	4.30	200	0.013	0.50	23.19	0.74	6.5	0.033	0.000	0.000	271.311	271.278
A2	SUMAC WAY	S15	S14	N	0.22	2.51		3	3	9	349	4.05	0.25	4.49	4.74	200	0.013	0.75	28.40	0.90	22.3	0.167	0.000	2.781	271.248	271.081
A3	SUMAC WAY	S14	S13	N	0.17	2.68		3	1	3	352	4.05	0.27	4.53	4.80	200	0.013	0.80	29.34	0.93	32.3	0.258	0.000	0.030	271.051	270.793
A4	SUMAC WAY	S13	S12	N	0.10	2.78		3	1	3	355	4.05	0.28	4.57	4.85	200	0.013	0.85	30.24	0.96	19.9	0.169	0.000	0.030	270.763	270.594
A5	SUMAC WAY	S12	S11	N	0.78	3.56		3	10	30	385	4.03	0.36	4.93	5.29	200	0.013	0.85	30.24	0.96	87.0	0.740	0.000	0.030	270.564	269.824
A6	SUMAC WAY	S11	S10	N	0.62	4.18		3	8	24	409	4.02	0.42	5.23	5.64	200	0.013	1.00	32.80	1.04	77.3	0.773	0.000	0.297	269.527	268.754
EXT1	RIVERBEND ROAD	EXT1	STUB	N	18.88	18.88				898	898	3.83	1.89	10.95	12.83											
A7	RIVERBEND ROAD	STUB	S10	N	0.01	18.89		3	0	0	898	3.83	1.89	10.95	12.83	200	0.013	0.35	19.40	0.62	11.5	0.040	0.000	0.000	268.889	268.849
A8	RIVERBEND ROAD	S10	S9	N	0.13	23.20		3	0	0	1307	3.72	2.32	15.48	17.80	200	0.013	0.50	23.19	0.74	52.6	0.263	0.000	0.300	268.549	268.286
EXT3	RIVERBEND ROAD	STUB	S9	N	2.07	2.07	180			373	373	4.04	0.21	4.79	5.00	200	0.013	0.50	23.19	0.74	9.8	0.049	0.000	0.000	268.099	268.050
A9	RIVERBEND ROAD	S9	S8	N	0.24	25.51		3	0	0	1680	3.64	2.55	19.48	22.03	200	0.013	0.60	25.40	0.81	91.5	0.549	0.000	0.286	268.000	267.451
A10	RIVERBEND ROAD	S8	S7	N	0.18	25.69				0	1680	3.64	2.57	19.48	22.05	200	0.013	0.60	25.40	0.81	69.8	0.419	0.000	0.050	267.401	266.982
A11	RIVERBEND ROAD	S7	S6	N	0.17	25.86				0	1680	3.64	2.59	19.48	22.06	200	0.013	1.20	35.93	1.14	69.8	0.838	0.000	1.500	265.482	264.645
A12	RIVERBEND ROAD	S6	S5	N	0.13	25.99				0	1680	3.64	2.60	19.48	22.08	200	0.013	0.60	25.40	0.81	51.5	0.309	0.000	1.399	263.246	262.937
A13	RIVERBEND ROAD	S5	S4	N	0.15	26.14				0	1680	3.64	2.61	19.48	22.09	200	0.013	0.60	25.40	0.81	63.6	0.382	0.000	1.200	261.737	261.355
EXT4	RIVERBEND ROAD	STUB	S4	N	47.52	47.52				5037	5037	3.24	4.75	51.98	56.73	300	0.013	0.38	59.61	0.84	18.1	0.069	0.000	0.300	258.339	258.270
A14	RIVERBEND ROAD	S4	S3	N	0.11	73.77				0	6717	3.12	7.38	66.78	74.16	300	0.013	0.75	83.74	1.18	42.5	0.319	0.000	0.030	258.240	257.921
A15	RIVERBEND ROAD	S3	S2	N	0.14	73.91				0	6717	3.12	7.39	66.78	74.17	300	0.013	0.75	83.74	1.18	57.1	0.428	0.000	0.030	257.891	257.463
A16	RIVERBEND ROAD	S2	S1B	N	0.05	73.96				0	6717	3.12	7.40	66.78	74.18	300	0.013	0.75	83.74	1.18	22.5	0.169	0.000	0.030	257.433	257.264
A17	RIVERBEND ROAD	S1B	S1	N	0.06	74.02				0	6717	3.12	7.40	66.78	74.18	300	0.013	0.75	83.74	1.18	25.5	0.191	0.000	0.030	257.234	257.043
A18	RIVERBEND ROAD	S1	Ex MH104	N	0.17	74.19				0	6717	3.12	7.42	66.78	74.20	300	0.013	0.75	83.74	1.18	68.4	0.513	0.000	0.030	257.013	256.500

AS CONSTRUCTED NOTES	AS CONSTRUCTED SERVICES	COMPLETION			No.	REVISIONS	DATE	BY
	SAN SEWERS, PDC's & M.H.'s	JUNE 2014	DESIGN	JKA/SGWB	1	REVISIONS AS PER CITY COMMENTS	NOV 15/10	SGWB
	STM SEWERS, PDC's & M.H.'s	JUNE 2014	DRAWN	JKA/SGWB	2	REVISIONS AS PER CITY COMMENTS	MAR 8/11	CH/SB
	W.M. & W.S	JUNE 2014	CHECKED	AG	3	REVISIONS AS PER CITY COMMENTS	MAR 30/11	SGWB
	GRANULAR BASE	JUNE 2014	APPROVED	AG	4	REVISED WATER SERVICING	JAN 11/12	CHK
	CURB & GUTTERS & SIDEWALKS	OCT 2014	DATE	AUG '10	5	REVISED AS PER CITY COMMENTS	MAR 2012	CJH
	PAVING — I BASE	OCT 2014			6	AS-CONSTRUCTED	DEC 2014	PS
	II SURFACE							

CONSULTANT OR DIVISION

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London CANADA

CORPORATION OF THE CITY OF LONDON

SCALE

TITLE: WARBLER WOODS WEST PHASE 2 SUBDIVISION
SIFTON PROPERTIES LIMITED

SANITARY & STORM DESIGN SHEETS

PROJECT No. 33M-638

SHEET No. 7 of 25

PLAN FILE No. 25254

STRIK BALDINELLI MONIZ
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Sanitary Service Design Sheet (Proposed Riverbend Road Outlet)

City of London

Date: December 17, 2021
Job Number: SBM-20-3418
Client: Oxford West Gateway (c/o York Developments)
Project: Proposed 10 Story Apartment Building
Location: 1856 - 1870 Oxford Street West, London, ON
Designed By: KJC
Reviewed By: JE

Residential Population Densities

(A) Area Basis

Low Density Residential (Single Family/Semi-Detached)	= 30 Units/hectare @ 3 people/unit
Medium Density Residential (Multi-Family/Townhouse)	=75 Units/hectare @ 2.4 people/unit
High Density Residential (Apartment Buildings)	=150-300 Units/hectare @ 1.6 people/unit
Commercial = 100 people/hectare	

Daily Flow (L/cap/day)	230 *
Sewage Infiltration (Litres/hectare/day)	8640
Harmon Formula (Peaking Factor), M = (1 + 14/(4+P^0.5))	
Uncertainty Factor	1.1

Location				Area			Population					Sewage Flows				Sewer Design					
Area No.	Street Name	From MH	To MH	Net or Gross	Delta Hectare	Total Hectare	People Per Hectare	People Per Lot	No. of Lots	Delta Pop.	Total Pop. (230 L/day)	Harmon Peaking Factor	Infilt. L/S	Sewage L/S	Total L/S	Dia. mm	n	Pipe Slope %	Capacity L/S	Velocity m/s	Percentage Full %
Proposed Development																					
Proposed 10 Story Building	-	-	-	-	-	-	-	1.6	223	357											
Prop. 7 Comm. Units	-	-	-	-	0.09 **	-	100	-	-	9											
Total	**Oxford Street West**	-	-	-	-	0.89	-	-	-	366	366	4.04	0.09	4.33	4.42	200	0.013	1.00%	32.82	1.04	13.5
A8	**Riverbend Road**	S10	S9	N	0.13	23.20		3.0	0.0	0	1307	3.72	2.32	14.24	16.56	200	0.013	0.50%	23.21	0.74	71.4
EXT3	**Riverbend Road**	STUB	S9	N	2.07	2.07	180			373	373	4.04	0.21	4.41	4.62	200	0.013	0.50%	23.21	0.74	19.9
A8(1) Proposed Development	**Riverbend Road**	Prop. Building	S9	N	0.89	0.89				366	366	4.04	0.09	4.33	4.42	200	0.013	1.00%	32.82	1.04	13.5
A9	**Riverbend Road**	S9	S8	N	0.24	26.40		3.0	0.0	0	2046	3.58	2.64	21.44	24.08	200	0.013	0.60%	25.42	0.81	94.7
A10	**Riverbend Road**	S8	S7	N	0.18	26.58				0	2046	3.58	2.66	21.44	24.10	200	0.013	0.60%	25.42	0.81	94.8
A11	**Riverbend Road**	S7	S6	N	0.17	26.75				0	2046	3.58	2.67	21.44	24.11	200	0.013	1.20%	35.95	1.14	67.1
A12	**Riverbend Road**	S6	S5	N	0.13	26.88				0	2046	3.58	2.69	21.44	24.13	200	0.013	0.60%	25.42	0.81	94.9
A13	**Riverbend Road**	S5	S4	N	0.15	27.03				0	2046	3.58	2.70	21.44	24.14	200	0.013	0.60%	25.42	0.81	95.0
EXT4	**Riverbend Road**	Stub	S4	N	47.52	47.52				5037	5037	3.24	4.75	47.82	52.57	300	0.013	0.38%	59.65	0.84	88.1
A14	**Riverbend Road**	S4	S3	N	0.11	74.66				0	7083	3.10	7.47	64.33	71.80	300	0.013	0.75%	83.80	1.19	85.7
A15	**Riverbend Road**	S3	S2	N	0.14	74.80				0	7083	3.10	7.48	64.33	71.81	300	0.013	0.75%	83.80	1.19	85.7
A16	**Riverbend Road**	S2	S1B	N	0.05	74.85				0	7083	3.10	7.48	64.33	71.81	300	0.013	0.75%	83.80	1.19	85.7
A17	**Riverbend Road**	S1B	S1B	N	0.06	74.91				0	7083	3.10	7.49	64.33	71.82	300	0.013	0.75%	83.80	1.19	85.7
A18	**Riverbend Road**	S1	EX MH104	N	0.17	75.08				0	7083	3.10	7.51	64.33	71.84	300	0.013	0.75%	83.80	1.19	85.7

* Sanitary per capita flows of 230 L/s per March 2021 City of London DS&RM

** Commercial area comprises of commercial floor area within the proposed 10 story building to develop an equivalent commercial population. Refer to Overall Key Plan & Main Floor/Parking Plan prepared by Patrick David Trottier dated November 29, 2021.

Design Parameters obtained from Section 3.8 in the City of London DS&RM

Refer to Overall Site Plan and Zoning Chart prepared by SBM dated March 11, 2021.

Refer to City of London Wharbler Woods West Phase 2 Subdivision Sanitary & Storm Design Sheets by Stantec Sheet 7 Dated December 2014

Refer to City of London Wharbler Woods West Phase 2 Subdivision Sanitary Drainage Area Plan by Stantec Sheet 3 Dated December 2014