

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
BS1 6SE
Tel: 0117 927 7756

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

The information and advice contained within this report is provided by T&P Regeneration Ltd for sole use and reliance by its Client in performance of T&P Regeneration Ltd's duties under its contract with the Client. Any advice, opinions or recommendations within this report should be read and relied upon only in the context of the report as a whole. The advice within the reports is based upon the information made available to T&P Regeneration Ltd within the financial and timeframe constraints imposed. The report is based on UK standards, codes and common practice current at time of writing. When considering this report regard should be given to the terms and conditions of T&P Regeneration Ltd's contract with the Client under which the report was prepared. The copyright of this report is held by T&P Regeneration Ltd. Should the Client wish to release this report to a Third Party for that party's reliance, T&P Regeneration Ltd may agree to such release provided that: (i) T&P Regeneration Ltd's written agreement to such release is obtained (ii) By release of the report, T&P Regeneration Ltd assumes no duties, liabilities or obligations to the Third Party and that the Third Party does not acquire any rights whatsoever against T&P Regeneration Ltd (iii) T&P Regeneration Ltd accepts no responsibility for any loss incurred by the Client through the Client's release of the report to the Third Party. Following final issue of this report, T&P Regeneration Ltd has no further obligation to advise the Client on any matters such as changes in legislation or codes of practice that may affect the advice contained within the report.

15 INFILTRATION TESTING

15.1 Summary of Field Testing

Infiltration testing was undertaken within 4N° 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 365¹⁷. 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

AW	CP	Changed SA01-SA04 to TP01-TP04	11/02/2020	A
Drawn	Checked	Amendment	Date	Rev.
Ede Holdings Ltd				
Choice Hill Road				
Exploratory Hole Location Plan - Proposed Development Plan				
Scale	Date	Drawn by	Check by	Rev.
1:1000@A3	13/01/20	RC	CP	A

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

Rev.	Drawing No.
A	CS-J-0511-01-002

0 25 50
Scaled in Metres

Infiltration Test Results in Accordance with BRE Digest 365:2016

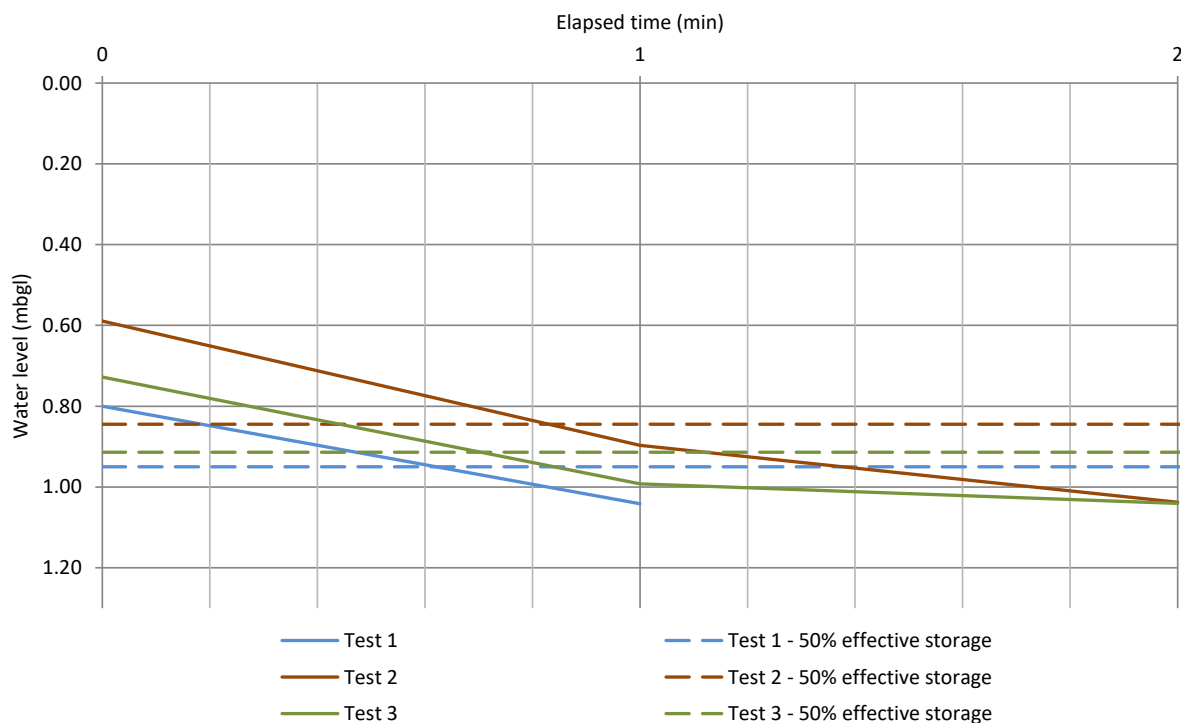
Project Name:				Choice Hill Road, Over Norton				Project ID:		CS-511			
Client:				Ede Homes Ltd									
Hole ID:				TP01		Test Date:		17/12/2019		Logged:	CP	Checked:	JF
Test 1		Test 2		Test 3		Soakaway Dimensions:				Length (m)		1.60	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)					Width (m)		0.70	
										Test 1 - Depth (m)		1.60	
										Test 2 - Depth (m)		1.60	
										Test 3 - Depth (m)		1.60	
0	1.35			0	1.39								
1	1.59			1	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 <i>f</i> (m/s)		8.01E-04		7.47E-04			
						Design soil infiltration rate <i>f</i> (m/s)		n/a (not BRE365 compliant)					

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		Soakaway Dimensions:				Length (m)		1.60	
Time (mins)	Depth (m)	Time (mins)	Depth (m)	Time (mins)	Depth (m)					Width (m)		0.70	
										Test 1 - Depth (m)		1.00	
										Test 2 - Depth (m)		1.00	
										Test 3 - Depth (m)		1.00	
0	0.50	0	0.44							Test 1	Test 2	Test 3	
1	0.51	1	0.44							0.50	0.44		
2	0.52	2	0.45							1.00	0.66		
3	0.52	3	0.45							0.50	0.22		
4	0.53	4	0.46							0.63	0.58		
5	0.54	5	0.46							0.75	0.72		
10	0.57	10	0.49							0.88	0.86		
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												

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		Soakaway Dimensions:		
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			
						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 <i>f</i> (m/s)						7.47E-04	5.57E-04	5.53E-04
Design soil infiltration rate <i>f</i> (m/s)						5.53E-04		



Remarks:



Figure 10 is a line graph showing the variation of water level (mbgl) versus elapsed time (min) for three tests (Test 1, Test 2, Test 3) and their corresponding 50% effective storage scenarios. The y-axis represents water level in meters below ground level (mbgl), ranging from 0.00 at the top to 1.00 at the bottom. The x-axis represents elapsed time in minutes, ranging from 0 to 18. Test 1 (blue line) shows a rapid decline in water level, reaching approximately 1.05 mbgl at 10 minutes. Test 2 (brown line) shows a moderate decline, reaching approximately 1.05 mbgl at 18 minutes. Test 3 (green line) shows a slow decline, reaching approximately 1.05 mbgl at 18 minutes. The 50% effective storage scenarios (Test 1 - 50% effective storage, Test 2 - 50% effective storage, Test 3 - 50% effective storage) are represented by dashed lines of the same color, showing a much slower decline in water level, remaining below 0.80 mbgl throughout the 18-minute period.

Remarks: