RIDGE

Appendix A - Site Investigation Extract

Choice Hill Road, Over Norton

Desk Study and Ground Investigation Report

Report for:

Ede Holdings Ltd.

CS/J/0511

T & P Regeneration Ltd
Unit 4, Brunel Lock Development
Smeaton Road
Bristol
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Document Revision

Client		**Ede Holdings Ltd.**		**Project Reference**	**CS/J/0511**
Site Address		**Choice Hill Road, Over Norton**			
Issue	**Date**	**Revision Details**	**Prepared by**	**Checked by**	**Approved by**
01	14/02/2020	Original Issue	Craig Pennell	Sam Butcher	Mike Nicholas

15 INFILTRATION TESTING

15.1 Summary of Field Testing

Infiltration testing was undertaken within 4No trial pits (TP01 – TP04) at approximate assumed deep soakaway formation level (i.e. 2m below existing levels) to assess the viability of using traditional soakaway drainage within the proposed redevelopment. It should be noted that due to trial pit excavations refusing at depths between 1.15 and 1.80mbgl, it was not possible to carry-out tests at 2m below existing levels. Graphical representations of the data are contained within Appendix J.

The trial pits were positioned as per the exploratory hole location plan contained within Appendix A.

The infiltration testing and subsequent calculation of soil infiltration rates were carried out in general accordance with the methodologies detailed within BRE 365[17]. However, tests carried-out in TP03 and TP04 managed three repeat tests in each position.

15.2 Soil Infiltration Rate Calculations

The infiltration rates (F) have been calculated in accordance with BRE 365. A summary of the results of the infiltration tests and calculated infiltration rates is provided in Table 15.1.

Table 15.1 Summary of Calculated Infiltration Rates

Exploratory Location	Date	Total Measured water level change (m)	Time Period (mins)	Calculated infiltration rate (m/s)
TP01 (Test 1)	17/12/19	0.25	1	8.01E-04
TP01 (Test 2)	17/12/19	n/a	n/a	Infiltration rapid. Unable to fill trial pit.
TP01 (Test 3)	17/12/19	0.22	1	7.47E-04
TP02 (Test 1)	17/12/19	0.50	150	8.89E-06
TP02 (Test 2)	17/12/19	0.22	53	9.48E-06
TP03 (Test 1)	17/12/19	0.24	1	7.47E-04
TP03 (Test 2)	17/12/19	0.45	2	5.57E-04
TP03 (Test 3)	17/12/19	0.31	2	5.53E-04
TP04 (Test 1)	17/12/19	0.55	7	1.65E-04
TP04 (Test 2)	17/12/19	0.58	14	8.96E-05
TP04 (Test 3)	17/12/19	0.63	18	7.53E-05

*Infiltration rates in red are not BRE Digest DG-365 compliant

15.3 Discussion

The calculated infiltration rates indicate the soils beneath the site have relatively good to very good infiltration characteristics which is reflective of the heavily fractured limestone encountered across the entirety of the site.

Based upon the test results and site observations it is considered that traditional soakaways are likely to offer a viable solution for surface water discharge.

[17] *Soakaway Design BRE Digest DG-365 (2016).*

Site Boundary

T&P Investigation - January 2020

- Windowless Sampling Locations (WS01 - WS05)
- Infiltration Locations (TP01 - TP04)
- Trial Pit Locations (TP05 - TP09)
- TRL Locations (TRL01 - TRL06)

Historical Investigation

- Historical Boreholes - Unknown Providence. (BH01-03) (x.xxm - dipped depth to base mbgl)

Base Map
Company: Oxon Planning Partnership
DWG Title: Proposed Site Plan
DWG Number: ON1/P/
Date: 31/05/19

Drawn	Checked	Amendment	Date	Rev.
AW	CP	Changed SA01-SA04 to TP01-TP04	11/02/2020	A

Client: Ede Holdings Ltd

Project: Choice Hill Road

Title: Exploratory Hole Location Plan - Proposed Development Plan

Scale	Date	Drawn by	Check by	Rev.	Drawing No.
1:1000@A3	13/01/20	RC	CP	A	CS-J-0511-01-002

T&P Regen
Unit 4 Brunel Lock Development, Smeaton Road, Bristol, BS1 6SE
Tel: 0117 927 7756
Email:Info@TP-regen.co.uk

0 25 50 Scaled in Metres

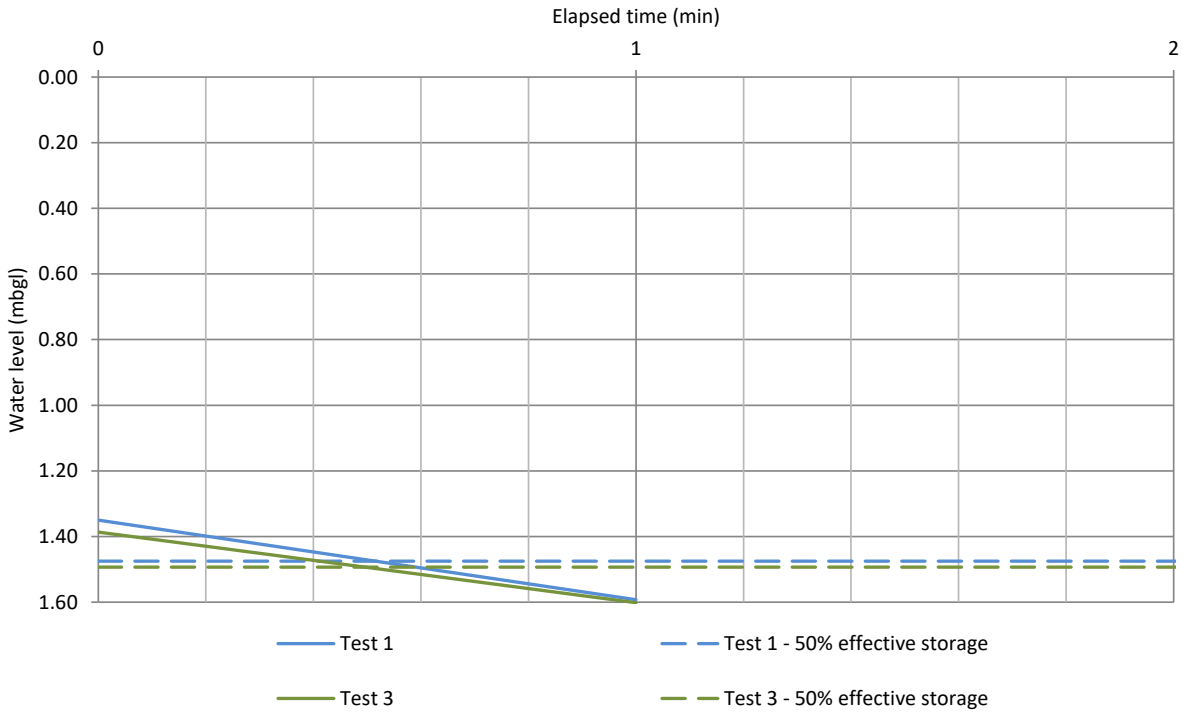
Infiltration Test Results in Accordance with BRE Digest 365:2016

Project Name:	Choice Hill Road, Over Norton	Project ID:	CS-511
Client:	Ede Homes Ltd		
Hole ID:	TP01	Test Date: 17/12/2019	Logged: CP / Checked: JF

Test 1		Test 2		Test 3	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	1.35			0	1.39
1	1.59			1	1.60

Soakaway Dimensions:	
Length (m)	1.60
Width (m)	0.70
Test 1 - Depth (m)	1.60
Test 2 - Depth (m)	1.60
Test 3 - Depth (m)	1.60

	Test 1	Test 2	Test 3
Depth to water at start of test (m)	1.35		1.39
Depth to water at end of test (m)	1.59		1.60
Total head drop (m)	0.24		0.22
Depth to water at 75% level (m)	1.41		1.44
Depth to water at 50% level (m)	1.48		1.49
Depth to water at 25% level (m)	1.54		1.55
Base area of pit (m^2)	1.12		1.12
Computed Internal Surface Area A_{p50} (m^2)	1.70		1.61
Effective Storage Volume V_{p75-25} (m^3)	0.04		0.04
Elapsed time at 75% level (mins)	0		0
Elapsed time at 25% level (mins)	1		1
50% discharge in 24 Hours	Yes		Yes
Soil infiltration rate *f* (m/s)	8.01E-04		7.47E-04
Design soil infiltration rate *f* (m/s)	**n/a (not BRE365 compliant)**		



Remarks:

Unable to fill trial pit during second test due to rapid infiltration.

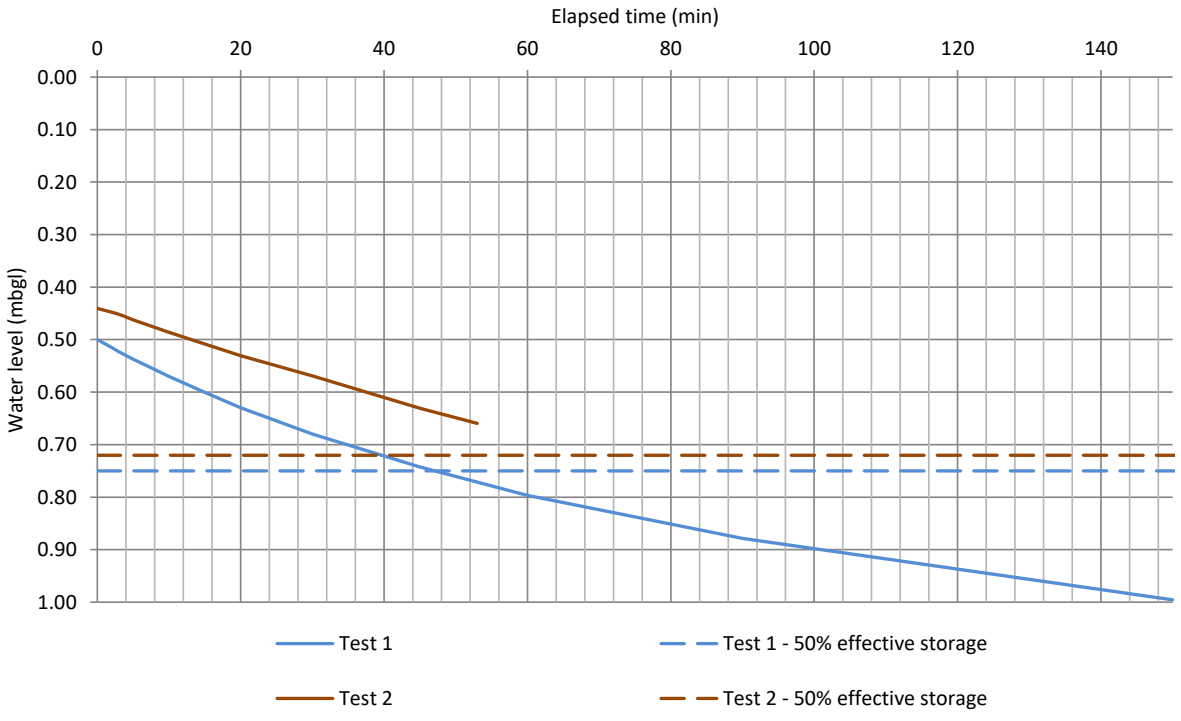
Infiltration Test Results in Accordance with BRE Digest 365:2016

Project Name:	Choice Hill Road, Over Norton	Project ID:	CS-511
Client:	Ede Homes Ltd		
Hole ID:	TP02	Test Date: 17/12/2019	Logged: CP / Checked: JF

Test 1		Test 2		Test 3	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.50	0	0.44		
1	0.51	1	0.44		
2	0.52	2	0.45		
3	0.52	3	0.45		
4	0.53	4	0.46		
5	0.54	5	0.46		
10	0.57	10	0.49		
15	0.60	15	0.51		
20	0.63	20	0.53		
30	0.68	30	0.57		
45	0.74	45	0.63		
60	0.80	53	0.66		
90	0.88				
150	1.00				

Soakaway Dimensions:	
Length (m)	1.60
Width (m)	0.70
Test 1 - Depth (m)	1.00
Test 2 - Depth (m)	1.00
Test 3 - Depth (m)	1.00

	Test 1	Test 2	Test 3
Depth to water at start of test (m)	0.50	0.44	
Depth to water at end of test (m)	1.00	0.66	
Total head drop (m)	0.50	0.22	
Depth to water at 75% level (m)	0.63	0.58	
Depth to water at 50% level (m)	0.75	0.72	
Depth to water at 25% level (m)	0.88	0.86	
Base area of pit (m^2)	1.12	1.12	
Computed Internal Surface Area A_{p50} (m^2)	2.27	2.41	
Effective Storage Volume V_{p75-25} (m^3)	0.08	0.09	
Elapsed time at 75% level (mins)	19	33	
Elapsed time at 25% level (mins)	89	101	
50% discharge in 24 Hours	Yes	Yes	
Soil infiltration rate *f* (m/s)	8.89E-06	9.48E-06	
Design soil infiltration rate *f* (m/s)	**n/a (not BRE365 compliant)**		



Remarks:

Third test not carried-out due to time constaints.

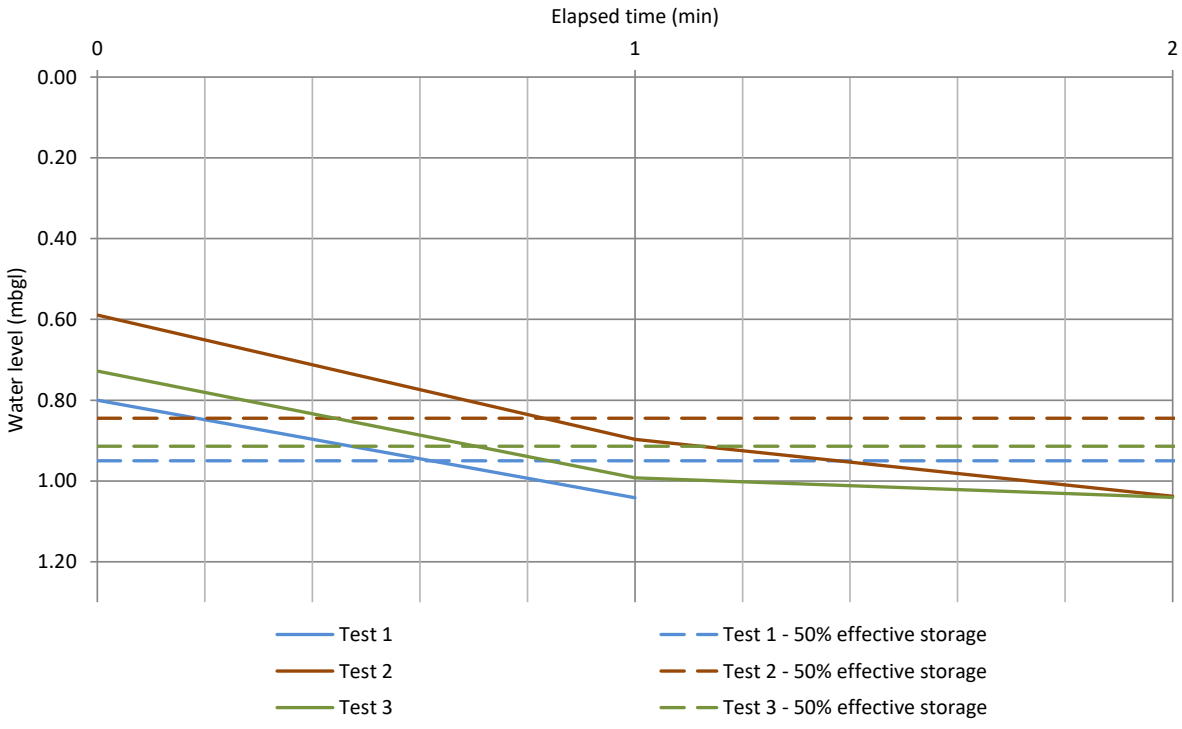
Infiltration Test Results in Accordance with BRE Digest 365:2016

Project Name:	Choice Hill Road, Over Norton	Project ID:	CS-0511
Client:	Ede Homes Ltd		
Hole ID:	TP03	Test Date: 17/12/2019	Logged: CP / Checked: JF

Test 1		Test 2		Test 3	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.80	0	0.59	0	0.73
1	1.04	1	0.90	1	0.99
		2	1.04	2	1.04

Soakaway Dimensions:	
Length (m)	1.60
Width (m)	0.70
Test 1 - Depth (m)	1.10
Test 2 - Depth (m)	1.10
Test 3 - Depth (m)	1.10

	Test 1	Test 2	Test 3
Depth to water at start of test (m)	0.80	0.59	0.73
Depth to water at end of test (m)	1.04	1.04	1.04
Total head drop (m)	0.24	0.45	0.31
Depth to water at 75% level (m)	0.88	0.72	0.82
Depth to water at 50% level (m)	0.95	0.84	0.91
Depth to water at 25% level (m)	1.03	0.97	1.01
Base area of pit (m^2)	1.12	1.12	1.12
Computed Internal Surface Area A_{p50} (m^2)	1.81	2.29	1.98
Effective Storage Volume V_{p75-25} (m^3)	0.05	0.09	0.06
Elapsed time at 75% level (mins)	0	0	0
Elapsed time at 25% level (mins)	1	2	1
50% discharge in 24 Hours	Yes	Yes	Yes
Soil infiltration rate *f* (m/s)	7.47E-04	5.57E-04	5.53E-04
Design soil infiltration rate *f* (m/s)	**5.53E-04**		



Remarks:

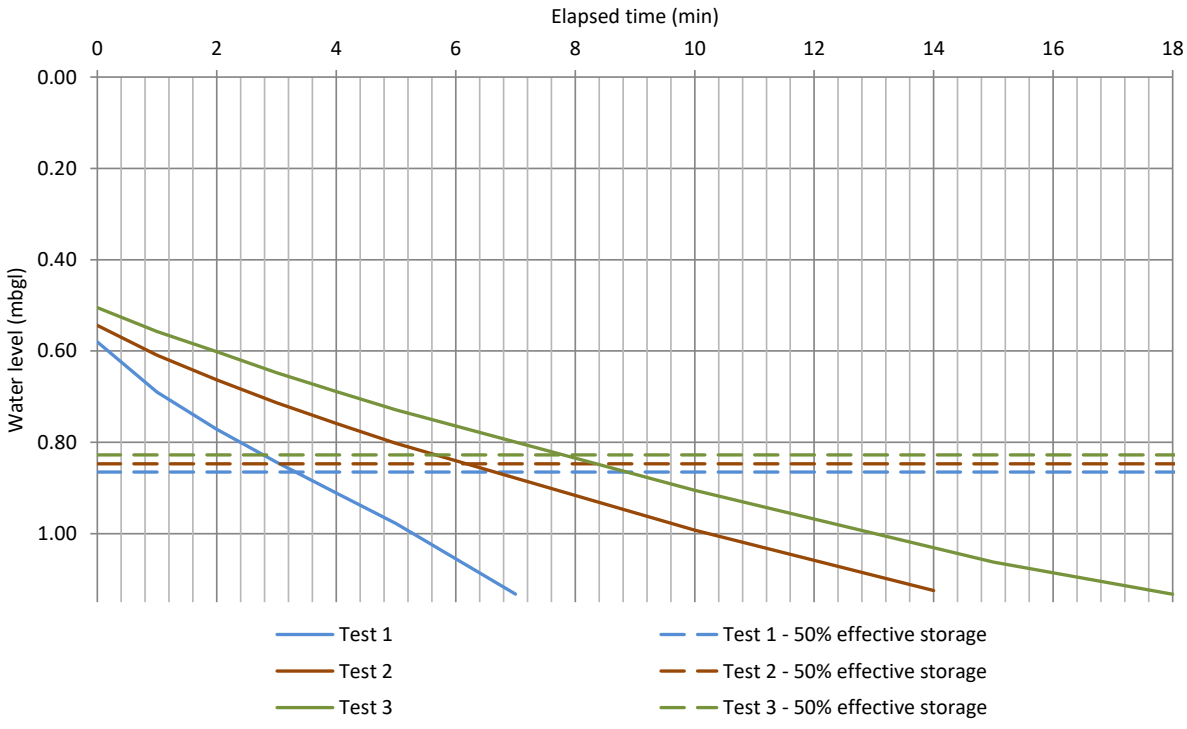
Infiltration Test Results in Accordance with BRE Digest 365:2016

Project Name:	Choice Hill Road, Over Norton	Project ID:	CS-0511
Client:	Ede Homes Ltd		
Hole ID:	TP04	Test Date: 17/12/2019	Logged: CP / Checked: JF

Test 1		Test 2		Test 3	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.58	0	0.54	0	0.50
1	0.69	1	0.61	1	0.56
2	0.77	2	0.66	2	0.60
3	0.84	3	0.71	3	0.65
4	0.91	4	0.76	4	0.69
5	0.98	5	0.80	5	0.73
7	1.13	10	0.99	10	0.91
		14	1.12	15	1.06
				18	1.13

Soakaway Dimensions:	
Length (m)	1.60
Width (m)	0.70
Test 1 - Depth (m)	1.15
Test 2 - Depth (m)	1.15
Test 3 - Depth (m)	1.15

	Test 1	Test 2	Test 3
Depth to water at start of test (m)	0.58	0.54	0.50
Depth to water at end of test (m)	1.13	1.12	1.13
Total head drop (m)	0.55	0.58	0.63
Depth to water at 75% level (m)	0.72	0.70	0.67
Depth to water at 50% level (m)	0.87	0.85	0.83
Depth to water at 25% level (m)	1.01	1.00	0.99
Base area of pit (m^2)	1.12	1.12	1.12
Computed Internal Surface Area A_{p50} (m^2)	2.43	2.51	2.60
Effective Storage Volume V_{p75-25} (m^3)	0.10	0.10	0.11
Elapsed time at 75% level (mins)	1	3	3
Elapsed time at 25% level (mins)	5	10	13
50% discharge in 24 Hours	Yes	Yes	Yes
Soil infiltration rate *f* (m/s)	1.65E-04	8.96E-05	7.53E-05
Design soil infiltration rate *f* (m/s)	**7.53E-05**		



Remarks: