Delta-Simons Environmental Consultants
3 Henley Way, Doddington Road, Lincoln LN6 3QR
www.deltasimons.com

Limited Factual Soakaway Infiltration Report

WGC-One YMCA, Peartree Lane, Welwyn Garden City

Presented to **Pinnacle Consulting Engineers**

Issued: April 2020

Delta-Simons Project Number: 20-0093.01

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
1	Final	1st April 2020				
				Jessica Rowe Consultant	Redmond Parker-Dunn Principal	Paul Huteson Associate

1.0 Context and Purpose

Delta-Simons Environmental Consultants Limited ("Delta-Simons") was instructed by Pinnacle Consulting Engineers (the "Client") to undertake BRE365 Infiltration testing at the existing YMCA Site, 90 Peartree Lane, Welwyn Garden City, AL7 3UL (the "Site"). A Site Location Map is included as Figure 1.

Delta-Simons has concurrently undertaken environmental investigation at the Site which is reported under a separate cover:

- Environmental Report, WCG-One YMCA, Peartree Lane, Welwyn Garden City, Delta-Simons Project No. 20-0093.01, dated March 2020.

It is understood that the proposed development comprises the demolition of all structures at the Site and the construction of a four-storey 100 bed YMCA Hostel and a 2, 3 and 4 storey building providing up to 43 residential apartments as detailed in Welwyn Hatfield Borough Council Planning Application 6/2019/2714/OUTLINE.

The purpose of this Report is to provide information on the soil infiltration rates beneath the Site to support the Client for drainage design. It is proposed at this stage that surface water drainage will be by two soakaways in the central area of the Site, via interceptors. Correspondence with the Local Planning Authority has been provided by the Client, indicating the requirement of a ground investigation to assess the presence of contamination (reported under a separate cover) and provide infiltration data.

The test locations were indicated by the Client, however following a Site walkover, limited access was available to the area of the proposed soakaways, as such the location of the testing was amended and agreed with the Client.

2.0 Limitations

Delta Simons standard limitations are included as Appendix A. In addition, the following specific limitations apply to this assessment:

- Access was limited in the area of the proposed soakaways.

3.0 Mapped Ground Conditions

From the British Geological Survey (BGS) Geology of Britain Viewer the Site is indicated as being underlain by superficial Diamicton deposits of the Lowestoft Formation. In addition, superficial sand and gravel deposits of the Kesgrave Catchment Subgroup may encroach onto Site in the northern area. The underlying bedrock is mapped as the Lewes Nodular Chalk Formation and Seaford Chalk Formation (Undifferentiated).

The ground conditions identified during the investigation generally comprised gravelly sandy Made Ground to a maximum depth of 0.68 m bgl underlain by natural firm sandy gravelly clays.

4.0 Soakage Testing

Soakage testing was undertaken in general accordance with BRE Digest 365: Soakaway Design [Ref. 1].

The soakage testing comprised excavating two trial pits to depths of approximately 0.95 m bgl and 1.0 m bgl. The locations and depths of the tests were provided by the Clients engineer, however, due to access restrictions and utilities, positions had to be amended and agreed with the Client. The geology at each trial pit location was logged. A gravel pack and monitoring pipes were then installed in the trial pits and the remaining void was backfilled with arisings. The remaining spoil was graded back to original ground level.

The gravel pack in each test location was then filled with water and the depth to water from ground level recorded at intervals over a period of up to 24 hours.

The soakage test data was recorded and used to calculate the soil infiltration rate for each location.

Test results are provided in Appendix B and summarised below. The approximate locations of the soakage tests are shown in Figure 2.

Location	Test Depth Range (m bgl)	Geology	Infiltration Rate (m/s)
SA101	0.50 -1.00	Sandy gravel clay	$4.5x10^{-5}$
SA102	0.50 – 1.00	Sandy gravel clay	$7.0x10^{-6}$

5.0 References

Ref 1: BRE Digest 365: Soakaway Design, BRE 2016.

Enclosures:

Figures

Figure 1 Site Location Map

Figure 2 Intrusive Location Plan

Appendices

Appendix A Limitations

Appendix B Soakaway Test Results

Figure 1 – Site Location Map

Scale: 1 / 500,000 @ A4

LEGEND

Site Boundary

Scale: 1 / 10,000 @ A4

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Environment - Health & Safety - Sustainability

TITLE:
Site Location Map
WCG- One YMCA
Peartree Lane, Welwyn Garden City

DRAWN BY: JR	SCALE: To Scale@A4
CHECKED BY: AH	REVISION: 1
DATE: 13th March 2020	

PROJECT NO: 20-0093

FIGURE NO: 1

Figure 2 – Intrusive Location Plan

LEGEND

Site Boundary

SAx BRE365 Infiltration Test

FOR PLANNING

REV	DATE	NOTE	IN

Project

YMCA
PEARTREE LANE
WELWYN GARDEN CITY

Title

PROPOSED SITE LAYOUT

Scale	Date
1:500 @A3	SEPT 2019
Drawn: SD	Checked: AL
Drawing Number: 8057 / P101	Revision: -

Saunders
Architecture + Urban Design

saundersarchitects.com | 01707 385300 | London | Manchester | Bristol | Welwyn

Site Plan provided by Client

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Environment - Health & Safety - Sustainability

TITLE:
Approximate Intrusive Location Plan
WCG-One YMCA
PeartreeLane, Welwyn Garden City

DRAWN BY:	SCALE:	PROJECT NO:
JR	Not to Scale	20-0093.01
CHECKED BY:	REVISION:	FIGURE NO:
RPD	1	2
DATE: 24th March 2020		

Appendix A – Limitations

Limitations

The recommendations contained in this Report represent Delta-Simons professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Due to the evolving regulatory climate specific to Per Fluoro Alkyl Substances (PFAS), the scope of works is not intended to be conclusive as it relates to the identification of any PFAS related issues. While Delta-Simons may advise its Client if Delta-Simons becomes aware of the use of PFAS at the subject property, Delta-Simons makes no representation nor accepts any liability that any or all PFAS issues have been identified and/or revealed to its client through its scope of work, as presented herein.

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client and others. Delta-Simons conclusions, opinions and recommendations has been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

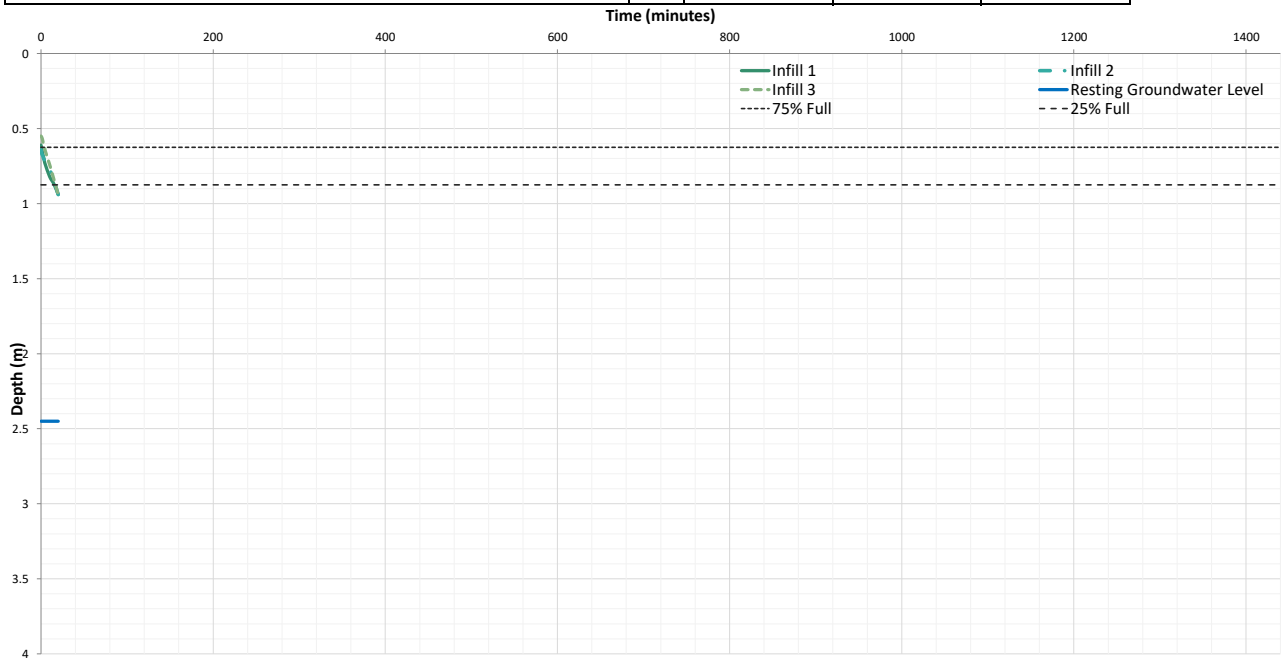
This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

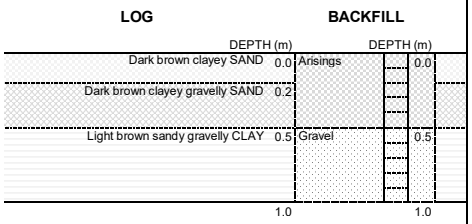
Appendix B – Soakaway Test Results

	units	Infill 1	Infill 2	Infill 3
Length	m		1.70	
Width	m		0.60	
Depth	m		1.00	
Gravel type			Standard	
Voids ratio			0.35	
Resting groundwater level at time of testing	m		2.45	
Depth of first reading	m	0.61	0.64	0.55
Depth of final reading	m	0.94	0.94	0.94
Did soakage test reach 25% of maximum fill depth?		Yes	Yes	Yes
Did soakage test reach near empty?		No	No	No
Depth at 75% full/effective depth	m	0.69	0.72	0.65
Depth at 25% full/effective depth	m	0.86	0.87	0.84
Time at 75% full/effective depth	mins	3.08	4.25	4.92
Time at 25% full/effective depth	mins	13.75	15.83	15.13
Vp75 - 25 (volume outflowing between 75% and 25% full/effective depth)	m^3	0.06	0.05	0.07
Mean surface area for outflow (50% full/effective depth)	m^2	1.78	1.71	1.92
tp75 (time for the water level to fall from 75% to 25% full/effective depth)	mins	10.67	11.58	10.21
Soil infiltration rate, f =	m/s	0.00005174	0.00004506	0.00005929
or	m/s	5.2E-05	4.5E-05	5.9E-05

Recommended soil infiltration rate	
4.5E-05	m/s

Note:
Where water level reaches nearly empty (5% full), soil infiltration based on 'Full' depth. Where water level did not reach nearly empty (5% full), soil infiltration rate is based on 'Effective' drainage achieved only. Where water level did not fall below 25% of the maximum fill level, this is considered to be a 'Failed' test.





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TITLE: Soakaway Test Results
YMCA Peartree Lane, Welwyn Garden City
Pinnacle Consulting Engineers

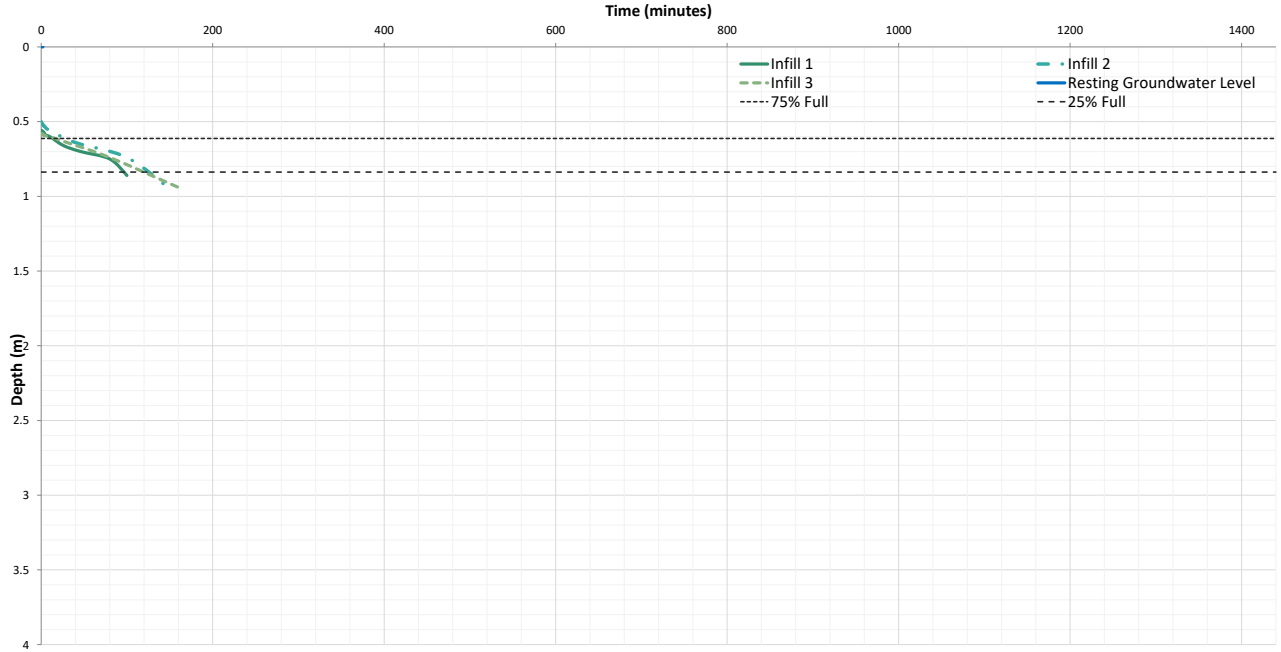
In accordance with BRE Digest 365 (2016)

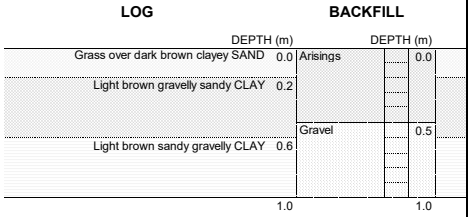
DRAWN BY: CB	SCALE: Not to Scale	PROJECT NUMBER: 20-0093.01	
CHECKED BY: SS	REVISION: 1	SOAKAWAY NUMBER: SA101	
DATE: 06/03/2020			

	units	Infill 1	Infill 2	Infill 3
Length	m		1.70	
Width	m		0.60	
Depth	m		0.95	
Gravel type			Standard	
Voids ratio			0.35	
Resting groundwater level at time of testing	m		0.00	
Depth of first reading	m	0.56	0.50	0.58
Depth of final reading	m	0.86	0.95	0.94
Did soakage test reach 25% of maximum fill depth?		Yes	Yes	Yes
Did soakage test reach near empty?		No	Yes	Yes
Depth at 75% full/effective depth	m	0.64	0.61	0.67
Depth at 25% full/effective depth	m	0.79	0.84	0.86
Time at 75% full/effective depth	mins	19.33	29.69	46.25
Time at 25% full/effective depth	mins	86.36	123.21	127.00
Vp75 - 25 (volume outflowing between 75% and 25% full/effective depth)	m^3	0.05	0.08	0.07
Mean surface area for outflow (50% full/effective depth)	m^2	1.71	2.06	1.87
tp75 (time for the water level to fall from 75% to 25% full/effective depth)	mins	67.03	93.53	80.75
Soil infiltration rate, f =	m/s	0.00000779	0.00000697	0.00000729
or	m/s	7.8E-06	7.0E-06	7.3E-06

Recommended soil infiltration rate	
7.0E-06	m/s

Note:
Where water level reaches nearly empty (5% full), soil infiltration based on 'Full' depth. Where water level did not reach nearly empty (5% full), soil infiltration rate is based on 'Effective' drainage achieved only. Where water level did not fall below 25% of the maximum fill level, this is considered to be a 'Failed' test.





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YMCA Peartree Lane, Welwyn Garden City
Pinnacle Consulting Engineers

In accordance with BRE Digest 365 (2016)

DRAWN BY: CB	SCALE: Not to Scale	PROJECT NUMBER: 20-0093.01	
CHECKED BY: SS	REVISION: 1	SOAKAWAY NUMBER: SA102	
DATE: 06/03/2020			