RE-INFILTRATION TEST REPORT

DOCUMENT CONTROL			
Version	Date	AUTHORISED	
		DKB	SRLB
1.0	4th February 2021		

1. INTRODUCTION

This document has been prepared to present the results of an initial re-infiltration test recently carried out at 55 Fitzroy Park at the request of the Sustainability Officer for Camden.

2. ADDITIONAL INVESTIGATION

The test was undertaken in a shallow hand augered borehole constructed by Concept on 27th January 2021 adjacent to Millfield Lane just inside the rear Entrance to the property, from an approximate Ground Level of +77.70m OD..

RE-INFILTRATION TEST REPORT

CONCEPT
Unit 8, Marple Mews, Warple Way
W3 0RF
Telephone: 020 8811 2880_Fax: 020 8811 2881
E-mail: si@conceptconsultants.co.uk

Borehole No HP01

Project 55 Fitzroy Road

Job No	Date Started	Ground Level (mOD)	Co-Ordinates	Final Depth
21/3527	27/01/21		E N	2.00m
	Date Completed 27/01/21			

Client	Method/ Plant Used	Sheet
	Hand Auger	1 of 1

PROGRESS			STRATA				SAMPLES & TESTS				
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	Field Records	Instrument/ Backfill
27/01/21		Dry			0.12	Dark grey sandy clayey SILT with low brick cobble content and frequent rootlets. Sand is fine to coarse. (MADE GROUND)					
					(1.18)	Soft to firm, light brown sandy gravelly CLAY. Gravel comprises angular medium to coarse brick and ceramic fragments. Sand is fine to coarse. (MADE GROUND)					
					1.30	0.70 ... becoming dark brown slightly sandy and slightly gravely. Gravel comprises angular to subangular fine to medium flint, brick and glass fragments					
					(0.70)	Firm to stiff, orangish brown mottled light bluish grey silty CLAY with occasional pockets of dark grey silt (<20mm). (CLAYGATE MEMBER/ WEATHERED LONDON CLAY?)					
27/01/21					2.00	End of Borehole					

Chiselling (m)			Water Added (m)	
From	To	Hours	From	To

GENERAL REMARKS

1. Borehole hand excavated with Hand Auger.
2. Water seepage encountered at 0.45m depth.
3. Falling Head Tests carried out in the borehole.
4. Ø50mm groundwater monitoring pipe installed at 2.00m, slotted between 0.10m and 2.00m depth.
5. Borehole backfilled with pea shingle between 0.1 to 2.00m depth. Concrete with a stopcock cover installed from 0.10m to ground level.

KEY: Drilled By: ES-Environmental Sample (Tub, Vial, Jar), U38-38mm Diameter Undisturbed Sample, U36-36mm Diameter Undisturbed Sample D-Disturbed Sample, B-Bulk Sample, C-Core Sample, W-Water Sample, R-Root Sample AZCL: Assumed Zone of Core Loss
V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds
All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue No: 01	Drilled By: DN	Logged By: AO	Checked By: AN	Approved By: OS	Log Print Date & Time: 01/02/2021 17:13

Report ID: CONCEPT-ABORTED BOREHOLE || Project: 213527 - FITZROY ROAD.GPJ || Library: CONCEPT LIBRARY - 2019.GLB || Date: 1 February 2021

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As can be seen from the log the borehole encountered the natural clay at 1.30 m. (+76.4m OD approx.). Groundwater was encountered at 0.45m depth bgl (+77.25m OD approx.),

It is noted that the borehole was constructed during saturated wet winter conditions and the pond outlet flow was running across Millfield Lane..

3. TEST RESULTS

FALLING HEAD FIELD PERMEABILITY

Project: **55 Fitzroy Park**

Borehole: HP01 **Date:** **27/01/2021**

Test at 1.00m

READINGS

Time (minutes)	Time (hh:mm:ss)	Water depth (m from ground level)
0	00:00:00	0.00
0.09	00:00:05	0.02
0.17	00:00:10	0.03
0.25	00:00:15	0.03
0.34	00:00:20	0.03
0.42	00:00:25	0.04
0.5	00:00:30	0.04
1	00:01:00	0.06
1.5	00:01:30	0.07
2	00:02:00	0.08
2.5	00:02:30	0.08
3	00:03:00	0.08
3.5	00:03:30	0.09
4	00:04:00	0.09
4.5	00:04:30	0.09
5	00:05:00	0.09
6	00:06:00	0.10
7	00:07:00	0.11
8	00:08:00	0.12
9	00:09:00	0.12
10	00:10:00	0.13
15	00:15:00	0.15
20	00:20:00	0.16
25	00:25:00	0.16
30	00:30:00	0.16
40	00:40:00	0.17
50	00:50:00	0.17
60	01:00:00	0.18
70	01:10:00	0.20
80	01:20:00	0.20
90	01:30:00	0.20

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The test was necessarily undertaken with limited, hand held, equipment and it was not possible to install borehole casing. However, despite the conditions not being ideal it is possible to gauge an approximate value for the soil permeability from this test.

The test was undertaken when the hole was drilled to 1.00m depth, by means of topping up the hole to ground level and measuring the rate of water fall over time.

The resultant fall was measured as a depth below ground level the top of casing at regular intervals over a period of 90 minutes.

4. CALCULATION OF PERMEABILITY

The test necessarily allowed drainage to take laterally. Given the presence of groundwater at a depth at 0.45m it can be assumed that in the first instance, the excess water would take the path of least resistance and flow laterally out of the borehole above this level rather than displace standing water deeper in the borehole.

It can be seen that the measured water level dropped by 0.15m depth overt a period of 15 minutes. .

The calculation of approximate permeability can be undertaken by comparing the water volume lost over this period across the average wetted borehole surface area above the water table using the following formula.

$$k = \frac{volume\ loss\ (V)}{average\ wetted\ area\ (A) \times\ test\ duration\ interval\ (t)}$$

The water volume loss (V) is calculated as

$$V\ =\ 0.15m\ \times\ (\pi\ \times\ (0.15m\ /\ 2)2)\ =\ 0.00265m3$$

The average wetted surface area (A) is calculated as the product of the circumference of the borehole and the average wetted borehole depth above the water table

$$A\ =\ 2\ \times\ \pi\ \times\ (0.15m\ /\ 2)\ \times\ (\ (0.45m\ +\ 0.35m)\ /\ 2\ )\ =\ 0.1767m2$$

The test duration interval (t) was 15 minutes

$$t\ =\ 15\ x\ 60\ =\ 900\ secs$$

The permeability of the soil can hence be assessed approximately from this test as per below:

$$k = \frac{0.00265m^3}{0.1767m^2\ \times\ 900sec} =\ 1.667 \times 10^{-5}\ m/sec$$

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This figure, although very approximate, compares well with the previously provided initial assessment of

$$k\ =\ 2\ x\ 10 - 5\ m/sec$$