

Job Name: Land East of Rayleigh Road, Thundersley

**Job No:** 332210105/350.001

Note No: TN-GEO-02

Date: July 2021

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Checked By: O Belson

Subject: Infiltration Assessment at Hadleigh Site Castle Point

### Introduction

Stantec UK has been commissioned jointly by This Land Development Limited (the client) to undertake an infiltration assessment for the site at Land East of Rayleigh Road, Thundersley, Essex, to be referred to hereafter as the 'site'. The assessment is required to determine the viability of shallow sustainable urban drainage systems (SuDS) as part of the site-wide drainage strategy.

The site is centred upon approximate National Grid Reference 580680 188798. A site location plan is presented as **Figure 1**.

The site comprises an irregular shaped piece of land covering approximately 28 hectares, located due north of Daws Heath Road and due east of Rayleigh Road in Rayleigh, Essex. It currently comprises largely open agricultural fields with some horse grazing paddocks, associated stables and a fishing lake.

The site falls from a high point of approximately 80m AOD in the south, to a low point of approximately 30m AOD in the northeast corner.

### **Published Site Geology**

The 1:50,000 series Geological Survey of England and Wales Sheet 258/259 (BGS, 1976) and BGS GeoIndex (onshore) (BSG, 2021) indicate the following geological sequence underlying the Site.

### Superficial Deposits

Superficial deposits are shown to be largely absent from the Site, particularly in the centre, west and south suggesting that the bedrock is shallow in these areas. The north east and centre of the Site is underlain by Head Deposits. Glaciofluvial Deposits, Mid Pleistocene – Sand and Gravel underlie the south east Site boundary. A small area of Sand and Gravel of (Uncertain Age and Origin) is recorded in the south west of the Site adjacent to Asquith Avenue.

### Bedrock

The Site is underlain by two bedrock formations which roughly divide the Site north and south. The Claygate Member – Clay, Silt and Sand is located across the north and centre (east) of the Site.

Beneath the south and centre (west) of the Site is the Bagshot Formation – Sand.

### **Ground Investigation**

Ground investigation works comprising of the digging of soakaway trial pits and window sampler boreholes were carried out between the 13th and 14th May 2021. The ground investigation was proposed to identify ground conditions and to assess ground drainage potential to help aid in a site wide Drainage Management Strategy.

The investigation comprised a total of twelve soakaway trial pits (TP101 to TP112) and six window sampler boreholes (WS101 to WS106) with standpipe installations to facilitate monitoring. Locations of completed investigation locations are presented on **Figure 2**.

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Soakaway trial pits TP101 to TP112 were excavated to a depth of 2m bgl by a JCB back-hoe loader in accordance with BRE 365:2015. All trial pits were logged in accordance with BS5930:2015 (BS EN ISO 14688-1:2002+A1:2013). Upon completion, the pits were backfilled with their arisings and compacted, leaving the soils slightly mounded to accommodate future settlement within the backfill.

Dynamic sampling techniques were used to construct boreholes at six locations (WS101 to WS106) to a target depth of 6.0m bgl. Continuous soil cores were recovered from the WS boreholes in PVC liners, which were split to enable logging of the recovered soils by the on site Engineer in accordance with BS 5930:2015 and BS EN ISO 14688. On completion, all boreholes were installed with nominal 50mm diameter groundwater monitoring pipework. The response zones of each installation were located within both Head Deposits and Claygate Member. Above each response zone a plain pipe and bentonite seal were installed to prevent downward migration of any surface water. The pipework was encased in a gravel filter pack and the plain section pipework was encased with bentonite pellets and a flush cover concreted in place.

The records of the exploratory holes are presented in Appendix 1.

Upon completion of the excavation and logging of the trial pits, infiltration testing was undertaken in seven of them. To facilitate the testing, the trial pits were filled with 20mm diameter gravel over a 1m deep test zone and the testing was undertaken in accordance with (BRE, 2016) by recording the time taken for water to drain away within the test zones.

### **Ground Conditions**

A summary of the stratigraphy encountered across both phases of ground investigation is presented in Table 1 below.

Table 1 Summary of Encountered Stratigraphy

Formation	Top Depth Range (bgl)	Base Depth Range (bgl)
Topsoil/Made Ground	Ground Level	0.20 - 0.5m
Head Deposits	0.20m – 0.50m	1.5m – 5.6m
Claygate Member	1.1m - 5.6m	2.0m – 6.0m

### **Topsoil**

Topsoil was encountered in all locations except TP107 and was typically described as brown friable slightly sandy, slightly gravelly clay with occasional rootlets. The gravel content was recorded as angular to subrounded fine to coarse flint.

### Made Ground

Made ground was recorded in two locations during the investigation works.

In trial pit TP103 0.4m of made ground was recorded beneath the topsoil and was described as soft orange-brown, very gravelly sandy clay. The sand was recorded as medium to coarse and the gravel content recorded fragments of brick, sandstone, glass and tile.

Trial pit TP107 was the second location to record the presence of made ground. This time from surface, to a depth of 0.3m bgl. The surface was covered by a thin layer of macadam underlain by a soft black to brown very gravelly sandy clay. The gravel contained fragments of clinker, brick, glass and occasional cobbles of angular brick.

### **Head Deposits**

Head Deposits often comprise mixed lithologies depending on the up-slope source the deposits were derived from. Head Deposits were encountered in each of the exploratory hole locations and were typically described as soft to firm orange-brown sandy clay. Occasionally the clay was described as mottled and in certain locations was recorded as becoming stiffer with depth.



The sand content within the Head Deposits was recorded as fine to medium and was also noted to increase in quantity in localised areas with depth. Increased sand and gravel content was noted in locations TP104, TP105 and TP110. Occasional relic roots were also recorded.

### Claygate Member

The BGS Lexicon described the Claygate Member as dark grey clay with sand laminaes that passes through thin bands of clays, silts and fine-grained sands.

The ground conditions encountered beneath the Head Deposits on site are considered most likely to represent the Claygate Member, as these deposits encountered included stiff dark grey slightly sandy clays; medium dense brown very clayey silty fine sands and soft orange brown sandy silts.

### Groundwater

Groundwater seepages were recorded within some of the exploratory holes during the investigation works. A summary is provided in Table 2 below.

Table 6.2 Groundwater Strikes in Exploratory Holes

Location	Depth (m)	Description Provided
TP106	2.0	Minor flow
TP107	1.5	Moderate seepage
TP108	1.5	Minor seepage
TP109	1.3	Slow flow
TP110	2.0	Minor flow
TP112	1.2	Moderate flow
WS102	4.0	Rose to 3.68m in 20m
WS103	2.0	-
WS104	2.0	Rose to 1.38m in 20 mins.
WS105	4.0	-
WS106	2.0	Rose to 1.95m in 15 mins.

Groundwater levels were monitored in the standpipes installed within the window sample hole locations on two occasions (25th May and 9th of June 2021). A summary of the findings is presented in Table 3 below.

Table 3 Summary of Groundwater levels in Monitoring Wells

	Ground Levels	Groundwater Depth										
Location	(m AOD)	25 May	2021	9 June 2021								
		(m bgl)	m AOD	(m bgl)	m AOD							
WS101	66.0	3.21	62.8	0.91	65.1							
WS102	66.2	0.85	65.4	1.23	64.9							
WS103	58.1	0.77	57.3	0.91	57.2							
WS104	66.8	1.31	65.5	1.34	65.5							
WS105	78.0	1.60	76.4	1.71	76.3							
WS106	70.1	0.61	69.5	0.75	69.4							



### **Soakaway Testing**

Testing was completed in the twelve trial pits (TP101 to TP112 inclusive) with test zones between 1.00m and 2.00m bgl.

Each of the test excavations were backfilled with supplied gravel and filled with clean water from a water bowser and the fall in water level was recorded over time. Testing was undertaken at each location for a minimum of 35 minutes. The results from contractor's assessment are presented in full as Appendix I and are summarised in Table 6.4 below.

Table 4 Summary of Infiltration Testing Results

Test Location	Ground Conditions	Depth of Infiltration Test (m bgl)	Infiltration Rate (m/s)
TP101	Orange brown mottled grey clay (Head Deposits)	Test 1: 1.00 – 2.00	Test Failed
TP102	Orange brown mottled grey clay (Head Deposits)	Test 1: 1.00 – 2.00	Test Failed
TP103	Orange brown mottled grey clay (Head Deposits)	Test 1: 1.00 – 2.00	Test Failed
TP104	Orange brown very silty sand (Head	Test 1: 1.00 – 2.00 Test 2: 1.00 – 2.00	Test 1: 2.96x10 <sup>-06</sup> Test 2: 1.99x10 <sup>-06</sup>
	Deposits over Claygate Member)	Test 3: 1.00 – 2.00	Test 3: 1.79x10 <sup>-06</sup>
TP105	Orange brown mottled grey clay (Head Deposits)	Test 1: 1.00 – 2.00	Test Failed
TP106	Orange brown mottled grey clay (Head Deposits)	Test 1: 1.00 – 2.00	Test Failed
TP107	Orange brown mottled grey clay (Head Deposits)	Test 1: 1.00 – 2.00	Test Failed
TP108	Multicoloured sandy clay/clayey sand (Head Deposits)	Test 1: 1.00 – 2.00	Test Failed
TP109	Orange brown mottled grey clay (Head Deposits)	Test 1: 1.00 – 2.00	Test Failed
TP110	Orange brown mottled grey clay (Head Deposits)	Test 1: 1.00 – 2.00	Test Failed
TP111	Orange brown slightly gravelly clay/ clayey sand.(Head Deposits over Claygate Member)	Test 1: 1.00 – 2.00	Test Failed
TP112	Orange brown mottled grey clay (Head Deposits)	Test 1: 1.00 – 2.00	Test Failed

### **Assessment of Infiltration Testing**

Only the soakaway tests undertaken in TP104 yielded infiltration results ranging between 1.79 and 2.96x10<sup>-6</sup>. The infiltration tests carried out at the other eleven locations failed, indicating that the water within the soakage pit had failed to reduce by 25% in a 24 hour period.

It was noted from the soil logs that trial pit TP104 was recorded as having a more granular sand layer present between 1.1m and 2.2m depth, which would have been located at the base of the soakage trial pit and therefore facilitated some infiltration in this location.



### **Conclusions**

Infiltration testing indicates that soakaway drainage solutions via infiltration are not likely to be suitable where cohesive Head deposits are present.

### References

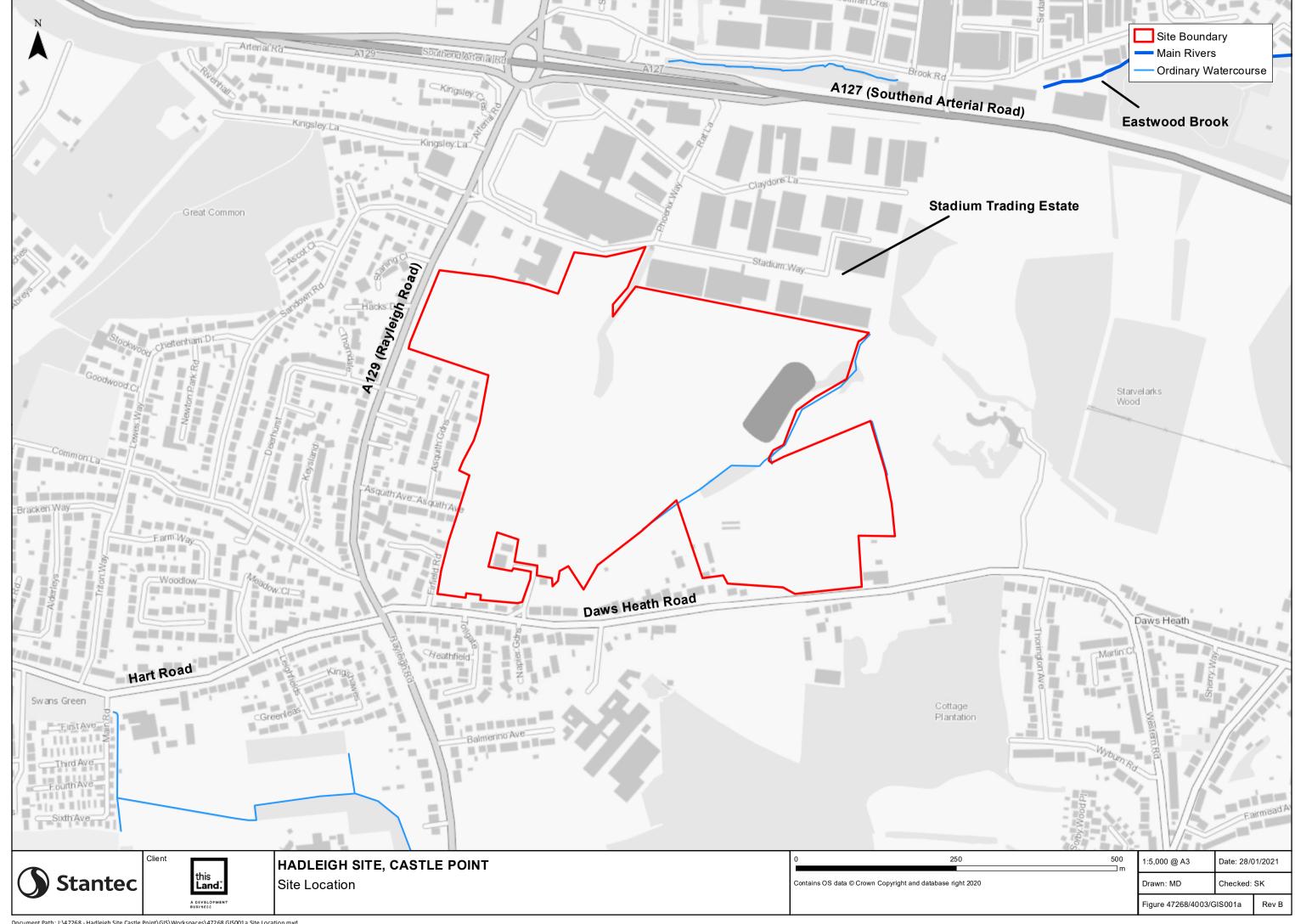
British Geological Survey (1976) Geological Map. Solid and Drift. Southend and Foulness Sheet 258/259 British Geological Survey (2021) BGS Lexicon of Named Rock Units [online] Accessed May 2021 BS 5930 2015 (+A1:2020) Code of practise for ground investigations.

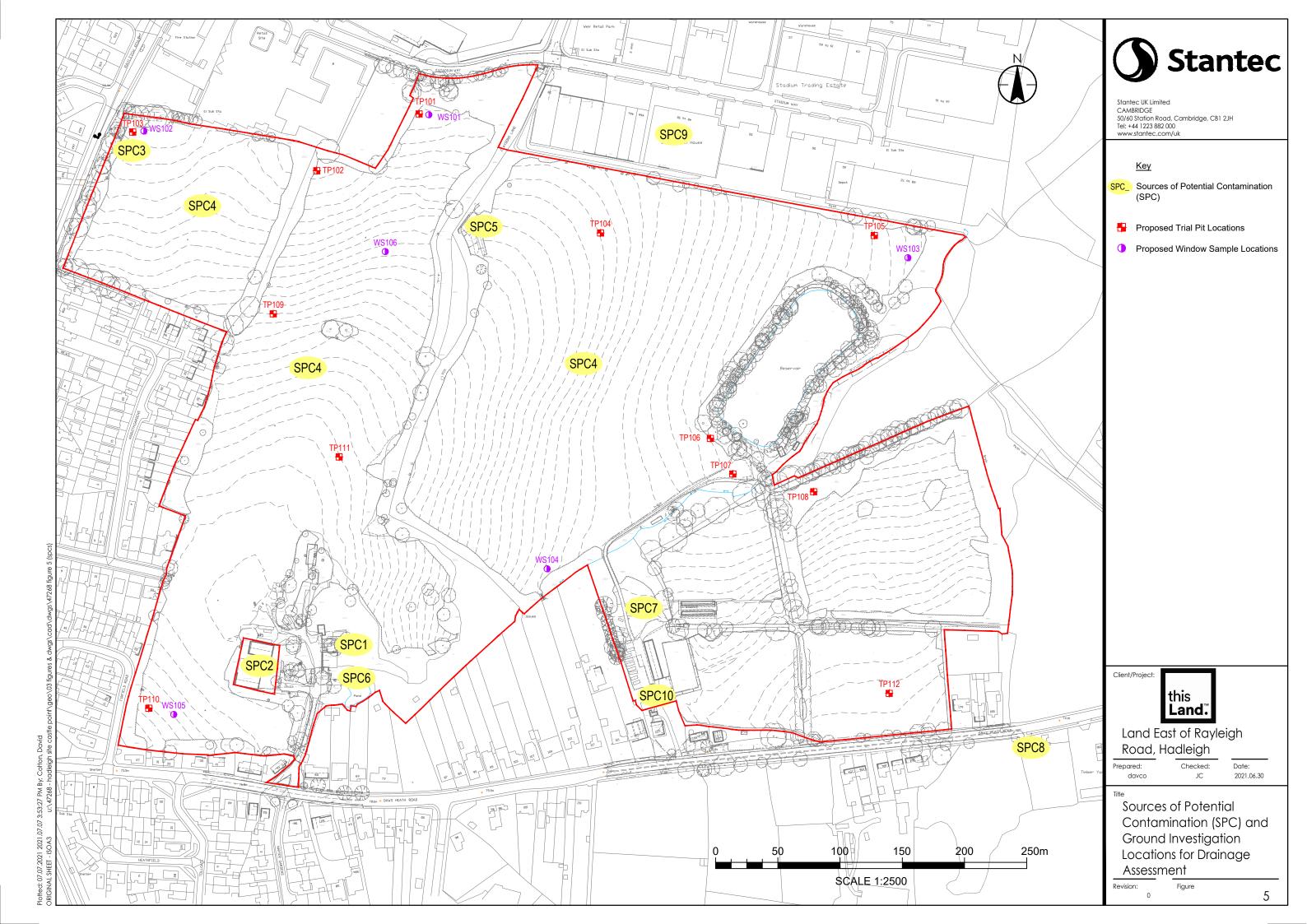
BS 10175:2011 (+A2:2017) Investigation of potentially contaminated sites – code of practice. BRE Digest 365: 2016 Soakaway design.

# **Stantec**

## **TECHNICAL NOTE**

## **FIGURES**







## APPENDIX 1 Investigation Logs and Infiltration Test Results

### WINDOWLESS DYNAMIC SAMPLE RECORDS

L Liner sample

**D** Small disturbed sample

SPT Standard penetration test using a split spoon sampler N Value is uncorrected,

but the hammer energy ratio is provided (in remarks)

Initial penetration during the SPT recorded in millimetres. If initial penetration

equals or exceeds 450 mm the test is aborted.

SPT seating drive blow count given by the summation of the blows 'X'

required to drive the seating length

T x,x,x,x SPT test drive blow count 'N' given by the summation of the blows 'X'

required to drive the seating length (300 mm)

X\*Y Incomplete standard penetration test where the seating/test drive could not be

completed. The blows 'X' represent the total blows for the given length of

seating drive 'Y' (mm)

dd/mm/yy: 1.0 Date, water level at the borehole depth at the end of shift

dd/mm/yy: dry and the start of the following shift

Each sample type is numbered sequentially with depth and relates to the depth range quoted

All depths and measurements are given in metres, except as noted

Strata descriptions complied by visual examination of samples obtained during boring, after BS 5930:2015+A1:2020 and modified in accordance with laboratory test results where applicable

		\	<b>A F Howland A</b> Geotechnical Er			Site Castle Point, Hadleigh	Number WS101
Method : W	ando Terrier 2002 /indowless Dynamic ampling	87 75	2mm to 2.00m mm to 4.00m mm to 6.00m		<b>Level (mOD)</b> 66.09	Stantec	Job Number 21.133
		Locatio 58	<b>n</b> 0276 E 189335 N	Dates 14	-/05/2021	Engineer	Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend to
0.00-0.30	D1			65.79	(0.30) - (0.30)	TOPSOIL (Brown friable silty sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse flint. Occasional rootlets)	
0.60-0.80	D2				- - - - - - - - - - - - -	Soft becoming firm grey orange mottled silty sandy CLAY. Occasional relic rootlets	× × × × × × × × × × × × × × × × × × ×
1.20-1.65 1.20-1.65	SPT N=13 D3	DRY	IP 0/S 1,2 T 2,4,3,4		(2.50)		× × × × × × × × × × × × × × × × × × ×
1.70-1.90 2.00-2.45 2.00-2.45	0-2.45 SPT N=14 D5 0-3.00 D6 0-3.45 SPT N=16		DRY IP 0/S 2,2 T 3,3,4,4				
2.80-3.00 3.00-3.45			DRY IP 0/S 1,1 T 3,3,4,6				
3.60-3.90	00-3.45 N=16 D7						
4.00-4.45 4.00-4.45	SPT N=14 D9	DRY	IP 0/S 1,2 T 3,3,3,5		(3.00)		***************************************
4.80-5.00 5.00-5.45 5.00-5.45	D10 SPT N=14 D11	DRY	IP 0/S 3,3 T 2,2,5,5				***************************************
5.60-6.00	D12		14/05/2021:DRY	60.29	- (0.20)	Stiff grey silty sandy CLAY	× × × × × × × × × × × × × × × × × × ×
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<ol><li>Hand dug</li><li>No ground</li></ol>	CAT scanned prior to inspection pit to 1.20 dwater encountered	0 m	ווע				
4. Slotted St 5. SPT Ham	andpipe installed to t mer Energy Ratio = 6	o.00 m 68%				1:40 Figur	SW e No.
						_	133.WS101

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				Location	1	Ground	Level (m	OD)	Engineer							Sheet
			_		6 E 189335 N		6.09	,	<b>g</b>							1/1
Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description				1	iroundwa	ater Strik	es Durin	g Drilling			
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Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickne	ı ess)	Description	Leg	gend	Water
0.00-0.20	D1			66.01	(0.2	20) 20	TOPSOIL (Brown friable silty sandy slightly gravelly clay.  Gravel is angular to subrounded fine to coarse flint.			
0.30-0.50	D2						Occasional rootlets)  Soft becoming firm light greyish brown orange mottled silty sandy CLAY. Occasional relic rootlets	× · · · × · · · · · · · · · · · · · · ·	× × × × × × × × × × × × × × × × × × ×	
1.20-1.70 1.20-1.65	SPT D3 N=9	DRY	IP 50/S 1,1 T 2,2,3,2					×	<u>×</u>	
1.80-2.00	D4							× -		
2.00-2.48 2.00-2.45	SPT D5 N=7	DRY	IP 30/S 2,1 T 1,2,2,2		(3.6	60)		× · · × · · · · × · · · · · · · · · · ·	× × ×	
2.80-3.00	D6							× -		
3.00-3.45	SPT	DRY	IP 0/S 1,2					* * ×		
3.00-3.45	N=15 D7		T 4,3,4,4		-			×	×	
3.70-3.80	D8			62.41		80	band of light brown very clayey silty fine sand from 3.70 m to 3.80 m	× ×	<u>-</u>	<b>▼</b> 1
3.80-4.00	D9		Madausta (1) at 4 00m	02.41	J. 3.	00	Stiff dark grey silty slightly sandy CLAY	×	<u>. × · </u>	<b>∇</b> 1
4.00-4.45	D10		Moderate(1) at 4.00m, rose to 3.68m in 20 mins, not sealed.					×	×	
4.00-4.45	SPT N=10	3.95	TP 0/S 2,2 T 2,2,3,3					× × × × × × × × × × × × × × × × × × ×	× ×	
5.00-5.45 5.00-5.45	SPT N=11 D11	4.50	IP 0/S 2,2 T 2,3,3,3		(2.2	20)		× × × × × × × × × × × × × × × × × × ×	×	
			13/05/2021:4.47m	60.21	6.	00	Complete at 6.00m	<u> :                                   </u>	<u></u> .	
Remarks 1. Location	CAT scanned prior to	excavati	on	1			Scale (approx	Lo.	ogged Y	t
2. Hand dug	g inspection pit to 1.20 ater struck at 4.00 m	0 m and rose	on to 3.95 m in 5 mins, 3.77 m ir	n 10 mins, 3	3.70 m in 1	5 m	ins and 3.68 m in 20 mins		-	
4. Slotted S 5. SPT Ham	tandpipe installed to some Energy Ratio = 6	o.uu m 68%					1:40		SW	
							Figure 21.	<b>∍ No.</b> I33.WS	3102	

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Installa Single	ition Inst	Type allatio	e on		Dimensi Interna	<b>ons</b> al Diameter of Tube [A] = 5	0 mm			Client Stantec						ı	Job Number 21.133
					Location 58005	1 2 E 189333 N	Ground 6	<b>Level (m</b> 6.21	nOD)	Engineer						•	Sheet 1/1
Legend	Water	Inst (A)	r	Level (mOD)	Depth (m)	Description			'	G	roundwa	ater Strik	es Durin	g Drilling	9		
	ā			66.01	0.20	Concrete	Date	Time	Depth Struck (m)	Casing Depth (m)	Inflo	w Rate	Readings			1	Depth Sealed (m)
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		Locatio		Dates 14	4/05/2021	Engineer	Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.30	D1			57.81	(0.30)	TOPSOIL (Brown friable silty sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse flint. Occasional rootlets)	* · · · ·	
0.50-0.70	D2				- - - - - - - - -	Soft becoming firm light greyish brown orange mottled silty sandy CLAY. Occasional angular to subrounded fine to medium flint gravel. Some relic rootlets	× × × × × × × × × × × × × × × × × × ×	- - - -
1.20-1.73 1.20-1.65	SPT D3 N=6	DRY	IP 80/S 1,2 T 1,1,2,2		E E E E		× · · · · · · · · · · · · · · · · · · ·	- - -
1.70-1.90	D4						× × ×	-
2.00-2.45	D5		Slow(1) at 2.00m, fell to		(3.50)		××	· <u>∇</u> 1 <b>▼</b> 1
2.00-2.50	SPT	2.19	2.10m in 20 mins, not sealed. IP 50/S 2,1				× × ×	-
	N=8		T 2,2,2,2				××	-
2.80-3.00	D6				<u></u>		× × · · ·	-
3.00-3.46 3.00-3.45	SPT D7 N=12	2.90	IP 10/S 2,2 T 3,3,3,3				× × × × × × × × × × × × × × × × × × ×	- - - -
3.80-4.00	D8			54.31	3.80	Stiff dark grey silty CLAY	×	-
4.00-4.45 4.00-4.45	SPT N=12 D9	3.12	IP 0/S 2.2 T 3,2,4,3				× × × × × × × × × × × × × × × × × × ×	- -
4.80-5.00	D10				(2.20)		××	
5.00-5.45 5.00-5.45	SPT N=17 D11	4.05	IP 0/S 3,4 T 4,3,5,5		(2.20)		× × × × × × × × × × × × × × × × × × ×	]
5.70-6.00	D12			52.11	6.00		×x	-
			14/05/2021:DRY	- 52.11	- 5.00	Complete at 6.00m		
Remarks 1. Location 2. Hand duc	CAT scanned prior to	excavati	on to 2.19 m in 5 mins, 2.15 m i			Scale (approx	Logge By	ed .
4. Slotted S	rater struck at 2.00 m tandpipe installed to 6 nmer Energy Ratio = 6	5.00 m	to 2.19 m in 5 mins, 2.15 m i	in 10 mins, 2	2.12 m in 15 m	nins and 2.10 m in 20 mins 1:40	SW	
J. JET HAII	iller Elleryy Adiiu = (	JJ 70				Figure 21.1	No. 133.WS102	<u> </u>

	_	<u>/</u>	1		1	<b>A F Howland</b> Geotechnical I				Site Castle Point, Hadleigh							
Install Single	<b>atio</b> i e Ins	n Typ tallati	on		Dimensi Interna	ons al Diameter of Tube [A] = 5	50 mm			Client Stantec						ì	Job Number 21.133
					Location 58065	8 E 189249 N	Ground I	L <b>evel (m</b> 8.11	iOD)	Engineer						;	Sheet 1/1
Legend	Water	Ins (A	tr )	Level (mOD)	Depth (m)	Description				G	roundwa	iter Strik	es Durin	g Drilling	1	,	
				57.91	0.20	Concrete	Date	Time	Depth Struck (m)	Casing Depth (m)	Inflo	w Rate	5 min	Readings 5 min   10 min   15 min   20			Depth Sealed (m)
* · · · · · · · · · · · · · · · · ·						Bentonite Seal	14/05/21		2.00	(III)	Slow		2.19	2.15	2.12	2.10	NOT
× × × × × × × × × × × × × × × × × × ×		2 50 0 2	2000 2000 2000 2000 2000 2000	57.11	1.00												
× × ×										Gr	oundwat	er Obse	rvations	During D	rilling		
×							<b>D</b>			Start of S					End of SI		
× × · · ·		00000000000000000000000000000000000000					Date	h Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)		Water Level (mOD)		
× × × × × × × × × × × × × × × × × × ×	<b>V</b> 1 <b>V</b> 1	700 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	25, 02, 03, 04, 03, 03, 03, 04, 04, 04, 04, 04, 04, 04, 04, 04, 04				14/05/21							6.00		DRY	
× × × × × × × × × × × × × × × × × × ×			2000 000 000 000 000 000 000 000 000 00							Instru	ument G	roundwa	ater Obse	ervations			
×							Inst.	[A] Type	: Slotte	ed Standpip	e						
× × · · · ·						Slotted Standpipe	Date	Ins	trumen	it [A]				Rema	arks		
××							Date	Time	Dept (m)	h Level (mOD)							
x x x x x x x x x x x x x x x x x x x	rke			52.11	6.00												
Remai	rks																

	<u>M</u> ľ	`	<b>A F Howland As</b> Geotechnical En			Castle Point, Hadleigh	Number WS104	
	Dando Terrier 2002	Dimens	sions 2mm to 2.00m	Ground	Level (mO		Job Number	_
Method : V	Vindowless Dynamic Sampling	87	mm to 3.00m mm to 4.00m		66.80	Stantec	21.133	
		Location 58	on 0373 E 188983 N	Dates 14	4/05/2021	Engineer	Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thicknes	Description	Legend	Water
0.00-0.40	D1	()		66.40	(0.40	TOPSOIL (Brown friable silty sandy slightly gravelly clay.) Gravel is angular to subrounded fine to coarse flint. Occasional rootlets)		_
0.70-0.90	D2				(1.30	))	× × × × × × × × × × × × × × × × × × ×	
1.20-1.71 1.20-1.65	.20-1.65 D3 N=29 .70-1.90 D4		IP 60/S 3,4 T 6,6,8,9	65.10	1.7	Madisus dans lesson strategistic fire CAND	× × × × × × × × × × × × × × × × × × ×	'1
1.70-1.90	D4				E	Medium dense brown very clayey silty fine SAND	×	<b>Z</b> 1
2.00-2.45	D5		Moderate(1) at 2.00m, rose to 1.38m in 20 mins,		E		×	
2.00-2.45	SPT N=21	1.62	not sealed. IP 0/S 1,3 T 3,5,5,8				× × × × × × × × × × × × × × × × × × ×	
2.80-3.00	D6				(2.30 - - - - - - - - -			
3.60-3.80	D7		14/05/2021:1.40m	62.80	4.0		**************************************	
						Complete at 4.00m		
2. Hand dug 3. Groundw 4. Slotted Si	tandpipe installed to 3	0 m and rose 3.00 m	on to 1.62 m in 5 mins, 1.46 m ir	n 10 mins, 1	1.40 m in 15	mins and 1.38 m in 20 mins  1:40	Logged By	
5. SPT Ham	mer Energy Ratio = 6	68%				Figure		_

	_		1		1	<b>A F Howland</b> . Geotechnical E				Site Castle Point, Hadleigh							Borehole Number VS104	
Install Single	latio e Ins	n Ty stalla	<b>pe</b> tion		Dimension Interna	ons al Diameter of Tube [A] = 5	60 mm		•	Client Stantec						1	Job Number 21.133	
					Location 58037	3 E 188983 N	Ground I	<b>_evel (m</b> 6.80	OD)	Engineer						S	Sheet 1/1	
Legeno	Water	Ins (A	str A)	Level (mOD)	Depth (m)	Description				G	roundwa	iter Strik	es Durin	g Drilling	9			
						Concrete	Date	Time	Depth Struck (m)	Casing Depth (m)	Inflo	w Rate	E main	Read		20 min	Depth Sealed (m)	
	X	* 5.	2.00	66.60	0.20	Bentonite Seal	14/05/21		2.00	(m)	Modera	ate	5 min	1.46	1.40	1.38	NOT	
× × × × × × × × × × × × × × × × × × ×		00000000000000000000000000000000000000	05 0 4 2 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	66.30	0.50													
× × × × × × × × × × × × × × × × × × ×	  -  -  -		00 00 00 00 00 00 00 00 00 00 00 00 00							Gro	roundwater Observations Dur			During D	Orilling			
× × ×							Date Time Depth Cas Hole (m) (r								End of SI	nift		
× × ×	:						Date Time Depth Hole (m)				Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	
× × × × × × × × × × × × × × × × × × ×	▼1				Slotted Standpipe	14/05/21							4.00		1.40	65.40		
× × ×	<b>.</b> <b>. . . . . . . . . .</b>						'			Instru	ument G	roundwa	iter Obse	ervations				
×							Inst.	A] Type	: Slotte	d Standpip	ipe							
×			2000 2000 2000 2000 2000 2000 2000 200					Ins	trumen	t [A]								
ו × × × × × × × × × × × × × × × × × ×	¥ ,		000 000 000 000 000 000 000 000 000 00				Date	Time	Depth (m)	Level (mOD)				Rema	arks			
Rema	narks		63.80		General Backfill													

	VI	\	<b>A F Howland A</b> Geotechnical E			Site Castle Point, Hadleigh	Number WS105	5
Method : W	ando Terrier 2002 Vindowless Dynamic ampling	87 75	2mm to 2.00m mm to 4.00m mm to 6.00m		<b>_evel (mOD)</b> '8.04	Stantec	Job Number 21.133	
		Locatio 58	on 0082 E 188888 N	Dates 13/	05/2021	Engineer	Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.00-0.20	D1			77.74		TOPSOIL (Brown friable silty sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse flint.  > Occasional rootlets)		
0.30-0.50	D2					Soft becoming firm light greyish brown orange mottled silty sandy CLAY. Occasional relic rootlets	× · · · · · · · · · · · · · · · · · · ·	
1.20-1.65 1.20-1.65	SPT N=12 D3	DRY	IP 0/S 2,3 T 3,3,3,3		(3.40)		× × × × × × × × × × × × × × × × × × ×	
1.80-2.00 2.00-2.45 2.00-2.45	D4 SPT N=11 D5	DRY	IP 0/S 1,1 T 2,3,3,3		- - - -		× × × × × × × × × × × × × × × × × × ×	
2.80-3.00 3.00-3.46 3.00-3.45	D6 SPT D7 N=15	DRY	IP 10/S 2,2 T 3,4,4,4			Becoming firm orange silty fine to medium sandy clay	× × × × × × × × × × × × × × × × × × ×	
3.70-3.80 3.80-4.00 4.00-4.45 4.00-4.45	D8 D9 D10 SPT N=17	DRY	Seepage(1) at 4.00m. IP 0/S 2,3 T 4,4,4,5	74.34	3.70	Firm becoming stiff brown silty sandy CLAY  Small pockets of fine to medium orange sand from 4.20 m to 6.00 m in firm to stiff clay	× × × × × × × × × × × × × × × × × × ×	1
5.00-5.45 5.00-5.45	SPT N=17 D11	DRY	IP 0/S 2,3 T 3,4,5,5		(2.30)		× × × × × × × × × × × × × × × × × × ×	
			13/05/2021:DRY	72.04	6.00	Complete at 6.00m	· · · · · · · · · · · · · · · · · · ·	
Remarks 1. Location (	CAT scanned prior to	excavation m	on			Scale (approx	Logged By	_
<ol><li>Slotted St</li></ol>	inspection pit to 1.20 ater seepage at 4.00 andpipe installed to 6	6.00 m				1:40	SW	
o. ori Hami	mer Energy Ratio = 6	00%				Figure 21.1:	<b>No.</b> 33.WS105	

4	$\triangle$			1	<b>A F Howland</b> Geotechnical I				Site Castle Poi	int, Hadle	eigh					Borehole Number VS105
Installa Single	tion <sup>-</sup> Instal	<b>Type</b> Ilation		Dimensi Interna	ons al Diameter of Tube [A] = 5	50 mm			Client Stantec						ì	Job Number 21.133
				Location 58008	n 22 E 188888 N	Ground I	L <b>evel (m</b> 3.04	iOD)	Engineer							Sheet 1/1
Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description				G	roundwa	iter Strik	es Durin	g Drilling	I	,	
			77.84	0.20	Concrete	Date	Time	Depth Struck (m)	Casing Depth (m)	Inflo	w Rate	5 min	Read	ings 15 min	20 min	Depth Sealed (m)
× - × · · · · · · · · · · · · · · · · ·					Bentonite Seal	13/05/21		4.00	(,	Seepag	ge	3 11111		10 111111	20 111111	()
× × × × × × × × × × × × × × × × × × ×	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0 1 2 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	77.04	1.00												
× × ×	800 00 00 00 00 00 00 00 00 00 00 00 00								Gr	oundwat	ter Obse	rvations	During D	rilling		
× × ×	000000000000000000000000000000000000000					Date		Dont	Start of S		Water			End of Sh		Weter
× - ×	2000 B 000 P C					13/05/21	Time	Dept Hole (m)	h Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m) 6.00	Casing Depth (m)	Water Depth (m) DRY	Water Level (mOD)
× × × × × × × × × × × × × × × × × × ×	Service of the servic					10/03/21							0.00			
× × × × × × × × × × × × × × × × × × ×	0.0000000000000000000000000000000000000								Instru	ument G	roundwa	iter Obse	rvations			
× × ×	200 B 00 00 00 00 00 00 00 00 00 00 00 00					Inst.	[A] Type	: Slotte	ed Standpip	е						
× × ×	000000000000000000000000000000000000000				Slotted Standpipe		Ins	trumen	t [A]				Rema	a ulca		
× × ×	500 B080 B00 500 500 500 500 500 500 500 500 50					Date	Time	Dept (m)	h Level (mOD)				nema	ai k5		
	<b>V</b> 1		72.04	6.00												
Remark	(S															

Machino : [	Dando Terrier 2002	_	Geotechnical Er	_		<b>0</b> D\	01		/S10	_
Method : V	Vindowless Dynamic Sampling	87	sions 12mm to 3.00m 1/mm to 5.00m 5mm to 6.00m		<b>Level (m</b> 70.13	OD)	Client Stantec	Nu	ob umbe 21.130	
		Locatio		Dates 13	3/05/2021		Engineer	SI	<b>heet</b> 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Dept (m) (Thickn	h ess)	Description	Leg	gend	Water
0.00-0.30	D1			69.83		30) .30	TOPSOIL (Brown friable silty sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse flint. Occasional rootlets) Soft becoming firm light greyish brown orange mottled silty		<u></u>	
0.60-0.80	D2						sandy CLAY. Occasional relic rootlets	× × × × × × × × × × × × × × × × × × ×	× × ×	
1.20-1.75 1.20-1.65	SPT D3 N=7	DRY	IP 100/S 1,2 T 1,2,2,2					× × × × × × × × × × × × × × × × × × ×	× ×	
1.80-2.00	D4							· -×	× ×	
2.00-2.45	D5		Moderate / Slow(1) at					× _	× · × ·	<b>₹</b> 1
2.00-2.50	SPT	DRY	2.00m, rose to 1.95m in 20 mins, not sealed. IP 50/S 2,1					×	× ×	
	N=7		T 1,2,2,2		<u>-</u>			×	×	
2.80-3.00	D6				(5.	30)		× :		
3.00-3.46 3.00-3.45	SPT D7 N=12	2.10	IP 10/S 2,2 T 2,3,3,4			00,		× × × × × × × × × × × × × × × × × × ×	*	
3.80-4.00	D8				E			× ×	<u>:</u>	
4.00-4.47 4.00-4.45	SPT D9 N=12	2.98	IP 20/S 2,1 T 3,2,4,3					× × × × × × × × × × × × × × × × × × ×	× × × × × × × × × × × × × × × × × × ×	
4.80-5.00	D10							×	×	
5.00-5.45 5.00-5.45	SPT N=17 D11	3.30	IP 0/S 2,2 T 3,4,5,5					×	× ×	
5.60-6.00	D12			64.53	F	.60 40)	Stiff dark grey silty slightly sandy CLAY	×	× ×	
Remarks			13/05/2021:3.51m	64.13	6	.00	Complete at 6.00m	× · ·		
Remarks 1. Location 2. Hand due	CAT scanned prior to	excavati	on to 2.10 m in 5 mins, 1.97 m i				Scale (approx	c) Lo	ogge y	t
4 Slotted S	tandpipe installed to 4	4 00 m	to 2.10 m in 5 mins, 1.97 m i	in 10 mins, 1	1.95 m in	15 m	ins and 20 mins		SW	
5. SPT Ham	nmer Energy Ratio = 6	58%					Figure 21.	No. 133.W§	S106	

4	<u>/</u>	<u>/</u>	1		<b>\</b>	<b>A F Howland</b> Geotechnical B				Site Castle Poi	int, Hadleiç	gh					Borehole Number WS106
Installa Single	tion Insta	<b>Typ</b> allati	<b>e</b> ion		Dimension Interna	ons al Diameter of Tube [A] = 5	60 mm			Client Stantec							Job Number 21.133
					Location 58024	2 E 189259 N	Ground I	<b>_evel (m</b>	OD)	Engineer							Sheet 1/1
Legend	Water	Ins (A	tr )	Level (mOD)	Depth (m)	Description			'	G	roundwate	er Strik	es Durin	g Drilling	J		
	40.			69.93	0.20	Concrete	Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow	Rate		Read			Depth Sealed (m)
× — ;							13/05/21		2.00	(m)	Moderate	e / Slow	<b>5 min</b> 2.10	<b>10 min</b> 1.97	<b>15 min</b> 1.95	<b>20 min</b>	(m) NOT
× × ×						Bentonite Seal											
× × ×				69.13	1.00												
× × ×	0,000,000			03.13	1.00												
× · · · · ·	00000000										oundwate	r Obsei	rvations		End of SI	- :61	
× - ×	000000000000000000000000000000000000000						Date	Time	Depti Hole (m)	Start of S  Casing Depth (m)		Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)		Water Level (mOD)
××	<b>▼</b> 1						13/05/21		(m)	(m)	(m) (	(mOD)		<b>(m)</b> 6.00	(m)	( <b>m</b> )	(mOD) 66.62
× - ×	<b>V</b> 1																
××	1000 B'00'n 0					Slotted Standpipe											
× × ×	0 000 000 000																
× × ×	0'B080 B'00'B0									Instru	ument Gro	oundwa	ter Obse	ervations			
× × ×	0 0 0 0 0 0 0 0 0						Inst.	A] Type	: Slotte	d Standpip	е						
× × ×	0 0 0 0 0 0 0 0							Ins	trumen	t [A]							
× × ×	0000000000000						Date	Time	Depti (m)	Level (mOD)				Rema	arks		
* * * * * * * * * * * * * * * * * * *	000000000000000000000000000000000000000			66.13	4.00												
× × ×	X																
×	X																
× × · · ·																	
× × × × × × × × × × × × × × × × × × ×						General Backfill											
× × ×																	
× × ×	X																
×																	
× × × ×	XX	***		64.13	6.00												
Remark	ks :		****			<u> </u>											

### APPENDIX B: CABLE PERCUSSIVE BOREHOLE RECORDS

B Bulk disturbed sample

D Small disturbed sample

ES Environmental sample

U 100 mm diameter undisturbed open tube drive sample

X blows The associated figure 'X' is the number of blows to drive the sample tube over

the given depth range

SPT Standard penetration test using a split spoon sampler

SPT(C) Cone penetration test using a solid cone

X,X/X,X,X Blows per increment during the standard penetration test. The initial value relates

to the seating drive (150 mm) and the remaining four to the 75 mm increments of

the test length

N=X SPT blow count 'N' given by the summation of the blows 'X' required to drive

the full test length (300 mm)

X\*/Y Incomplete standard penetration test where the seating drive could not be

completed. The blows 'X' represent the total blows for the given length of seating

drive 'Y' (mm)

X/Z Incomplete standard penetration test where the seating drive was achieved but the

full test length was not. The blows 'X' represent the total blows for the given test

length 'Z' (mm)

dd/mm/yy: 1.0 Date, water level at the borehole depth at the end of shift

dd/mm/yy: dry and the start of the following shift

Each sample type is numbered sequentially with depth and relates to the depth range quoted

All depths and measurements are given in metres, except as noted

Strata descriptions complied by visual examination of samples obtained during boring, after BS 5930:2015 and modified in accordance with laboratory test results where applicable

	$\sqrt{r}$	1		<b>d Associa</b> tal Engineers		Site Castle Point, Hadleigh		Trial Pit Number TP101
Excavation JCB 3CX	Method	Dimensio		Ground	<b>Level (mOD)</b> 65.76	Client Stantec		Job Number 21.133
		Location 5802	70 E 189339 N	Dates 11	/05/2021	Engineer		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Recor	ds Level (mOD)	Depth (m) (Thickness)	D	escription	Kegend Page 1
0.10-1.00	D1			65.66	- (0.10) - 0.10 	TOPSOIL(Dark brown clay		
1.00-1.90	D2				(1.80)			
1.90-2.00	D3			63.86 63.76	(0.10)	Yellowish brown sandy SIL Complete at 2.00m	_T	**************************************
Plan .					•	Remarks  1. Location CAT scanned pr	ior to execution	
						No groundwater encounte     Trial pit remained open ar     Pit backfilled with gravel t     Soakage test performed b	ered of sidewalls stable during e o 1.0 m and then arisings to the oetween 1.0 m and 2.0 m	excavation. o surface
		•				Scale (approx) 1:20	Logged By	<b>Figure No.</b> 21.133.TP101



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number

Client : Stantec

Sheet

Engineer:

1 / 12

Location	Date	Level	Location			
TP101	11/05/2021	65.76 mOD	E: 580270 N: 189339			

Pit Width (m)	0.45
Pit Depth (m)	2.00
Pit Length (m)	2.00

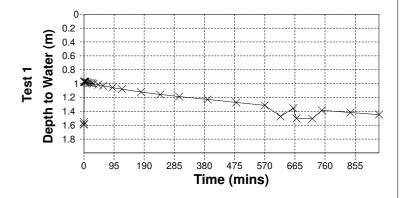
Soil type at test level	Orange-brown mottled grey CLAY
Groundwater	None
Drain discharge depth	Not known
Sidewall stability	Stable
Stone filled or open pit	Stone filled

	1
Effective depth (m)	1.03
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

- 1. Soakage test undertaken between 1.0 m and 2.0 m 2. No groundwater encountered 3. Datalogger serial no. 10226020 4. Test 1 carried out on 11/05/21

<sup>\*</sup> Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed). Elapsed time Depth to Water

Liapseu tillie	Deptil to Water
(mins)	Test 1
0	1.556
1	0.971
2	0.973
3	0.974
4	0.976
5	0.977
10	0.983
15	0.988
20	0.992
25	0.997
30	1.001
45	1.016
60	1.031
90	1.057
120	1.08
180	1.121
240	1.157
300	1.187
390	1.229
480	1.272
570	1.314
620	1.475
660	1.354
670	1.502
720	1.506
750	1.386
840	1.418
930	1.447



	$\bigvee \bigwedge$	1		<b>d Associa</b> : al Engineer:		Site Castle Point, Hadleigh		Trial Pit Number TP102
Excavation JCB 3CX	Method	Dimensio		Ground	<b>Level (mOD)</b> 66.72	Client Stantec		Job Number 21.133
		Location 5801	98 E 189305 N	Dates 11	/05/2021	Engineer		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Recor	ds Level (mOD)	Depth (m) (Thickness)	D	escription	Kegend Factor Laborater La
0.00-0.30	D1			66.62	- (0.10) - 0.10	TOPSOIL(Dark brown clay Firm to stiff orange brown		
0.30-1.00	D2				- - - - - - - - -			
1.00-1.90	D3				- (1.80) 			
				64.82	- 1.90 - 1.90 	Complete at 1.90m		
					- - - - - -			
Plan .		•			•	Remarks  1. Location CAT scanned pri	ior to excavation	
						No groundwater encounte     Trial pit remained open ar     Pit backfilled with gravel to     Soakage test performed by	ored and sidewalls stable during e o 0.9 m and then arisings to between 0.9 m and 1.9 m	xcavation. o surface
					-			
						Scale (approx)	Logged By	Figure No.
						1:20	CJL	21.133.TP102



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number

2/12

Client : Stantec

Sheet

Engineer:

Location	Date	Level	Location
TP102	11/05/2021	66.72 mOD	E: 580198 N: 189305

Pit Width (m)	0.45
Pit Depth (m)	1.90
Pit Length (m)	1.90

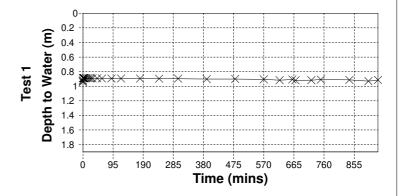
Soil type at test level	Orange-brown mottled grey CLAY
Groundwater	None
Drain discharge depth	Not known
Sidewall stability	Stable
Stone filled or open pit	Stone filled

	1
Effective depth (m)	1.01
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

- 1. Soakage test undertaken between 0.9 m and 1.9 m 2. No groundwater encountered 3. Datalogger serial no. 11186040 4. Test 1 carried out on 11/05/21

<sup>\*</sup> Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed). Elapsed time Depth to Water

Elapseu tillie	Deptil to water
(mins)	Test 1
0	0.931
1	0.89
2	0.89
3	0.89
4	0.89
5	0.89
10	0.89
15	0.89
20	0.89
25	0.891
30	0.891
45	0.891
60	0.893
90	0.894
120	0.894
180	0.895
240	0.896
300	0.896
390	0.902
480	0.901
570	0.906
620	0.917
660	0.907
670	0.918
720	0.917
750	0.909
840	0.913
900	0.93
930	0.914



	$\nabla \nabla \nabla$	<b>\</b>		n <b>d Associa</b> cal Enginee		Site Castle Point, Hadleigh		Trial Pit Number TP103
Excavation JCB 3CX	Method	Dimensio		1	d Level (mOD) 66.40	Client Stantec		Job Number 21.133
		Location 5800	048 E 189328 N	Dates	1/05/2021	Engineer		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Reco	rds Level	Depth (m) (Thickness	) D	escription	Kegend Name Land
0.00-0.35	D1			66.3	(0.10) - (0.10) - 0.10	MADE GROUND (Dark br Gravel is angular to round brick)  Soft to firm orange brown	own gravelly fine to coarse sed fine to coarse concrete a	sand.
0.35-1.10	D2				- - - - - - - - -	Son to limi drange brown	and grey mothed GLAT	
1.10-2.00	D3				- (1.90) - (1.90)			
				64.4	2.00	Complete at 2.00m		
					- - - - - - - -			
Plan .						Remarks  1. Location CAT scanned pr	ior to excavation	
		٠				No groundwater encounte     Trial pit remained open at     Pit backfilled with gravel t     Soakage test performed b	ored and stable during ex of 1.0 m and then arisings to between 1.0 m and 2.0 m	cavation. surface
						Scale (approx) 1:20	CJL	Figure No. 21.133.TP103



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number

Client : Stantec

Sheet

Engineer:

3 / 12

Location	Date	Level	Location
TP103	11/05/2021	66.40 mOD	E: 580048 N: 189328

Pit Width (m)	0.45
Pit Depth (m)	2.00
Pit Length (m)	2.00

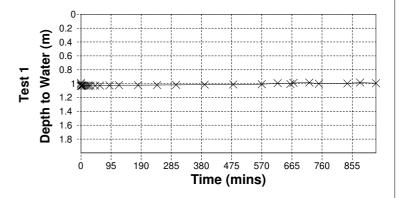
Soil type at test level	Orange-brown mottled grye CLAY
Groundwater	None
Drain discharge depth	Not known
Sidewall stability	Stable
Stone filled or open pit	Stone filled

	1
Effective depth (m)	0.97
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

- 1. Soakage test undertaken between 1.0 m and 2.0 m 2. No groundwater encountered 3. Datalogger serial no. 12726020 4. Test 1 carried out on 11/05/21

<sup>\*</sup> Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed). Elapsed time Depth to Water

Elapseu tillie	Deptil to water			
(mins)	Test 1			
0	0.989			
1	1.03			
2	1.03			
3	1.03			
4	1.029			
5	1.029			
10	1.029			
15	1.028			
20	1.028			
25	1.029			
30	1.029			
45	1.03			
60	1.028			
90	1.026			
120	1.023			
180	1.023			
240	1.021			
300	1.018			
390	1.015			
480	1.012			
570	1.009			
620	0.994			
660	1.005			
670	0.99			
720	0.985			
750	1.002			
840	0.998			
880	0.985			
930	0.995			



		1	<b>F Howland A</b> cotechnical Er			Site Castle Point, Hadleigh		Trial Pit Number TP104			
JCB 3CX		Dimension 2.00 m x 0	<b>ns</b> 0.45 m x 2.20 m		<b>Level (mOD)</b> 67.26	mOD) Client Stantec					Job Number 21.133
		Location 5804	34 E 189257 N	Dates 11	/05/2021	Engineer		Sheet 1/1			
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	D	escription	Kater Name Name Name Name Name Name Name Name			
0.00-0.30	D1				 	TOPSOIL (Dark brown cla	yey very silty fine to coarse s	and)			
0.30-1.10	D2			66.96	0.30	Soft to firm orange brown	and grey mottled CLAY				
				66.16	- - - - - 1.10	Occurs have a sile fi	CAND				
1.10-1.90	D3					Orange brown very silty fir	ne to medium SAND				
1.90-2.20	D4			65.06	2.20	Complete at 2.20m					
					-						
Plan .		-		-		Remarks					
				-		Location CAT scanned pr     No groundwater encounte     Trial pit remained open at     Pit backfilled with gravel t     Soakage test performed b	ior to excavation ered nd sidewalls stable during exc o 1.2 m and then arisings to s petween 1.2 m and 2.2 m	cavation. surface			
				-							
				-							
				•		Scale (approx)	Logged By	Figure No.			
						1:20	CJL	21.133.TP104			



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number 21.133

Client : Stantec

Sheet

Engineer:

4 / 12

Location	Date	Level	Location
TP104	10/05/2021	67.26 mOD	E: 580434 N: 189257

Pit Width (m)	0.40
Pit Depth (m)	2.20
Pit Length (m)	2.00

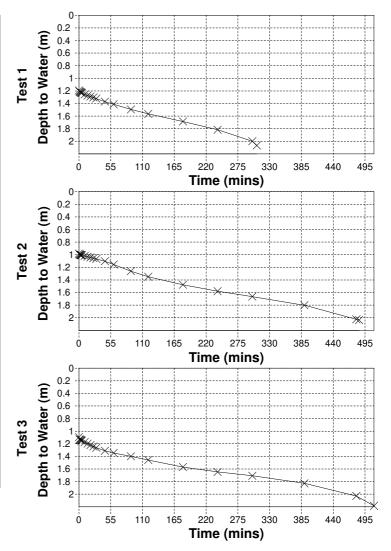
Soil type at test level	Orange-brown very silty SAND
Groundwater	None
Drain discharge depth	Not known
Sidewall stability	Stable
Stone filled or open pit	Stone filled

	1	2	3
Effective depth (m)	1.01	1.22	1.11
Volume outflowing between 75% & 25% (m3)*	0.12	0.15	0.13
Mean surface area through which outflow occurs (m2)	3.22	3.73	3.46
Time for outflow between 75% & 25% (min)	211.72	329.14	358.58
SOIL INFILTRATION RATE (ms-1), f	2.96E-6	1.99E-6	1.79E-6

- Soakage test undertaken between 1.2 m and 2.2 m No groundwater encountered Datalogger serial no. 10/226030 Test 1 carried out on 10/05/21 Test 2 carried out on 11/05/21 Test 3 carried out on 12/05/21

- \* Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed).

Elapsed time	Depth to Water	Depth to Water	Depth to Water
(mins)	Test 1	Test 2	Test 3
0	1.192	0.982	1.095
1	1.208	0.995	1.129
2	1.216	0.998	1.136
3	1.223	1.002	1.142
4	1.228	1.005	1.147
5	1.233	1.007	1.152
10	1.256	1.019	1.174
15	1.274	1.032	1.199
20	1.289	1.043	1.221
25	1.305	1.055	1.244
30	1.322	1.066	1.263
45	1.371	1.103	1.311
60	1.412	1.155	1.346
90	1.494	1.26	1.399
120	1.565	1.35	1.458
180	1.686	1.476	1.569
240	1.817	1.579	1.647
300	1.998	1.664	1.708
307.833	2.067		
390		1.801	1.828
480		2.025	2.029
484.833		2.037	
510.5			2.185



	$\bigvee \bigwedge$	•		nd Assoc cal Engine			Site Castle Point, Hadleigh			Trial Pi Numbe	er
Excavation JCB 3CX	Method	Dimensio			und L	<b>.evel (mOD)</b> 8.64	Client Stantec			Job Numbe 21.133	- 1
		Location 5806	642 E 189249 N	Date	<b>98</b> 10/0	05/2021	Engineer			Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Reco	ords Lev (mC	vel DD)	Depth (m) (Thickness)	D	escription	L	_egend	Water
0.00-0.20	D1					(0.20)	TOPSOIL (Dark brown sar	ndy clay)			
0.20-0.80	D2			58	8.44	- 0.20 - -	Firm orange brown and gr	ey mottled CLAY			
						- - - - -					
0.80-1.50	D3					- - - - -					
						(1.80)					
1.50-2.00	D4					- - - - -					
				56	6.64	2.00	Complete at 2.00m		_	=	
						- - - -					
						- : - -					
Plan .						•	Remarks  1. Location CAT scanned pri	ior to excavation			
							No groundwater encounte     Trial pit remained open ar     Pit backfilled with gravel to     Soakage test performed by	ered ind sidewalls stable during e o 1.0 m and then arisings to between 1.0 m and 2.0 m	xcavation surface	1.	
					•	•					
						S	Scale (approx) 1:20	<b>Logged By</b> CJL	<b>Figure</b> 21.13	<b>No.</b> 3.TP105	5



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number

Sheet

Client : Stantec

Engineer:

5/12

Location	Date	Level	Location
TD105	12/05/2021	58 64 mOD	E: 580642 N: 180240

Pit Width (m)	0.45
Pit Depth (m)	2.00
Pit Length (m)	1.90

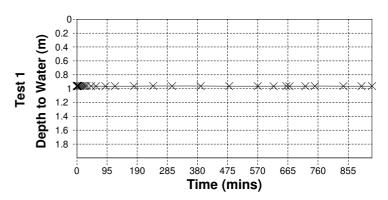
Soil type at test level	Orange-brown mottled grey CLAY
Groundwater	None
Drain discharge depth	Not known
Sidewall stability	Stable
Stone filled or open pit	Stone filled

	1
Effective depth (m)	1.04
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

- 1. Soakage test undertaken between 1.0 m and 2.0 m 2. No groundwater encountered 3. Datalogger serial no. 12575011 4. Test 1 carried out on 12/05/21

<sup>\*</sup> Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed). Elapsed time | Depth to Water

Elapsed time	Depth to Water
(mins)	Test 1
0	0.966
1	0.961
2	0.961
3	0.961
4	0.961
5	0.961
10	0.962
15	0.962
20	0.962
25	0.962
30	0.962
45	0.963
60	0.965
90	0.965
120	0.964
180	0.964
240	0.962
300	0.963
390	0.963
480	0.964
570	0.964
620	0.966
660	0.963
670	0.966
720	0.965
750	0.963
840	0.964
897	0.965
930	0.964



		`	F Howlar eotechnic				Site Castle Point, Hadleigh		N	ial Pit umber P106
Excavation JCB 3CX	Method	Dimensio			ound L	_evel (mOD) 62.42	Client Stantec		Jo Ni	
		Location 5805	511 E 189085 N	Dat	i <b>tes</b> 10/	05/2021	Engineer		Sł	1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Reco	ords Le	evel nOD)	Depth (m) (Thickness)	D	escription	Leç	Mater Pune
0.00-0.20	D1				60.00	(0.20)		yey very silty slightly gravelly angular fine to medium flint)		
0.20-0.80	D2				62.22	- 0.20 	Soft orange brown and gre soft and damp with depth	ey mottled CLAY becoming v	-	
0.80-1.80	D3				60.62	(1.60)				
1.80-2.00	D4				60.62	- 1.80 - (0.20) - 2.00 	Complete at 2.00m	d grey mottled very silty CLA		x
Plan .						•	Remarks  1. Location CAT scanned pr	ior to excavation		
							No groundwater encounte     Trial pit remained open ar     Pit backfilled with gravel t     Soakage test performed b	ored and stable during ex of 1.0 m and then arisings to between 1.0 m and 2.0 m	cavation. surface	
		•			•	•				
· · · · ·										
								T		
						\$	Scale (approx) 1:20	CJL	21.133.7	



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number

6/12

Client : Stantec

Sheet

Engineer:

Location	Date	Level	Location	
TP106	10/05/2021	62.42 mOD	E: 580511 N: 189085	

Pit Width (m)	0.40
Pit Depth (m)	2.00
Pit Length (m)	2.00

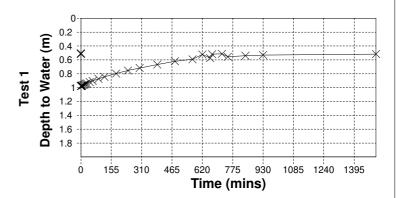
Soil type at test level	Oraneg-brown mottled grey CLAY			
Groundwater	1.63 m (seepage)			
Drain discharge depth	Not known			
Sidewall stability	Stable			
Stone filled or open pit	Stone filled			

	1
Effective depth (m)	1.02
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

- 1. Soakage test undertaken between 1.0 m and 2.0 m 2. No groundwater encountered. Seepage at 1.63 m 3. Datalogger serial no. 106607020 4. Test 1 carried out on 10/05/21

<sup>\*</sup> Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed).

Elapsed time	Depth to Water			
(mins)	Test 1			
0	0.503			
1	0.978			
2	0.975			
3	0.973			
4	0.971			
5	0.97			
10	0.966			
15	0.959			
20	0.952			
25	0.945			
30	0.939			
45	0.92			
60	0.903			
90	0.873			
120	0.845			
180	0.797			
240	0.753			
300	0.717			
390	0.667			
480	0.62			
570	0.592			
620	0.522			
660	0.573			
670	0.518			
720	0.513			
750	0.555			
840	0.54			
930	0.53			
1506.5	0.516			



A F Howland Associates Geotechnical Engineers			Site Castle Point, Hadleigh TP			ber				
Excavation Method  JCB 3CX		<b>Dimensions</b> 2.00 m x 0.45 m x 1.50 m		Ground	<b>Level (mOD)</b> 61.93	Client Stantec			Job Number 21.133	
		Locatio 58	n 0529 E 189058 N	Dates 11	/05/2021	Engineer		Shee		
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	D	escription	Legen	P. Water	
0.00-0.30	D1				- - - (0.30)	MADE GROUND (Dark gr Gravel is angular fine to m	ey silty slightly gravelly clay nedium flint)	·.		
0.30-0.80	D2			61.63	- 0.30 	Very soft orange brown ar	nd grey mottled CLAY		W	
0.80-1.50	D3				- (1.20) 				- - - -	
			SEEPAGE(1) at 1.50m.	60.43	1.50 	Complete at 1.50m			_∇1	
Plan					_	Remarks				
						Location CAT scanned pr     Groundwater seepage at     Trial pit remained open ar     Heit backfilled with gravel t     Soakage test performed by	ior to excavation 1.50 m nd sidewalls stable during e o 0.5 m and then arisings to	xcavation. o surface		
				-		S. Soundge tool performed t	5555m 5.5 m and 1.5 m			
					·	Scale (approx)	Logged Py	Figure No.		
						Scale (approx) 1:20	Logged By  CJL	21.133.TP1	07	



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number

21.133

7 / 12

Sheet

Client : Stantec

Engineer:

Location	Date	Level	Location
TP107	11/05/2021	61.93 mOD	E: 580529 N: 189058

Pit Width (m)	0.45
Pit Depth (m)	1.50
Pit Length (m)	2.00

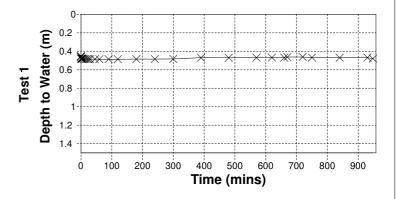
Soil type at test level	Orange-brown mottled grey CLAY		
Groundwater	None		
Drain discharge depth	Not known		
Sidewall stability	Stable		
Stone filled or open pit	Stone filled		

	1
Effective depth (m)	1.02
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

- 1. Soakage test undertaken between 0.5 m and 1.5 m 2. No groundwater encountered 3. Datalogger serial no. 10109050 4. Test 1 carried out on 11/05/21

<sup>\*</sup> Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed).

Elapsed time	Depth to Water			
(mins)	Test 1			
0	0.461			
1	0.48			
2	0.481			
3	0.481			
4	0.481			
5	0.481			
10	0.482			
15	0.483			
20	0.484			
25	0.485			
30	0.486			
45	0.485			
60	0.486			
90	0.486			
120	0.486			
180	0.485			
240	0.484			
300	0.483			
390	0.47			
480	0.471			
570	0.469			
620	0.468			
660	0.469			
670	0.463			
720	0.462			
750	0.468			
840	0.47			
930	0.469			
948	0.479			



	$\bigvee \bigwedge$	1	<b>A F Howland</b> Geotechnica			Site Castle Point, Hadleigh		Trial Pit Number TP108
Excavation JCB 3CX	Method	Dimens		Ground	<b>Level (mOD)</b> 63.69	Client Stantec		Job Number 21.133
		Locatio 58	n 0592 E 189039 N	Dates 10	0/05/2021	Engineer		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	D	escription	Legend Nater
0.00-0.30	D1				- - - (0.30)	TOPSOIL (Brown silty fine	to coarse sand with rootle	ts)
0.30-1.00	D2			63.39	0.30	Orange brown, grey, golde sandy CLAY inter-bedded	en brown and brown mottle with clayey sand	d
1.00-1.50	D3				- (1.70) 			
1.50-2.00	D4		SEEPAGE(1) at 1.50r		-			
Plan				61.69		Complete at 2.00m		
: ••••		•		•		1 Location CAT scanned or	ior to excavation	
		•		•		Groundwater seepage at     Trial pit remained open ar     Pit backfilled with gravel t     Soakage test performed by	n.30 m nd sidewalls stable during e o 1.0 m and then arisings t between 1.0 m and 2.0 m	excavation. o surface
		•		•				
						Scale (approx)	Logged By	Figure No.
						1:20	CJL	21.133.TP108



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number

Sheet

Client : Stantec

Engineer:

8 / 12

Location	Date	Level	Location
TP108	10/05/2021	63.69 mOD	E: 580592 N: 189039

Pit Width (m)	0.40
Pit Depth (m)	2.00
Pit Length (m)	2.00

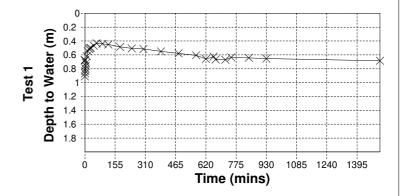
Soil type at test level	Multicoloured sandy CLAY/clayey SAND		
Groundwater	1.50 m (seepage)		
Drain discharge depth	Not known		
Sidewall stability	Stable		
Stone filled or open pit	Stone filled		

	1
Effective depth (m)	1.09
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

- 1. Soakage test undertaken between 1.0 m and 2.0 m 2. No groundwater encountered. Seepage at 1.50 m 3. Datalogger serial no. 10109020 4. Test 1 carried out on 10/05/21

<sup>\*</sup> Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed).

(mins)	T
()	Test 1
0	0.675
1	0.867
2	0.833
3	0.799
4	0.759
5	0.719
10	0.618
15	0.549
20	0.515
25	0.503
30	0.498
45	0.468
60	0.433
90	0.44
120	0.45
180	0.485
240	0.506
300	0.515
390	0.55
480	0.579
570	0.606
620	0.659
660	0.625
670	0.667
720	0.67
750	0.636
840	0.643
930	0.654
1512.333	0.685



		•	A F Howland As Geotechnical Eng			Site Castle Point, Hadleigh		Trial Pit Number TP109	r
Excavation JCB 3CX	Method	<b>Dimensions</b> 1.90 m x 0.45 m x 1.50 m		Ground	<b>Level (mOD)</b> 72.78	Client Stantec		Job Number 21.133	
		Locatio	n 0151 E 189192 N	Dates 11	/05/2021	Engineer		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	D	escription	Legend	Water
0.00-0.40	D1			72.38	(0.40) (0.40)	TOPSOIL (Dark brown cla			
0.40-1.00	52						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
1.00-1.50	D3		Water strike(1) at 1.30m.	71.28					Z <sub>1</sub>
				71.20	1.50	Complete at 1.50m			
					- - - - - - - -				
					- - - - - - - - - -				
Plan .				-		Remarks			
						Location CAT scanned pr     Groundwater struck at 1.3     Trial pit remained open ar     Pit backfilled with gravel t     Soakage test performed by	ior to excavation 30 m nd sidewalls stable during e o 0.5 m and then arisings to between 0.5 m and 1.5 m	xcavation. o surface	
		•							
						Scale (approx)	Logged By	Figure No.	_
						1:20	CJL	21.133.TP109	



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number

9 / 12

Sheet

Client : Stantec

Engineer:

Location	Date	Level	Location	
TP109	11/05/2021	72.78 mOD	E: 580151 N: 189192	

Pit Width (m)	0.45
Pit Depth (m)	1.50
Pit Length (m)	1.90

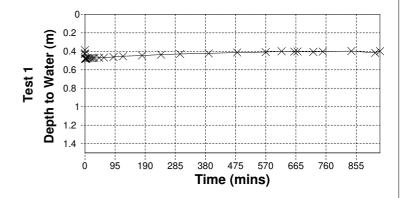
Soil type at test level	Orange-brown mottled grey CLAY	
Groundwater	1.30 m (seepage)	
Drain discharge depth	Not known	
Sidewall stability	Stable	
Stone filled or open pit	Stone filled	

	1
Effective depth (m)	1.02
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

- 1. Soakage test undertaken between 0.5 m and 1.5 m 2. No groundwater encountered. Seepage at 1.30 m 3. Datalogger serial no. 10259010 4. Test 1 carried out on 11/05/21

<sup>\*</sup> Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed).

Elapsed time	Depth to Water
(mins)	Test 1
0	0.481
1	0.481
2	0.48
3	0.48
4	0.479
5	0.479
10	0.476
15	0.474
20	0.473
25	0.473
30	0.472
45	0.471
60	0.468
90	0.463
120	0.454
180	0.446
240	0.437
300	0.43
390	0.423
480	0.413
570	0.409
620	0.40
660	0.404
670	0.403
720	0.407
750	0.404
840	0.398
915	0.418
930	0.399



		1	F Howland Associated English			Site Castle Point, Hadleigh		Trial Pit Number TP110
Excavation JCB 3CX	Method	Dimension 2.00 m x 0	<b>ns</b> ).45 m x 2.00 m		<b>Level (mOD)</b> 77.56	Client Stantec		Job Number 21.133
		Location 5800	72 E 188890 N	Dates 11	/05/2021	Engineer		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	D	escription	Legend sea
0.00-0.30	D1				 	TOPSOIL (Dark brown ver	y silty clay)	
0.30-1.00	D2			77.26	0.30	Soft to firm orange brown	and grey mottled CLAY	
1.00-2.00	D3				- (1.70) - (1.70) (1.70)			
				75.56	2.00	Complete at 2.00m		<u></u>
Plan .						Remarks  1. Location CAT scanned pri	ior to excavation	
						No groundwater encounts     Trial pit remained open ar     Pit backfilled with gravel to     Soakage test performed by	ered nd sidewalls stable during e o 1.0 m and then arisings to between 1.0 m and 2.0 m	xcavation. o surface
						Scale (approx)	Logged By	Figure No.
						1:20	CJL	21.133.TP110



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number 21.133

Sheet

Client : Stantec

10/12

Fnair	neer	

Location	Location Date		Location	
TP110	11/05/2021	77.56 mOD	E: 580072 N: 188890	

Pit Width (m)	0.45
Pit Depth (m)	2.00
Pit Length (m)	2.00

Soil type at test level	Orange-brown mottled grey CLAY	
Groundwater	None	
Drain discharge depth	Not known	
Sidewall stability	Stable	
Stone filled or open pit	Stone filled	

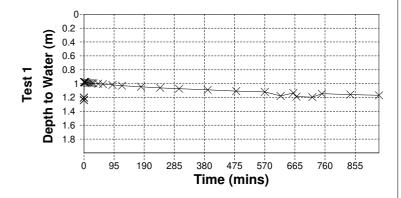
	1
Effective depth (m)	1.02
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

- 1. Soakage test undertaken between 1.0 m and 2.0 m 2. No groundwater encountered 3. Datalogger serial no. 13114031 4. Test 1 carried out on 11/05/21

<sup>\*</sup> Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed).

| Elapsed time | Depth to Water |

Elapsed time	Depth to Water		
(mins)	Test 1		
0	1.199		
1	0.979		
2	0.979		
3	0.98		
4	0.981		
5	0.982		
10	0.985		
15	0.989		
20	0.991		
25	0.993		
30	0.995		
45	1.002		
60	1.008		
90	1.019		
120	1.03		
180	1.046		
240	1.061		
300	1.074		
390	1.09		
480	1.108		
570	1.12		
620	1.178		
660	1.135		
670	1.187		
720	1.195		
750	1.146		
840	1.158		
930	1.169		



		•	<b>F Howland A</b> eotechnical E			Site Castle Point, Hadleigh		Trial Pit Number <b>TP111</b>
Excavation JCB 3CX	Method	Dimensio		Ground	<b>Level (mOD)</b> 77.62	Client Stantec		Job Number 21.133
		Location 5802	08 E 189073 N	Dates 11	/05/2021	Engineer		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	D	escription	Mater Water
0.00-0.30	D1					TOPSOIL (Dark brown ver rootlets)	ry silty fine to coarse sand wi	th
0.30-1.00	D2			77.32	0.30	Firm orange brown and gr Gravel is rounded fine to c	ey mottled slightly gravelly C coarse flint	LAY.
1.00-1.80	D3				- (1.50) 			
1.80-2.00	D4			75.82 75.62	(0.20)	Golden brown very silty sli SAND. Gravel is rounded Complete at 2.00m	ightly gravelly fine to coarse fine to coarse fine	
Plan .						Remarks		
						Location CAT scanned pr     No groundwater encounte     Trial pit remained open ar     Het backfilled with gravel t     Soakage test performed be	ior to excavation ered and sidewalls stable during extention of 1.0 m and then arisings to between 1.0 m and 2.0 m	cavation. surface
		-						
						Scale (approx) 1:20	Logged By	Figure No. 21.133.TP111



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number

Sheet

Client : Stantec

Engineer:

11 / 12

Location	Date	Level	Location
TP111	11/05/2021	77.62 mOD	E: 580208 N: 189073

Pit Width (m)	0.45
Pit Depth (m)	2.00
Pit Length (m)	1.90

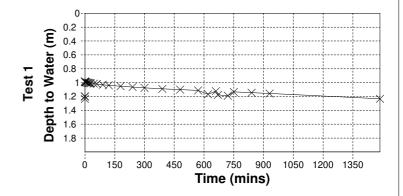
Soil type at test level	Orange-brown slightly gravelly CLAY/clayey SAND	
Groundwater	None	
Drain discharge depth	Not known	
Sidewall stability	Stable	
Stone filled or open pit	Stone filled	

	1
Effective depth (m)	1.02
Volume outflowing between 75% & 25% (m3)*	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

- 1. Soakage test undertaken between 1.0 m and 2.0 m 2. No groundwater encountered 3. Datalogger serial no. 10259030 4. Test 1 carried out on 11/05/21

<sup>\*</sup> Volume outflowing reduced to account for granular backfill used during testing (30 % of free volume assumed). 

Liapseu tiille	Deptil to Water		
(mins)	Test 1		
0	1.197		
1	0.992		
2	0.993		
3	0.994		
4	0.995		
5	0.996		
10	1.00		
15	1.002		
20	1.004		
25	1.007		
30	1.01		
45	1.015		
60	1.02		
90	1.031		
120	1.039		
180	1.052		
240	1.064		
300	1.076		
390	1.09		
480	1.101		
570	1.113		
620	1.168		
660	1.124		
670	1.178		
720	1.189		
750	1.134		
840	1.146		
930	1.157		
1486.5	1.234		



	$\nabla \Gamma$	<b>\</b>	A <b>F Howland</b> A Seotechnical E			Site Castle Point, Hadleigh		Trial Pit Number TP112
Excavation JCB 3CX	Method	Dimens		Ground	<b>Level (mOD)</b> 72.83	Client Stantec		Job Number 21.133
		Locatio 58	n 0652 E 188879 N	Dates 10	)/05/2021	Engineer		Sheet 1/1
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	D	escription	Legend Nate.
0.00-0.35	D1			72.48			y fine to coarse sand with roo	otlets)
0.35-0.80	D2			. 2.13		Soft orange brown and bro	own CLAY	
0.80-1.40	D3			72.03	- 0.80 (0.60)	Very soft orange brown ar	d grey mottled CLAY	
1.40-2.00	D4		SEEPAGE(1) at 1.40m.	71.43	1.40	Soft orange brown and ge	y mottled CLAY	
				70.73	2.10	Complete at 2.10m		
					- - - - - - - - - - - - - - - - - - -			
Plan .						Remarks  1. Location CAT scanned pr	ior to executation	
						Counterfact Scattled by 2. Groundwater seepage at 3. Trial pit remained open at 4. Pit backfilled with gravel t 5. Soakage test performed by 1. Soakage test	in to excavation 1.40 m In disidewalls stable during ex to 1.1 m and then arisings to between 1.1 m and 2.1 m	cavation. surface
					<del> </del>	Scale (annual)	Logged Pr	Eiguro No
						Scale (approx) 1:20	CJL	Figure No. 21.133.TP112



### Soakage Test (BRE Digest 365)

Site : Castle Point, Hadleigh Job Number 21.133

Client : Stantec

Sheet

Engineer:

12/12

Location	Date	Level	Location	
TP112	11/05/2021	72.83 mOD	E: 580652 N: 188879	

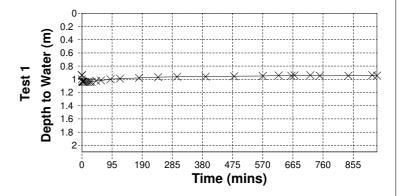
Pit Width (m)	0.40
Pit Depth (m)	2.10
Pit Length (m)	1.90

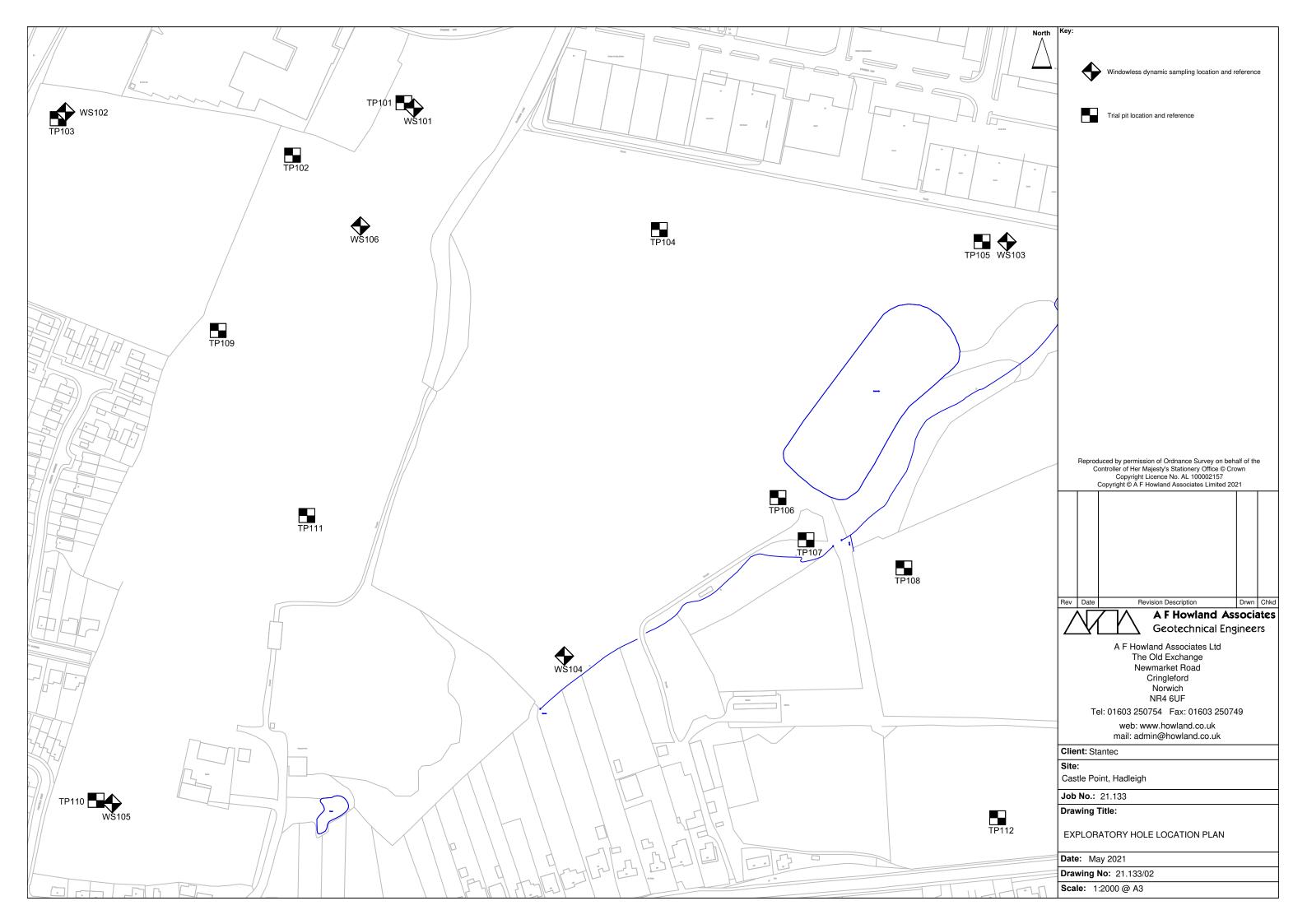
Soil type at test level	Orange-brown mottled grey CLAY	
Groundwater	1.60 m (seepage)	
Drain discharge depth	Not known	
Sidewall stability	Stable	
Stone filled or open pit	Stone filled	

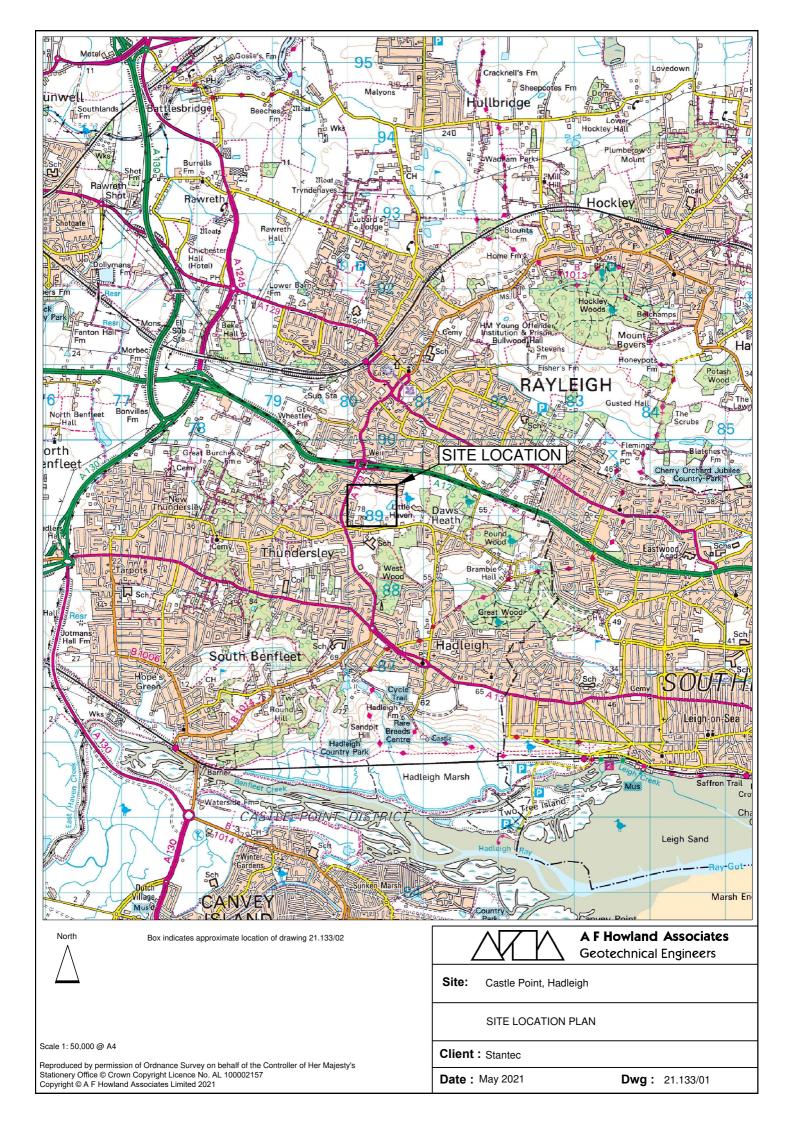
	1	Remarks
Effective depth (m)	1.10	Soakage test undertaken     No groundwater encounte
Volume outflowing between 75% & 25% (m3)*		3. Datalogger serial no. 1008 4. Test 1 carried out on 10/05
Mean surface area through which outflow occurs (m2)		4. Test i camed out on 10/0:
Time for outflow between 75% & 25% (min)		
SOIL INFILTRATION RATE (ms-1), f	Test Failed	
* Volume outflowing reduced to account for granular backfill	used during test	ing (30 % of free volume assumed)

- 1. Soakage test undertaken between 1.1 m and 2.1 m 2. No groundwater encountered. Seepage at 1.60 m 3. Datalogger serial no. 10089010 4. Test 1 carried out on 10/05/21

Elapsed time	Depth to Water		
(mins)	Test 1		
0	0.94		
1	1.03		
2	1.033		
3	1.037		
4	1.04		
5	1.04		
10	1.041		
15	1.042		
20	1.04		
25	1.039		
30	1.039		
45	1.024		
60	1.017		
90	0.999		
120	0.99		
180	0.979		
240	0.968		
300	0.962		
390	0.958		
480	0.953		
570	0.95		
620	0.942		
660	0.948		
670	0.94		
720	0.938		
750	0.947		
840	0.946		
915	0.937		
930	0.944		







D:-	4 NI				- In	! <b>t</b> NI			1			
Proje	ect Name				P	roject No:					TRIA	L PIT
Had	lleigh						3322101	105				
Clien	nt				S	tart Date	En	d Date	C St	antec		
This	s Land					10/05/20	)21	14/05/2021		antec	TP'	101
Cont	ractor				G	round Level						
ΑF	Howlands						65.76m	OD				
Meth	nod/Plant				С	oordinates			Logged By:	JC	Sheet	1 of 1
JCE	3 3CX					580270	E	189338 N	Checked By:	JEC	Scale	1:25
(m)	Sam	ples and Insi	tu Tests	Water	Legen	Depth	Level (m OD)		Stratum D	escription		Instrum entation /Backfill
	Depth	Type	Results	>		(Thickness)	(III OD)			•		
								TOPSOIL (B	rown friable silt	sandy sligh	tly gravelly	

	Som	union and in-	tu Tooto			Donth		1.25 Scale 1.25
(m)	Depth	ples and Insi	tu lests Results	Water	Legend	Depth (Thickness)	Level (m OD)	Stratum Description Unit of the support of the supp
	0.10 - 1.00	D1	recount	-		(0.20)	65.56	TOPSOIL (Brown friable silty sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse flint. Occasional rootlets) [TOPSOIL] Firm orange brown sandy CLAY. Sand is fine to medium grained. [HEAD DEPOSITS]
- 1	1.00 - 1.90	D2		-		(1.70)		
- 2	1.90 - 2.00	D3		-		1.90 (0.10) 2.00	63.86 63.76	Soft red orange brown sandy SILT. Sand is fine to medium grained.  [CLAYGATE MEMBER]  End of Trial Pit at 2.00m
- 3				-				
- 4				-				
				-				
- 5 Gener	ral Remarks						Wa	ater Stability: Stable

1. Location CAT scanned prior to excavation 2. No groundwater encountered. 3. Trial pit remained open and sidewalls stable during excavation, 4. Pit backfilled with gravel to 1.0m and then arisings to the surface. 5. Soakage test performed between 1.0m and 2.0m

Strike Standing Flow Pit Dimensions

2.00 m

0.45 m

	ct Name				Pro	ject No:	0000404				TRIAL	. PIT
	leigh				0.		3322101					
Client	Land				Sta	rt Date 10/05/20		d Date 14/05/2021	( ) St	antec	TP1	02
	actor				Cr	ound Level	<b>Z</b> I	14/05/2021			IFI	UZ
	Howlands				Git		66.72m	OD.				
	od/Plant				Co	ordinates	00.72111	OD	Logged By:	JC	Sheet	1 of 1
	3CX					580198	F	189305 N	Checked By:	JEC	Scale	1:25
		ples and Insit	u Toete	<u> </u>		Depth		10300011	Official by:	020	Ocalc	
(m)	Depth	Type	Results	Water	Legend	(Thickness)	Level (m OD)		Stratum D	escription		Instrum
1	0.00 - 0.30 0.30 - 1.00 1.00 - 1.90	D1 D2				(0.40) 0.40 (1.50)	66.32 64.82	clay. Gravel flint. Occasio [TOPSOIL]	orange brown m to medium grain OSITS]	brounded fine	e to coarse	
- 2				-								

General Remarks

1. Location CAT scanned prior to excavation 2. No groundwater encountered. 3. Trial pit remained open and sidewalls stable during excavation, 4. Pit backfilled with gravel to 0.9m and then arisings to the surface. 5. Soakage test performed between 0.9m and 1.9m

Water

Stability: Stable

Pit Dimensions

1.90 m

0.45 m

	ct Name				Pı	oject No:					TRIAL F	PIT
Hadl	leigh						3322101					
Client					St	art Date		d Date	Sta	ntec		_
This	Land					10/05/20	21	14/05/2021			TP10	3
Contra					G	round Level						
	Howlands						66.40m	OD	Logged By:	JC	Sheet 1 o	of 1
	od/Plant				C	oordinates	_	400000 N				
JCB	3CX					580048	E	189328 N	Checked By:	JEC	Scale	1:25
(m)		ples and Insitu		Water	Legen		Level (m OD)		Stratum Des	cription		Instrum entation /Backfill
_	<b>Depth</b> 0.00 - 0.35	Type D1	Results		X//XX//	(Thickness)	( 02)	TOPSOIL (B)	own friable silty s	andv sligh	tly gravelly	= 50
-	0.00			-		(0.10) 0.10	66.30	clay. Gravel i	s angular to subr	ounded fine	e to coarse	
-	0.30	ES1		-		(0.40)		flint. Occasio				
-	0.35 - 1.10	D2		-		(0.40)		Soft orange b	prown very gravel	ly sandy C	LAY. Sand is	
-				Ė		0.50	65.90	angular brick	oarse grained. Gr , sandstone fr	aver is med agments of	glass and tile	
-				-				[MADE GRO	UND] brown mottled lig	ht grov san	dy CLAV	
-				Ė				Sand is fine t	o medium graine	d beco	ming stiff with	
-				-				depth [HEAD DEP0	OSITSI			
_ 1				Ė				[1127888213	, , , ,			
-	1.10 - 2.00	D3		-								
-				Ė		(1.50)						
-				ļ.								
-				F								
				E								
-				F								
-				E								
- - 2				F		2.00	64.40		End of Trial Pit	at 2 00m		
-				E					End of main it	at 2.00m		
-				F								
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1. Location CAT scanned prior to excavation 2. No groundwater encountered. 3. Trial pit remained open and sidewalls stable during excavation, 4. Pit backfilled with gravel to 1.0m and then arisings to the surface. 5. Soakage test performed between 1.0m and 2.0m

General Remarks

Water Strike Standing Flow

Pit Dimensions 2.00 m

Stable

Stability:

rojec	t Name				Pro	oject No:					TRIAL	_ PIT
ladl	eigh						332210 <sup>2</sup>	105				
Client					Sta	art Date	En	d Date	C+	antec		
This	Land					10/05/20	21	14/05/2021		antec	TP1	04
Contra	actor				Gr	ound Level						
۱F	Howlands						67.26m	OD				
1etho	d/Plant				Co	ordinates			Logged By:	JC	Sheet	1 of 1
ICB	3CX					580434	E	189257 N	Checked By:	JEC	Scale	1:25
(m)	Sam	ples and Insitu	u Tests	Water	Legend	Depth	Level		Stratum D	escription		Instrum
,	Depth	Туре	Results	×	Logona	(Thickness)	(m OD)			•		Inst
	0.00 - 0.30 0.30 - 1.10	D1				(0.35) 0.35 (0.75)	66.91	clay. Gravel flint. Occasio [TOPSOIL]	rown friable silt is angular to su onal rootlets)  orange brown saned increasom OSITS]	brounded fine	e to coarse	
1	1.10 - 1.90	D3		-	× × × × × × × × × × × × × × × × × × ×	1.10	66.16	Orange brow [CLAYGATE	vn very silty fine MEMBER]	to medium S	SAND	
2	1.90 - 2.20	D4		- 		(1.10)						
				E	× ^×	2.20	65.06					

2 3 3 5					× × × × × × × × × × × × × × × × × × ×	(1.10)					• *	
-	1.90 - 2.20	D4			××××						•	
_ 2					×××						***	
-				<u> </u>	××		05.00					
_					· · · · · »	2.20	65.06	E	nd of Trial Pit at	2.20m		
_												
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	eral Remarks		o					/ater	Stability:	Stable		
1. Lo	ocation CAI scar	nned prior to e	excavation 2. No gro alls stable during ex	oundw	ater end	countered		trike	Pit Dimensi	ons	2.00 m	
with	gravel to 1.2m a	nd then arisin	alls stable during ex ngs to the surface. 5	Soal	ion, 4. P kade tes	t perform	الم	tanding				7
betw	een 1.2m and 2.	.2m	.50 15 110 5411400. 0	Ooui	90 .00	201101111	F	low		0.45 m		

-	t Name				Pro	ject No:					TRIAL	. PIT
ładl	eigh						332210 <sup>-</sup>	105				
Client					Sta	rt Date	En	d Date	St:	antec		
This	Land					10/05/20	21	14/05/2021		urrece	TP1	05
Contra	actor				Gro	ound Level						
۱F	Howlands						58.64m	OD				
/letho	od/Plant				Co	ordinates			Logged By:	JC	Sheet 1	1 of 1
ICB	3CX					580642	E	189249 N	Checked By:	JEC	Scale	1:25
(m)	Sam	ples and Insitu	ı Tests	Water	Legend	Depth	Level (m OD)		Stratum D	escription		Instrum
	<b>Depth</b> 0.00 - 0.20	<b>Type</b> D1	Results	>	V//5×///5	(Thickness)	(III OD)	TODOOU /F	Brown friable silt			ent s
- 1	0.20 - 0.80 0.80 - 1.50 1.50 - 2.00	D2 D3				(0.40)	58.24	clay. Gravel flint. Occasio [TOPSOIL]	is angular to sulpnal rootlets)  brown mottled to medium grain depth	brounded fine	dy CLAY.	
2				- - - - - -		2.00	56.64		End of Trial	Pit at 2.00m		

(,	Depth	Туре	Results	≥		(Thickness)	(m OD)		iddain 2000 i paoi	Inst enta //Ba
-	0.00 - 0.20	D1		-				TOPSOIL (Brown fria	able silty sandy slightly gra	velly
-	0.00 0.00	D0		-		(0.40)		clay. Gravel is angula	ar to subrounded fine to co	parse
F	0.20 - 0.80	D2		F		(0.40)		flint. Occasional root [TOPSOIL]	iets)	
F				F		0.40	50.04			
F				-		0.40	58.24	Firm orange brown n	nottled light grey sandy Cl	_AY.
F				F				Sand is fine to mediu	um grained becoming	slightly
F				F				gravelly with depth [HEAD DEPOSITS]		
F				-				[IILAD DEI OOITO]		
F	0.80 - 1.50	D3		-						
F				-						
F 1				_						V
F				-						
F				-		(1.60)				
F				F						
F	4.50.000	D.4		-						
F	1.50 - 2.00	D4		-						
F				-						
F				F						
F				Ė						
F				-						
_ 2				_		2.00	56.64	End	d of Trial Pit at 2.00m	
F				F						
F				Ė						
F				-						
F				-						
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F				-						
F 1				_						
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F				F						
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F				-						
F				-						
-				F						
				F						
				ļ.						
— 5										
	L						1			
	eral Remarks						1		Stability: Stable	
1. Lo	cation CAT scar	nned prior to	excavation 2. No gro	ound	water en	countered			Pit Dimensions	1.90 m
with	pit remained op	en and sidew and then arisir	ralls stable during ex ngs to the surface. 5	cava So	iuon, 4. l akane te	าแ DackTille st nerform		anding		
betw	een 1.0m and 2		igo to the surface. S	. 506	anage ie	or benonin	ed Fid	DW .	0.45 m	

Proje	ect Name					Project No:					TRIA	L PIT
Had	lleigh						332210	105				
Clien	ıt					Start Date	En	d Date	Ch St	antec		
This	s Land					10/05/20	021	14/05/2021		antec	TP1	106
Conti	ractor					Ground Level						
ΑF	Howlands						62.42m	OD				
Meth	od/Plant					Coordinates			Logged By:	JC	Sheet	1 of 1
JCE	3 3CX					580511	E	189085 N	Checked By:	JEC	Scale	1:25
(m)	Sam	ples and Insi	tu Tests	Water	Lege	Depth	Level		Stratum D	escription		Instrum entation /Backfill
()	Depth	Type	Results	_   ≥	cg(	(Thickness)	(m OD)		Cautain D	00011711011		Inst enta /Ba

JCB	3 U X					580511		189085 N	Спескеа ву:	EC	Scale	1:25
(m)		ples and Ins		Water	Legend	Depth	Level (m OD)		Stratum Descrip	otion		Instrum entation /Backfill
	<b>Depth</b> 0.00 - 0.20	Type D1	Results	5	X// <u>X</u> X///X	(Thickness)	22,	TODCOU /P	rough friehl: If	الحالمينات	hi arayali :	= 5 6
_	0.00 - 0.20	וט		-		(0.20)		day Gravel i	rown friable silty sands s angular to subroun	ay siigni	iy graveliy	
	0.20 - 0.80	D2		Ė		0.20	62.22	flint. Occasio	is aligular to subrour inal rootlets)	ided iirie	to coarse	
	0.20 0.00	52		Ŀ		0.20	OZ.ZZ	\ ITOPSOIL1				K/XXX
_				Ŀ				Firm orange	brown mottled light o	grey very	sandy CLAY.	
F				F				Sand is fine t	to medium grained.	beco	ming soft with	
_				F				depth bed	coming damp with de	pth		
_				Ė				[HEAD DEPO	JSHSJ			
_				Ė								
_	0.80 - 1.80	D3		-								
				Ł								
<u> </u>				$\vdash$		(1.60)						(//)
F				F								
F				F								
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_				Ė								
				Ė								
_				Ŀ								
-				-								
F	4.00 0.00	D.4		F		4.00	00.00					
F	1.80 - 2.00	D4		F		1.80	60.62	Soft orange b	orown and grey mottl MEMBER]	led very	silty CLAY	
				<u> </u>		(0.20)		[CLAYGATE	MEMBER]			
_ 2						2.00	60.42		End of Trial Pit at 2	2.00m		
				Ŀ								
-				-								
F				F								
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— 5												
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Conc	ral Remarks						Wa	tor	Stability:	Stable		

General Remarks

1. Location CAT scanned prior to excavation 2. Groundwater encountered as a minor seepage at 2m depth. 3. Trial pit remained open and sidewalls stable during excavation, 4. Pit backfilled with gravel to 1.0m and then arisings to the surface. 5. Soakage test performed between 1.0m and 2.0m

Water

Strike 2.00 m

Standing

Flow Minor seepage

0.45 m

Proje	ct Name			Project No:					TRIA	L PIT
Had	leigh				332210 <sup>-</sup>	105				
Client	t			Start Date	En	d Date	Ch Ch	antec		
This	s Land			10/05/20	021	14/05/2021		antec	TP'	107
Contr	ractor			Ground Level						
ΑF	Howlands				61.93m	OD				
Metho	od/Plant			Coordinates			Logged By:	JC	Sheet	1 of 1
JCB	3CX			580529	E	189058 N	Checked By:	JEC	Scale	1:25
(m)	Samples and Insitu Tests	ater	Lege	Depth	Level		Stratum D	escription		trum ation ckfill

JB 3	3CX					580529	E	189058 N	Checked By:	JEC	Scale	1:25
n)	Sam	ples and Insi	tu Tests	Water	Legend	Depth	Level		Stratum De	scription		Instrum
	Depth	Туре	Results	Š		(Thickness)	(m OD)					Ins
	0.00 - 0.30 0.20 0.30 - 0.80	D1 ES1 D2		- - - - - - - - - -		(0.30) 0.30	61.63	sandy CLAY. Occasional c to coarse gra MADE GRO Firm orange	UND] brown mottled li o medium grain	r, brick and ar brick. Sa ght grey sa	glass. and is medium	
1	0.80 - 1.50	D3		- - - - - - - - -		(1.20)						
				•		1.50	60.43		End of Trial P	lit at 1.50m		
2				- - - - - - - - - - - - - - - - - - -								
				- - - - - - - - - -								
				- - - - - - - - - - -								
				- - - - - - - - - - -								
era	al Remarks						Wa	iter	Stability	: Stable		

1. Location CAT scanned prior to excavation 2. Groundwater encountered as a moderate seepage at 1.5m depth 3. Trial pit remained open and sidewalls stable during excavation, 4. Pit backfilled with gravel to 0.5m and then arisings to the surface. 5. Soakage test performed between 0.5m and 1.5m

Water
Strike 1.50 m
Standing
Flow Moderate

seepage

Pit Dimensions

2.00 m

0.45 m

Proje	ect Name			Project No:					TRIA	L PIT
Had	lleigh				3322101	105				
Clien	ıt			Start Date	En	d Date	C+	antec		
This	s Land			10/05/20	021	14/05/2021		antec	TP'	108
Cont	ractor			Ground Level						
ΑF	Howlands			63.69m	OD					
Meth	od/Plant		Coordinates			Logged By:	JC	Sheet	1 of 1	
JCE	3 3CX		580592 E 189039 N			Checked By:	JEC	Scale	1:25	
(m)	Samples and Insitu Tests	Lege	Depth	Level	Stratum Description				trum ation ckfill	

JCB	3CX					580592	<u> </u>	189039 N Checked By: JEC Scale 1:2	
(m)		ples and Insit		Water	Legend	Depth	Level	Stratum Description	entation /Backfill
` /	Depth	Туре	Results	8	· · · · · · · · · · · · · · · · · · ·	(Thickness)	(m OD)	ns in the second	ent B
- - - - - - - - - - - - - - - - - - -	0.00 - 0.30 0.30 - 1.00	D1				(0.30) 0.30	63.39	TOPSOIL (Brown friable silty sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse flint. Occasional rootlets) [TOPSOIL] Firm red orange brown mottled light grey sandy CLAY. Sand is fine to medium grained becoming clayey fine SAND with depth arisings recorded as damp from 1.0m depth [HEAD DEPOSITS]	
- - - - - - - - - - - -	1.00 - 1.50	D3				(1.70)			
- - - - - - - -	1.50 - 2.00	D4		-					
_ 2				_		2.00	61.69	End of Trial Pit at 2.00m	
3									
- 4 - 4 									
Genei	ral Remarks			- - - - -			Wa	later Stability: Stable	

1. Location CAT scanned prior to excavation 2. Groundwater encountered at 1.5m as a minor seepage 3. Trial pit remained open and sidewalls stable during excavation, 4. Pit backfilled with gravel to 1.0m and then arisings to the surface. 5. Soakage test performed between 1.0m and 2.0m

Water 1.50 m Standing

Pit Dimensions

Minor seepage

2.00 m 0.45 m

Proje	ect Name			Project No:					TRIA	L PIT
Hac	lleigh			;	3322101	105				
Clier	nt			Start Date	En	d Date	C+	ontoc		
Thi	s Land		10/05/20	21	14/05/2021		antec	TP	109	
Cont	tractor		Ground Level							
ΑF	Howlands			72.78m	OD					
Meth	nod/Plant			Coordinates			Logged By:	JC	Sheet	1 of 1
JCE	3 3CX		580151	E	189192 N	Checked By:	JEC	Scale	1:25	
	Samples and Insitu Tests	5	Ι	Denth	Laval					<u> </u>

JCB	3CX					580151	E	189192 N	Checked By:	JEC	Scale	1:25
(m)		ples and Insi		Water	Legend	Depth	Level		Stratum De	escription		Instrum entation /Backfill
` ,	Depth	Туре	Results	>		(Thickness)	(m OD)					ent /Ba
	0.00 - 0.40 0.40 - 1.00	D1		-		(0.50)	72.28	clay. Gravel is flint. Occasion [TOPSOIL]	range brown sa	orounded fir	ne to coarse	
1 1 	1.00 - 1.50	D3		_ - - - - - - - - - - - - - - - - - -		(1.00)	71.28					
	ral Remarks							ater	End of Trial F			

1. Location CAT scanned prior to excavation 2. No groundwater encountered. 3. Trial pit remained open and sidewalls stable during excavation, 4. Pit backfilled with gravel to 0.5m and then arisings to the surface. 5. Soakage test performed between 0.5m and 1.5m

Water
Strike 1.30 m
Standing

Slow inflow

Flow

Pit Dimensions

1.90 m

Proie	ct Name				Р	roject No:					TDIA	LDIT
1	leigh						3322101	105			TRIA	L PII
Clien	t				S	tart Date	En	d Date	C+	ontoc		
This	Land					10/05/20	021	14/05/2021		antec	TP	110
Cont	ractor				G	round Level						
ΑF	Howlands						77.56m	OD				
Meth	od/Plant				С	Coordinates			Logged By:	JC	Sheet	1 of 1
JCE	3CX		580072 E 188890 N			Checked By:	JEC	Scale	1:25			
(m)	Samples and Insitu Tests					Depth (Thickness)	Level (m OD)		Stratum D		Instrum entation /Backfill	
- 0.00 - 0.30 D1						(Tillokiless)		TOPSOIL (Brown friable silty sandy slightly gravelly				= 6 =

Company   Comp	JCB	3CX					580072	E	188890 N	Checked By:	JEC	Scale	1:25
0.00 - 0.30 D1 0.30 - 1.00 D2 0.30 - 1.00 D2 0.30 T7.26	(m)				ater	Legend	Depth	Level		Stratum De	escription		Instrum entation /Backfill
0.30 - 1.00 D2  0.30 - 1.00 D2  1 1.00 - 2.00 D3  1 1.00 - 2.00 D3	` /			Results	>		(Thickness)	(m OD)					Ins /Ba
2.00 75.56 End of Trial Pit at 2.00m	- - - - - - - - - - - - - - - - - - -				-			77.26	clay. Gravel flint. Occasio [TOPSOIL] Firm orange Sand is fine content with	is angular to sub onal rootlets) brown mottled li to medium grain depth	orounded fir	ne to coarse	
2.00 10.00 End of Trial Pit at 2.00m  End of Trial Pit at 2.00m	- 1 - 1 	1.00 - 2.00	D3		-		(1.70)						
	- - -				-		2.00	75 56					
General Remarks Water Stability: Stabile		ral Remarks						Wa	ater	Stability	r: Stable		

Location CAT scanned prior to excavation 2. Groundwater encountered at 2m.
 Trial pit remained open and sidewalls stable during excavation, 4. Pit backfilled with gravel to 1.0m and then arisings to the surface. 5. Soakage test performed between 1.0m and 2.0m

Strike 2.00 m Standing

Flow Minor seepage

Pit Dimensions

2.00 m

Proje	ct Name				Pr	oject No:					TRIA	L PIT
Had	leigh						3322101	105				
Clien	t				Sta	art Date	En	d Date	C+	antec		
This	Land					10/05/20	21	14/05/2021		antec	TP'	111
Conti	actor				Gr	ound Level						
ΑF	Howlands						77.62m	OD				
Meth	od/Plant				Co	Coordinates			Logged By:	JC	Sheet	1 of 1
JCB	3CX					580208	E	189073 N	Checked By:	JEC	Scale	1:25
(m) Samples and Insitu Tests				Water	Legend	Depth Level			Stratum De	escription		Instrum entation /Backfill
` ′	Depth	Туре	Results		"	(Thickness)	(m OD)			•		
	0.00 0.30	D1			V//XV//	0		Dork brown	convailty fine to	accres CANI	D with frague	-t \///

JCB	3CX					580208	E	189073 N	Checked By:	JEC	Scale	1:25
(m)	Sam	ples and Insi	u Tests	Water	Legend	Depth	Level		Stratum Des	scription		Instrum entation /Backfill
` /	Depth	Туре	Results	×		(Thickness)	(m OD)					Ins ent /Ba
-	0.00 - 0.30 0.30 - 1.00	D1 D2				(0.30)	77.32	rootlets [TOPSOIL]	brown and grey it is rounded fine OSITS]	mottled slig	phtly gravelly	
1	1.00 - 1.80	D3				(1.50)						
2	1.80 - 2.00	D4				1.80 (0.20) 2.00	75.82 75.62	Orange brow SAND. Grave [CLAYGATE	n very silty slight el is rounded fine MEMBER] End of Trial Pi	to coarse	fine to coarse flint.	
- - - - - - - - - - - - - - - - - - -												
4												
				-								
Gene	ral Remarks						w	ater	Stability:	Stable		

1. Location CAT scanned prior to excavation 2. No groundwater encountered. 3. Trial pit remained open and sidewalls stable during excavation, 4. Pit backfilled with gravel to 1.0m and then arisings to the surface. 5. Soakage test performed between 1.0m and 2.0m

Strike Standing Flow

Pit Dimensions

0.45 m

2.00 m

,	ct Name				ı	Project No:					TRIA	L PIT
Had	leigh						3322101	105				
Client	i					Start Date	En	d Date	St:	antec		
This	Land					10/05/20	)21	14/05/2021		arriceC	TP'	112
Contr	actor				(	Ground Level						
ΑF	Howlands						72.83m	OD				
Metho	od/Plant				(	Coordinates			Logged By:	JC	Sheet	1 of 1
JCB	3CX					580652 E 188879 N			Checked By:	JEC	Scale	1:25
(m)	Sam	ples and Insi	tu Tests	Water	Legei	Depth	Level		Stratum De	escription		Instrum entation /Backfill
()	John Hount						(Thickness) (m OD)					Inst enta /Ba
0.00 - 0.35					(0.35)		TOPSOIL (Brown friable silty sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse flint. Occasional rootlets)					

	Som	nloo ond le-!	tu Taata	Ļ		Donth		E S.
(m)	Depth	ples and Insi Type	Results	Water	Legend	Depth (Thickness)	Level (m OD)	Purstrum Description Stratum Description
	0.00 - 0.35	D1	Results	<u> </u>		(0.35)		TOPSOIL (Brown friable silty sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse flint. Occasional rootlets)
- - - - - -	0.35 - 0.80	D2		- - - - - - - -		0.35	72.48	[TOPSOIL]  Firm orange brown mottled light grey very sandy CLAY. Sand is fine to medium grained. [HEAD DEPOSITS]
- - - - - 1 - -	0.80 - 1.40	D3		-		(1.75)		
-	1.40 - 2.00	D4		-		(1.73)		
2				-		2.10	70.73	End of Trial Pit at 2.10m
				- - - - - - - -				
- - - - - - - -				- - - - - - - - -				
4				-				
- - - - - - -				- - - - - -				
_ _ _ _ _ _ _ _ 5				- - - - - - - -				
	ral Pomarke						Wa	tor Stability: Unctable beyond 2m

1. Location CAT scanned prior to excavation 2. Groundwater encountered from 1.2m 3. Trial pit remained open and sidewalls unstable during excavation, 4. Pit backfilled with gravel to 1.1m and then arisings to the surface. 5. Soakage test performed between 1.1m and 2.1m

Water
Strike 1.20 m
Standing

Flow Moderate inflow

Stability: Unstable beyond 2m
Pit Dimensions 1.90 m

0.45 m

Proje	ect Name			Project No:					WINDOW	SAMPLE
Hac	dleigh				332210 <sup>-</sup>	105				
Clier	nt			Start Date	En	nd Date	Ch St	antec		
Thi	s Land		14/05/20	21	14/05/2021		antec	WS	101	
Cont	tractor	Ground Level								
ΑF	Howlands		66.09	9m OD	(OSGB)					
Meth	nod/Plant			Coordinates (OSGB)			Logged By:	SW	Sheet	1 of 1
Dar	ando Terrier 2002			580276	E	189335 N	Checked By:	JC	Scale	1:40
	Samples and Insitu Tests	-		Depth	Lovel				1	<b>₹</b> 5₩

Campain   Samples and Insitut Tests   Depth	Dan	do Terrier 200	2				580276	E	189335 N	Checked By:	JC	Scale	1:40
0.00 - 0.30	(m)	Sam	ples and Insi	tu Tests	ater	Legend	Depth			Stratum De	escription		rrum ation ckfill
1.20	(''')			Results	× ×	Legena		(m OD)					Inst enta /Bac
120	- - - - -				-	X X X X X X X X X X X X X X X X X X X		65.79	clay. Gravel flint. Occasion [TOPSOIL] Soft becomi	is angular to sub onal rootlets) ng firm grey orar	orounded fir	ne to coarse	
1.70 - 1.90	- - - - 1	1 20	S	N=13		X			CLAY. Occa [HEAD DEP	sional relic rootle 'OSITS]	ets		
2.80 - 3.00	- - - -	1.20 - 1.65	D3		-	X———X X———X X—————————————————————————	(2.50)						
3 300 3.45 S D7 N=16	2 2 	2.00 2.00 - 2.45		N=14	- - - - - -	X X X X X X X X X X X X X X X X X X X							
3.00 - 3.45 D7 N=16 D7 S N=14 D9 N=14 D S N=14 D S	_	2.80 - 3.00	D6			××	2.80	63.29	Medium der	nse brown very cl	layey silty f	ine SAND	
4 4.00 S N=14	3 _ _ _ _ _ _			N=16		× × × × × × × × × × × × × × × × × × ×			[CLAYGATE	MEMBER]			
4.00 - 4.45 D9 (3.00)  4.80 - 5.00 D10 S D11 N=14	- - -				-	*_^							
5 5.00 S D11  5.60 - 6.00 D12  5.80 (0.20) 6.00  Stiff grey silty sandy CLAY [LONDON CLAY FORMATION?] End of Window Sample at 6.00m	- 4 - - - - - -	4.00 - 4.45	D9	N=14	- - - - - -	* * * * * * * * * * * * * * * * * * *	(3.00)						
5.80 (0.20) 60.09 Stiff grey silty sandy CLAY [LONDON CLAY FORMATION?] End of Window Sample at 6.00m	5 5 	5.00	S D11	N=14	- - - -	*** * ** * ** * ** * ** *			Medium der	nse brown very c	layey silty f	ine SAND	
End of Window Sample at 6.00m	- - - - - 6	5.60 - 6.00	D12			× × × × × × × × × × × × × × × × × × ×	5.80 (0.20) 6.00		Stiff grey silt	ty sandy CLAY CLAY FORMATIO	DN?1		
Water Strike Window Sample Pun	- - - - - - - - - - - - - - - - - - -				-		6.00	60.09	LONDON	End of Window S	ample at 6.00	Om	
								<u> </u>	Water Strike	<u> </u>	Mind	ow Sample Dun	

General Remarks

1. Location CAT scanned prior to excavation2. Hand dug inspection pit to 1.20 m3.

No groundwater encountered4. Slotted Standpipe installed to 5.00 m5. SPT

Hammer Energy Ratio = 68%

Water Strike | Window Sample Run

Strike | Time (mins) | Rose to | Start | End | Dia. (mm) | Rec. %

Project Name	Project No:				WINDOW S	SAMPLE
Hadleigh	33221	0105				
Client	Start Date	End Date	(Sta	ntec		
This Land	13/05/2021	13/05/2021	Justa	mec	WS1	02
Contractor	Ground Level					
A F Howlands	66.21m OE	(OSGB)				
Method/Plant	Coordinates (OSGB)		Logged By:	SW	Sheet 1	of 1
Dando Terrier 2002	580052 E	189333 N	Checked By:	JC	Scale	1:40

I Strike   Time (mins)   Rose to I Start   End   Dia. (mm)   Rec. %	Dan	do Terrier 200	12				580052	E	189333 N	Checked By:	JC	Scale	1:40
0.00 - 0.20	(m)	Sam	ples and Insi	tu Tests	ater	Legend	Depth			Stratum De	scription		trum ation ckfill
0.30 - 0.50   D2	(,			Results	×	090		(m OD)					Insi ent
1.20	- - -				-	X—	(0.20) 0.20	66.01	clay. Gravel	is angular to sub	sandy slig rounded fir	htly gravelly ne to coarse	
1	_				-	××			\  TOPSOIL1	•	ich brown d	orango mottlad	
120   S   N=9	_				Ė	×			silty sandy C	CLAY. Occasional	relic rootle	ets	
1,20 - 1,65	_				E	××			[HEAD DEP	OSHSJ			
1.80 - 2.00	-	1.20	s	N=9	-								
2 2 0 2 2 0 2 2 0 2 2 5	-	1.20 - 1.65	D3		-								
2 2 0 2 2 0 2 2 0 2 2 5					E	X——×							
2.00 - 2.45	_	1.80 - 2.00	D4		-	×							
3.30 - 3.45 D7	<u> </u>			N=7	-	×——×	(3.60)						
3.30 - 3.45 D7	_				F	×— ×							
3.30 - 3.45 D7					E	×_×_							
3.30 - 3.45 D7	_	2.80 - 3.00	D6		-	××							
3.70 - 3.80	_ 3	3.00	s	N=15	-	X—X—X							
3.80 -4.00 D9	_	3.00 - 3.45	D7		F	××							
3.80 -4.00 D9					E	×— -×							
3.80 -4.00 D9	_	3.70 - 3.80	D8			××							
A   4,00-4.45   D10	_	3.80 - 4.00	D9			×_×_	3.80	62.41	3.70 m to 3.	80 m		fine sand from	
Stiff dark grey silty slightly sandy CLAY	_ 4		S D10	N=10		Xx			Stiff dark gre	ey silty slightly sa MEMBER]	indy CLAY		
Stiff dark grey silty slightly sandy CLAY   Stiff dark grey slig	_				E	×				•			
Stiff dark grey silty slightly sandy CLAY   Stiff dark grey slig	_				-	×——×							
Stiff dark grey silty slightly sandy CLAY   Stiff dark grey slig	-				-		(0.00)						
6.00 60.21 End of Window Sample at 6.00m  Find of Window Sample at 6.00m  Water Strike Window Sample Run  Strike Time (mins) Rose to Start End Dia (mm) Rec. %	_ 5			N=11	E	×_×_	(2.20)		Chiff doub out	ov oilty oliobthy on	and CLAY		
General Remarks  6.00   60.21   End of Window Sample at 6.00m      Value   Strike   Window Sample Run	_	5.00 - 5.45	DII		-	X			Sun dark gre	ey siity siigritiy sa	indy CLAY		
General Remarks  6.00   60.21   End of Window Sample at 6.00m      Value   Strike   Window Sample Run	_				-	X							
General Remarks  6.00   60.21   End of Window Sample at 6.00m      Value   Strike   Window Sample Run	_				F	×——×							
General Remarks  End of Window Sample at 6.00m  Water Strike   Window Sample Run  Strike   Time (mins)   Rose to   Start   End   Dia (mm)   Rec. %	_ 6				E	^x	6.00	60 21					
General Remarks    Water Strike   Window Sample Run	_				-		0.00	00.21		End of Window S	ample at 6.00	)m	
General Remarks    Water Strike   Window Sample Run	_				-								
General Remarks    Water Strike   Window Sample Run	_				-								
General Remarks    Water Strike   Window Sample Run					E								
General Remarks  Water Strike   Window Sample Run	<u> </u>				-								
General Remarks  Water Strike   Window Sample Run	_				-								
General Remarks  Water Strike   Window Sample Run	_				F								
General Remarks  Water Strike   Window Sample Run					E								
General Remarks  Water Strike   Window Sample Run	- 				F								
Strike Time (mins) Rose to Start End Dia. (mm) Rec. %								<u> </u>					
			aned prior to	eveavation? Han	d dua i	nenectic	n nit to 1 3	00 m <sup>2</sup>					Rec. %

1. Location CAT scanned prior to excavation2. Hand dug inspection pit to 1.20 m3. Groundwater struck at 4.00 m and rose to 3.95 m in 5 mins, 3.77 m in 10 mins, 3.70 m in 15 mins and 3.68 m in 20 mins4. Slotted Standpipe installed to 5.00 m5. SPT Hammer Energy Ratio = 68%

Project Name		Pi	roject No:					WINDOW	SAMPLE
Hadleigh			;	3322101	05				
Client		St	tart Date	End	d Date	C+	antec		
This Land			14/05/20	21	14/05/2021		antec	WS	103
Contractor		G	round Level						
A F Howlands			58.11	lm OD (	(OSGB)				
Method/Plant		С	oordinates (C	SGB)		Logged By:	SW	Sheet	1 of 1
Dando Terrier 2002			580658	E	189249 N	Checked By:	JC	Scale	1:40
	Г				l				

Dan	Dando Terrier 2002					580658	E	<b>189249 N</b> Checked By: <b>JC</b> Scale 1:40
(m)		ples and Insi	tu Tests	Water	Legend	Depth	Level (m OD)	Stratum Description
	Depth	Туре	Results	>	V//XV///	(Thickness)	(M OD)	
- - - - - - -	0.00 - 0.30 0.50 - 0.70	D1 D2		-	X	(0.30) 0.30	57.81	TOPSOIL (Brown friable silty sandy slightly gravelly clay. Gravel is angular to subrounded fine to coarse flint. Occasional rootlets)  [TOPSOIL]  Soft becoming firm light greyish brown orange mottled silty sandy CLAY. Occasional angular to subrounded fine to medium flint gravel. Some relic rootlets  [HEAD DEPOSITS]
- ' - - - -	1.20 1.20 - 1.65	S D3	N=6	- - - - -	×— — × ×— — × ×— — × ×— — ×			
_ _ _ 2 _ _ _ _	1.70 - 1.90 2.00 2.00 - 2.45	D4 S D5	N=8		X	(3.50)		
- - - - 3 -	2.80 - 3.00 3.00 3.00 - 3.45	D6 S D7	N=12	- - - - - -	X			
	3.80 - 4.00 4.00 4.00 - 4.45	D8 S D9	N=12	- - - - - - - - -	X X X X X X X X X X X X X X X X X X X	3.80	54.31	Stiff dark grey silty CLAY [CLAYGATE MEMBER]
- - - - - 5 -	4.80 - 5.00 5.00 5.00 - 5.45	D10 S D11	N=17	- - - - - - - -	X	(2.20)		Stiff dark grey silty CLAY
_ _ _ _ _ _ _ 6	5.70 - 6.00	D12		- - - - - -	× × × × × × × × × × × × × × × × × × ×	6.00	52.11	End of Window Sample at 6.00m
7				-				
Gono	ral Remarks							Water Strike Window Sample Run

1. Location CAT scanned prior to excavation2. Hand dug inspection pit to 1.20 m3. Groundwater struck at 2.00 m and rose to 2.19 m in 5 mins, 2.15 m in 10 mins, 2.12 m in 15 mins and 2.10 m in 20 mins4. Slotted Standpipe installed to 6.00 m5. SPT Hammer Energy Ratio = 68%

	Water Strike			Window S	ample Run	
Strike	Time (mins)	Rose to	Start	End	Dia. (mm)	Rec. %
ı	1	1	I	1		l

Project Name		F	Project No:					WINDOW	SAMPLE
Hadleigh			33	22101	05				
Client		5	Start Date	End	d Date	C+	antec		
This Land			14/05/2021		14/05/2021	310	antec	WS	104
Contractor		C	Ground Level						
A F Howlands			66.80m	OD (	(OSGB)				
Method/Plant		(	Coordinates (OSC	GB)		Logged By:	SW	Sheet	1 of 1
Dando Terrier 2002			580373 E		188983 N	Checked By:	JC	Scale	1:40
	1					<u> </u>			

Dando Terrier 2002					580373	E	188983 N	Checked By:	JC	Scale	1:40	
(m)	Sam	ples and Insi	tu Tests	Water	Legend	Depth	Level		Stratum De	scription		Instrum entation /Backfill
(,,,	Depth	Type	Results	×	Logona	(Thickness)	(m OD)					Inst enta /Ba
- - - - - - -	0.00 - 0.40	D1		- - - - - - -	X x X x X x	(0.40) 0.40	66.40	clay. Gravel flint. Occasi [TOPSOIL] Soft becomi	Brown friable silty is angular to sub onal rootlets) ng firm light grey CLAY. Occasiona OSITS]	rounded fir	ne to coarse	
- '  -   -	1.20 1.20 - 1.65	S D3	N=29	_	X	(1.30)						
_ _ _ _ 2 _ _	2.00 2.00 - 2.45	D4 S D5	N=21	-	× × × × × × × × × × × × × × × × × × ×	1.70	65.10	Medium der [BAGSHOT	ise brown very cl FORMATION]	ayey silty fi	ne SAND	
	2.80 - 3.00	D6		- - - - - -		(2.30)						
- - - - - - - - 4	3.60 - 3.80	D7		- - - - - -	× × × × × × × × × × × × × × × × × × ×	4.00	62.80		End of Window S	ample at 4.00	)m	
- - - - -				-								
5 5 				-								
_ _ _ _ 6 _ _				- - - - - -								
- - - - - 7				- - - - - -								
- - - - - -				- - - - - -								
8	ral Remarks			- - -				Water Strike	, I	Windo	ow Sample Run	

1. Location CAT scanned prior to excavation2. Hand dug inspection pit to 1.20 m3. Groundwater struck at 2.00 m and rose to 1.62 m in 5 mins, 1.46 m in 10 mins, 1.40 m in 15 mins and 1.38 m in 20 mins4. Slotted Standpipe installed to 3.00 m5. SPT Hammer Energy Ratio = 68%

	water Strike			window S		
Strike	Time (mins)	Rose to	Start	End	Dia. (mm)	Rec. %
1			l			

Project Name		F	Project No:					WINDOW SAMPL		
Hadleigh			33	22101	05					
Client		5	Start Date	End	d Date	Ch.	antec			
This Land			13/05/2021		13/05/2021	310	antec	WS	105	
Contractor		(	Ground Level							
A F Howlands			78.04m	OD (	(OSGB)					
Method/Plant		(	Coordinates (OSC	GB)		Logged By:	SW	Sheet	1 of 1	
Dando Terrier 2002			580082 E		188888 N	Checked By:	JC	Scale	1:40	
	1	т .							T = <b>-</b> -	

Dan	do Terrier 200			580082	E	188888 N	Checked By:	JC	Scale	1:40		
(m)	Sam	ples and Insi	itu Tests	Water	Legend	Depth	Level		Stratum De	scription		Instrum entation /Backfill
	Depth	Туре	Results	>	V//XV///	(Thickness)	(m OD)					
_	0.00 - 0.20 0.30 - 0.50	D1 D2				(0.30) 0.30	77.74	clay. Gravel flint. Occasio	rown friable silty is angular to sub onal rootlets)	sandy slig rounded fir	htly gravelly ne to coarse	
 _ _ _ _ _ _				- - - - -	×——× ×——× ×——× ×——×			Soft becoming silty sandy (IHEAD DEP	ng firm light greyi CLAY. Occasional OSITS]	ish brown o	orange mottled ets	
-	1.20 1.20 - 1.65	S D3	N=12	- - - -	X—————————————————————————————————————							
	1.80 - 2.00	D4			×							
_ 2	2.00 2.00 - 2.45	S D5	N=11	_ - - - -	×-^x ×x ×x ×x	(3.40)						
-	2.80 - 3.00	D6		-	 X			Becoming	g firm orange silt	y fine to me	edium sandy	
3  	3.00 3.00 - 3.45	S D7	N=15	-  -  -  -  -	XX XX XX							
- - - - - - 4	3.70 - 3.80 3.80 - 4.00 4.00	D8 D9 S	N=17	-	×— —× ×— —× ×— —×	3.70	74.34	Firm becomi	ng stiff brown sill MEMBER]	ty sandy C	LAY	
-	4.00 - 4.45	D10		- - - - - -	× × - × - × - × - × - × - × - × - ×	(2.30)		Small po 4.20 m to 6.	ckets of fine to m 00 m in firm to st	edium orai iff clay	nge sand from	
5 - - - - - -	5.00 5.00 - 5.45	S D11	N=17	- - - - - - - -	X			Firm becom	ing stiff brown sil	ty sandy C	LAY	
- - 6				F	<u> </u>	6.00	72.04		End of Window Sa	ample at 6.00	)m	
7									End of Window Sa	ample at 6.00	Jim	
Gono	eral Remarks		1					Water Strike		Wind	ow Sample Run	

Project Name	Р	Project No:					WINDOW	SAMPLE
Hadleigh		33	22101	05				
Client	S	Start Date	End	d Date	Ch St	antec		
This Land		13/05/2021		13/05/2021		antec	WS	106
Contractor	G	Ground Level						
A F Howlands		70.13m	OD (	(OSGB)				
Method/Plant	C	Coordinates (OSC	GB)		Logged By:	SW	Sheet	1 of 1
Dando Terrier 2002		580242 E		189259 N	Checked By:	JC	Scale	1:40
								T

Dan	lando Terrier 2002					580242	E	189259 N	Checked By:	JC	Scale	1:40
(m)		ples and Insi	tu Tests	Water	Legend	Depth	Level (m OD)		Stratum De	scription		Instrum entation /Backfill
. ,	Depth	Туре	Results	>	V///XV///	(Thickness)	(III OD)					
- - - - - -	0.00 - 0.30 0.60 - 0.80	D1 D2		- - - - - - - -	X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-X-	(0.30) 0.30	69.83	clay. Gravel flint. Occasio [TOPSOIL] Soft becomin	ng firm light greyi CLAY. Occasional	rounded fir	ne to coarse	
- 1 - - - - -	1.20 1.20 - 1.65	S D3	N=7	- - - - -	X—————————————————————————————————————							
F	1.80 - 2.00	D4		F	× <u> </u>							
2 	2.00 2.00 - 2.45	S D5	N=7	-	× × - × × × × × × × × × × × × × × × × ×							
-	2.80 - 3.00	D6		-	××							
_ 3 _ _ _ _ _	3.00 3.00 - 3.45	S D7	N=12	- - - - -	X - X X - X X - X X - X X - X X - X	(5.30)						
-	0.00 4.00	<b>D</b> 0		F	X——×							
- - - - - - -	3.80 - 4.00 4.00 4.00 - 4.45	D8 S D9	N=12	-	X—————————————————————————————————————							
-	400 500	540		F	X							
-	4.80 - 5.00	D10		F	×							
5 - - - -	5.00 5.00 - 5.45	S D11	N=17	-	X— — x X— — x — X — X			Stiff dark gre	ey silty slightly sa	ndy CLAY		
- -	5.60 - 6.00	D12		-	<u>×</u> × × × × × × × × × × × × × × × × × ×	5.60 (0.40)	64.53	Stiff dark gre	ey silty slightly sa MEMBER]	ndy CLAY		
_ 6				F	××	6.00	64.13		End of Window Sa	ample at 6.00	)m	
7				-		0.00			End of Window Sa	ample at 6.00	)m	
Gene	ral Remarks							Water Strike		Winde	ow Sample Run	

1. Location CAT scanned prior to excavation2. Hand dug inspection pit to 1.20 m3. Groundwater struck at 2.00 m and rose to 2.10 m in 5 mins, 1.97 m in 10 mins, 1.95 m in 15 mins and 20 mins4. Slotted Standpipe installed to 4.00 m5. SPT Hammer Energy Ratio = 68%

Water Strike			Window Sample Run			
Strike	Time (mins)	Rose to	Start	End	Dia. (mm)	Rec. %