

Ref: J20-003-R01

Date: 23rd January 2020

FAO: Harvey Hillary

Nyton House

Nyton Rd
Westergate
Chichester
PO20 3UL

Dear Harvey,

Re: Groundwater Monitoring & Infiltration Testing – Nyton house

GCC was commissioned by Nyton House in January 2020 to undertake Groundwater Monitoring (3 rounds, January, February and March) and Infiltration Testing to support the drainage design for the proposed new development, comprising an orangery, at the site.

Reference to the British Geological Survey (BGS) Geology of Britain viewer indicates the site to overlie River Terrace Deposits (Undifferentiated – sand, silt and clay) over London Clay Formation (clay, silt and sand).

Two windowless sample boreholes (WS101 and WS102) were constructed on the 20th January 2020 at the site (locations shown on Figure 1) and groundwater monitoring wells were installed in the boreholes to allow for groundwater monitoring, with the first round undertaken on the 23rd January 2020 (Monitoring data presented in Appendix B). The ground conditions encountered in the boreholes are presented in Appendix A.

Infiltration testing was conducted in accordance with BRE DG365 and comprised piping water into an open trial hole, the drop in measured head over time was then recorded to give an indication of soakage potential.

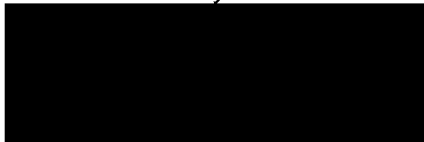
BRE DG365, 2016 states that for an accurate infiltration rate to be obtained, a soakage pit needs to be filled three times in quick succession. Each test is completed once 75% of the water present has drained away.

Three tests were conducted within SA101 (location shown on Figure 1). The infiltration calculation sheets are presented in Appendix C and the rates are summarised below.

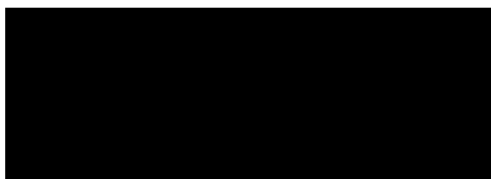
Location	Stratum	Trial Pit Base Depth	Infiltration Rate (m/sec)	Notes
SA101 Test 1	Silty CLAY with rare gravels	0.82	5.14×10^{-4}	Three tests conducted
SA101 Test 2		0.82	4.55×10^{-4}	
SA101 Test 3		0.82	3.56×10^{-4}	



Yours sincerely

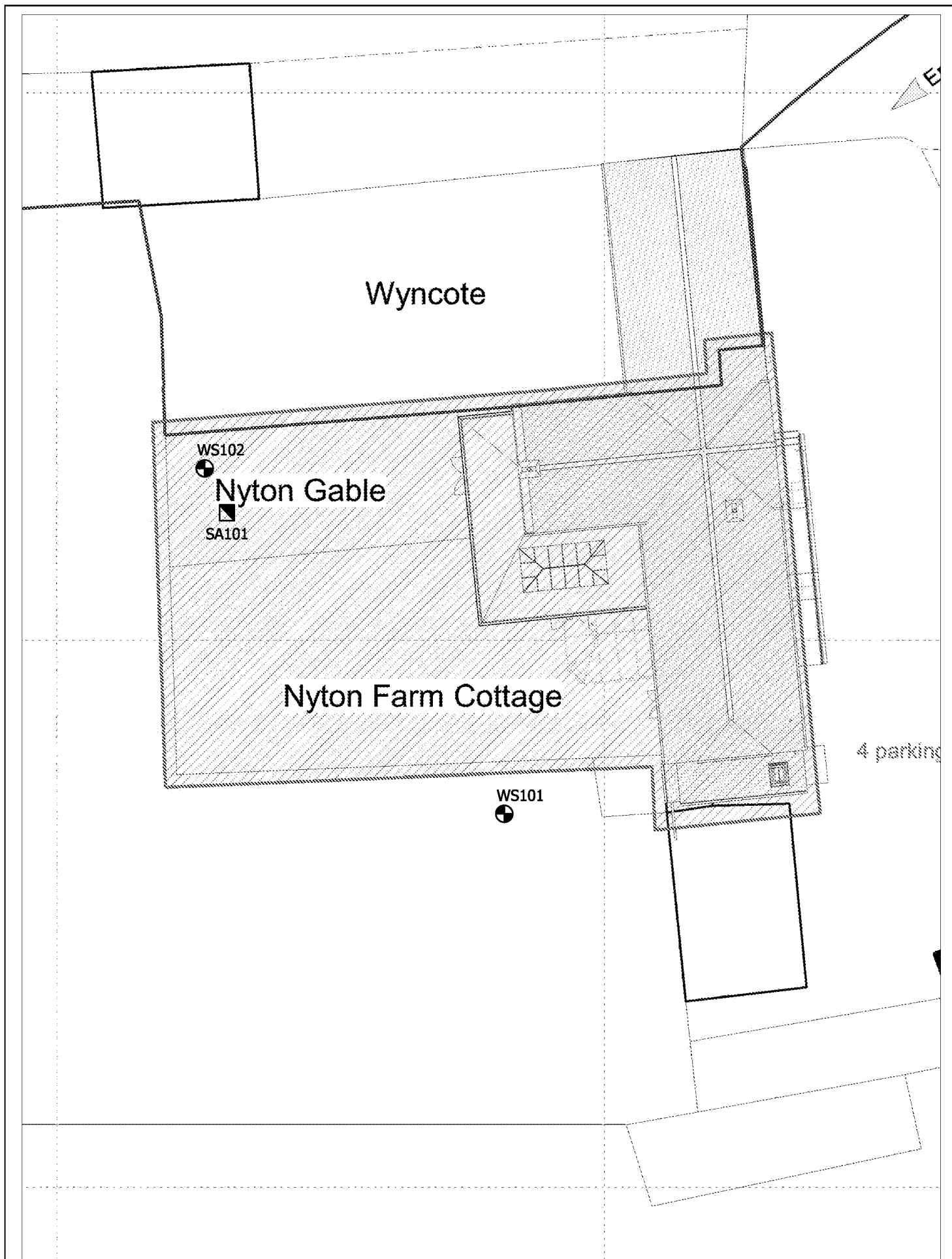


ANTONY PLATT
Director
For Ground Condition Consultants Ltd



RASMUS PALMGREN
Director
For Ground Condition Consultants Ltd

Encl: Figure 1: Location plan
 Appendix A: Borehole logs
 Appendix B: Groundwater monitoring data
 Appendix C: Infiltration test data



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client
NYTON HOUSE
site
NYTON HOUSE ORANGERY
title
INVESTIGATION LOCATION PLAN

scale NTS drawn by AP checked by RP
date 23 JAN 20 job no J20-003
drawing number
FIGURE 1
rev. 1

BOREHOLE LOG WS101

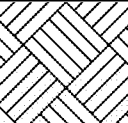
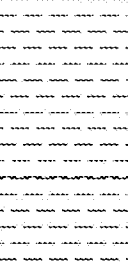
PROJECT NUMBER J20-003
PROJECT NAME Orangery
CLIENT Nyton House
ADDRESS Chichester
DRILLING DATE 20/01/20

DRILLING COMPANY South Coast Drilling
DRILLING METHOD Windowless Sampling
DRILL RIG Terrier Mk2
LOGGED BY RP

COMPLETION

CASING

COMMENTS

Depth (m)	Samples	SPT N	Water	Graphic Log	Material Description	Well Installation
0.2					Grass over soft dark brown slightly silty CLAY with occasional fine to medium angular to rounded flint gravel (Topsoil)	
0.4						
0.6					Soft brown slightly silty CLAY with rare fine to medium angular to rounded flint gravel.	
0.8						
1						
1.2						
1.4						
1.6					Soft to firm grey brown silty CLAY	
1.8			▽		Soft to firm grey silty sandy gravelly CLAY. Gravel is fine to coarse angular to rounded flint.	
2					Soft light grey slightly silty sandy very gravelly CLAY	
2.2						
2.4						
2.6						
2.8						
3						
3.2						
3.4						
3.6						
3.8					Brown very silty fine SAND	
4						
4.2						
4.4						
4.6						
4.8						
5					Termination Depth at: 5.0 m	
5.2						
5.4						

BOREHOLE LOG WS102

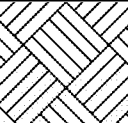
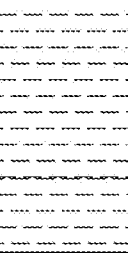
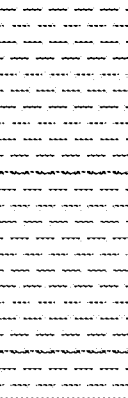
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DRILL RIG Terrier Mk2
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COMPLETION

CASING

COMMENTS

Depth (m)	Samples	SPT N	Water	Graphic Log	Material Description	Well Installation
0.2					Grass over soft dark brown slightly silty CLAY with rare flint gravel and brick fragments (Topsoil)	
0.4						
0.6					Soft brown slightly silty CLAY with rare fine to medium angular to rounded flint gravel	
0.8						
1						
1.2					Firm to stiff light brown slightly silty CLAY with rare fine to coarse angular to rounded flint gravel	
1.4						
1.6						
1.8						
2			∇			
2.2					Soft light grey slightly silty sandy very gravelly CLAY	
2.4						
2.6						
2.8						
3						
3.2						
3.4						
3.6						
3.8					Brown very silty fine SAND	
4						
4.2						
4.4						
4.6						
4.8						
5					Termination Depth at: 5.0 m	
5.2						
5.4						

GROUND GAS AND GROUNDWATER MONITORING RESULTS



SITE/REF: Nyton House						General Site comments			
DATE: 23/01/2020		 1... of 1...							
OPERATOR(S): RP									
Ambient Conditions:		Barometric Pressure (mb)	CH ₄ (%v/v)	CO ₂ (%v/v)	O ₂ (%v/v)	PID (ppm)			
Before Monitoring									
After Monitoring									
Atmospheric Pressure Trend:							EQUIPMENT		
Ground Conditions:									
Weather Conditions:									
							Instrument / Model Type	Serial Number	Comments
							Interface metre		

Ground Gas Note: "0" readings to be recorded as instrument detection limit

Borehole ID	Time	Flow (l/hr)	Relative Pressure (mb)	Steady CH ₄ (%v/v)	CO ₂ (%v/v)	O ₂ (%v/v)	Peak CH ₄ (%v/v)	% of Lower Explosive Limit	CO (ppm)	H ₂ S (ppm)	Balance (%)	PID (ppm)	Response Zone		Response Strata	Gas screening value CH ₄	Gas screening value CO ₂
													From (mbgl)	To (mbgl)			

Groundwater

Borehole ID	Standing Water Level (mbgl)	Installation Base Dip (mbgl)	Free Phase LNAPL Thickness (m)	Free Phase DNAPL Thickness (m)	Water Quality Indicators					Well Volume (l)	Purge Volume (l)	Comments (samples)
					Eh	EC	pH	DO	Temp			
WS101	1.74	4.94	None	None								No odour
WS102	1.49	4.86	None	None								No odour

Well volume (l) = $(3.14 \times (\text{hole diameter (m)} / 2)^2 \times (\text{base dip (m)} - \text{standing water level (m)})) \times 1000$ (2l/m in 50mm well)

Gas screening value = gas concentration (%) x gas flow rate (l/hr)

%v/v - Percentage volume by total volume; mbgl - metres below ground level; ppm - parts per million; mb - milibars; l/hr - litres per hour; vv - water vial; gb - 1l glass bottle; pb - 1l plastic bottle

Soakaway Calculations

Soakaway Test No. SA101 - Test 1
 Contract: Nyton House
 Contract No. J20-003

Field Test

Depth of Pit 0.82 m
 Width of Pit 0.30 m
 Length of Pit 0.30 m
 Depth of Pit Soaked 0.42 m

ap50 0.342 m2
 Vp75-25 0.0189 m3
 t75-25 1.8 min
 water used 0.0378 m3
 f 5.141E-04 m/sec.

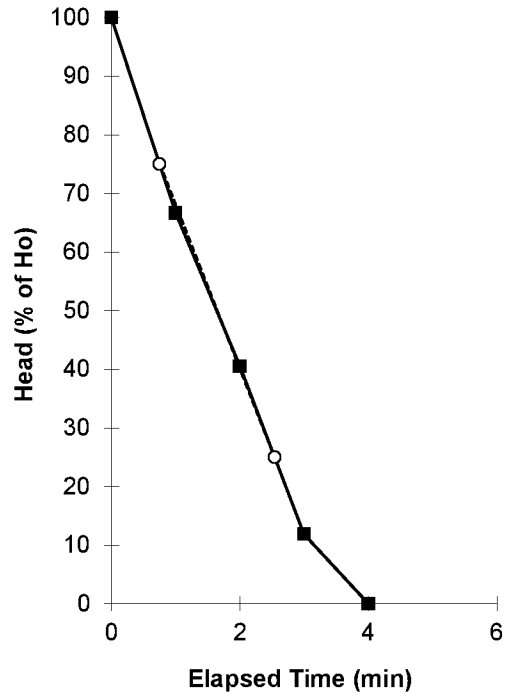
Trial Pit Log (include details of groundwater):

0.0-0.45 - Grass over soft dark brown silty CLAY with rare flint gravel.
 0.45-0.82 - Soft brown silty CLAY with rare flint gravel.

Field Data

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
0.40	0	100	0.42
0.54	1	67	0.28
0.65	2	40	0.17
0.77	3	12	0.05
0.82	4	0	0.00

T75 0.750 75
 T25 2.542 25
 T75-25 1.792 Derived from Best Fit



Comments

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Soakaway Calculations

Soakaway Test No. SA101 - Test 2
Contract: Nyton House
Contract No. J20-003

Field Test

Depth of Pit 0.82 m
Width of Pit 0.30 m
Length of Pit 0.30 m
Depth of Pit Soaked 0.42 m

ap50 0.342 m2
Vp75-25 0.0189 m3
t75-25 2.0 min
water used 0.0378 m3
f 4.547E-04 m/sec.

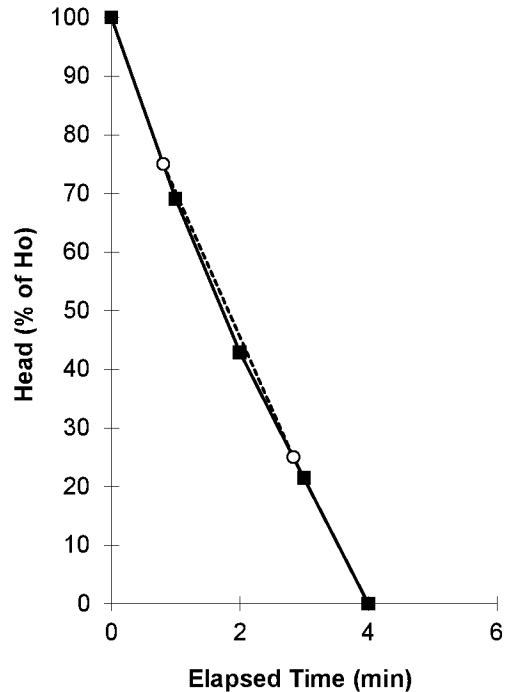
Trial Pit Log (include details of groundwater):

0.0-0.45 - Grass over soft dark brown silty CLAY with rare flint gravel.
0.45-0.82 - Soft brown silty CLAY with rare flint gravel.

Field Data

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
0.40	0	100	0.42
0.53	1	69	0.29
0.64	2	43	0.18
0.73	3	21	0.09
0.82	4	0	0.00

T75 0.808 75
T25 2.833 25
T75-25 2.026 Derived from Best Fit



Comments

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Southampton, SO19 9RY

Soakaway Calculations

Soakaway Test No. SA101 - Test 3
Contract: Nyton House
Contract No. J20-003

Field Test

Depth of Pit 0.82 m
Width of Pit 0.30 m
Length of Pit 0.30 m
Depth of Pit Soaked 0.42 m

ap50 0.342 m2
Vp75-25 0.0189 m3
t75-25 2.7 min
water used 0.0378 m3
f 3.355E-04 m/sec.

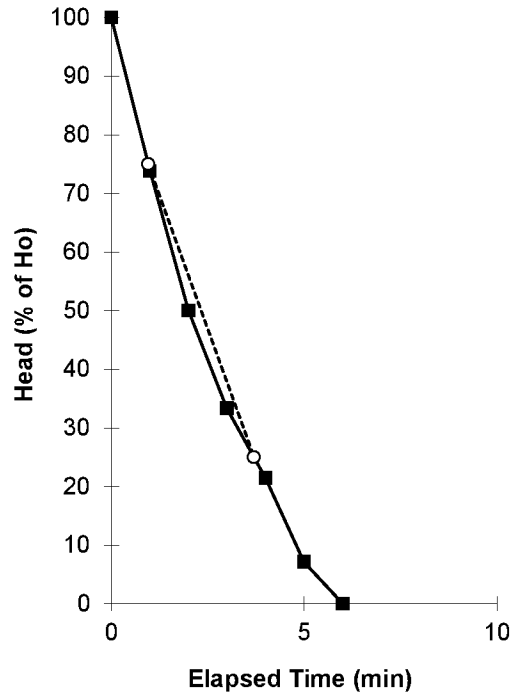
Trial Pit Log (include details of groundwater):

0.0-0.45 - Grass over soft dark brown silty CLAY with rare flint gravel.
0.45-0.82 - Soft brown silty CLAY with rare flint gravel.

Field Data

Depth to Water (m)	Elapsed Time (min)	Head of Water (% of Ho)	Head of Water (m)
0.40	0	100	0.42
0.51	1	74	0.31
0.61	2	50	0.21
0.68	3	33	0.14
0.73	4	21	0.09
0.79	5	7	0.03
0.82	6	0	0.00

T75 0.955 75
T25 3.700 25
T75-25 2.745 Derived from Best Fit



Comments

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