1579 & 1589 Fanshawe Park Road East

Preliminary Servicing Report

Project Location:
1579 & 1589 Fanshawe Park Road East
London, Ontario

Prepared for:
1433506 Ontario Inc.
1579 Fanshawe Park Road East
London, Ontario N5X 3Z9

Prepared by:
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May 12, 2026

MTE File No.: 65865_001

Engineers, Scientists, Surveyors.

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1.0 INTRODUCTION

MTE Consultants Inc. (MTE) has been retained by 1433506 Ontario Inc. to undertake a Preliminary Servicing Report in support of the proposed Zoning By-Law Amendment (ZBA) Application for the property at 1579 and 1589 Fanshawe Park Road East in London.

The property is 3.45Ha in size and currently contains a small office building, asphalt/gravel parking areas and a large, vegetated area. The developed portion of the site is 1.84Ha in size. The remainder of the site is proposed to be open space.

The surrounding lands include residential development to the north and east, and a large forest patch to the south and west.

It is proposed to develop the site with 176 stacked townhouses units, a mid rise apartment building with 67 units while keeping the existing small, office building. Please refer to the attached concept site plan included in **Appendix A**. It is important to note that this is a conceptual site plan only and the final site layout will be determined at the future site plan stage of the process.

This report details the preliminary servicing (water, sanitary and storm) for the proposed development.

1.1 Background Documents:

The following background materials were reviewed and referenced for the development:

- City of London Design Specifications and Requirements Manual (updated January 2025)
- As-Built City of London Record Drawings 29968 and 29977 (MTE Consultants Inc,. 2021)
- Feature Based Water Balance Memo (MTE Consultants Inc., May 2026)
- Preliminary Geotechnical Engineering (MTE Consultants Inc., June 2025)
- Preliminary Hydrogeological Assessment (MTE Consultants Inc., May 2025)

2.0 WATER SERVICING

Water servicing is available from the existing 200mm diameter watermain at Cedar Park Drive and Aukett Drive as well as the existing trunk 1200mm diameter watermain on Fanshawe Park Road East. This area is within the City of London low-level system and has an HGL of 301.8m.

It is anticipated that a looped site watermain will be required for the reasons outlined below:

- There will be over 250 units in the development.
- The fire flow requirement for the stacked townhouses will be high, around 105 L/s. This high fire flow will require more than one feed to meet City of London watermain velocity requirements. A single 200mm watermain feed, can provide a fire flow of 75 L/s with a maximum velocity of 2.4 m/s.

For the purposes of this preliminary report, we have assumed a looped 200mm diameter watermain will be required.

Please refer to the attached **Figure 1**, Preliminary Watermain Plan which outlines the watermain servicing for the development. A 200mm diameter watermain loop is proposed with double check valve chambers at both connection locations. This plan conceptually shows watermain sizes and fire hydrant locations for the development.

As previously outlined the site plan layout is conceptual only. Detailed fire flow calculations, watermain modelling and watermain design will be completed during the future site plan stage of the process, when the final site layout and unit count are determined.

SANITARY SERVICING

Sanitary servicing is available from the existing 200mm diameter sanitary sewer at Cedar Park Drive and Aukett Drive.

The original sanitary design allowance for the outlet sanitary sewer on Aukett Drive is outlined on City of London Record Drawing 29968 (MTE Consultants Inc,. 2021). This drawing outlines a maximum externa) population of 713 people can be serviced into the Aukett Drive sanitary sewer.

We have calculation the population for the proposed development below:

- 176 stacked townhouses units: population = 176 x 2.4 = 422 people
- 67 apartment units: population= 67 x 1.6 = 107 people
- Existing office building. Approximately size of existing building plus associated parking area and landscape area = 0.21 Ha. 0.21 x 100 people/Ha = 21 people
- Total estimated population = 422 + 107 + 21= 550 people

As the estimated population of 550 people is below the original sanitary design allowance of 713 people, there is sufficient sanitary capacity to service the anticipated sanitary flows from the proposed development.

Please refer to the attached **Figure 2**, Concept Sanitary Plan, which outlines the proposed sanitary servicing for the development.

As previously outlined the site plan layout is conceptual only. Further sanitary design calculations and detailed sanitary design will be completed during the future site plan stage of the process, when the final site layout and unit count are determined.

3.0 STORMWATER SERVICING AND STORMWATER MANAGEMENT

3.1 General

As previously outlined:

- The property land area is 3.45Ha in size.
- It is proposed to develop a 1.84Ha portion of the site with stacked townhouses and a mid rise apartment building.
- The remainder 1.61Ha of the site will be open space area. This area will be not altered or graded.

This stormwater component of this report focuses on the 1.84Ha development portion of the site.

3.2 Pre-development Drainage

Please refer to the attached **Figure 3A**, Pre-Development Drainage Plan. As outlined in this figure:

- The development site area is outlined as Area 2. This area is 1.84Ha in size, with an associated pre-development C=0.30. This area drains west to the existing woodland/wetland.
- There is an existing external drainage area (Area E1) which drains through Area 2, discharging west to the existing woodlot/wetland. Area E1 is 0.36Ha in size with a runoff coefficient of 0.50.

We have estimated the pre-development peak flow runoff for site below:

- Area 2 (Area=1.84Ha, C= 0.30)
- 1:5 year runoff: Q=2.78CIA = 2.78 (0.30)(76)(1.84) = 116L/s
- 1:10 year runoff: Q=2.78CIA = 2.78 (0.30)(90)(1.84) = 138L/s
- 1:100 year runoff: Q=2.78CIA = 2.78 (0.30)(131)(1.84) = 201L/s
- I based on 19 minutes time of concentration.

3.3 Post-development Drainage

There are no existing storm sewers which can provide servicing the property. As such, we have developed a post-development drainage plan in which the post-development drainage will follow the same pattern as the pre-development drainage and discharge stormwater flows to the west to the existing woodlot/wetland.

Please refer to **Figure 3B**: Preliminary Storm Drainage Plan which outlines the post-development drainage for the site.

3.3.1 Post-development Drainage Criteria

MTE Consultants has completed a scoped Environmental Impact Study (EIS) for the development. Through collaboration with the MTE EIS group, the following criteria have been established for the post-development storm drainage for the 1.84Ha development area.

- Similar to the pre-development condition, the post-development drainage will discharge storm flows to the existing woodlot/wetland to the west.
- The development will manage the site runoff to provide an annual runoff water balance to the adjacent woodlot/wetland. In summary the post-development annual runoff water balance from the site to the adjacent woodlot/wetland will be maintained to the pre-development condition.
- On-site stormwater quantity control (peak flow control) will be provided to limit the post development peak flows to the woodlot/wetland to pre-development levels, for storms upto the 1:100-year event.
- Level 1 (enhanced) quality control will be provided for the site.

3.3.2 Post-Development Drainage Plan

Please refer to **Figure 3B**: Preliminary Storm Drainage Plan which outlines the proposed drainage for the site. This plan outlines:

- The internal stormwater drainage system will consist of internal CB, CBMHs and underground storm sewers.
- Site Area A3 represents the controlled stormwater area. Stormwater from this area will outlet to three separate underground storage/infiltration systems. The storage/infiltration systems will store the stormwater underground and the stormwater will be infiltrated into the native sandy loam material. An ADS storage/infiltration system or similar system will be utilized.
- Prior to discharge to the three underground storage/infiltration systems, three separate OGS units will provide quality control. The OGS units will be located immediately upstream of the underground storage/infiltration systems.
- The underground storage/infiltration systems will contain an infiltration component and associated storage for infiltration as well as a storage component for overall peak flow control.
- The underground storage/infiltration systems will outlet to an underground storm sewer which will discharge to the open space, located immediately to the west.
- Site Areas A1 and A2 represent uncontrolled stormwater areas. Stormwater from these areas will flow uncontrolled and discharge to the open space to the west.
- External Area E1 will be drained with a series of CBMHs located along the east property line and then conveyed through the underground storm sewers within the site, discharging uncontrolled flows to the open space to the west.
- The storage capacity of the storage/infiltration systems is outlined on the plan. A total of 585m3 of underground storage will be provided. This includes both infiltration storage (dead storage) and quantity control storage (active storage).

3.3.3 Feature Based Water Balance for Site Drainage to Adjacent Woodlot/Wetland

The 1.84Ha development area is located adjacent to a woodlot/wetland. To mimic the pre-development condition, drainage from the site will be discharged to the adjacent woodlot/wetland. An overall annual water balance assessment has been completed using the Thornthwaite and Mather method.

The analysis showed that if 12.5mm of runoff were targeted for infiltration from the controlled areas of the site, the annual surface runoff from the site to the adjacent woodlot/wetland will be maintained.

Please refer to the following attached water balance documents in **Appendix B**.

- Overall MTE calculation sheet for pre-development vs post-development water balance. This sheet outlines the annual evapotranspiration, runoff and infiltration amounts for the 1.84 Ha development site area for both the pre-development and post-development conditions. The runoff parameter represents the runoff from the 1.84 Ha site area to the adjacent woodlot/wetland. As shown in red in this calculation sheet the post-development runoff essentially matches the pre-development runoff.
- Feature Based Water Balance Memo (MTE Consultants Inc., May 2026). This memo outlines the calculations and assessment used to complete the water balance for the pre-development condition.

In summary, water balance (runoff) from the site to the adjacent feature (ie adjacent woodlot/wetland) has been maintained to the pre-development levels:

- Pre-development runoff from the 1.84Ha site to the feature = 3,738m3 per year.
- Post-development runoff from the 1.84Ha site to the feature = 3,780m3 per year.

The attached calculations are based on a total infiltration amount of 157m3. This equates to an overall capture and infiltration of the first 12.5mm of runoff from the controlled areas. As such, the proposed underground storage system has been designed with a 'dead' storage volume of 157m^3 (12.5mm x 1.25ha = 156.3m^3). This volume will be stored underground and infiltrated into the native sandy loam soils.

3.3.4 Quantity Control

On-site stormwater quantity control (peak flow control) will be provided to limit the post development flows to the adjacent woodlot/wetland to below pre-development levels, for storms upto the 1:100-year event.

As outlined in Section 4.2, the 1:100 pre-development site discharge is 201L/s.

The following two site areas will discharge uncontrolled:

- Area A1 (Area=0.21 Ha, C=0.50)
- Area A2 (Area=0.38 Ha, C=0.75)

The combined 1:100-year flows from these two uncontrolled areas:

- 1:100-year runoff: Q=2.78CIA = 2.78 [(0.50)(131)(0.21) + [(0.75)(131)(0.38)] = 142L/s
- I based on 19 minutes time of concentration.

The maximum 1:100-year discharge for the controlled areas are 201-142 = 59L/s

Area A3 (1.25Ha, C=0.75) will be controlled to a maximum 1:100-year discharge rate of 55L/s.

Please refer to the modified rational method storage calculations attached in **Appendix B**. As shown in the calculations, 380m3 of storage is required to provide 1:100-year post-development flow control.

In summary:

- 1:100-year pre-development site outflow to woodlot/wetland (1.84 Ha) = 201L/s
- 1:100-year post-development site outflow to woodlot/wetland (1.84 Ha) = 142 + 55 = 197L/s

A total of 380m3 of active storage will be required to achieve the flow control. In summary the underground storage/infiltration system will provide:

- 160m3 of infiltration storage (dead storage) to maintain provide the water balance
- 380m3 of quantity storage (active storage) to control the 1:100-year post-development peak flows to the pre-development rates
- Total storage required = 160 + 380 = 540m3

For the purposes of this preliminary report, the underground storage/infiltration system has been sized for a total storage of 585m3 which exceeds the 540m3 requirement.

3.3.5 Quality Control

As shown in **Figure 3A**; three separate oil grit separator (OGS) units are proposed for the development. The OGS units will provide quality control for all asphalt areas prior to infiltration as well as overall quality control for all asphalt areas prior to site discharge to the adjacent woodlot/wetland.

The OGS units will be designed to provide Level 1 (enhanced) quality control.

3.3.6 Detailed Design and Modelling

The SWM calculations outlined in this report are preliminary in nature and support the zoning change for the property. The SWM calculations and modelling are based on the Concept Site Plan which is conceptual only and subject to change.

Detailed SWM calculations and modelling will be dependent on the final site plan. A detailed SWM report will be prepared during the site plan stage of the process, after the final site plan layout has been determined.

This report assesses flow control and storage for the 1:100 year event, which is the event that produces the maximum required storage. During the final report, pre/post calculations will be completed for smaller storm events to ensure the pre-development discharges to the adjacent open space are not exceeded for smaller storm events. During the final design it may be possible to reduce the size of the underground storage system:

- The dead storage volume for the underground system could be reduced by factoring in the native sandy soil infiltration rates.
- The dead and active storage could be partially overlapped to reduce the overall storage requirement.

These details will be reviewed during the final design of the SWM system.

4.0 EROSION AND SEDIMENT CONTOL

Prior to construction, erosion and sediment control (ESC) measures will be installed. The proposed ESC measures are outlined below:

- Heavy duty silt fence(with straw bales) to be located along the open space block.
- Light duty silt fence to be located around the property perimeter in all other areas.
- Silt sacks will to be provided at all CBs and CBMHs.
- Mud mats to be provided at the site entrances.
- Roadways and sidewalks to be kept clean of sediments resulting from construction traffic.
- Any disturbed areas will be stabilized after construction or where work will not take place for 30 days. Stabilization will consist of broadcast seeding during the spring, summer or fall.

The details and locations of the proposed ESC devices will be shown on the detailed engineering plans that will be completed during the site plan stage of the development.

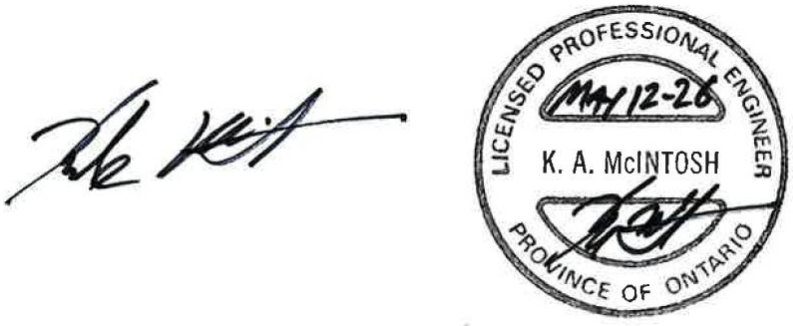
5.0 CONCLUSIONS

Based on this report, it is concluded that:

- A looped site watermain will provide water servicing for the site.
- The existing sanitary sewer on Aukett Drive will provide sanitary servicing for the site.
- A portion of the site drainage will be infiltrated with an underground infiltration/storage system. The remainder of the site drainage will be controlled and discharged to the adjacent woodlot/wetland to mimic the pre-development site condition.
- The site will maintain the water balance to the adjacent woodlot/wetland.
- The flows discharging to the adjacent woodlot/wetland will be controlled to below the pre-development levels for all storms upto the 1:100-year event. Storage will be provided in the underground infiltration/storage system.
- Level 1 (enhanced) stormwater quality control will be provided.
- Adequate sediment and erosion control will be provided prior to construction.
- Detailed engineering design including water, sanitary and stormwater modelling will be completed during the future stage plan stage of the process.

All of which is respectfully submitted,

MTE Consultants Inc.



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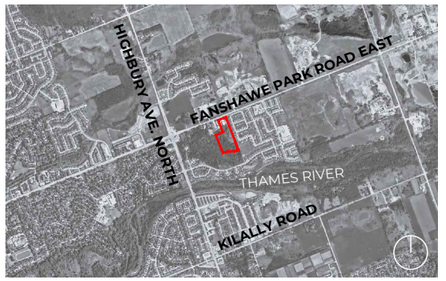
https://mte85.sharepoint.com/sites/65865_001/Shared Documents/03- Reports/65865_001_2026-05-07_PSR_1579 & 1589 Fanshawe Park Road East.docx

Appendix A

Conceptual Site Plan
Figure 1: Preliminary Watermain Plan
Figure 2: Preliminary Sanitary Plan
Figure 3A: Pre-Development Drainage Plan
Figure 3B: Preliminary Storm Drainage Plan

PRELIMINARY
DRAFT PLAN OF CONDOMINIUM

1589 & 1579 FANSHAWE PARK ROAD EAST



LAND USE BREAKDOWN				
LAND USE	**Ha**	**%**	**UNITS**	**DENSITY**
STACKED TOWNS **BLOCK 1**	1.19	64	176	148
MID RISE APARTMENT **BLOCK 2**	0.37	20	60	162
HERITAGE BUILDING **BLOCK 3**	0.09	5		
WIDENING **BLOCK 4**	0.02	1		
PATHWAY **BLOCK 5**	0.19	10		
DEVELOPMENT AREA	1.86	100	236	
OPEN SPACE **BLOCK 6**	1.58			
TOTAL	3.44			

PARKLAND CALCULATION			
BLOCK / CLASSIFICATION	**AREA (Ha)**	**PARK**	**RATIO**
BLOCK 5 NON CONSTRAINED PARK (OUTSIDE 30m BUFFER)	0.138	0.1380	1:1
CONSTRAINED PARK	0.056	0.0019	30:1
SUB TOTAL	0.194	0.1399	
BLOCK 6 CONSTRAINED AREA WITH BUFFER	1.5800	0.0527	30:1
TOTAL SITE AREA	1.97	0.1925	

Nov 26, 2024

24-1500

SCALE 1: 1500 (11x17)

0 15 30 45m

Monteith+Brown planning consultants

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N6H 1S5
519.686.1300
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CAD: P:\P\65865_001\65865_001.DWG

CEDAR PARK DRIVE

EX. 200ø WATERMAIN

EX. 200ø WATERMAIN

AUKETT DRIVE

CONNECT TO EXISTING 200ø STUB

EX. 200ø WATERMAIN

EX. 1200ø WATERMAIN

FANSHAWE PARK ROAD EAST

200ø WATERMAIN

DOUBLE CHECK VALVE CHAMBER

EXISTING RESIDENTIAL

EXISTING RESIDENTIAL

GARAGE

EX. HERITAGE BUILDING

FIRE HYDRANT

200ø WATERMAIN

200ø WATERMAIN

150ø WATERMAIN

150ø WATERMAIN

FIRE HYDRANT

200ø WATERMAIN

CONNECT TO EXISTING WATERMAIN

DOUBLE CHECK VALVE CHAMBER

6 STOREY APARTMENT 60 UNITS

EX. 1200ø WATERMAIN

EXISTING PARKING LOT

EXISTING FUNERAL HOME

BLOCK 6
OPEN SPACE
1.58 Ha

Plot Date: May 5, 2026 - 2:37 PM

MTE
Engineers, Scientists, Surveyors

PROJECT
1579 & 1589 FANSHAWE PARK ROAD EAST

TITLE
PRELIMINARY WATERMAIN PLAN

Drawn	Scale	Figure
AJH	1:750	1
Checked: KAM	Project No.: 65865_001	
Date: 2026-04-21	Rev No.: 0	

CAD: P:\P\65865_001\65865_001.DWG

CEDAR PARK DRIVE

EX. 200ø SANITARY

EX. 200ø SANITARY

AUKETT DRIVE

EX. 200ø SANITARY

CONNECT TO EXISTING SANITARY MANHOLE

200ø SANITARY

EXISTING RESIDENTIAL

EXISTING RESIDENTIAL

FANSHAWE PARK ROAD EAST

GARAGE

EX. HERITAGE BUILDING

150ø SANITARY

150ø SANITARY

200ø SANITARY

200ø SANITARY

200ø SANITARY

200ø SANITARY

200ø SANITARY

6 STOREY APARTMENT 60 UNITS

EXISTING PARKING LOT

EXISTING FUNERAL HOME

BLOCK 6
OPEN SPACE
1.58 Ha

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PROJECT
1579 & 1589 FANSHAWE PARK ROAD EAST

TITLE
PRELIMINARY SANITARY PLAN

Drawn	Scale	Figure
AJH	1:750	2
Checked	Project No.	
KAM	65865_001	
Date	Rev No.	
2026-04-21	0	

Plot Date: May 5, 2026 - 2:38 PM

CAD: P:\P\65865_001\65865_001.DWG

CEDAR PARK DRIVE

O'HANLAN LANE

AUKETT DRIVE

FANSHAWE PARK ROAD EAST

EXISTING RESIDENTIAL

EXISTING RESIDENTIAL

E1
0.36
0.50

EXISTING ASPHALT

EXISTING GARAGE

EXISTING GREENHOUSE

EXISTING HERITAGE BUILDING

EXISTING GRAVEL

EXISTING ASPHALT

EXISTING ASPHALT

2
1.84
0.30

EXISTING PARKING LOT

EXISTING FUNERAL HOME

LEGEND

- OVERLAND FLOW DIRECTION
- CATCHMENT BOUNDARY
- 201 — SUB-CATCHMENT AREA
- 3.16 — AREA (Ha)
- 0.60 — RUN-OFF COEFFICIENT

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PROJECT
1579 & 1589 FANSHAWE PARK ROAD EAST

TITLE
PRE-DEVELOPMENT DRAINAGE PLAN

Drawn	Scale	Figure
AJH	1:750	3A
Checked	Project No.	
KAM	65865_001	
Date	Rev No.	
2026-04-21	0	

Plot Date: May 7, 2026 - 1:35 PM

CAD: P:\P\65865_001\65865_001.DWG

Plot Date: May 7, 2026 - 11:07 AM

CEDAR PARK DRIVE

AUKETT DRIVE

FANSHAWE PARK ROAD EAST

EXISTING RESIDENTIAL

EXISTING RESIDENTIAL

UNDERGROUND INFILTRATION/STORAGE SYSTEM 1

UNDERGROUND INFILTRATION/STORAGE SYSTEM 3

UNDERGROUND INFILTRATION/STORAGE SYSTEM 2

E1
0.36
0.50

A1
0.21
0.60

A2
0.38
0.75

A3
1.25
0.80

GARAGE

EX. HERITAGE BUILDING

6 STOREY APARTMENT 60 UNITS

CBMH

MH

OGS

OUTLET

HEADWALL

BLOCK 6
OPEN SPACE
1.58 Ha

LEGEND

- STORM SEWER & MANHOLE
- OVERLAND FLOW DIRECTION
- UNDERGROUND INFILTRATION/STORAGE SYSTEM
- CATCHMENT BOUNDARY
- 201 / 3.16 / 0.60 — SUB-CATCHMENT AREA / AREA (Ha) / RUN-OFF COEFFICIENT

INFILTRATION/STORAGE SYSTEM

ID	AREA (m^2)	DEPTH (m)	STORAGE VOLUME (m^3) (WITH 0.65 RATIO)
1	255	1.0	
2	360	1.0	
3	285	1.0	
TOTAL	900		585

MTE
Engineers, Scientists, Surveyors

PROJECT
1579 & 1589 FANSHAWE PARK ROAD EAST

TITLE
PRELIMINARY STORM DRAINAGE PLAN

Drawn: AJH	Scale: 1:750	Figure: **3B**
Checked: KAM	Project No.: 65865_001	
Date: 2026-04-21	Rev No.: 0	

Appendix B

Water Balance Calculations
Feature Based Water Balance Memo
Stormwater Quantity Calculations

1589 &1579 Fanshawe Park Road East
POST-DEVELOPMENT SITE WATER BUDGET ANALYSIS
London, Ontario

NOTE: THIS ANALYSIS IS THE PRE-DEVELOPMENT VS POST-DEVELOPMENT WATER BALANCE FROM THE 1.84 HA SITE AREA TO THE ADJACENT WOODLOT/WETLAND

Project Number: 65865-001
Date: March 27, 2026
Design By: JJM
File: Q:\65865_001\Water Balance\65865-001_POST Water Balance.xlsx

Landuse			Uncontrolled Areas - Fine Sandy Loam (mm)			Controlled Areas - Fine Sandy Loam (mm)			Post Dev. (Unmitigated) Total (mm)			Post-Dev. (Unmitigated) Total (m^3)			Post Dev. (Mitigated) Total (mm)			Post-Dev. (Mitigated)* Total (m^3)			Pre-Development Total (mm)			Pre-Development Total (m^3)		
Area (ha)			0.59			1.25			1.84						1.84			1.84			1.84					
Month	T (Cº)	P (mm)	ET	R	I	ET	R	I	ET	R	I	ET	R	I	ET	R	I	ET	R	I	ET	R	I	ET	R	I
Jan	-5.4	78.6	0.0	7.7	5.1	0.0	8.2	5.5	0.0	8.1	5.4	0	148	99	0.0	3.2	10.2	0	59	188	0.0	6.2	4.2	0	115	77
Feb	-4.8	62.8	0.0	3.9	2.6	0.0	4.1	2.7	0.0	4.0	2.7	0	74	49	0.0	2.0	4.7	0	38	86	0.0	3.1	2.1	0	57	38
Mar	0.1	67.4	0.1	32.1	21.4	0.1	32.2	21.5	0.1	32.2	21.5	2	592	395	0.1	17.3	36.4	2	318	670	0.3	31.4	20.9	5	578	385
Apr	6.8	88.5	18.2	77.1	51.4	15.4	78.0	52.0	16.3	77.7	51.8	300	1430	953	16.3	38.5	91.1	300	708	1676	32.7	71.2	47.5	601	1311	874
May	13.5	88.8	44.4	51.9	34.6	37.5	54.4	36.3	39.7	53.6	35.7	731	986	657	39.7	26.1	63.2	731	480	1163	79.7	38.4	25.6	1466	706	471
Jun	18.8	85.9	81.4	45.3	30.2	68.7	50.4	33.6	72.7	48.7	32.5	1339	897	598	72.7	26.6	54.6	1339	490	1005	168.5	13.5	9.0	3100	248	165
Jul	21	80.5	46.6	33.7	22.5	39.3	38.4	25.6	41.6	36.9	24.6	766	679	453	41.6	21.9	39.6	766	403	729	87.9	6.7	4.5	1617	124	83
Aug	20.1	66.9	66.3	32.6	21.8	55.9	38.1	25.4	59.3	36.3	24.2	1091	669	446	59.3	21.8	38.7	1091	402	713	118.9	3.4	2.2	2187	62	41
Sep	16.3	92.7	45.4	27.1	18.1	38.3	32.0	21.3	40.6	30.4	20.3	746	559	373	40.6	16.4	34.2	746	303	630	81.3	1.7	1.1	1496	31	21
Oct	9.9	82.6	23.6	19.2	12.8	19.9	22.7	15.1	21.1	21.6	14.4	388	397	265	21.1	9.5	26.4	388	176	486	42.3	0.8	0.6	779	15	10
Nov	3.6	87.7	6.4	31.2	20.8	5.4	33.3	22.2	5.7	32.6	21.7	106	600	400	5.7	14.9	39.4	106	275	724	11.5	13.9	9.2	212	255	170
Dec	-2	79.2	0.0	15.8	10.5	0.0	16.8	11.2	0.0	16.5	11.0	0	303	202	0.0	7.1	20.4	0	130	375	0.0	12.8	8.6	0	236	157
Total		961.60	332.5	377.5	251.7	280.6	408.6	272.4	297.2	398.6	265.8	5,468	7,335	4,890	297.2	205.4	459.0	5,468	3,780	8,445	623.0	203.1	135.4	11,464	3,738	2,492

Where:
ET = Evapotranspiration
R= Runoff
I = Infiltration

*Mitigation is based on an infiltration gallery sized to infiltrate 12.5mm of runoff from the contributing areas.

Technical Memorandum

Project Name: Hydrogeological Investigation
1589 Fanshawe Park Road East
London, ON

MTE File No.: 61395_002

To: Adam Lagrou
Monteith Brown Planning Consultants
302-219 Oxford Street West
London, ON N6H 1S5

Date: May 7, 2026

From: Tomson Hecky, P.Geo.

RE: Desktop Feature-Based Water Balance

A desktop feature-based water balance for the pre-development (i.e., existing) condition of 1589 Fanshawe Park Road East, London (herein referred to as "the Site") was completed for the Provincially Significant Wetland (PSW) known as the Highbury Swamp (herein referred to as "the Feature") that occupies a portion of the southwest corner of the Site. The water balance was completed to provide preliminary estimates of infiltration and runoff for the feature to support the Site design.

The on-Site portion of the Feature is currently instrumented with a nested piezometer and staff gauge to monitor groundwater-surface water levels and assess their interaction (**Figure 1**).

Methodology

Following the Thornthwaite and Mather (1957) approach, the monthly water balance for the Site may be expressed as:

$$P = RO + ET + I + \Delta S$$

Where:

P = precipitation

RO = runoff

ET = evapotranspiration

I = infiltration

ΔS = change in groundwater storage (assumed to be negligible over long term)

The difference between precipitation and evapotranspiration is the estimated water surplus (WS) available for infiltration (I) and runoff (RO) and is expressed as:

$$WS = P - ET$$

The estimated water surplus is used to estimate infiltration by applying an infiltration factor (IF), as follows:

$$I = WS\ x\ IF$$

This infiltration factor (IF) is estimated based on topography, soil type and ground cover, as described in the MECP Stormwater Management Planning and Design Manual (Ministry of the Environment, 2003).

And finally, runoff (RO) is estimated from:

$$RO = WS - I$$

The following sections describes the sub-catchment areas contributing to the Feature and summarize the estimated input parameters for the water balance equation.

In the existing condition, portions of the Site provide surface and groundwater inputs to the on-Site wetland feature. In order to determine the amount of water that is being directed to the wetland feature, a monthly water budget analysis was completed using Thornwaite & Mather method (1957). The Canadian Climate Normals between 1990 and 2020 for the London Climate Station provide an average annual precipitation estimate of 961.6mm/yr for the area.

Sub-Catchment Areas

The pre-development sub-catchments that contribute water to the wetland feature are shown on **Figure 2.** The sub-catchments were delineated based on topographic contours provided by the City of London (City of London, 2019).

The land uses and hydrologic soil types for each of the sub-catchments were assessed using available aerial imagery and surficial geological mapping (Ontario Geological Survey, 2010)]. The results are summarized below in **Table 1**.

Table 1 – Sub-Catchment Characterization

Sub-Catchment ID	Land Use	Hydrologic Soil Group	Area (ha)
101A	pasture and shrubs	fine sandy loam	2.71
101B	mature forest	silt loam soil	0.73
101C	mature forest	fine sandy loam	0.03
102A	urban lawn	fine sandy loam	2.49
102B	mature forest	fine sandy loam	0.44
102C	pasture and shrubs	fine sandy loam	0.15
102D	urban lawn	silt loam soil	0.19
102E	pasture and shrubs	silt loam soil	0.14
102F	mature forest	silt loam soil	13.75
102G	mature forest	fine sandy loam	0.1
102H	urban lawn	fine sandy loam	0.69
102I	urban lawn	silt loam soil	0.21
102J	pasture and shrubs	silt loam soil	0.93

Based on the Site topography, each of the sub-catchment areas were identified as “hilly”, as defined by the Ministry of Agriculture and Food document *Determination of Runoff from Agricultural Lands Chart 2.4.*

For the purpose of estimating infiltration and run-off volumes each of the individual sub-catchment areas were combined into groupings with other sub-catchment areas that shared the same land use and hydrologic soil group classifications. Each grouping is assigned a soil moisture retention capacity and runoff factor to calculate monthly infiltration and runoff volumes in the water balance.

Precipitation

The Canadian Climate Normals (1990 to 2020) for the London Climate Station provide an average annual precipitation estimate of 961.6 millimeters per year (mm/yr) for the area (Environment Canada, 2021).

Evapotranspiration

Potential evapotranspiration (PE) is estimated in three steps as per Thornthwaite and Mather (1957):

- Heat Index (*i*) is obtained based on average monthly temperature values as provided in Table 2 of Section II of Thornthwaite and Mather (1957). *i* is zero when the average temperature is 0°C or less.
- Unadjusted PE is obtained based on average monthly temperature values as provided in Table 4 of Section II of Thornthwaite and Mather (1957). PE is zero when the average temperature is 0°C or less.
- PE is then adjusted by a correction factor used to compensate for latitude given in Tables 6 of Section III of Thornthwaite and Mather (1957).

Pre-Development Results

The results of the pre-development feature-based water balance analyses are provided in **Appendix A** and summarized in **Table 2**, below.

Table 2 - Pre-Development Feature-Based Water Balance

Month	Total ET (mm)	Total Runoff (mm)	Total Infiltration (mm)	Total ET (m^3)	Total Runoff (m^3)	Total Infiltration (m^3)
January	0.0	4.6	4.0	0	1,040	904
February	0.0	2.3	2.0	0	520	452
March	0.3	27.2	24.5	58	6,131	5,527
April	32.7	61.8	55.7	7,370	13,944	12,574
May	79.7	33.3	30.0	17,971	7,513	6,777
June	178.7	12.0	10.9	40,309	2,715	2,459
July	91.0	6.0	5.4	20,540	1,357	1,229
August	118.9	3.0	2.7	26,814	679	615
September	81.3	1.5	1.4	18,347	339	307
October	42.3	0.8	0.7	9,550	170	154
November	11.5	9.5	8.0	2,601	2,141	1,815
December	0.0	9.5	8.3	0	2,146	1,867
Annual Total	636.4	171.5	153.7	143,559	38,693	34,678

Based on the above, the estimated annual runoff and infiltration volumes contributing to the wetland feature under the pre-development condition are approximately 38,690m^3/year and 34,680m^3/year, respectively. Seasonally, the estimated monthly runoff and infiltration volumes are anticipated to peak in April with monthly volumes of approximately 13,940m^3/year and 12,570m^3/year, respectively. The lowest estimated monthly runoff and infiltration volumes are anticipated to occur in October with monthly volumes of approximately 170m^3/year and 154m^3/year, respectively.

RECOMMENDATIONS

Based on the results of the desktop feature-based water balance analysis, we recommend the following:

- Pre-development infiltration and runoff contributions within to the Feature should be maintained post-development. To the extent feasible, the stormwater design should replicate the pre-development infiltration and runoff distribution.
- Monitoring of nested piezometers and staff gauge installed at the Site be continued through construction and following build out to maintain a record of seasonal fluctuation of groundwater and surface water levels within the accessible on-site portion of the Feature and confirm the effectiveness of the stormwater design.

LIMITATIONS

The above desktop feature-based water balance is based on publicly available surficial geological and topographical mapping at the time of assessment. Actual subsurface and topographic conditions may vary from regional scale mapping which may affect the estimated infiltration and runoff volumes contributing to the feature catchment area.

It is assumed that the information provided by the Client and others is factual and accurate. MTE accepts no responsibility or liability for any deficiency, misstatements or inaccuracies contained in this *assessment* as a result of errors, omissions, misinterpretations, negligence or fraudulent acts of others.

CLOSING

We trust that this information meets your current needs. Should you have any questions or require additional information, please contact the undersigned.

All of which is respectfully submitted,

MTE Consultants Inc.

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Encl: Figures
Appendices

https://mte85.sharepoint.com/sites/61395_002/Shared Documents/5 - Deliverables/3 - Memos/61395_002_2026-05-07_Technical_Memo_1589 Fanshawe Park Road E.docx

REFERENCES

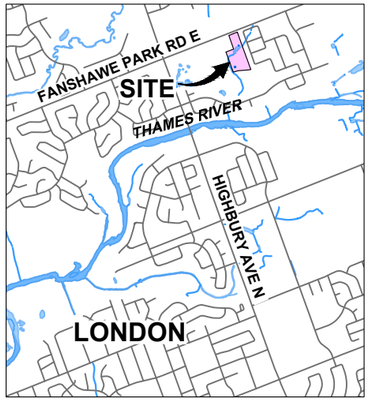
City of London. (2019, July 17). Open Data.

Environment Canada. (2021, February). *Canadian Climate Normals*. Retrieved from https://climate.weather.gc.ca/climate_normals/index_e.html

Ministry of the Environment. (2003). *Stormwater Management Planning and Design Manual.*

Ontario Geological Survey. (2010). Surficial geology of southern Ontario; Ontario Geological Survey. *Miscellaneous Relase - Data 128 - Revised*.

Figures



KEY PLAN (nts)

LEGEND

- SITE
- BOREHOLE
- BOREHOLE/MONITORING WELL
- MONITORING PIEZOMETER
- STAFF GAUGE
- (258.3m) ELEVATION (m AMSL)
- A A' GEOLOGICAL CROSS-SECTION

REFERENCES

CITY OF 2024 LONDON PARCEL, ROAD AND WATER NETWORK, AND AERIAL IMAGERY, OPEN DATA SET;
PRELIMINARY DRAFT PLAN OF CONDMINIUM, 1589 AND 1579 FANSHAWE PARK ROAD EAST, DATED: NOV 26, 2024, BY: MONTEITH BROWN PLANNING CONSULTANTS; AND
GEOSPATIAL ONTARIO, ROAD AND WATER NETWORK © KINGS PRINTER FOR ONTARIO, 2025 (key plan).

NOTES

THIS FIGURE IS SCHEMATIC ONLY AND TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

ALL LOCATIONS ARE APPROXIMATE.

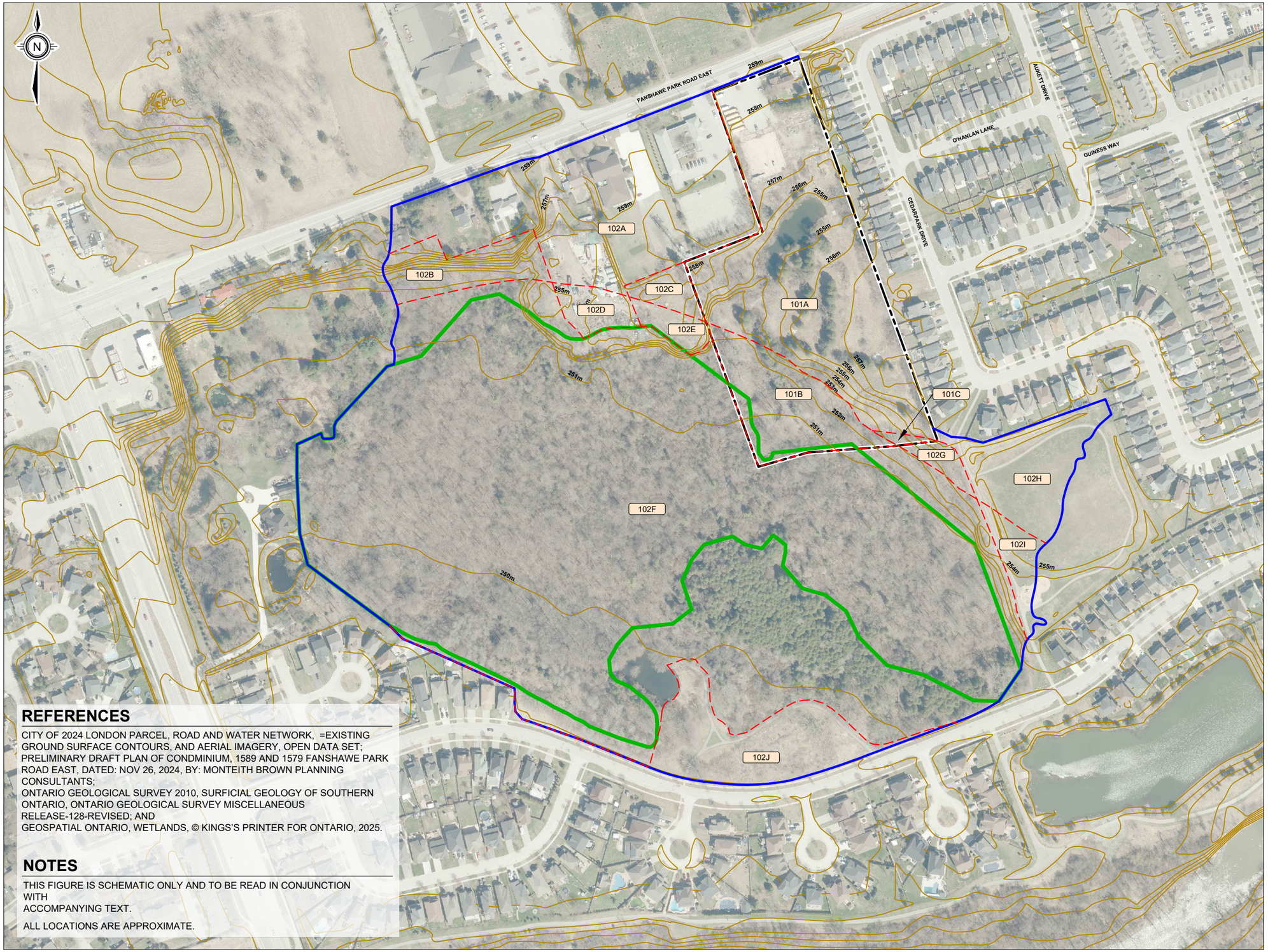
0 25 50 75m

MTE
Engineers, Scientists, Surveyors

PROJECT
FEATURE-BASED WATER BALANCE
1579 AND 1589 FANSHAWE PARK ROAD EAST
LONDON, ONTARIO

TITLE
SITE PLAN

Drawn: DCH	Scale: 1:1,500	Figure: 1
Checked:	Project No.: 61395_001	
Date: 2025-08-05	Rev No.: 0	



LEGEND

- SITE
- GROUND SURFACE CONTOUR (m AMSL)
- FEATURE
- CATCHMENT DIVIDE
- SUB-CATCHMENT DIVIDE

ON-SITE

- 101A — PASTURE AND SHRUBS (Fine Sandy Loam) (27,135m^2)
- 101B — MATURE FOREST (Silt Loam) (7,345m^2)
- 101C — MATURE FOREST (Fine Sandy Loam) (264m^2)

OFF-SITE

- 102A — URBAN LAWN (Fine Sandy Loam) (24,905m^2)
- 102B — MATURE FOREST (Fine Sandy Loam) (4,417m^2)
- 102C — PASTURE AND SHRUBS (Fine Sandy Loam) (1,478m^2)
- 102D — URBAN LAWN (Silt Loam) (1,896m^2)
- 102E — PASTURE AND SHRUBS (Silt Loam) (1,367m^2)
- 102F — MATURE FOREST (Silt Loam) (137,483m^2)
- 102G — MATURE FOREST (Fine Sandy Loam) (972m^2)
- 102H — URBAN LAWN (Fine Sandy Loam) 6,879m^2)
- 102I — URBAN LAWN (Silt Loam) (2,116m^2)
- 102J — PASTURE AND SHRUBS (Silt Loam) (9,334m^2)

0 30 60 90 120 150m

REFERENCES

CITY OF 2024 LONDON PARCEL, ROAD AND WATER NETWORK, =EXISTING GROUND SURFACE CONTOURS, AND AERIAL IMAGERY, OPEN DATA SET;
PRELIMINARY DRAFT PLAN OF CONDMINIUM, 1589 AND 1579 FANSHAWE PARK ROAD EAST, DATED: NOV 26, 2024, BY: MONTEITH BROWN PLANNING CONSULTANTS;
ONTARIO GEOLOGICAL SURVEY 2010, SURFICIAL GEOLOGY OF SOUTHERN ONTARIO, ONTARIO GEOLOGICAL SURVEY MISCELLANEOUS RELEASE-128-REVISED; AND
GEOSPATIAL ONTARIO, WETLANDS, © KINGS'S PRINTER FOR ONTARIO, 2025.

NOTES

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ACCOMPANYING TEXT.

ALL LOCATIONS ARE APPROXIMATE.

MTE
Engineers, Scientists, Surveyors

PROJECT
FEATURE-BASED WATER BALANCE
1579 AND 1589 FANSHAWE PARK ROAD EAST
LONDON, ONTARIO

TITLE
SUB-CATCHMENT AREAS

Drawn	Scale	Figure
DCH	1:3,000	2
Checked	Project No. 61395_002	
Date 2025-10-20	Rev No. 0	

CAD: P:\61395_002\61395_002-HYG1.8.DWG
Plot Date: October 20, 2025 - 3:58 PM

Appendices

1589 &1579 Fanshawe Park Road East
PRE-DEVELOPMENT SITE WATER BUDGET ANALYSIS
London, Ontario

Project Number: 61395_002
Date: October 20, 2025
Design By: TMH
File: https://mte85.sharepoint.com/sites/61395_002/Shared Documents/4 - Data and Analysis/6 - Tables/61395-002_Water Balance.xlsx

Landuse			Pasture and Shrubs - Fine Sandy Loam (mm)			Pasture and Shrubs - Silt Loam (mm)			Mature Forest - Fine Sandy Loam (mm)			Mature Forest - Silt Loam (mm)			Urban Lawn - Fine Sandy Loam (mm)			Urban Lawn - Silt Loam (mm)			Total (mm)			Total (m^3)		
Area (ha)			2.86			1.07			0.57			14.48			3.18			0.40			22.56					
Month	T (C°)	P (mm)	ET	R	I	ET	R	I	ET	R	I	ET	R	I	ET	R	I	ET	R	I	ET	R	I	ET	R	I
Jan	-5.4	78.6	0.0	6.2	4.2	0.0	3.4	5.2	0.0	5.6	2.4	0.0	3.6	3.6	0.0	8.1	5.4	0.0	4.5	6.7	0.0	4.6	4.0	0	1040	904
Feb	-4.8	62.8	0.0	3.1	2.1	0.0	1.7	2.6	0.0	2.8	1.2	0.0	1.8	1.8	0.0	4.0	2.7	0.0	2.2	3.3	0.0	2.3	2.0	0	520	452
Mar	0.1	67.4	0.3	31.4	20.9	0.3	20.6	30.9	0.3	36.0	15.4	0.3	25.6	25.6	0.3	32.2	21.4	0.3	21.0	31.6	0.3	27.2	24.5	58	6131	5527
Apr	6.8	88.5	32.7	71.2	47.5	32.7	46.8	70.3	32.7	81.9	35.1	32.7	58.2	58.2	32.7	72.8	48.5	32.7	47.7	71.5	32.7	61.8	55.7	7370	13944	12574
May	13.5	88.8	79.7	38.4	25.6	79.7	25.3	37.9	79.7	44.2	18.9	79.7	31.4	31.4	79.7	39.1	26.1	79.7	25.7	38.5	79.7	33.3	30.0	17971	7513	6777
Jun	18.8	85.9	168.5	13.5	9.0	173.5	9.0	13.6	183.9	16.0	6.9	188.5	11.6	11.6	145.9	13.5	9.0	162.9	8.9	13.4	178.7	12.0	10.9	40309	2715	2459
Jul	21	80.5	87.9	6.7	4.5	97.9	4.5	6.8	91.5	8.0	3.4	92.9	5.8	5.8	83.5	6.7	4.5	87.5	4.5	6.7	91.0	6.0	5.4	20540	1357	1229
Aug	20.1	66.9	118.9	3.4	2.2	118.9	2.3	3.4	118.9	4.0	1.7	118.9	2.9	2.9	118.9	3.4	2.2	118.9	2.2	3.4	118.9	3.0	2.7	26814	679	615
Sep	16.3	92.7	81.3	1.7	1.1	81.3	1.1	1.7	81.3	2.0	0.9	81.3	1.4	1.4	81.3	1.7	1.1	81.3	1.1	1.7	81.3	1.5	1.4	18347	339	307
Oct	9.9	82.6	42.3	0.8	0.6	42.3	0.6	0.8	42.3	1.0	0.4	42.3	0.7	0.7	42.3	0.8	0.6	42.3	0.6	0.8	42.3	0.8	0.7	9550	170	154
Nov	3.6	87.7	11.5	13.9	9.2	11.5	6.9	10.3	11.5	10.6	4.6	11.5	6.3	6.3	11.5	20.5	13.7	11.5	10.3	15.4	11.5	9.5	8.0	2601	2141	1815
Dec	-2	79.2	0.0	12.8	8.6	0.0	7.1	10.7	0.0	11.6	5.0	0.0	7.4	7.4	0.0	16.5	11.0	0.0	9.1	13.7	0.0	9.5	8.3	0	2146	1867
Total		961.60	623.0	203.1	135.4	638.0	129.4	194.1	642.0	223.7	95.9	648.0	156.8	156.8	596.0	219.3	146.2	617.0	137.8	206.7	636.4	171.5	153.7	143,559	38,693	34,678

Where:
ET = Evapotranspiration
R= Runoff
I = Infiltration

Modified Rational Method SWM Quantity Calculations
1579 and 1589 Fanshawe Park Road East

Storm Area: Area A3 (1.25 Ha)
City of London

	AREA (ha)	% OF TOTAL AREA	RUNOFF COEFFICIENT
ROOF	0.49000	39.2%	0.90
PAVED	0.49000	39.2%	0.90
GRASSED	0.27000	21.6%	0.20
TOTAL	**1.25000**	**100.0%**	**0.75**

QUESTIONS:			ANSWERS:			**Imperial Units**	
RETURN PERIOD?	100	years	2,5,10,25,50,100 years	**100**	years		
ROOFS CONTROLLED?	N		PARKING LOT STORAGE	**379**	m3	83,463	i.g.
ROOF AREA/DRAIN?	0	m2	# OF ROOF DRAINS	**0**			
CAPACITY/DRAIN?	1.00	L/s	ROOF OUTFLOW	**0.000**	m3/s	0.00	i.g.p.m.
ALLOWABLE OUTFLOW?	0.044	m3/s/ha	TOTAL OUTFLOW	**0.055**	m3/s	725.90	i.g.p.m.
ORIFICE HEAD?	1.000	m	ORIFICE DIAMETER	**162.3**	mm	6.4	inches

TOTAL OUTFLOW SET TO 55 L/s FOR THE 1:100 YEAR EVENT

TIME (min)	RAINFALL INTENSITY (mm/hr) I2	I5	I10	I25	I50	I100	RUNOFF RATE (m3/s) Q2	Q5	Q10	Q25	Q50	Q100	ALLOWABLE OUTFLOW (m3/s)	S2	S5
10	80	107	125	148	165	181	0.207	0.278	0.325	0.385	0.428	0.472	0.055	0.152	0.223
15	64	87	102	122	135	150	0.166	0.225	0.266	0.316	0.352	0.389	0.055	0.111	0.170
20	54	73	87	104	115	128	0.140	0.191	0.226	0.269	0.300	0.332	0.055	0.085	0.136
25	47	64	76	90	101	112	0.121	0.166	0.197	0.235	0.262	0.290	0.055	0.066	0.111
30	41	57	67	80	90	99	0.108	0.147	0.175	0.209	0.233	0.258	0.055	0.053	0.092
35	37	51	61	72	81	90	0.097	0.133	0.158	0.188	0.210	0.233	0.055	0.042	0.078
40	34	46	55	66	74	82	0.088	0.121	0.144	0.172	0.192	0.213	0.055	0.033	0.066
45	31	43	51	61	68	75	0.081	0.111	0.132	0.158	0.176	0.196	0.055	0.026	0.056
50	29	40	47	56	63	70	0.075	0.103	0.123	0.146	0.164	0.181	0.055	0.020	0.048
55	27	37	44	52	59	65	0.070	0.096	0.114	0.136	0.152	0.169	0.055	0.015	0.041
60	25	35	41	49	55	61	0.066	0.090	0.107	0.128	0.143	0.158	0.055	0.011	0.035
65	24	33	39	46	52	57	0.062	0.085	0.101	0.120	0.134	0.149	0.055	0.007	0.030
70	23	31	37	44	49	54	0.059	0.080	0.096	0.114	0.127	0.141	0.055	0.004	0.025
75	21	29	35	41	46	51	0.056	0.076	0.091	0.108	0.121	0.133	0.055	0.001	0.021
80	20	28	33	39	44	49	0.053	0.072	0.086	0.103	0.115	0.127	0.055	-0.002	0.017
85	20	27	32	38	42	47	0.051	0.069	0.082	0.098	0.109	0.121	0.055	-0.004	0.014
90	19	25	30	36	40	44	0.049	0.066	0.079	0.094	0.105	0.116	0.055	-0.006	0.011
95	18	24	29	34	39	43	0.047	0.063	0.075	0.090	0.100	0.111	0.055	-0.008	0.008
100	17	23	28	33	37	41	0.045	0.061	0.072	0.086	0.096	0.106	0.055	-0.010	0.006
105	17	23	27	32	36	39	0.043	0.059	0.070	0.083	0.092	0.102	0.055	-0.012	0.004
110	16	22	26	31	34	38	0.042	0.057	0.067	0.080	0.089	0.099	0.055	-0.013	0.002
115	16	21	25	30	33	37	0.040	0.055	0.065	0.077	0.086	0.095	0.055	-0.015	0.000
120	15	20	24	29	32	35	0.039	0.053	0.063	0.074	0.083	0.092	0.055	-0.016	-0.002

IDF COEFFICIENTS:						
A	754.36	1183.74	1574.38	2019.372	2270.665	2619.363
B	6.011	7.641	9.025	9.824	9.984	10.5
C	-0.81	-0.838	-0.86	-0.875	-0.876	-0.884

STORAGE RATE (m3/s)					REQUIRED STORAGE (m3)					
S10	S25	S50	S100	*	2	5	10	25	50	100
0.270	0.330	0.373	0.417	*	91	134	162	198	224	250
0.211	0.261	0.297	0.334	*	100	153	190	235	267	300
0.171	0.214	0.245	0.277	*	102	163	205	257	294	332
0.142	0.180	0.207	0.235	*	100	166	213	270	311	353
0.120	0.154	0.178	0.203	*	95	166	216	277	321	366
0.103	0.133	0.155	0.178	*	88	163	216	280	326	374
0.089	0.117	0.137	0.158	*	80	158	214	280	328	378
0.077	0.103	0.121	0.141	*	71	152	209	278	328	379
0.068	0.091	0.109	0.126	*	61	144	203	274	326	379
0.059	0.081	0.097	0.114	*	50	135	196	269	322	376
0.052	0.073	0.088	0.103	*	39	126	188	262	316	372
0.046	0.065	0.079	0.094	*	28	116	179	255	310	366
0.041	0.059	0.072	0.086	*	16	106	170	247	303	360
0.036	0.053	0.066	0.078	*	4	95	160	238	295	353
0.031	0.048	0.060	0.072	*	-9	84	150	228	286	345
0.027	0.043	0.054	0.066	*	-22	72	139	218	277	337
0.024	0.039	0.050	0.061	*	-34	61	128	208	267	328
0.020	0.035	0.045	0.056	*	-47	48	116	197	257	318
0.017	0.031	0.041	0.051	*	-61	36	104	186	247	308
0.015	0.028	0.037	0.047	*	-74	24	92	175	236	298
0.012	0.025	0.034	0.044	*	-88	11	80	163	225	287
0.010	0.022	0.031	0.040	*	-101	-2	68	151	214	276
0.008	0.019	0.028	0.037	*	-115	-15	55	139	202	265
					MAXIMUM STORAGE VOLUME					
					102	166	216	280	328	379