18th October 2017

Our ref: GE16226/GR02.2/171018



Daniel Crawford
Miller Homes
Spinnaker House
Lime Tree Way
Hampshire International Business Park
Chineham
Basingstoke
Hampshire
RG24 8GG

Dear Daniel,

RE: Downend Road, Portchester

Further to the request received via Odyssey and your subsequent instruction, we write to present the findings of the supplementary permeability testing undertaken on this site. The site location is shown on Figure 1 enclosed. This letter includes a minor revision from letter ref. GE16226/GR02/170217 in that the enclosed Figures 2 and 3 reflect the revised site extent as indicated on TOR Drawings ref. 2495-01/PP-002 Aug 2017 and 2495-01/SK-013 Rev C Oct 2017. These drawings should be referred to for the definitive red line boundary and the proposed development layout.

Background

The findings presented within this letter supplement the Desk Study Report, ref. GE15996-DSR-OCT17v1.2, and aim to provide clarification with regards to recommendations set out in Section 4.2 of the Desk Study Report.

Trial pit soakage testing was undertaken on site by Geo-Environmental for Miller Homes. The ground conditions and soakage tests were somewhat variable and as such, Geo-Environmental was requested by Odyssey to undertake further testing in the vicinity of trial pits TP5 and TP6.

Scope of Works

The following scope of works was undertaken:

- Attendance of a Geo-Environmental Engineer to set out and supervise the intrusive investigation, undertake sampling, in-situ testing and logging of recovered soils from exploratory holes. It is estimated that the works would extend to two days.
- The construction of up to 6No. machine dug trial pits to provisional depths of 3m bgl.
- Construction of 2No. cable percussion boreholes to a provisional depth of 10m bgl together with in-situ testing and sampling at regular intervals.
- Attendance of a 4x4 bowser to supply water for trial pit soakage and borehole falling head tests.
- Undertake soakage tests in trial pits and falling head permeability tests within the boreholes at two depths per borehole.

The exploratory holes were located in the vicinity of the previous trial pits TP5 and TP6, with BH1 and TP501-TP503 located in the vicinity of TP5; and BH2 and TP601-TP603 located in the vicinity of TP6. Exploratory hole locations

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from the previous phase of investigation are shown on Figure 2 and positions form the supplementary investigation are shown on Figure 3 enclosed herein.

Ground and Groundwater Conditions

The ground conditions encountered within the exploratory holes were generally consistent with those encountered during the previous phase of investigation. A summary of the conditions encountered during the supplementary investigations is presented in Table 1 below and exploratory hole logs from both phases of investigation are enclosed.

Top depth (m bgl)	Base depth (m bgl)	Description
0	0.30 - 0.78	TOPSOIL: Brown gravelly silty CLAY
0.30 - 0.78	4.80 – 5.80	HEAD DEPOSITS: Very soft, soft, firm and stiff brown, grey and cream gravelly CLAY with gravelly comprising flint and chalk clasts
4.80 – 5.80	10.0+	CHALK: Recovered as destructured white CHALK. Tentatively inferred as CIRIA Grade Dm/Dc becoming less weathered, possibly CIRIA Grade C at depth.

Table 1 Summary of ground conditions encountered during the supplementary investigation

Groundwater was not encountered within any of the exploratory holes during the investigation. Additionally, monitoring within standpipes installed elsewhere across the site as part of a previous phase of assessment has not encountered groundwater.

However, changes in groundwater levels do occur for a number of reasons including effects and variations in drainage. Such fluctuations may only be recorded by the measurement of the groundwater level within a standpipe or piezometer installed within appropriate response zones. Changes in groundwater level can have a direct effect on excavation stability, soakaway performance and more cohesive soils can soften under rising or high groundwater conditions.

Permeability Testing

In line with the agreed scope of works, soakage tests were undertaken in general accordance with BRE Digest 365 in each of the trial pits and falling head permeability tests were undertaken at depths of 3m and 10m bgl within the cable percussion boreholes (BH1 and BH2). The rate of outflow within the trial pits was slow and thus three inundations, as detailed in BRE Digest 365, within each trial pit was not achievable. Permeability values from the borehole falling head tests were derived in accordance with BS5930:2015 and BS ISO EN22282:2012 Parts 1 and 2.

Whilst the objective of the supplementary investigation included targeting of Chalk for soakage testing, this was not encountered within the trial pits. In addition, the Chalk was only present from between 4.8m and 5.8m bgl in the boreholes. Thus each of the trial pit soakage tests and the shallower falling head test within each borehole was undertaken within the superficial Head Deposits. Table 2 summarises the results of the various permeability tests undertaken from both phases of investigation.

Location	Permeability (m/s)	Comment
TP1	3.0x10 ⁻⁵	-
TP2	=	Insufficient fall in water level to estimate permeability
TP3	1.4-2.0x10 ⁻⁵	-



















Location	Permeability (m/s)	Comment
TP4	-	Water outflow too rapid to undertake test. Permeability likely to be 10^{-4} m/s or better.
TP5	1.9x10 ⁻⁶	-
TP6	1.5x10 ⁻⁶	-
TP501	1.2x10 ⁻⁵	Value estimated from measured range rather than achieving 75% discharge.
TP502	4.2x10 ⁻⁶	Value estimated from measured range rather than achieving 75% discharge.
TP503	9.3x10 ⁻⁶	Value estimated from measured range rather than achieving 75% discharge.
TP601	5.1x10 ⁻⁶	Value estimated from measured range rather than achieving 75% discharge.
TP602	1.2x10 ⁻⁵	Value estimated from measured range rather than achieving 75% discharge.
TP603	2.6x10 ⁻⁶	Value estimated from measured range rather than achieving 75% discharge.
BH1	3.51x10 ⁻⁶	Test in partially cased borehole at 3m bgl
BH1	2.86x10 ⁻⁶	Test in partially cased borehole at 10m bgl
BH2	2.64x10 ⁻⁵	Test in partially cased borehole at 3m bgl
BH2	2.83x10 ⁻⁶	Test in partially cased borehole at 10m bgl

Table 2 Summary of permeability results

It should be noted that the fall in water level within each pit tested as part of the supplementary investigation was insufficient to achieve the 75% drained depth required to determine a soil infiltration rate. As such, the infiltration rates presented for each of these trial pits (TP501-503 and TP601-603) are estimates based on the actual fall in water level recorded during the test. It is possible that the permeability could be lower than this estimated value.

The permeability values derived from the tests in Chalk at depth in boreholes BH1 and BH2 would suggest that the outflow of water from these exploratory holes was into a general rock mass. Whilst a higher permeability value might be achievable if open fractures are present, the presence of any such fractures should not be relied upon.

Closure

We trust we have interpreted your instructions correctly and provided sufficient information for your current requirements. Should you have any queries please do not hesitate to contact us.

Yours sincerely

For and on Behalf of Geo-Environmental

GAVIN ROBERTS CGeol, BEng (Hons), MSc, FGS

Technical Director

gavin.roberts@gesl.net

Enc Figure 1 Site Location Plan

Figure 2 Exploratory Hole Location Plan (preliminary investigation)

Figure 3 Exploratory Hole Location Plan (supplementary investigation)

Exploratory hole logs

Trial pit soakage test and falling head permeability test results







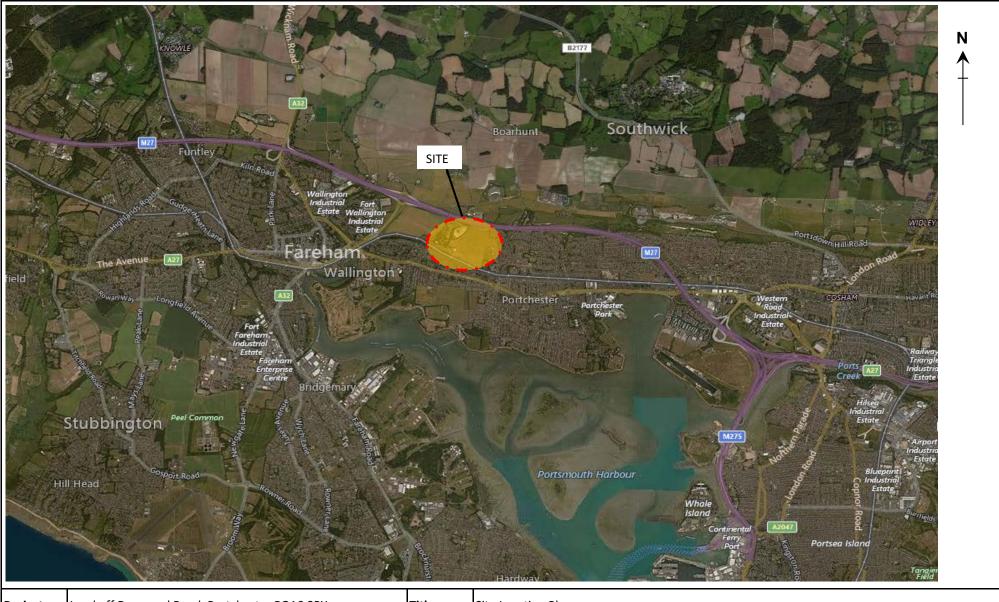












Project:	Land off Downen	ıd Road, Portchest	er PO16 8PX	Title	Site Location Plan
Client:	Miller Homes				Geo-Environmental Se
Ref No:	GE16226	Revision:	1.0		Unit 7 Danworth Farm, Co
Drawn:	VB	Date:	18/11/2016		Hurstpierpoint, West Sus
Figure:	1	Scale:	Not To Scale		+44(0)1273 832972 ww

Services Ltd **Cuckfield Road** ussex BN6 9GL ww.gesl.net





Project:	Land off Downend Road	l, Portcheste	er PO16 8PX	Title
Client:	Miller Homes			
Ref No:	GE16226	Revision:	1.1	
Drawn:	GR	Date:	11/10/2017	
Figure:	2	Scale:	Not To Scale	

Exploratory Hole Location Plan (preliminary investigation)

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Project:	Land off Downend Road	d, Portcheste	er PO16 8PX	Title
Client:	Miller Homes			
Ref No:	GE15996	Revision:	1.1	
Drawn:	GR	Date:	11/10/2017	
Figure:	3	Scale:	Not To Scale	

Exploratory Hole Location Plan (Supplementary investigation)

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Geo-En	vironmer	Unit 7, Hurstp BN6 9 ntalwww.g		1		Tr	rial Pit Log	TrialPit TP1 Sheet 1	1
Project Name:	Downen	ıd Road, Po	ortchester		ect No.		Co-ords: 460199.43 - 106388.88	Date	
	n: Downon	ıd Road, Po	ortohostor	GE1	5996		Level: Dimensions 2.36	13/12/20 Scale	
			JI ICH ESIEI				(m): 09 O	1:25 Logge	
Client:	Miller Ho		tu Tooting				3.00	VB	
Water	Depth	mples & In Sit	Results	Depth (m)	Level (m)	Legend	Stratum Description		
Ough Si he	0.26 0.26 1.55 1.55	D ES	None encountered	0.40			Dark brown clayey gravelly cobbly SILT. Grav cobbles consist of subangular flint. Light brown and off-white structureless CHAL composed of a silt and sand matrix with grave cobble size weak low to medium density clast gravel sized flint. CIRIA Grade Dc. White and off-white structureless CHALK com silt and sand matrix with gravel to cobble size medium density clasts and some gravel and of flint. CIRIA Grade Dc. End of Pit at 3.00m	K I and s and some posed of a weak	2 — 3 — 5 —
		Stability						AC	S

Geo-En	vironme			n		Tr	rial Pit Log	TrialPit TP2 Sheet 1	<u> </u>
Project Name:	Downer	nd Road, Po	ortchester		ect No.		Co-ords: 460189.58 - 106221.54	Date	
	n. Downer	nd Dood D	ortob ootor	GET	5996		Level: Dimensions 2.50	13/12/20 Scale	
		nd Road, Po	ortchester				(m): 99 Depth 0	1:25 Logge	
Client:	Miller H				I	1	3.00	VB	.u
Water Strike	Sa Depth	amples & In Sit	tu Testing Results	Depth (m)	Level (m)	Legend	Stratum Description		
	0.25	Type D	resuits				Dark brown clayey gravelly cobbly SILT. Gravel ar cobbles consist of subangular flint.	nd	- - - -
	0.25 0.68 0.68	ES D ES		0.30		· · · · · · · · · · · · · · · · · · ·	Orange gravelly cobbly CLAY. Gravel and cobbles subangular flint.	s of	- - - - - -
	0.66	ES		0.80		**************************************	Firm orange-brown and reddish brown clayey slig gravelly SILT. Gravel is fine to medium subangula	htly r flint.	1 -
	1.46 1.46	D ES				(× × × × × × × × × × × × × × × × × × ×			2 —
						X X X X X X X X X X X X X X X X X X X			
				3.00		(× · × · × · × · × · × · × · × · × · ×	End of Pit at 3.00m		3 -
									- - - - - - - -
									4 -
									- - - - -
									5 —
Water Depth Strike	Strikes Rose to (mbgl)	Remarks Stability	None encountered					AG	I S

Geo-Er	environme					Tr	rial Pit Log	TrialPit I	
Project Name:	Downer	nd Road, Po	ortchester		ect No. 15996		Co-ords: 460301.58 - 106281.29 Level: Dimensions 2.37	Date 13/12/20 Scale	16
		nd Road, Po	ortchester				(m): 09 Depth 0	1:25 Logge	
Client:	Miller H	Iomes amples & In Situ	u Testing		1		3.00	VB	
Water Strike	Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description		
	0.25 0.25 0.67	D ES		0.25			Dark brown clayey gravelly cobbly SILT. Gravel a cobbles consist of subangular flint. Orange-brown gravelly cobbly CLAY. Gravel and is subangular flint.		
	1.06 1.06	D ES		0.85			Light brown and off-white structureless CHALK composed of a silt and sand matrix with gravel size low to medium density clasts and some gravel an cobble sized flint. CIRIA Grade Dc.	ze weak d	1
	2.80 2.80	D ES		1.60			White and off-white structureless CHALK compos silt and sand matrix with gravel to cobble size we medium density clasts and some gravel to cobble flint. CIRIA Grade Dc.	ak	2 —
				3.00			End of Pit at 3.00m		4
Depth Strike	ater Strikes Rose to (mbgl)	Remarks N	None encountered		ı			AG	I S

Project Name: Location Client:	Downend					• •	rial Pit Log TP4	of 1
Locatior		l Road, Po	ortchester		ect No.		Co-ords: 460255.03 - 106126.47 Date	.40
Client:	n. Downend	I Road Po	ortchester	GET	5996		Level: 13/12/20 Dimensions 2.40 Scale	
	Miller Ho						(m): 0 1:25 Depth 0 Logged	
호울 느		ples & In Siti	u Testina				3.00 VB	
Str	Depth	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Description	
	0.33 0.33	D ES		0.35			Greyish brown gravelly clayey SILT. Gravel is subangular flint. Firm orange-brown gravelly cobbly CLAY. Gravel and cobble is subangular flint.	
	0.67	D					CODDIC IS SUBURIGUIA IIIII.	1 -
	1.20 1.20	D ES		1.10		X	Firm to stiff orange-brown silty CLAY.	
	2.40 2.40	D ES		2.20		× × - × - × - × - × - × - × - × - ×	Orange-brown very slightly clayey GRAVEL. Gravel is fine to medium subanglar to sub-rounded flint.	2 -
				3.00			End of Pit at 3.00m	3 -
								4 -
								5

Stability

Geo-En	vironment	BN6 90				Tr	rial Pit Log	TrialPit TP5 Sheet 1	5
Project		Road, Po			ect No.		Co-ords: 460478.59 - 106180.29	Date)
Name:				GE1	15996		Level: Dimensions 2.20	13/12/20 Scale	
Location	n: Downend	Road, Po	rtchester				(m): 00	1:25	
Client:	Miller Hor	mes					Depth o 3.10	Logge VB	⊹d ——
Water Strike	Sam	ples & In Situ	ı Testing	Depth	Level	Legend	Stratum Description		
≥ છ	Depth	Туре	Results	(m)	(m)	V//XV//XV	Dark brown clayey gravelly cobbly SILT. Gravel ar	ad	
	0.25 0.25	D ES		0.50			cobbles consist of subangular flint. Firm orange-brown gravelly cobbly CLAY. Gravel a cobble of subangular flint.		-
	1.00 1.00	D ES							1 -
				1.70			Firm to stiff orange-brown silty CLAY with occasio black flecks/mottling	nal	1
	2.80 2.80	D ES		1.90		X	Firm light greyish brown silty sandy gravelly CLAY Gravel is subangular flint.	·	2 -
Work Depth Stree	vr Strikes Rose to (mbg/) R	emarks N	None encountered	3.10		XX	End of Pit at 3.10m		3

Geo-En	vironmer					Tr	rial Pit Log	TrialPit I TP6 Sheet 1	
Project Name:	Downer	nd Road, Po	ortchester		ect No.		Co-ords: 460503.05 - 105999.77 Level:	Date 13/12/20	116
	n: Downer	nd Road, Po	ortchester	PLI	3990		Dimensions 2.30	Scale	!
Client:	Miller H	omes					(m): 09 O	1:25 Logge	
Water	Sa	mples & In Sit	u Testing	Depth	Level	Legend	3.00	VB	
Stri	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description Dark brown clayey gravelly cobbly SILT. Gravel a	and I	
	0.25 0.25	D ES		0.30			cobbles consist of subangular flint.		- - - -
	0.25	E3					Firm reddish brown graavelly cobbly CLAY. Grave cobble consist of subangular flint, which become from 1.25m.	el and sparse	- - - - - - -
	1.00 1.00	D ES							1 -
	2.00	D		1.60			Light brown to light orange-brown and off-white structureless CHALK composed of a silt and san with gravel size weak low to medium density clas some gravel sized flint. CIRIA Grade Dc.	d matrix sts and	2 —
	2.00	ES							-
				3.00			End of Pit at 3.00m		3 -
									4 -
									5 —
Wate Depth Strike		Remarks I	None encountered		I	I		AG	S

Unit 7, Danworth Farm Borehole No. Hurstpierpoint **Borehole Log WS1** BN6 9GL Geo-Environmental_{WWW}.gesl.net Sheet 1 of 1 Project No. Hole Type Downend Road, Portchester Co-ords: 460533E - 106045N Project Name: GE15996 WLS Scale Location: Downend Road, Portchester Level: 1:25 Logged By Dates: Client: 14/12/2016 Miller Homes VΒ Sample and In Situ Testing Water Depth Level Well Legend Stratum Description Strikes (m) (m) Depth (m) Type Results Greyish brown slightly SILT with some subangular flint 0.15 0.15 ES 0.30 Firm reddish brown silty slightly gravelly CLAY. Gravel is subangular flint. 0.65 Slightly reddish brown silty clayey fine to coarse flint GRAVEL with occasional cobble sized flint 1.50 1.50 2.05 Firm orange brown CLAY 2.50 2.50 ES 3.00 End of Borehole at 3.00m Casing Water Strikes (mbgl) Diameter Depth (m) Depth Strike Rose to Chiselling (mbgl) No water encountered

		Unit 7, Danworth Farm					_	_	Borehole N	lo.
		Hurstp BN6 9	GL			Во	reho	ole Log	WS2	
Geo-E	nvironm	nental _{WWW} .g	esl.ne	t					Sheet 1 of	
Projec	t Name:	Downer	nd Road	, Portchester	Project No. GE15996		Co-ords:	460291E - 106526N	Hole Type WLS	Э
Location	on:	Downer	nd Road	, Portchester			Level:		Scale 1:25	
Client:		Miller H	omes				Dates:	14/12/2016	Logged B VB	у
\A/-!I	Water	Sample	e and In	Situ Testing	Depth	Level		Otentura Decembrica		
Well	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Description		
		0.20 0.20	D ES		0.35			Greyish brown slightly SILT with some gravel Firm reddish brown and off-white sand	dy gravelly	
		0.50 0.50	D ES		0.75			CLAY. Gravel is subangular flint and cl	halk.	-
		2.00 2.00	D ES					Recovered as off-white CHALK composize matrix with sand and gravel sized density clasts. Possible CIRIA Grade	weak low	2 -
					3.00			End of Borehole at 3.00m		4
	Casing	Water Str	ikes (mbgl)	Chiselling (mbg	gl) Dome-le					
Diamet			Rose to		pth to	encountere	ed			
									AGS	

Unit 7, Danworth Farm Borehole No. Hurstpierpoint **Borehole Log** WS3 BN6 9GL Geo-Environmental_{WWW}.gesl.net Sheet 1 of 1 Project No. Hole Type 460094E - 106309N Co-ords: Project Name: Downend Road, Portchester GE15996 WLS Scale Location: Downend Road, Portchester Level: 1:25 Logged By Dates: Client: 14/12/2016 Miller Homes VΒ Sample and In Situ Testing Water Depth Level Well Legend Stratum Description Strikes (m) (m) Depth (m) Туре Results Greyish brown slightly SILT with some subangular flint 0.30 0.30 ES 0.40 Firm brown silty gravelly CLAY. Gravel is subangular 0.75 0.75 ES 1.50 Recovered as off-white CHALK compopsed of a silt size matrix with sand and gravel sized weak low density clasts. Possible CIRIA Grade Dc. 2.00 2.00 D ES 3.00 End of Borehole at 3.00m Casing Water Strikes (mbgl) Diameter Depth (m) Depth Strike Rose to Chiselling (mbgl) No water encountered

Unit 7, Danworth Farm Borehole No. Hurstpierpoint **Borehole Log WS4** BN6 9GL Geo-Environmental_{WWW}.gesl.net Sheet 1 of 1 Project No. Hole Type Co-ords: 460089E - 106209N Downend Road, Portchester Project Name: GE15996 WLS Scale Location: Downend Road, Portchester Level: 1:25 Logged By Dates: Client: 14/12/2016 Miller Homes VΒ Sample and In Situ Testing Water Depth Level Well Legend Stratum Description Strikes (m) (m) Depth (m) Туре Results Worn, broken conctrete hardstanding. 0.10 Brown and black mottled silty clayey flint gravel with 0.20 some fine gravel sized charcoal fragments 0.20 ES 0.50 Reddish brown silty clayey fine to coarse flint 1.00 1.00 Firm reddish brown gravelly CLAY. Gravel is fine to coarse size subangular flint. ES 2.00 Firm reddish brown silty CLAY 2.50 2.50 ES 3.00 End of Borehole at 3.00m Water Strikes (mbgl) Depth Strike Rose to Casing Diameter Depth (m) Chiselling (mbgl) No water encountered

Unit 7, Danworth Farm Borehole No. Hurstpierpoint **Borehole Log WS5** BN6 9GL Geo-Environmental_{WWW}.gesl.net Sheet 1 of 1 Project No. Hole Type Co-ords: 459978E - 106320N Downend Road, Portchester Project Name: GE15996 WLS Scale Location: Downend Road, Portchester Level: 1:25 Logged By Dates: Client: 14/12/2016 Miller Homes VΒ Sample and In Situ Testing Water Depth Level Well Legend Stratum Description Strikes (m) (m) Depth (m) Туре Results Dark brown and locally black mottled clayey gravelly SILT. Gravel is fine to coarse subangular flint. 0.20 0.20 ES 0.40 Firm reddish brown silty slightly gravelly CLAY. Gravel is subangular flint. 0.75 0.75 ES 1.00 Pale brown staining GRAVEL. Weathered, unstructured chalk 1.25 Recovered as off-white CHALK composed of a silt size matrix with sand and gravel sized weak low density clasts. Possible CIRIA Grade Dm/ Dc. FS 3.00 End of Borehole at 3.00m Water Strikes (mbgl) Depth Strike Rose to Casing Diameter Depth (m) Chiselling (mbgl) No water encountered

				orth Farm					Borehole N	0.
		Hurstp BN6 9	ierpoin Gl	ıt		Bo	reho	ole Log	WS6	
Geo-E	nvironm	nental _{WWW.g}	esl.net	İ			. •	5.5 _59	Sheet 1 of	1
Projec	t Name:	Downer	ıd Road,	Portchester	Project No. GE15996		Co-ords:	459732E - 106397N	Hole Type	;
Location	on:	Downer	nd Road,	Portchester			Level:		Scale 1:25	
Client:		Miller H	omes				Dates:	14/12/2016	Logged By VB	У
Well	Water Strikes	Sample Depth (m)	and In	Situ Testing Results	Depti (m)		Legend	Stratum Description	1	
		0.10	D	results				Dark brown silty CLAY.		
		0.10	ES		0.20			Firm reddish brown silty slightly gravel is subangular flint. Recovered as off-white CHALK composize matrix with sand and gravel sized density clasts. Possible CIRIA Grade	osed of a silt weak low	1 -
		2.50 2.50	D ES		3.00			End of Borehole at 3.00m		2
										4
Diamet	Casing er Depth		ikes (mbgl) Rose to	Chiselling (mt Depth from De	epth to	ter encounter	ed		AGS	

Borehole No. Unit 7, Danworth Farm Hurstpierpoint **Borehole Log BH1** BN6 9GL Geo-Environmentalwww.gesl.net Sheet 1 of 1 Project No. Hole Type Co-ords: Portchester II Project Name: GE16226 CP Scale Location: Downend Road, Portchester Level: 1:50 Logged By Dates: Client: Miller Homes 10/02/2017 Sample and In Situ Testing Water Depth Level Well Legend Stratum Description Strikes (m) (m) Depth (m) Туре Results Brown gravelly silty CLAY 0.50 D 0.70 Firm to stiff brown gravelly CLAY. Medium to coarse gravel of flint 1.00 С N=18 (2,3/4,5,4,5) 1.45 D 1.70 D С N=14 (2,3/3,3,4,4) 2.00 2 2.30 Firm brown gravelly CLAY. Gravel is fine to medium 2.45 D sized clasts of chalk and flint 2.60 2.70 Firm light grey silty CLAY with gravel of chalk 3.00 S N=10 (1,2/2,2,3,3) 3 D 3.45 S 4.00 N=12 (1,2/2,3,4,3) 4.45 D 4.80 Structureless CHALK composed of silty matrix with S 5.00 N=12 (5,4/2,3,4,3) some gravel size weak clasts of chalk occasional iron staining. CIRIA Grade Dm/Dc 5.45 5.50 CHALK recovered as moderately weak gravel to 5.60 D cobble sized clasts due to drilling process. Presumed CIRIA Grade D/C. 6.10 White CHALK recovered as moderately weak gravel 6.20 D sized chalk clasts and occasional flint nodules. Probable CIRIA Grade C/B 6.50 S N=34 (4,5/7,8,9,10) 6.95 D 7.50 D S N=20 (6,7/5,4,5,6) 8.00 8 D 8.45 9.00 D 9 N=22 (6,6/6,5,6,5) 9.50 S 9.95 D 10.00 10 End of Borehole at 10.00m Water Strikes (mbgl) Casing Diameter Depth (m) Chiselling (mbgl) Remarks Falling head tests conducted in borehole 0.00 1.00 5.50

Borehole No. Unit 7, Danworth Farm Hurstpierpoint **Borehole Log** BH₂ BN6 9GL Geo-Environmentalwww.gesl.net Sheet 1 of 1 Project No. Hole Type Co-ords: Portchester II Project Name: GE16226 CP Scale Location: Downend Road, Portchester Level: 1:50 Logged By Dates: Client: Miller Homes 09/02/2017 Sample and In Situ Testing Water Depth Level Well Legend Stratum Description (m) Strikes (m) Depth (m) Туре Results Brown gravelly silty CLAY 0.30 Firm brown gravelly CLAY. Gravel is fine to medium 0.50 D 1.00 S N=10 (1,2/2,2,3,3) 1.45 D 1.50 Firm brown gravelly CLAY. Gravel is fine to medium 1.70 D sized clasts of chalk and flint s N=11 (1,2/2,3,3,3) 2.00 2 2.45 D 2.60 D Soft to firm brown gravelly CLAY. Gravel is fine chalk 2.70 clasts 3.00 S N=6 (1,2/2,1,1,2) 3 D 3.45 3.50 Firm brown silty gravelly CLAY. Gravel is of fine to medium sized chalk clasts S 4.00 N=10 (1,2/2,2,3,3) 4.45 D S N=11 (1,2/2,2,3,4) 5.00 5.45 D 5.80 White CHALK recovered as moderately weak gravel 6.00 D sized chalk clasts and occasional flint nodules. Probable CIRIA Grade D/C grading to C/B 6.50 S N=16 (2,3/4,3,4,5) 6.95 D D 7.50 S N=17 (2,3/4,4,4,5) 8.00 8 D 8.45 9.00 D 9 N=18 (3,3/4,4,5,5) 9.50 S 9.95 D 10.00 10 End of Borehole at 10.00m Water Strikes (mbgl) Casing Diameter Depth (m) Chiselling (mbgl) Remarks Falling head tests conducted in borehole 0.00

Geo-l	Environmer	Hurst BN6		n		Tr	rial Pit Log	TrialPit I TP50 Sheet 1 o	1
Proje Name		ster II		1 -	ect No.		Co-ords: -	Date	
	ion: Downen	ıd Road İ	Portchester	GE1	6226		Level: Dimensions 200.00	09/02/20 Scale	
Client							(m): 09 Depth 0	1:25 Logged	d
		mples & In S	Situ Testina				3.00	V. Benn	ett
Water Strike	Depth	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Description		
	1 20	PP	DD=1 5kg/cm2	0.60			Dark brown clayey gravelly cobbly SILT. Gravel a cobbles consist of subangular flint. Firm orange-brown gravelly cobbly silty CLAY. G cobbles of subrounded to subangular flint.		1 —
	1.20	PP	PP=1.5kg/cm2	1.50		* * * * * * * * * * * * * * * * * * * *	Soft becoming very soft light greyish brown silty slightly gravelly CLAY. Gravel medium sized, sub	sandy pangular	-
	1.76	PP	PP=0.6kg/cm2				flint and chalk.		2
	3.00	PP	PP=0.25kg/cm2	3.00			Ēnd of Pit at 3.00m		4 —
	Water Science								5 —
Depth Strik		Remarks Stability						AG	S

Geo-E	nvironmen	Hurst BN6		n		Tr	rial Pit Log	TrialPit N TP502 Sheet 1 or	2
Projec Name	t Portches	ster II			ect No. 16226		Co-ords: - Level:	Date 09/02/201	17
Locati	on: Downen	d Road, F	Portchester	<u> </u> -	. 0220		Dimensions 212.50	Scale	•
Client:	Miller Ho	omes					Depth 0	1:25 Logged	
ter ke	Sar	mples & In S	Situ Testing	Depth	Level	ļ	3.00	V. Benne	tt
Water Strike	Depth	Туре	Results	(m)	(m)	Legend	Stratum Description		
	1.00	DD.	PP=0.25kg/cm2	0.40			Dark brown clayey gravelly cobbly SILT. Gravel cobbles consist of subangular flint. Soft orange-brown gravelly cobbly silty CLAY. G cobbles of subrounded to subangular flint.		1 —
	1.90 2.40	PP PP	PP=0.25kg/cm2 PP=0.1kg/cm2	2.10		X X X X X X X X X X X X X X X X X X X	Very soft becoming firm pale grey mottled slightl CLAY. Rare gravel inclusions of flint and chalk.	y orange	2
	3.00	PP	PP=1.5kg/cm2	3.00			End of Pit at 3.00m		4 —
Depth Strike	Rose to (mbgl)	Remarks						AGS	S

Geo-E	Invironment	Hurst BN6		ו		Tr	rial Pit Log	TrialPit I TP50 Sheet 1 c	3
Project Name:		er II			ect No. 16226		Co-ords: -	Date 09/02/20	117
	on: Downend	Road F	Portchester	GE	10220		Level: Dimensions 210.00	Scale	
			Ortoriostor				(m): 09 Depth 0	1:25 Logged	d
Client:			Situ Testing				3.00	V. Benn	ett
Water Strike	Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description		
Depth Strike	1.80 2.10	PP	PP=1.1kg/cm2 PP=1.6kg/cm2	2.00			Dark brown clayey gravelly cobbly SILT. Gravel cobbles consist of subangular flint. Firm orange-brown gravelly cobbly silty CLAY. G cobbles of subrounded to subangular flint. Stiff light greyish brown silty sandy slightly grave Gravel medium sized, subangular flint and chalk	iravel and	3
	Sta	ability						AG	Ŋ

Geo-l	Environmenta	Hurst BN6 9				Tr	rial Pit Log	TrialPit I TP60 Sheet 1 o	1
Projed Name		er II			ect No. 16226		Co-ords: - Level:	Date 09/02/20	
Locat	ion: Downend	Road, F	Portchester	-			Dimensions 195.00	Scale 1:25	:
Client	:: Miller Hon	nes					(m): Depth 3.00	Logged V. Benn	d
Water Strike	Samp	les & In S	Situ Testing	Depth	Level	Legend	Stratum Description	v. Dellii	eu
Str	Depth	Туре	Results	(m)	(m)	Legenu	Dark brown clayey gravelly cobbly SILT. Rare root	s I	
				0.70			(2-3mm). Gravel and cobbles consist of subangula Dark brown clayey very gravelly very cobbly SILT. and cobbles consist of subangular flint.	ar flint.	1 —
				1.50		* * * * * * * * * * * * * * * * * * *	Orange-brown gravelly cobbly silty CLAY. Gravel a cobbles of subrounded to subangular flint.	and	
	2.00	PP	PP=0.5kg/cm2	1.95			Soft creamy orange brown silty sandy slightly gravel CLAY. Gravel medium sized, subangular flint and o	relly chalk.	2 —
				3.00			End of Pit at 3.00m		4
Depth Strike	Water Strikes Rose to (mbdy) Re	marks							5 —

Geo-l	Environmen	Hurst BN6		n		Tr	rial Pit Log		TrialPit 1 TP60	2
Projed Name		ster II			ect No. 16226		Co-ords: -		Date 09/02/20	17
	ion: Downen	d Road. I	Portchester	GE	10220		/	10.00	Scale	
Client			0.10.100101				(m): 09 Depth 0		1:25 Logged	d
			Situ Testing	5 "	Ι		3.00		V. Benne	<u>ett</u>
Water Strike	Depth	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Descrip	otion		
	1.00	PP	PP=0.25kg/cm2	0.78			Dark brown clayey gravelly cobbly cobbles consist of subangular flint. Very soft orange-brown gravelly co and cobbles of subrounded to suba	bbly silty CLA		1 —
	2.50	PP	PP=0.75kg/cm2	1.97		× × × × × × × × × × × × × × × × × × ×	Soft creamy orange brown silty sar CLAY. Gravel medium sized, subar	ndy slightly gra ngular flint and	avelly d chalk.	2
				3.00			End of Pit at 3.00)m		3
										4
Depth Strike	Water Strikes Risse to (mbgr)	Remarks								5 —
	S	Stability							AG	S

	Invironment	Hurst BN6				Tr	rial Pit Log	TrialPit TP60 Sheet 1	03 of 1
Project Name:	t Portchest	er II			ect No. 16226		Co-ords: - Level:	Date 09/02/20	
Locati	on: Downend	Road, F	Portchester				Dimensions 205.00 (m):	Scale 1:25	
Client:	Miller Hor	nes					(m): 09	Logge V. Benn	d
ater	Samp	oles & In S	Situ Testing	Depth	Level	Legend		V. DOM	iott
Water Strike	Depth 0.60	PP PP	Results PP=0.75kg/cm2 PP=2kg/cm2	Depth (m) 0.40 3.00	Level (m)		Stratum Description Dark brown clayey gravelly cobbly SILT. Gravel a cobbles consist of subangular flint. Soft becoming stiff orange-brown gravelly cobbly CLAY. Gravel and cobbles of subrounded to sub flint. End of Pit at 3.00m	and r silty	2 - 3
Depth Strike		emarks						AG	5 — S



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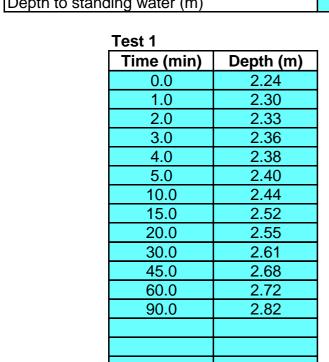
Project Name: Downend Road, Portchester

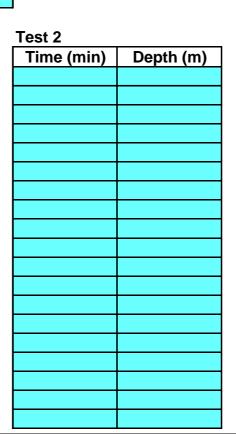
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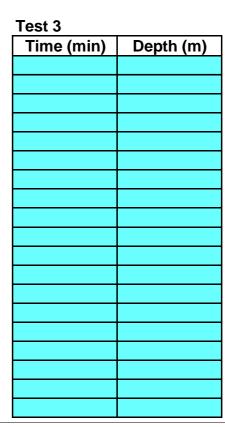
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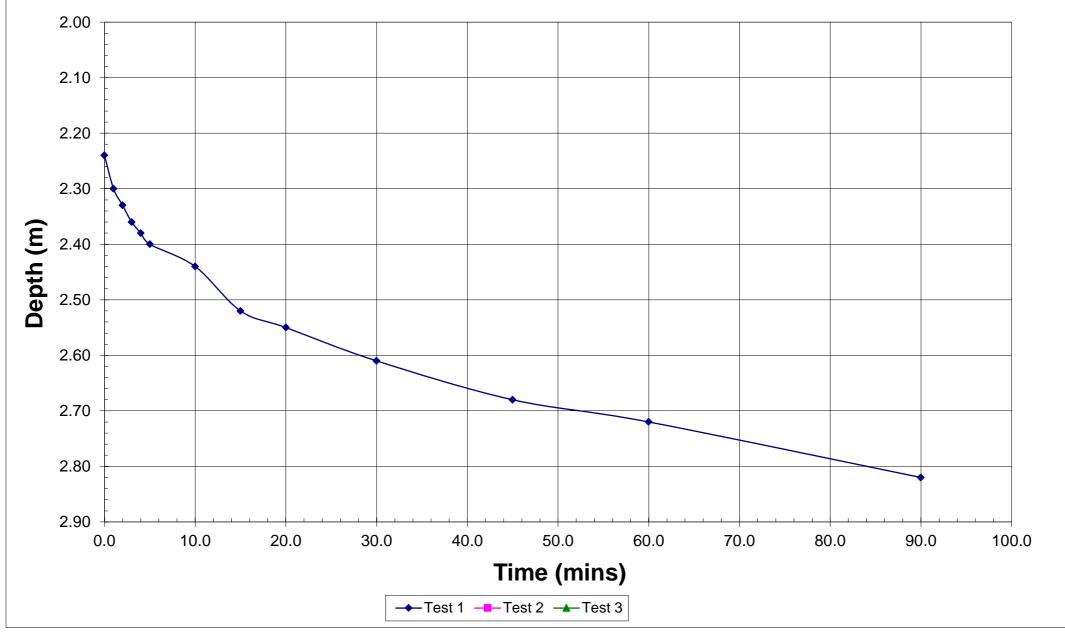
Date: 13/12/2016

Pit reference	TP1
Pit depth (m)	3.00
Pit width (m)	0.60
Pit length (m)	1.43
Denth to standing water (m)	









Max. depth (m)	3.00	3.00	3.00
Effective depth (m)	0.76	3.00	3.00
75% effective depth (m)	2.43	0.75	0.75
50% effective depth (m)	2.62	1.50	1.50
25% effective depth (m)	2.81	2.25	2.25
t75 (min)	12.00		
t50 (min)	32.00		
t25 (min)	88.00		
Vp 75-25	0.33	1.29	1.29
ap 50	2.4008	6.948	6.948
tp 75-25	76.00	0.00	0.00

Soil infiltration rate (m/s)	3.0E-05	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	1.07E+02	#DIV/0!	#DIV/0!

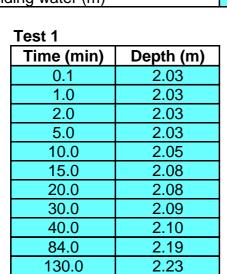


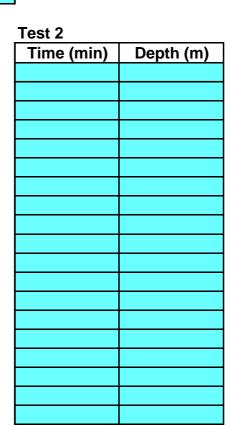
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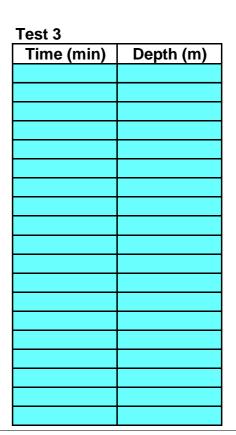
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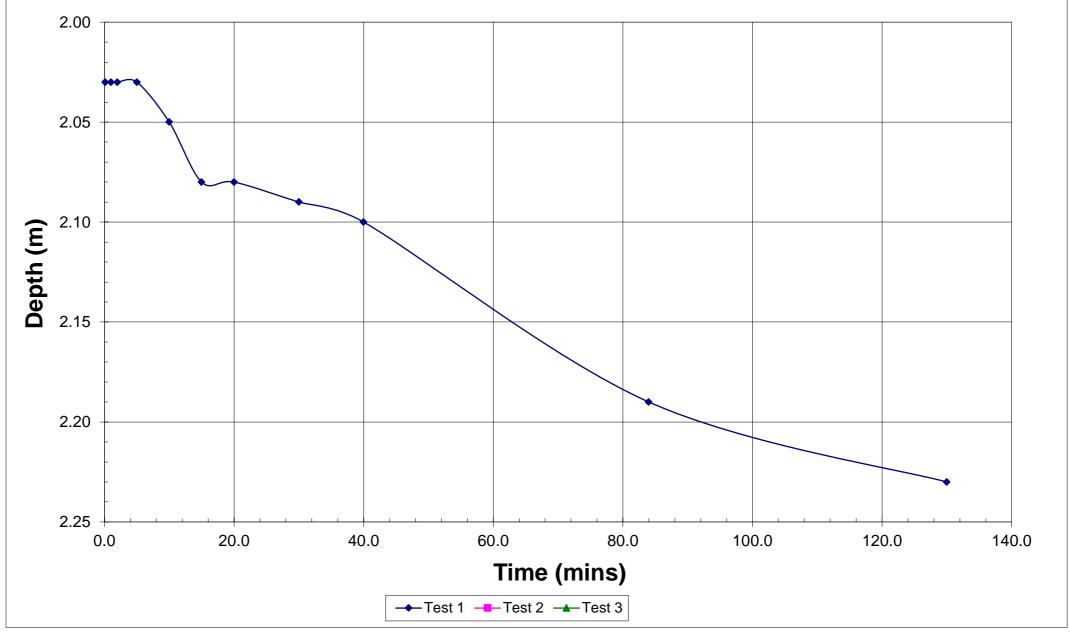
Project Name : Downend Road, PortchesterJob No. :GE15996Client : Miller HomesDate :13/12/2016

Pit reference	TP2
Pit depth (m)	3.00
Pit width (m)	0.60
Pit length (m)	1.80
Depth to standing water (m)	









Max. depth (m)	3.00	3.00	3.00
Effective depth (m)	0.97	3.00	3.00
75% effective depth (m)	2.27	0.75	0.75
50% effective depth (m)	2.52	1.50	1.50
25% effective depth (m)	2.76	2.25	2.25
t75 (min) t50 (min) t25 (min)			
Vp 75-25	0.52	1.62	1.62
ap 50	3.408	8.28	8.28
tp 75-25	0.00	0.00	0.00

Soil infiltration rate (m/s)	#DIV/0!	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	#DIV/0!	#DIV/0!	#DIV/0!



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Project Name: Downend Road, Portchester Job No.: GE15996 Client : Miller Homes 13/12/2016 Date:

Pit reference	TP3
Pit depth (m)	3.00
Pit width (m)	0.60
Pit length (m)	1.94
Depth to standing water (m)	

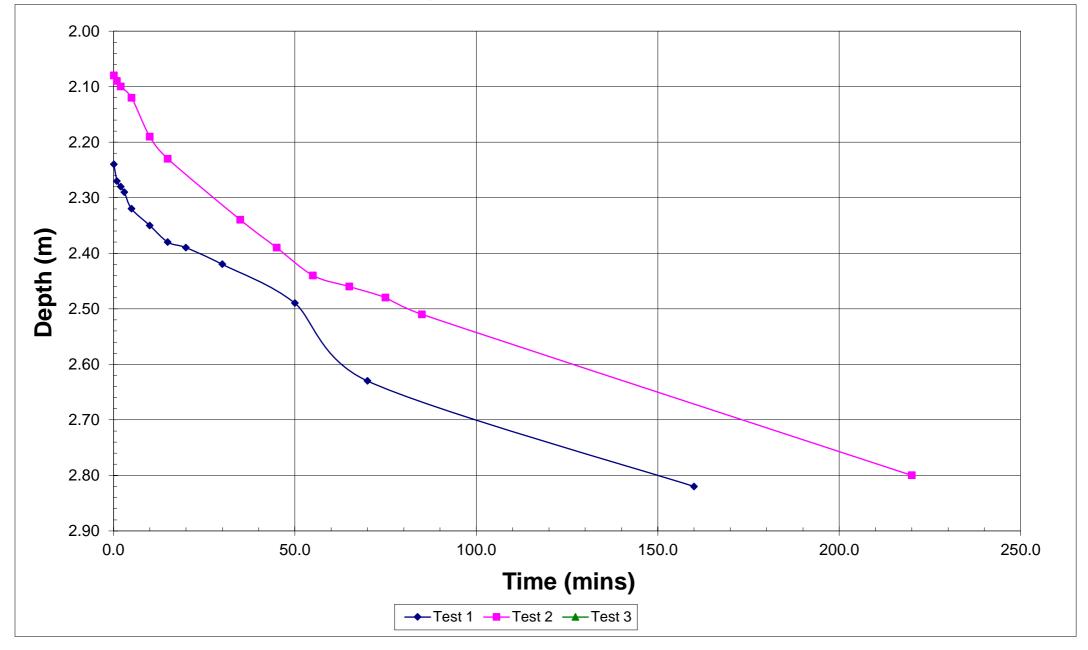
Test 1					
Time (min)	Depth (m)				
0.1	2.24				
1.0	2.27				
2.0	2.28				
	0.00				

0.1	2.24
1.0	2.27
2.0	2.28
3.0	2.29
5.0	2.32
10.0	2.35
15.0	2.38
20.0	2.39
30.0	2.42
50.0	2.49
70.0	2.63
160.0	2.82

Test 2				
Time (min)	Depth (m)			
0.1	2.08			
1.0	2.09			
2.0	2.10			
5.0	2.12			
10.0	2.19			
15.0	2.23			
35.0	2.34			
45.0	2.39			
55.0	2.44			
65.0	2.46			
75.0	2.48			
85.0	2.51			
220.0	2.80			

Test 3

Test 3					
Time (min)	Depth (m)				
	_				



Max. depth (m)	3.00	3.00	3.00
Effective depth (m)	0.76	0.92	3.00
75% effective depth (m)	2.43	2.31	0.75
50% effective depth (m)	2.62	2.54	1.50
25% effective depth (m)	2.81	2.77	2.25
t75 (min)	34.00	30.00	
t50 (min)	68.00	100.00	
t25 (min)	155.00	210.00	
Vp 75-25	0.44	0.54	1.75
ap 50	3.0944	3.5008	8.784
tp 75-25	121.00	180.00	0.00

Soil infiltration rate (m/s)	2.0E-05	1.4E-05	#DIV/0!
Soil infiltration rate (mm/hr)	7.09E+01	5.10E+01	#DIV/0!

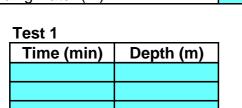


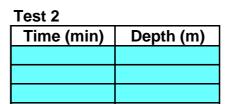
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Project Name : Downend Road, PortchesterJob No. :GE15996Client : Miller HomesDate :13/12/2016

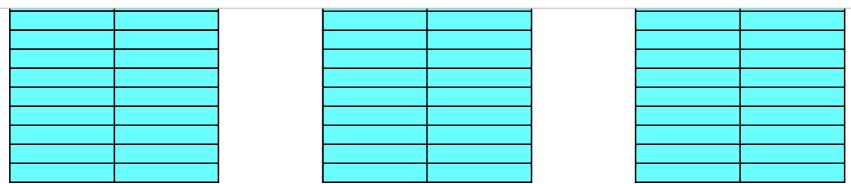
Pit reference	TP4
Pit depth (m)	3.00
Pit width (m)	0.60
Pit length (m)	1.95
Depth to standing water (m)	

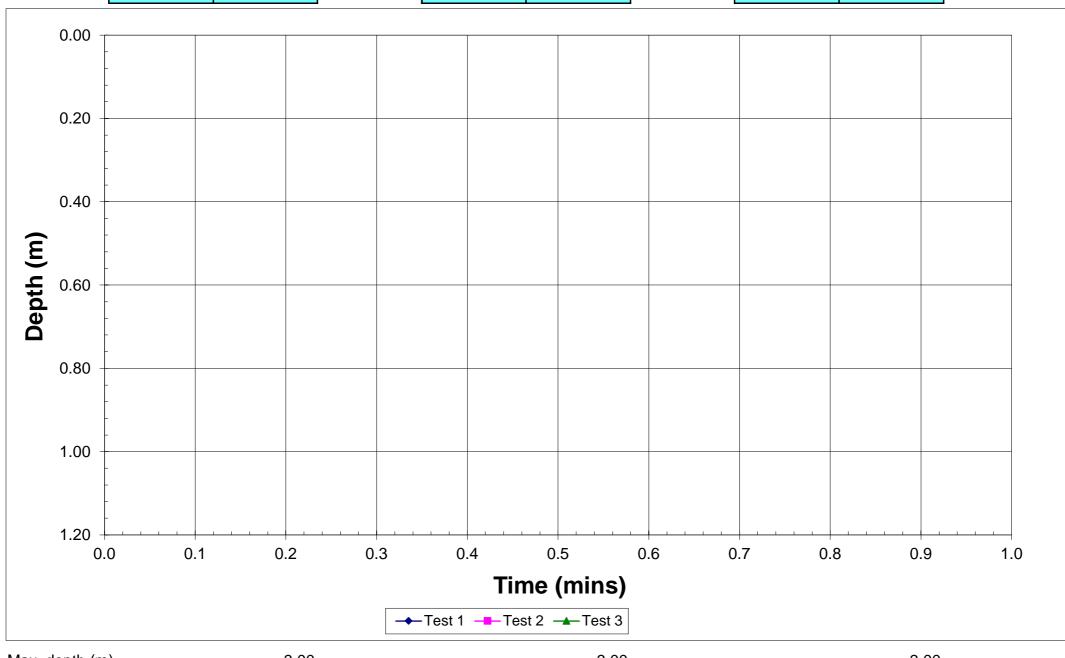




Test 3	
Time (min)	Depth (m)

Water outflow was too fast for a head of water to build in the pit. c. 1800litres of water pumped into the pit for the test. Water drained out immediately. Multiple fillings were attempted, each having the same outcome.





Max. depth (m)	3.00	3.00	3.00
Effective depth (m) 75% effective depth (m) 50% effective depth (m) 25% effective depth (m)	3.00	3.00	3.00
	0.75	0.75	0.75
	1.50	1.50	1.50
	2.25	2.25	2.25
t75 (min) t50 (min) t25 (min)			
Vp 75-25	1.76	1.76	1.76
ap 50	8.82	8.82	8.82
tp 75-25	0.00	0.00	0.00

Soil infiltration rate (m/s)	#DIV/0!	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	#DIV/0!	#DIV/0!	#DIV/0!

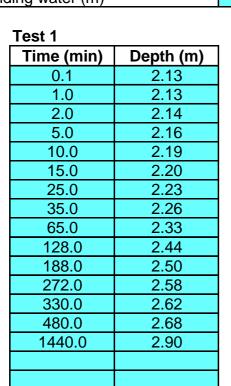


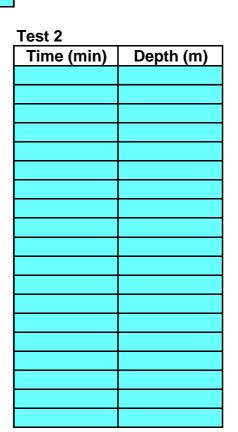
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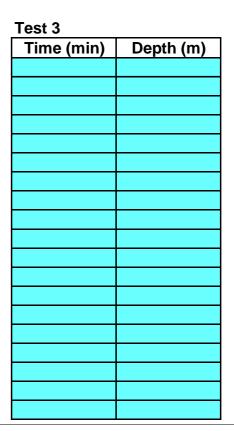
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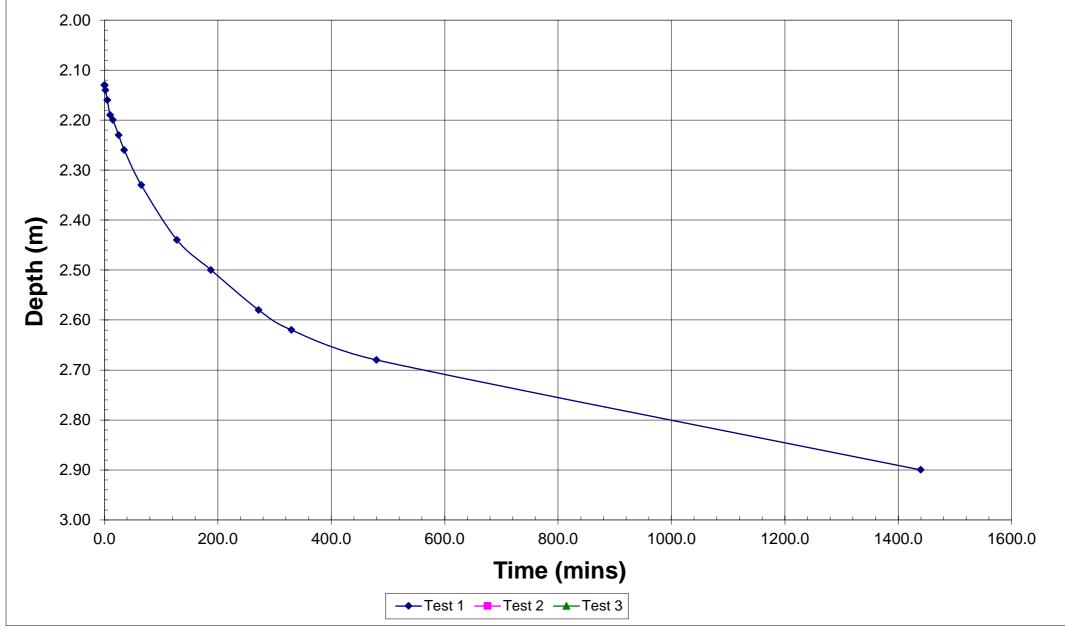
Project Name : Downend Road, PortchesterJob No. :GE15996Client : Miller HomesDate :13/12/2016

Pit reference	TP5
Pit depth (m)	3.10
Pit width (m)	0.60
Pit length (m)	1.70
Depth to standing water (m)	









Max. depth (m)	3.10	3.10	3.10
Effective depth (m)	0.97	3.10	3.10
75% effective depth (m)	2.37	0.78	0.78
50% effective depth (m)	2.62	1.55	1.55
25% effective depth (m)	2.86	2.33	2.33
t75 (min)	85.00		
t50 (min)	330.00		
t25 (min)	1400.00		
\/n 75 25	0.49	1.50	1.58
Vp 75-25		1.58	
ap 50	3.251	8.15	8.15
tp 75-25	1315.00	0.00	0.00

Soil infiltration rate (m/s)	1.9E-06	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	6.94E+00	#DIV/0!	#DIV/0!



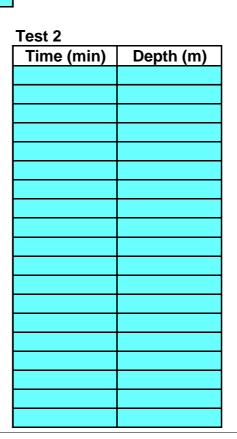
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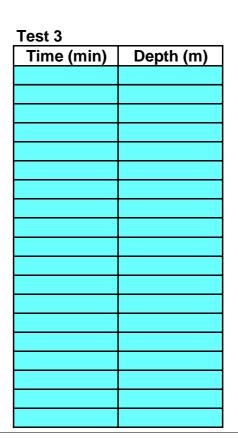
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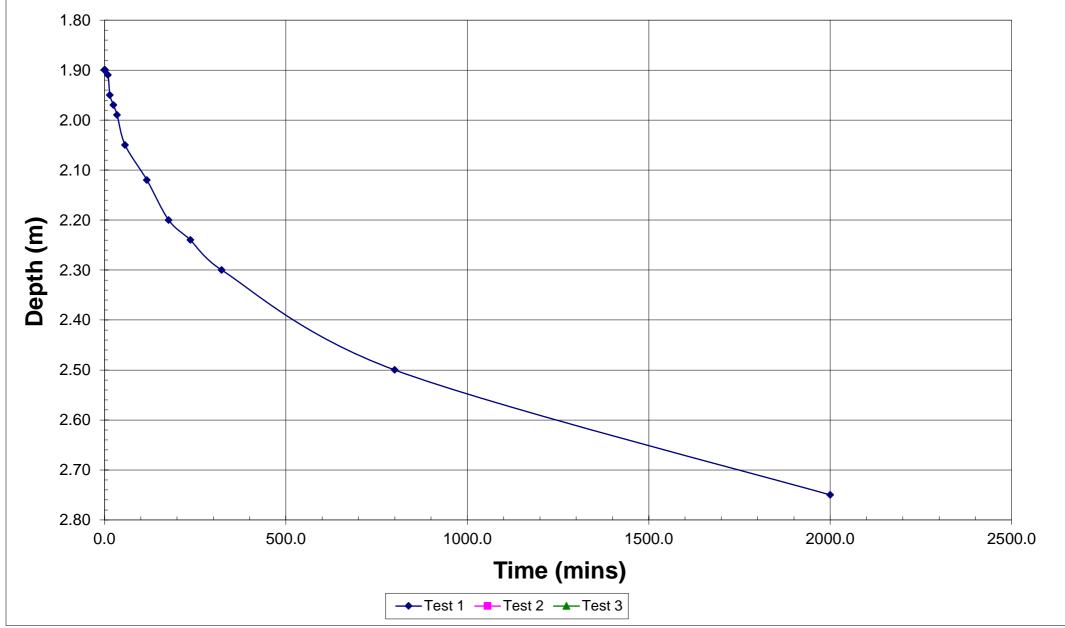
Project Name : Downend Road, PortchesterJob No. :GE15996Client : Miller HomesDate :13/12/2016

Pit reference	TP6
Pit depth (m)	3.00
Pit width (m)	0.60
Pit length (m)	1.75
Depth to standing water (m)	

Time (min)	Depth (m)
0.1	1.90
1.0	1.90
2.0	1.90
10.0	1.91
15.0	1.95
25.0	1.97
35.0	1.99
57.0	2.05
117.0	2.12
177.0	2.20
237.0	2.24
323.0	2.30
800.0	2.50
2000.0	2.75







Max. depth (m)	3.00	3.00	3.00
Effective depth (m)	1.10	3.00	3.00
75% effective depth (m)	2.18	0.75	0.75
50% effective depth (m)	2.45	1.50	1.50
25% effective depth (m)	2.73	2.25	2.25
t75 (min)	160.00		
t50 (min)	650.00		
t25 (min)	1900.00		
Vp 75-25	0.58	1.58	1.58
ap 50	3.635	8.1	8.1
tp 75-25	1740.00	0.00	0.00

Soil infiltration rate (m/s)	1.5E-06	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	5.48E+00	#DIV/0!	#DIV/0!



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Project Name: Downend Road, Portchester II

Client: Miller Homes

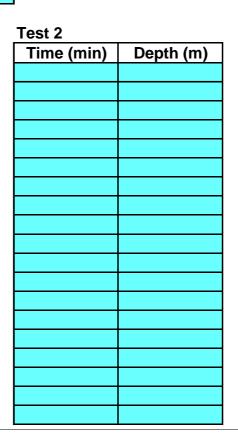
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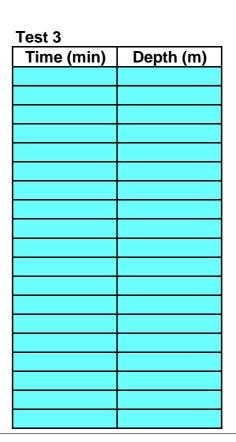
Date: 09/02/2017

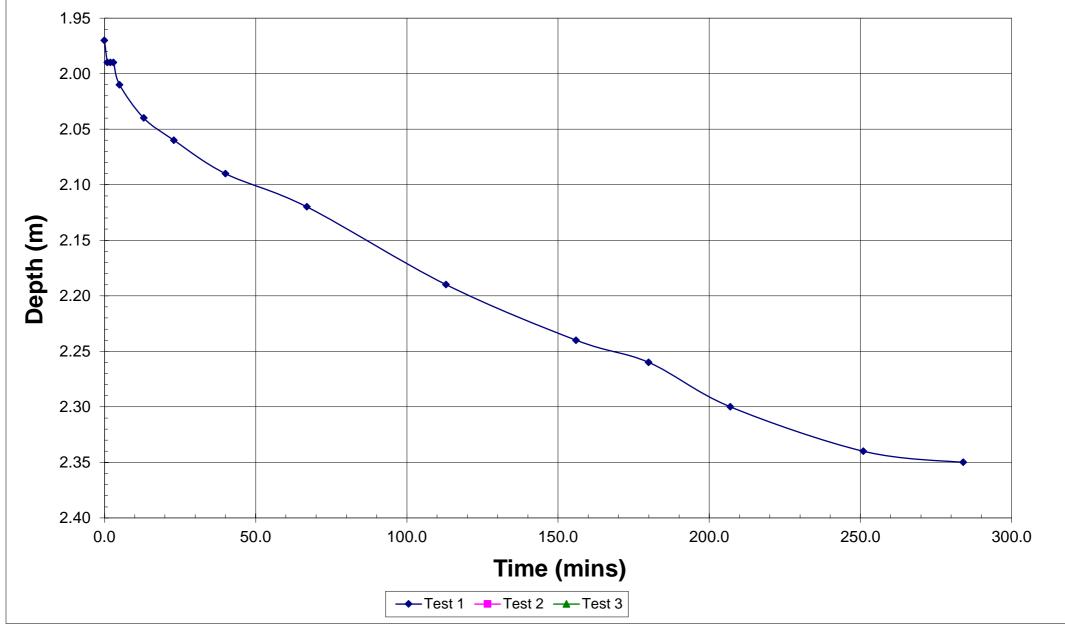
Pit reference	TP501
Pit depth (m)	2.35
Pit width (m)	0.60
Pit length (m)	2.00
Depth to standing water (m)	

Base depth adjusted to maximum water depth during test

Test 1				
Time (min)	Depth (m)			
0.0	1.97			
1.0	1.99			
2.0	1.99			
3.0	1.99			
5.0	2.01			
13.0	2.04			
23.0	2.06			
40.0	2.09			
67.0	2.12			
113.0	2.19			
156.0	2.24			
180.0	2.26			
207.0	2.30			
251.0	2.34			
284.0	2.35			







Max. depth (m)	2.35	2.35	2.35
Effective depth (m)	0.38	2.35	2.35
75% effective depth (m)	2.07	0.59	0.59
50% effective depth (m)	2.16	1.18	1.18
25% effective depth (m)	2.26	1.76	1.76
t75 (min)	30.00		
t50 (min)	90.00		
t25 (min)	180.00		
Vp 75-25	0.23	1.41	1.41
ap 50	2.188	7.31	7.31
tp 75-25	150.00	0.00	0.00

Soil infiltration rate (m/s)	1.2E-05	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	4.17E+01	#DIV/0!	#DIV/0!



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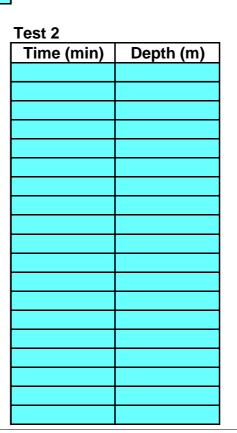
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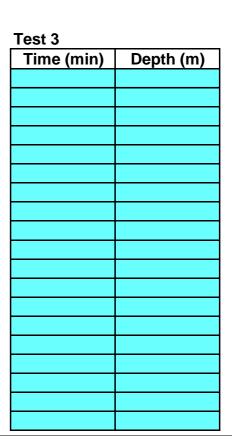
Project Name : Downend Road, Portchester IIJob No. :GE16226Client : Miller HomesDate :09/02/2017

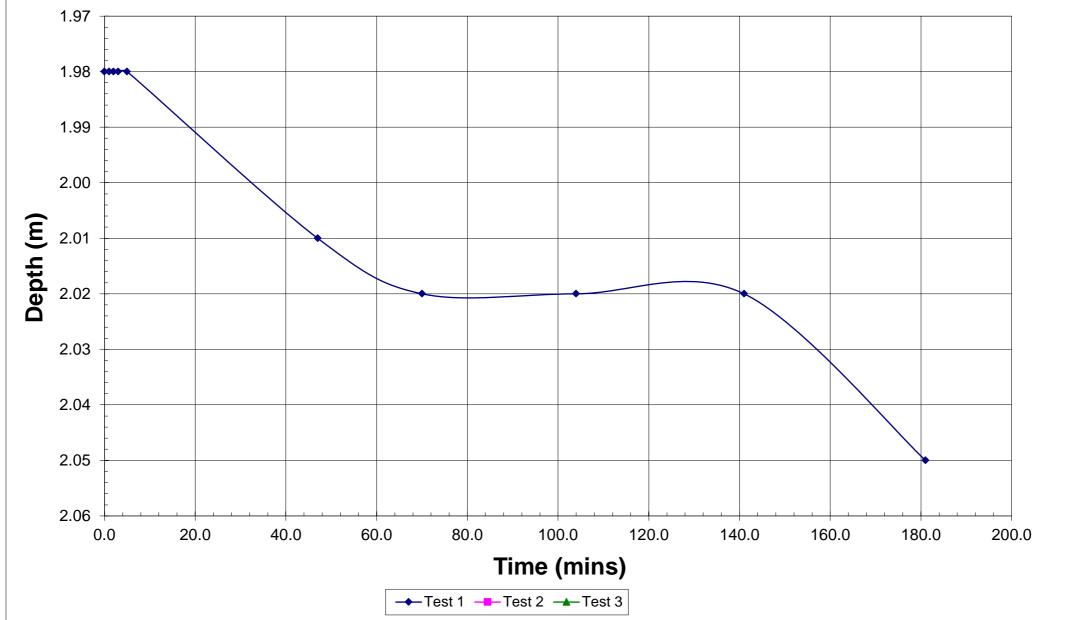
Pit reference	TP502
Pit depth (m)	2.05
Pit width (m)	0.60
Pit length (m)	2.15
Depth to standing water (m)	

Base depth adjusted to maximum water depth during test

Time (min)	Depth (m)
0.0	1.98
1.0	1.98
2.0	1.98
3.0	1.98
5.0	1.98
47.0	2.01
70.0	2.02
104.0	2.02
141.0	2.02
181.0	2.05







Max. depth (m)	2.05	2.05	2.05
Effective depth (m)	0.07	2.05	2.05
75% effective depth (m)	2.00	0.51	0.51
50% effective depth (m)	2.02	1.03	1.03
25% effective depth (m)	2.03	1.54	1.54
t75 (min)	36.00		
t50 (min)	70.00		
t25 (min)	156.00		
Vp 75-25	0.05	1.32	1.32
ap 50	1.4825	6.9275	6.9275
tp 75-25	120.00	0.00	0.00

Soil infiltration rate (m/s)	4.2E-06	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	1.52E+01	#DIV/0!	#DIV/0!



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Project Name: Downend Road, Portchester II

Client: Miller Homes

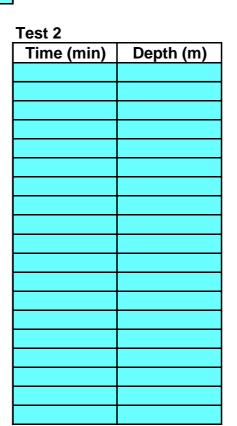
Job No.: GE16226

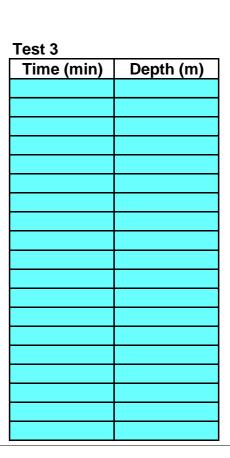
Date: 09/02/2017

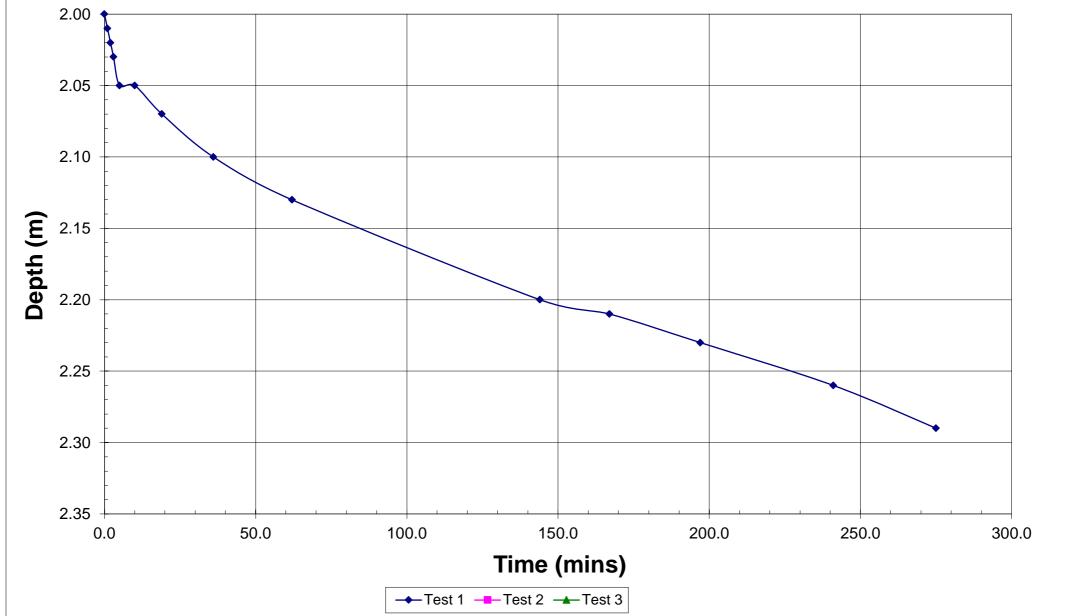
Pit reference	TP503
Pit depth (m)	2.29
Pit width (m)	0.60
Pit length (m)	2.10
Depth to standing water (m)	

Base depth adjusted to maximum water depth during test

Depth (m)
2.00
2.01
2.02
2.03
2.05
2.05
2.07
2.10
2.13
2.20
2.21
2.23
2.26
2.29







Max. depth (m)	2.29	2.29	2.29
Effective depth (m)	0.29	2.29	2.29
75% effective depth (m)	2.07	0.57	0.57
50% effective depth (m)	2.15	1.15	1.15
25% effective depth (m)	2.22	1.72	1.72
t75 (min)	19.00		
t50 (min)	85.00		
t25 (min)	180.00		
Vp 75-25	0.18	1.44	1.44
ap 50	2.043	7.443	7.443
tp 75-25	161.00	0.00	0.00

Soil infiltration rate (m/s)	9.3E-06	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	3.33E+01	#DIV/0!	#DIV/0!



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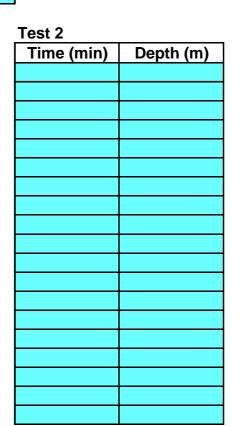
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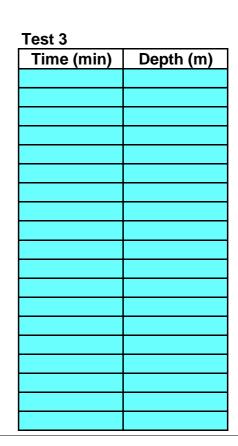
Project Name : Downend Road, Portchester IIJob No. :GE16226Client : Miller HomesDate :09/02/2017

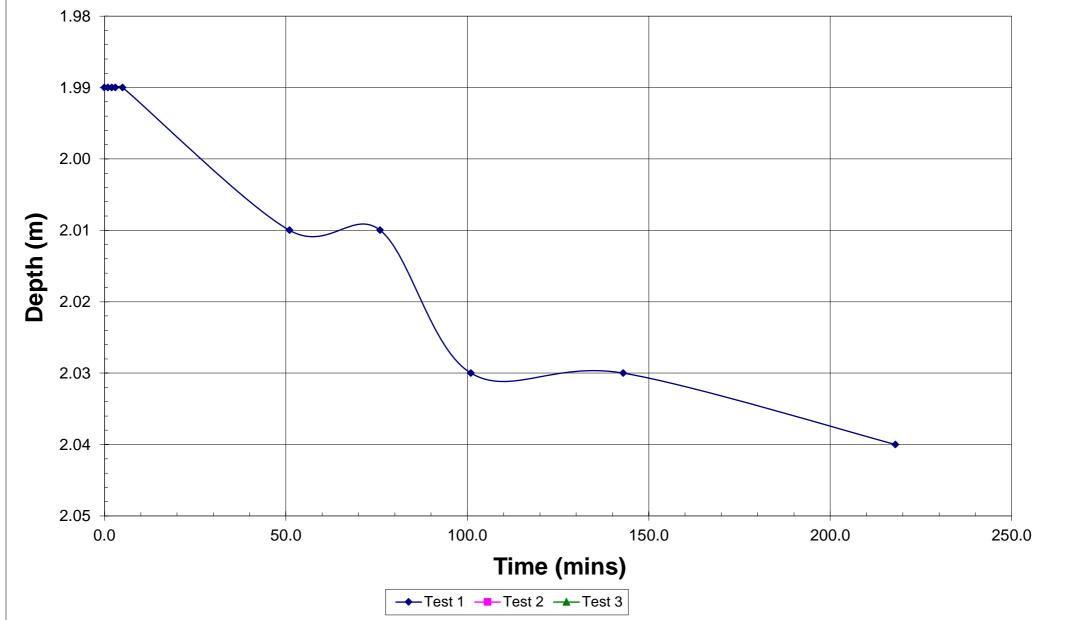
Pit reference	TP601
Pit depth (m)	2.04
Pit width (m)	0.60
Pit length (m)	1.95
Depth to standing water (m)	

Base depth adjusted to maximum water depth during test

Test 1			
Time (min)	Depth (m)		
0.0	1.99		
1.0	1.99		
2.0	1.99		
3.0	1.99		
5.0	1.99		
51.0	2.01		
76.0	2.01		
101.0	2.03		
143.0	2.03		
218.0	2.04		







Max. depth (m)	2.04	2.04	2.04
Effective depth (m)	0.05	2.04	2.04
75% effective depth (m)	2.00	0.51	0.51
50% effective depth (m)	2.02	1.02	1.02
25% effective depth (m)	2.03	1.53	1.53
t75 (min)	27.00		
t50 (min)	85.00		
t25 (min)	100.00		
Vp 75-25	0.03	1.19	1.19
ap 50	1.2975	6.372	6.372
tp 75-25	73.00	0.00	0.00
NOTE: Values are based on	the mean and the all water ale	ath and not a fully during diseast. They require one in	all a a thur a a mhur a fi the a ta a time manage

Soil infiltration rate (m/s)	5.1E-06	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	1.85E+01	#DIV/0!	#DIV/0!



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Project Name: Downend Road, Portchester II

Client: Miller Homes

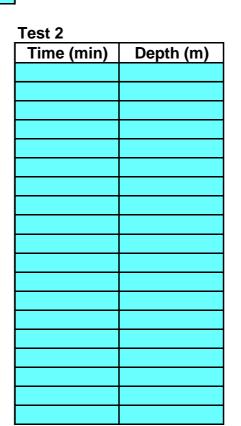
Job No.: GE16226

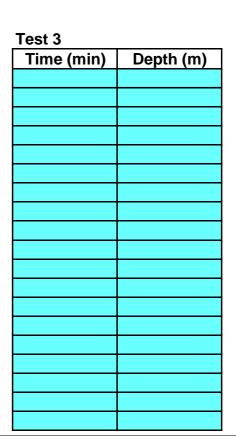
Date: 09/02/2017

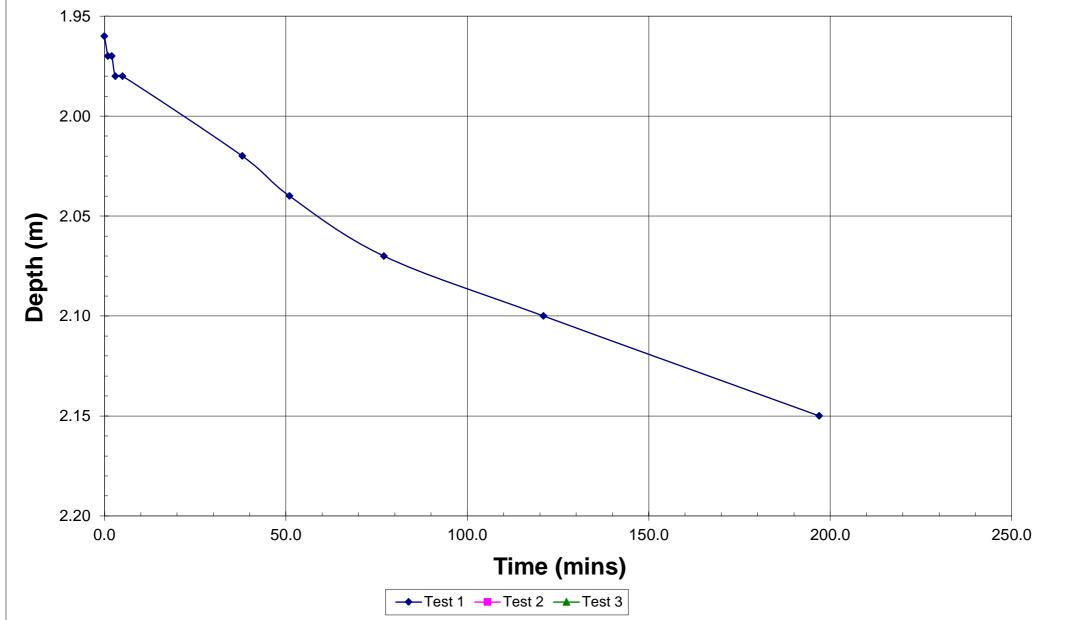
Pit reference	TP602
Pit depth (m)	2.15
Pit width (m)	0.60
Pit length (m)	2.10
Depth to standing water (m)	

Base depth adjusted to maximum water depth during test

Test 1	
Time (min)	Depth (m)
0.0	1.96
1.0	1.97
2.0	1.97
3.0	1.98
5.0	1.98
38.0	2.02
51.0	2.04
77.0	2.07
121.0	2.10
197.0	2.15







Max. depth (m)	2.15	2.15	2.15
Effective depth (m)	0.19	2.15	2.15
75% effective depth (m)	2.01	0.54	0.54
50% effective depth (m)	2.06	1.08	1.08
25% effective depth (m)	2.10	1.61	1.61
t75 (min)	30.00		
t50 (min)	65.00		
t25 (min)	121.00		
Vp 75-25	0.12	1.35	1.35
ар 50	1.773	7.065	7.065
tp 75-25	91.00	0.00	0.00
NATE MALE SERVICES		. (1	in the second of

Soil infiltration rate (m/s)	1.2E-05	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	4.45E+01	#DIV/0!	#DIV/0!



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Project Name: Downend Road, Portchester II

Client: Miller Homes

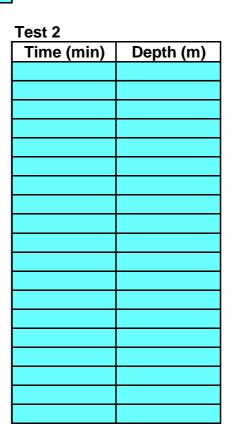
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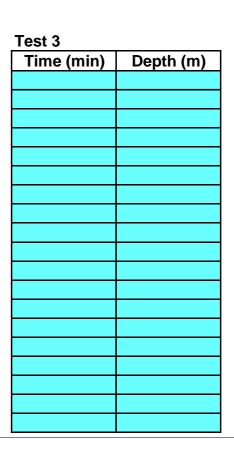
Date: 09/02/2017

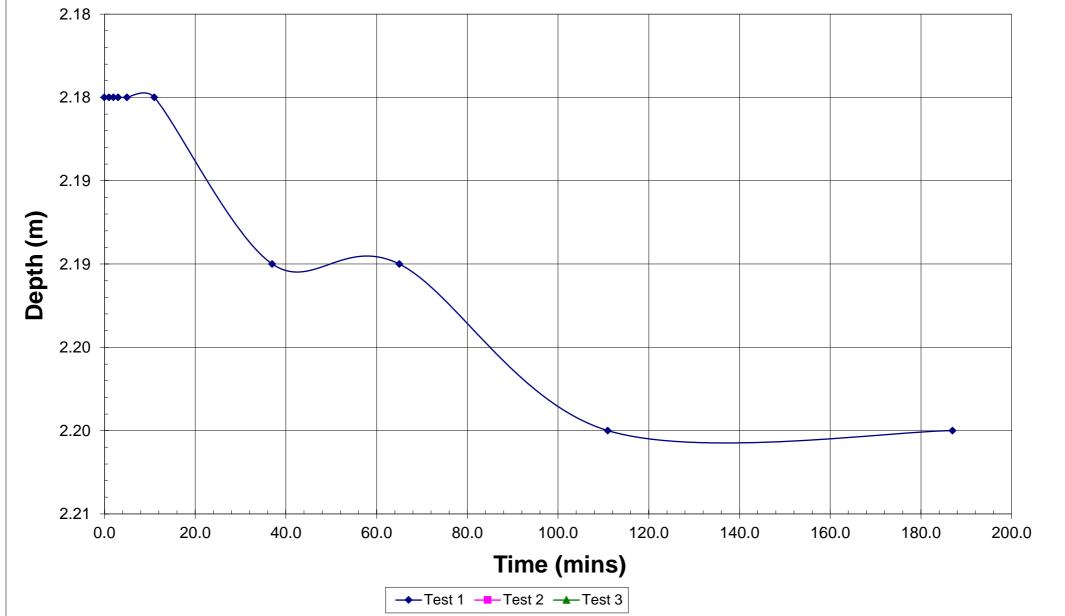
Pit reference	TP603
Pit depth (m)	2.20
Pit width (m)	0.60
Pit length (m)	2.05
Depth to standing water (m)	

Base depth adjusted to maximum water depth during test

Test 1									
Time (min)	Depth (m)								
0.0	2.18								
1.0	2.18								
2.0	2.18								
3.0	2.18								
5.0	2.18								
11.0	2.18								
37.0	2.19								
65.0	2.19								
111.0	2.20								
187.0	2.20								







Max. depth (m)	2.20	2.20	2.20
Effective depth (m)	0.02	2.20	2.20
75% effective depth (m)	2.19	0.55	0.55
50% effective depth (m)	2.19	1.10	1.10
25% effective depth (m)	2.20	1.65	1.65
t75 (min)	24.00		
t50 (min)	24.00		
t25 (min)	86.00		
Vp 75-25	0.01	1.35	1.35
ар 50	1.283	7.06	7.06
tp 75-25	62.00	0.00	0.00

Soil infiltration rate (m/s)	2.6E-06	#DIV/0!	#DIV/0!
Soil infiltration rate (mm/hr)	9.28E+00	#DIV/0!	#DIV/0!

cation	Ī	Down	end Road, Portch		Position				O 22282:2012)	Date:	10/02/2017
	denth	(m bgl)	s		3	1	BH1 Date: Standing water level (m bgl)				
sing he			ground level		1			1	1	<u> </u>	
m) Time e				-	Depth of casing	g below ground le	evel (m bgl)	1.5	Casing diamete	r (m)	0.15
			Time 6	total time	t-t0	Depth (m)	_	<u> </u>	T		
		mins	secs	(secs)	(secs)	- op (,	h _o	h _o /ht	In (h _o /ht)	dh/dt (m/s)	
	•	0	10	10	0.00	0.10 0.20	0.10	1.00	0.00	0.00	
		0	20 30	20 30	10.00 20.00	0.20	0.10 0.10	0.50 0.40	0.69 0.92	0.10 0.05	
		0	45	45	35.00	0.31	0.10	0.32	1.13	0.06	
		1	- 20	60	50.00	0.40 0.44	0.10 0.10	0.25 0.23	1.39 1.48	0.09 0.04	
		2	30	90 120	80.00 110.00	0.47	0.10	0.23	1.48	0.04	
		3	-	180	170.00	0.51	0.10	0.20	1.63	0.04	
		<u>4</u> 5	-	240 300	230.00 290.00	0.53 0.55	0.10 0.10	0.19 0.18	1.67 1.70	0.02 0.02	
		7	-	420	410.00	0.62	0.10	0.16	1.82	0.02	
		9	-	540	530.00	0.68	0.10	0.15	1.92	0.06	
		12 15	-	720 900	710.00 890.00	0.70 0.72	0.10 0.10	0.14 0.14	1.95 1.97	0.02 0.02	
		20	-	1200	1190.00	0.72	0.10	0.14	2.00	0.02	
		25	-	1500	1490.00	0.78	0.10	0.13	2.05	0.04	
		30 40	-	1800 2400	1790.00 2390.00	0.82 0.89	0.10 0.10	0.12 0.11	2.10 2.19	0.04 0.07	
		50	-	3000	2990.00	0.92	0.10	0.11	2.22	0.03	
		60	-	3600	3590.00	0.94	0.10	0.11	2.24	0.02	
Change in head (m)	0.20 0.30 0.40										
Ch	0.60 0.70 0.80										
Ch	0.70		30 45	60 90	120 180	240 300	420 540	720 90	00 1200 150	00 1800 240	0 3000 3600
ape Fac	0.70 0.80 0.90 1.00		22282-1	60 90	120 180	L = D = L/D = F= t0 t h0 h	1.50 0.15 10.00 3.15 10.00 3600.00 0.10 0.94		00 1200 150	00 1800 240	0 3000 3600
ape Fac	0.70 0.80 0.90 1.00	from BS EN ISO	22282-1 282-2)	60 90	120 180	L = D = L/D = F= t0 t h0	1.50 0.15 10.00 3.15 10.00 3600.00 0.10 0.94 0.0177 -3.51E-06	m/s	(negative value	means falling hea	
ape Fac	0.70 0.80 0.90 1.00	from BS EN ISO Downend Road Miller Homes	22282-1 282-2)			L = D = L/D = F= t0 t h0 h S =	1.50 0.15 10.00 3.15 10.00 3600.00 0.10 0.94 0.0177	m/s BH1 A Variable Geo-E	(negative value Head Permeabili nvironmental Ser	means falling hea ty Test at 3m bgl vices Ltd	
ape Fac	0.70 0.80 0.90 1.00	from BS EN ISO Downend Road,	22282-1 282-2)	60 90 Rev: Date:	120 180	L = D = L/D = F= t0 t h0 h S =	1.50 0.15 10.00 3.15 10.00 3600.00 0.10 0.94 0.0177 -3.51E-06	m/s BH1 A Variable Geo-E i Unit 7 Da	(negative value Head Permeabili	means falling hea ty Test at 3m bgl vices Ltd kfield Road	

						ty Test (after	BS5930:2015 aı				
cation		Down	end Road, Portch	ester II	Position		BH:			Date:	10/02/2017
rehole							Standing water level (m bgl)				-
sing he)	ight ab	ove	ground level	-	Depth of casing	below ground lo	evel (m bgl)	3	Casing diamete	r (m)	0.15
			Time e	elapsed		Double ()			· T		
		mins	secs	total time (secs)	t-t0 (secs)	Depth (m)	h _o	h _o /ht	In (h _o /ht)	dh/dt (m/s)	
	F	0	10 20	10 20	0.00 10.00	0.60 1.20	0.60 0.60	1.00 0.50	0.00 0.69	0.00	
	F	0	30	30	20.00	1.40	0.60	0.30	0.85	0.20	
	F	0	45	45 60	35.00 50.00	1.60 2.00	0.60 0.60	0.38 0.30	0.98 1.20	0.20 0.40	
	E	1	30	90	80.00	2.40	0.60	0.35	1.39	0.40	
	-	3	-	120 180	110.00 170.00	4.00 4.80	0.60 0.60	0.15 0.13	1.90 2.08	1.60 0.80	
	E	4	-	240	230.00	5.80	0.60	0.10	2.27	1.00	
	-	5 7	-	300 420	290.00 410.00	6.20 6.50	0.60 0.60	0.10	2.34	0.40 0.30	
	F	9	-	540	530.00	7.30	0.60	0.03	2.50	0.80	
	-	12 15	-	720 900	710.00 890.00	8.20 8.70	0.60 0.60	0.07 0.07	2.61 2.67	0.90 0.50	
	E	20	-	1200	1190.00	9.20	0.60	0.07	2.73	0.50	
	-	25 30	-	1500 1800	1490.00 1790.00	9.80 10.00	0.60 0.60	0.06 0.06	2.79 2.81	0.60 0.20	
	Ė	40	-	1800	1750.00	10.00	0.00	0.00	2.01	-10.00	
	-	50 60	-							0.00	
	L	00								0.00	
Change in head (m)	2.00 4.00 6.00 8.00										
	12.00	10 20	30 45	60 90	120 180	240 300 Elapsed t	420 540 ime (secs)	720 9	00 1200 150	00 1800	
ape Fac		rom BS EN ISO m BS EN ISO 22				L = D = L/D = F= t0 t h0 h S =	7.00 0.15 46.67 9.70 10.00 1800.00 0.60 10.00 0.0177				
rmeabi						s = k =	-2.86E-06 r	m/s	(negative value	means falling head o	f water)
rmeabil	1	Downend Road	, Portchester II			k =	-2.86E-06 r			means falling head o	f water)
Dject: ent:	ı	Miller Homes	, Portchester II	Rov		k =	-2.86E-06 r	BH1 A Variablo Geo- E	e Head Permeabili nvironmental Ser	ty Test at 10m bgl vices Ltd	f water)
ject:	1		, Portchester II	Rev: Date:		k =	-2.86E-06 r	BH1 A Variablo Geo-E Unit 7 D a	e Head Permeabili	ty Test at 10m bgl vices Ltd ckfield Road	f water)

				Variable Hea		ty Test (after	BS5930:2015 ar	nd BS EN IS	O 22282:2012)		
cation		Downer	nd Road, Portch	ester II	Position		BH2	2		Date:	10/02/2017
Borehole depth (m bgl)					3		Standing water level (m bgl)				-
sing heig)	ght above	above ground level 0.5 Depth of ca			Depth of casing	Depth of casing below ground leve		level (m bgl) 2.5		r (m)	0.15
,			Time e						<u> </u>		
	m	nins	secs	total time (secs)	t-t0 (secs)	Depth (m)	h _o	h _o /ht	In (h _o /ht)	dh/dt (m/s)	
	-	0	10	10	0.00	1.10	1.10	1.00	0.00	0.00	
		0	20 30	20 30	10.00 20.00	1.30 1.50	1.10 1.10	0.85 0.73	0.17 0.31	0.20 0.20	<u>_</u>
	-	0	45 -	45 60	35.00 50.00	1.80 2.00	1.10 1.10	0.61 0.55	0.49 0.60	0.30 0.20	
		1	30	90	80.00	2.25	1.10	0.49	0.72	0.25	
		3	-	120 180	110.00 170.00	2.35 2.40	1.10 1.10	0.47 0.46	0.76 0.78	0.10 0.05	
		4	-	240	230.00	2.60	1.10	0.42	0.86	0.20	
		5 7	-	300 420	290.00 410.00	2.80 3.00	1.10 1.10	0.39	0.93 1.00	0.20 0.20	
		9	-							-3.00 0.00	
		15	-							0.00	
		20 25	-							0.00	
		30	-							0.00	
		40 50	-							0.00	
		60	-							0.00	
	0.00] 1	
	0.50										
	1.00										
	1.00										
(m)											
head	1.50										
ge ir											
ž.											
Change in head (m)	2.00										
Chan⊱	2.00										
Chan	2.00										
Chan⊱	2.00										
Chang											
Chang											
Chang											
Chang	2.50										
Chang	2.50										
Chang	3.00	20	30 45	60 90	120 180	240 300	420				
Chang	3.00	20	30 45	60 90	120 180	240 300 Elapsed t	420 time (secs)				
Chang	3.00	20	30 45	60 90	120 180						
	3.50 3.50			60 90		Elapsed 1	ime (secs)				
	3.00			60 90		Elapsed t L = D =	0.50 0.15				
	3.50 3.50			60 90		Elapsed 1	o.50				
ape Fact	3.50 3.60r F (from BS	S EN ISO 2	2282-1	60 90		Elapsed t L = D = L/D =	0.50 0.15 3.33				
ape Fact	3.50 3.50	S EN ISO 2	2282-1	60 90		L = D = L/D =	0.50 0.15 3.33 1.64				
ape Fact	3.50 3.60r F (from BS	S EN ISO 2	2282-1	60 90		Elapsed t L = D = L/D = F= t0 t	0.50 0.15 3.33 1.64				
ipe Fact	3.50 3.60r F (from BS	S EN ISO 2	2282-1	60 90		Elapsed t L = D = L/D = F= t0 t h0 h	0.50 0.15 3.33 1.64 10.00 420.00 1.10 3.00				
ape Fact	3.50 3.60r F (from BS	S EN ISO 2	2282-1	60 90		L = D = L/D = F= t0 t h0	0.50 0.15 3.33 1.64 10.00 420.00 1.10	n/s	(negative value	means falling head	of water)
ape Fact	3.50 3.50 10	S EN ISO 22	2282-1 82-2)	60 90		Elapsed t L = D = L/D = F= t0 t h0 h S = k =	0.50 0.15 3.33 1.64 10.00 420.00 1.10 3.00 0.0177 -2.64E-05 m				of water)
ape Fact	3.50 3.50 10	S EN ISO 22 EN ISO 222 end Road, F	2282-1	60 90		Elapsed t L = D = L/D = F= t0 t h0 h S = k =	0.50 0.15 3.33 1.64 10.00 420.00 1.10 3.00 0.0177 -2.64E-05 m	H2 A Variabl	(negative value	ty Test at 3m bgl	of water)
ape Fact	2.50 3.00 3.50 10 ty (from BS E	S EN ISO 22 EN ISO 222 end Road, F Homes	2282-1 82-2) Portchester II	60 90 Rev: Date:		Elapsed t L = D = L/D = F= t0 t h0 h S = k =	0.50 0.15 3.33 1.64 10.00 420.00 1.10 3.00 0.0177 -2.64E-05 m	H2 A Variabl Geo-E Unit 7 D a	e Head Permeabili	ty Test at 3m bgl vices Ltd ckfield Road	of water)

ocatic -		Darriii	and Bood Barriel			ty Test (after			O 22282:2012)		10/02/2017
cation	da::-!! '		end Road, Portch	iester II	Position	<u> </u>	BH:			Date:	10/02/2017
rehole d					10		Standing water le	evel (m bgl)			-
sing heig)	ght abo	ve	ground level		Depth of casing	below ground l	evel (m bgl)	4.5	Casing diamete	r (m)	0.15
<u>, </u>			Time 6	elapsed							
		mins	secs	total time (secs)	t-t0 (secs)	Depth (m)	h _o	h _o /ht	In (h _o /ht)	dh/dt (m/s)	
		0	10	10	0.00	1.00	1.00	1.00	0.00	0.00	
		0	20	20	10.00	1.10	1.00	0.91	0.10	0.10	
	-	0	30 45	30	20.00	1.30	1.00	0.77	0.26	0.20 0.30	
	H	0 1	45 -	45 60	35.00 50.00	1.60 1.90	1.00 1.00	0.63 0.53	0.47 0.64	0.30	
		1	30	90	80.00	2.30	1.00	0.43	0.83	0.40	
	<u> </u>	2	-	120	110.00	4.13	1.00	0.24	1.42	1.83	
	-	3 4	-	180 240	170.00 230.00	4.96 5.84	1.00 1.00	0.20	1.60 1.76	0.83 0.88	
		5	-	300	290.00	6.18	1.00	0.16	1.82	0.34	
		7	-	420	410.00	6.41	1.00	0.16	1.86	0.23	
	-	9 12	-	540 720	530.00 710.00	7.21 8.10	1.00 1.00	0.14	1.98 2.09	0.80 0.89	
		15	-	900	890.00	8.65	9.12	0.12	2.16	0.55	
		20	-	1200	1190.00	9.12	9.75	0.11	2.21	0.47	
	-	25 30	-	1500 1800	1490.00 1790.00	9.75 10.00	10.00	0.10 0.10	2.28	0.63 0.25	
		40	-	1000	1730.00	20.00		0.20		-10.00	
		50	-							0.00	
		60	-							0.00	
Change in head (m)	2.00 4.00 6.00 8.00										
	12.00	10 20	30 45	60 90	120 180	240 300 Elapsed 1	420 540 time (secs)	720 9	00 1200 150	00 1800	
ipe Fact	tor F (fro	om BS EN ISO	22282-1			L = D = L/D = F =	5.50 0.15 36.67 8.05				
meabili	ity (fron	n BS EN ISO 22	282-2)			t0 t h0 h S =	10.00 1800.00 1.00 10.00 0.0177				
						k =	-2.83E-06 r	m/s	(negative value	means falling head	of water)
oject:			Portchester II			k =		3H2 A Variable	e Head Permeabili	ty Test at 10m bgl	of water)
oject: ent: f No:	M	ownend Road, 1iller Homes E16226		Rev:	lo	k =		BH2 A Variablo Geo-E		ty Test at 10m bgl	of water)