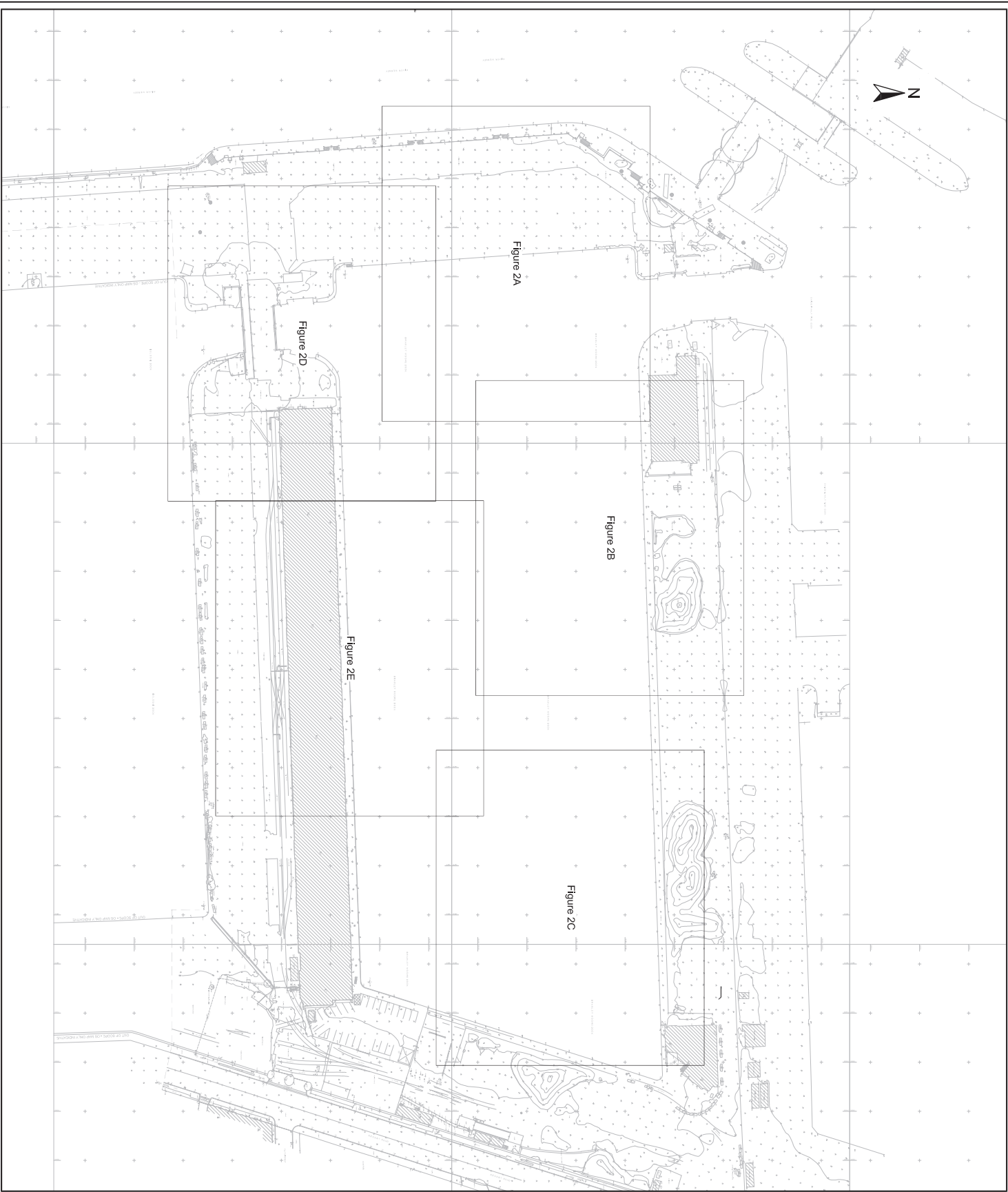


LEGEND



00	13.02.2018	-	MW	AJ	-
REV	DATE	DESCRIPTION	BY	CHD	APR
DIMENSION		SCALE	ORIGIN SIZE		
m		1:1500	A3		

STRUCTURAL SOILS
The Poteries
2 Pottery Street
Canterbury
WF10 1NJ
Tel: 01977 552255
ask@sdsl.co.uk
www.sdsl.co.uk

CLIENT
Buro Happold Ltd

PROJECT
Project Blue: Phase 2 Ground Investigation

TITLE
EXPLORATORY HOLE LOCATION PLAN

JOB NO
764393

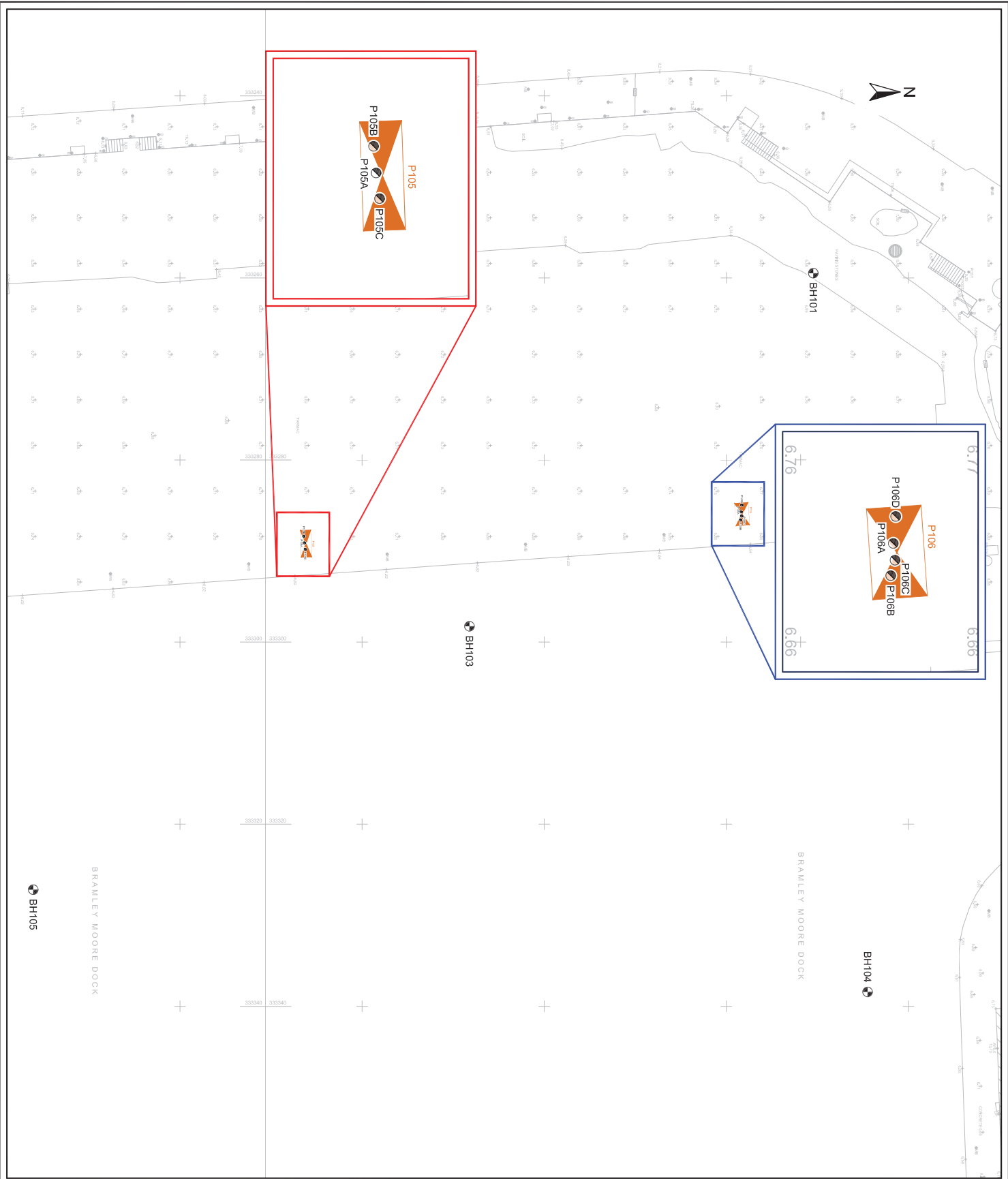
FIGURE
2

DRAWING STATUS
REV

FINAL
00

SCALE BAR



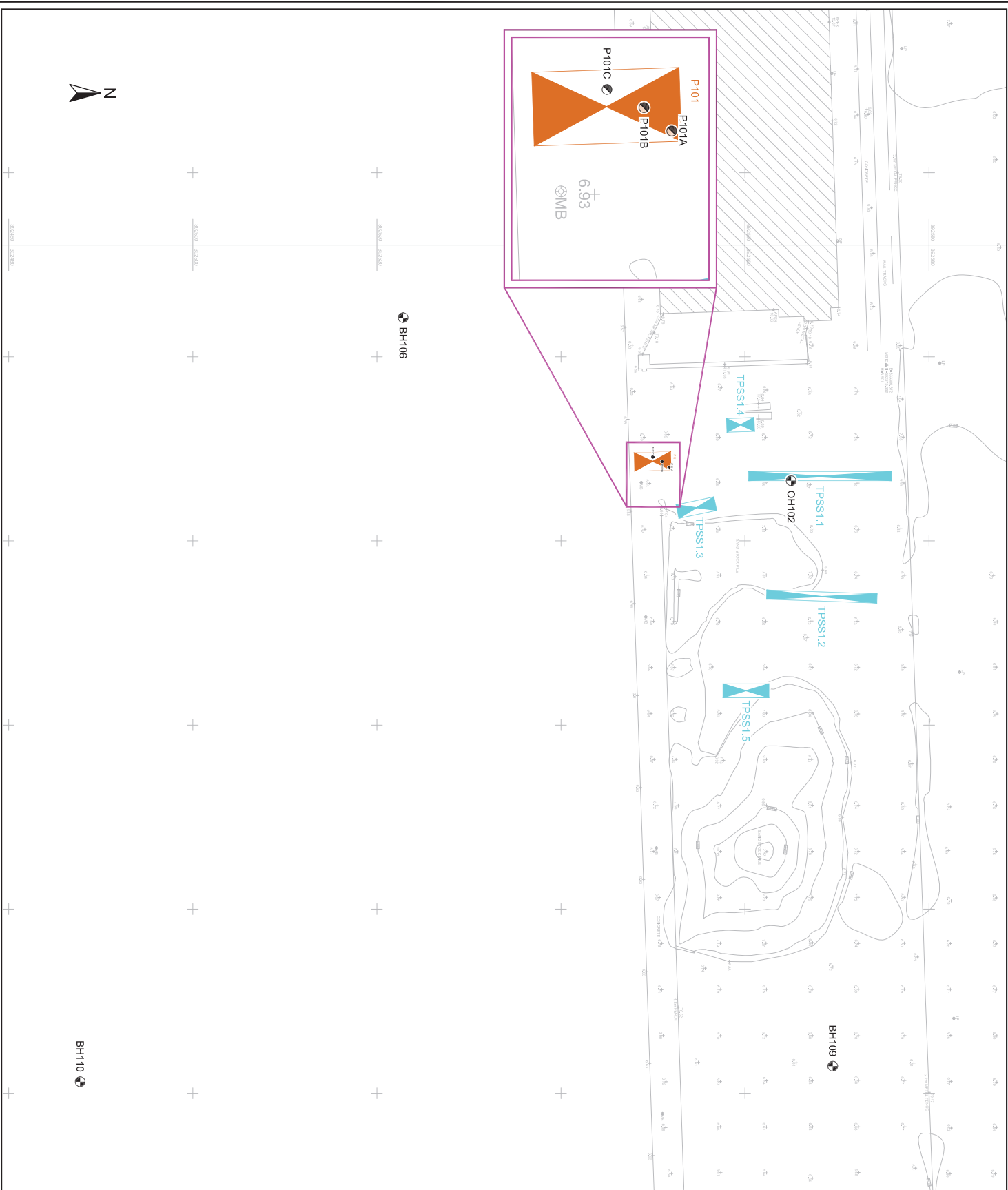


- LEGEND**
- Trial Pit Location
 - Borehole Location
 - Probe Location
 - Trial Trench Location

00	13.02.2018	-	MW	AJ	-
REV	DATE	DESCRIPTION	BY	CHKD	APR
DIMENSION	SCALE	ORIGIN SIZE			
m	1:400	A3			

STRUCTURAL SOILS
The Poteries
2, Poteries Street
Warrington, Cheshire
WF10 1NJ
Tel: 01977 552255
ask@ssk.co.uk
www.ssk.co.uk

CLIENT	Buro Happold Ltd	
PROJECT	Project Blue: Phase 2 Ground Investigation	
TITLE	EXPLORATORY HOLE LOCATION PLAN	
JOB NO	764393	FIGURE 2a
DRAWING STATUS	REV	00
FINAL		
SCALE BAR	0 5 10 15 20m	



- LEGEND**
- Trial Pit Location
 - Borehole Location
 - Probe Location
 - Trial Trench Location

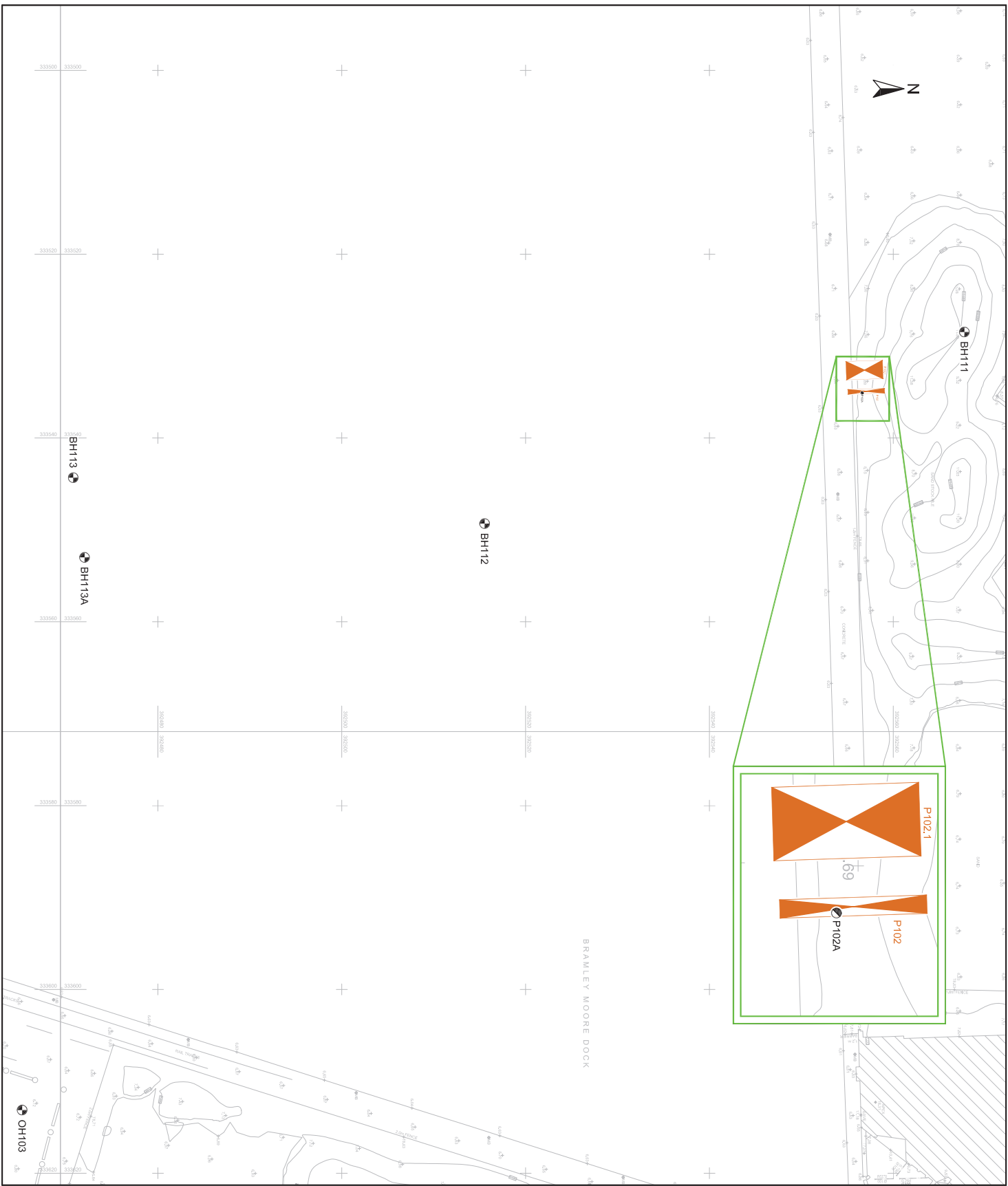
00	13.02.2018	-	MW	AJ	-
REV	DATE	DESCRIPTION	BY	CHD	APR
DIMENSION		SCALE	ORIGIN SIZE		
m		1:400	A3		

STRUCTURAL SOILS

The Poteries
2, Cedar Street
Cape Town
WF 10 1N1

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CLIENT		Buro Happold Ltd
PROJECT		Project Blue: Phase 2 Ground Investigation
TITLE		EXPLORATORY HOLE LOCATION PLAN
JOB NO	FIGURE	
764393	2b	
DRAWING STATUS	REV	
FINAL	00	
SCALE BAR		



- LEGEND**
- Trial Pit Location
 - Borehole Location
 - Probe Location
 - Trial Trench Location

00	13.02.2018	-	MMW	AJ	-
REV	DATE	DESCRIPTION	BY	CHD	APR
DIMENSION		SCALE	ORIGIN SIZE		
m		1:400	A3		

STRUCTURAL SOILS
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CLIENT
Buro Happold Ltd

PROJECT
Project Blue: Phase 2 Ground Investigation

TITLE
EXPLORATORY HOLE LOCATION PLAN

JOB NO
764393

DRAWING STATUS
FINAL

SCALE BAR
0 5 10 15 20m



- LEGEND**
- Trial Pit Location
 - Borehole Location
 - Probe Location
 - Trial Trench Location

00	13.02.2018	-	MW	AJ	-
REV	DATE	DESCRIPTION	BY	CHD	APR
DIMENSION		SCALE	ORIGIN SIZE		
m		1:400	A3		

STRUCTURAL SOILS
The Poteries
2000/1000
WFD 100
Tel: 01977 552255
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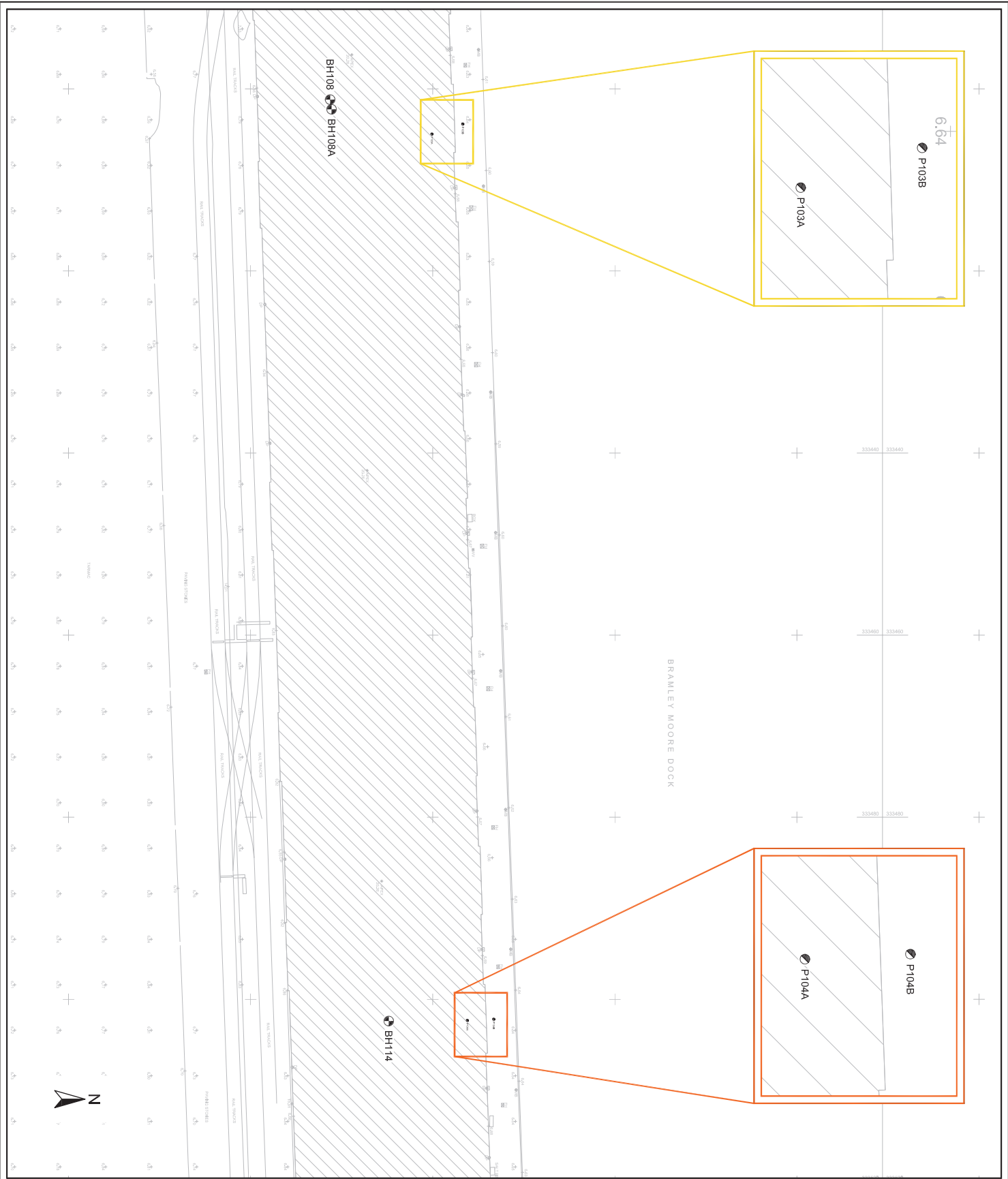
CLIENT
Buro Happold Ltd

PROJECT
Project Blue: Phase 2 Ground Investigation

TITLE
EXPLORATORY HOLE LOCATION PLAN

JOB NO	764393	FIGURE	2d
DRAWING STATUS	REV	00	
FINAL			
SCALE BAR			





LEGEND

- Trial Pit Location
- Borehole Location
- Probe Location
- Trial Trench Location

00	13.02.2018	-	MW	AJ	-
REV	DATE	DESCRIPTION	BY	CHD	APR
DIMENSION	SCALE	ORIGIN SIZE			
m	1:400	A3			

STRUCTURAL SOILS
The Poteries
2000/1000
Cotton Street
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CLIENT	Buro Happold Ltd	
PROJECT	Project Blue: Phase 2 Ground Investigation	
TITLE	EXPLORATORY HOLE LOCATION PLAN	
JOB NO	764393	FIGURE 2e
DRAWING STATUS	REV	00
SCALE BAR	0 5 10 15 20m	

APPENDIX B - EXPLORATORY HOLE RECORDS

- (i) Key to Exploratory Hole Logs
- (ii) Borehole Logs
- (iii) Probe Borehole Logs and Cross Sections
- (iv) Trial Pit Logs
- (v) Site Strip Logs
- (vi) Standpipe Summary Table
- (vii) Ground Level and Co-Ordinate Summary Table



KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF ABBREVIATIONS

SAMPLING

Sample type codes

B	=	Bulk disturbed sample.
C	=	Core sample.
D	=	Small disturbed sample.
DSPT	=	Small disturbed sample originating from SPT test.
ES	=	Soil sample for environmental testing.
EW	=	Water sample for environmental testing.
P	=	Undisturbed pushed piston sample - 102 mm diameter, 1000 mm long. % recovery reported.
UT	=	Undisturbed thin-walled driven tube sample - Number of blows indicated. % recovery reported.

Undisturbed sample detail codes

U _(UT100)	=	Undisturbed sample UT100
----------------------	---	--------------------------

IN-SITU TESTING

SPT _(c)	=	Standard Penetration Test using a solid 60 degree cone.
SPT Recovery _(NR)	=	Standard Penetration Test using split spoon sampler. (SPT _(NR) indicates 'No Sample Recovery').
	=	* denotes extrapolated N value. NP denotes 'No Penetration'.

PID	=	Photo Ionisation Detector Results, in ppm.
-----	---	--

ROTARY DRILLING INFORMATION

W	=	Water flush returns (%)
TCR	=	Total core recovery (%)
SCR	=	Solid core recovery (%)
RQD	=	Rock quality designations (%)
If	=	Fracture spacing (mm).

In the fracture column (i) denotes discontinuity is infilled (refer to Fracture Table for details).

Where variable the minimum - average - maximum spacing may be quoted.
'NI' denotes non-intact core. 'NA' denotes not applicable.

All lengths used to determine rock core mechanical properties taken along the centre line of the core.
Obvious induced fractures have been ignored.

The assessment of solid core is based on lengths that show a full diameter and not necessarily a full circumference.

AZCL = Assessed zone of core loss.

ADDITIONAL NOTES

1. All soil and rock descriptions and legends in general accordance with BS EN ISO 14688-1, 14688-2, 14689-1, and BS5930:2015.
2. Material types divided by a broken line (- - -) indicates an unclear boundary.
3. The data on any sheet within the report showing the AGS icon is available in the AGS format.



KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF GRAPHIC SYMBOLS

WATER COLUMN SYMBOLS



First water strike, second water strike etc.

Standing water level following first strike, standing water level following second strike etc.

Seepage.

Standing water level recorded at documented date.

MATERIAL GRAPHIC LEGENDS



Clayey
gravelly
SAND



Clayey
SAND



Gravelly
CLAY



Gravelly
SAND



Gravelly
SILT



MADE
GROUND



Possible
MADE
GROUND



SAND



Sandstone



Sandy
CLAY



Sandy
gravelly
CLAY



Sandy
gravelly
SILT



Siltstone



Sandy
SILT



SILT



Silty
gravelly
SAND



MADE
GROUND



CONCRETE



Clayey
SAND



SANDSTONE

INSTRUMENTATION SYMBOLS



Backfill



Bentonite
seal



Concrete



Gravel
filter



Sand filter



Stopcock
cover



Flush
cover



Upstanding
cover



Piezometer
tip



Plain pipe



Slotted
pipe



Contract: Project Blue			Client: Buro Happold		Borehole: BH101
Contract Ref: 764393	Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6		Sheet: 1 of 13

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
0.50 0.50 0.50	1 101	B ES PID	x6 0.3ppm								MADE GROUND: ASPHALT.	6.50	0.05	
											MADE GROUND: CONCRETE. Clast to matrix ratio: 65:45. 10% voids. Clasts are subrounded medium to coarse gravel sized, occasionally cobble sized.	6.30	0.25	
											MADE GROUND: CONCRETE. Clast to matrix ratio: 65:45. 10% voids. Clasts are subangular to rounded and fine to medium gravel sized.	6.15	0.40	
1.00 1.00 1.00 1.20-1.65 1.20-1.65 1.20	102 2 3 4 5	ES B PID SPT D D	x6 0.3ppm N=4								MADE GROUND: Dark brown very sandy clayey subangular fine to coarse GRAVEL of mixed lithologies including brick, clinker and sandstone with high cobble content. Sand is fine to medium. Cobbles are subangular of sandstone and brick.	(0.90)		
1.50 1.50	103	ES PID	x6 10.6ppm				Window run 115mm dia (100% rec)				MADE GROUND: Dark brown gravelly clayey fine to medium SAND with medium cobble content. Gravel is subangular to subrounded fine to medium of mixed lithologies including brick, sandstone, clinker, concrete and siltstone. Cobbles are subangular of sandstone.	5.25	1.30	
2.00-2.45 2.00 2.00-2.45 2.00 2.20 2.30	6 104 7 8 9	SPT ES D PID D B	N=5 x6 0.8ppm				Window run 115mm dia (100% rec)				MADE GROUND: Reddish brown gravelly very clayey medium SAND. Gravel is subangular fine of sandstone and concrete.	(0.80)		
												3.65	2.90	
3.00-3.45 3.00 3.00-3.45 3.00 3.30 3.40 3.50	10 105 11 12	SPT ES D PID EW D EW	N=5 x6 0.3ppm				Window run 115mm dia (100% rec)				MADE GROUND: Dark brown sandy slightly clayey subangular fine GRAVEL of mixed lithologies including clinker, siltstone, sandstone and brick. Sand is medium.	(0.30)		
											MADE GROUND: Greyish brown gravelly slightly clayey medium SAND. Gravel is subangular fine to medium of brick, concrete and sandstone. Occasional fine to medium gravel sized shell fragments.	(0.50)		
3.80	13	D									MADE GROUND: Dark greyish brown very gravelly medium	2.85	3.70	





Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
01/12/17	16:00	0.40	None	300	Dry	1. CAT scan undertaken at exploratory hole location. 2. Concrete core from GL to 0.40m. 3. Inspection pit hand excavated to 1.20m. 4. Variable Head Test performed during borehole formation with test section between 3.30m and 4.30m. 5. On completion, 50mm diameter standpipe installed to 3.50m, with response zone from 0.50m to 3.50m.	
13/12/17	08:00	0.40	None	300	Dry		
13/12/17	16:00	4.00	4.00	150	3.90		
14/12/17	08:00	4.00	4.00	150	2.90		
14/12/17	16:00	17.50	13.00	146	5.50		
18/12/17	08:00	17.50	13.00	146	6.10		
18/12/17	16:00	25.00	13.00	146	4.70		
All dimensions in metres						Scale:	1:22
Method Used:		Plant Used:		Drilled By:	Jonathan Newby	Logged By:	TBeeson
Concrete core + Inspection pit + Dynamic sampling + Rotary Cored		Hilti Concrete Corer + Hand tools + Comacchio GEO 205		Checked By:		AGS	



STRUCTURAL SOILS

BOREHOLE LOG

Contract: Project Blue			Client: Buro Happold		Borehole: BH101
Contract Ref: 764393	Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6		Sheet: 2 of 13

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instru- mentation	Water	Description of Strata	Reduced Level	Depth (Thick- ness)	Material Graphic Legend	
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)								
4.00-4.45 4.00 4.00-4.45 4.00 4.30-4.70	14 106 15 16	SPT ES D PID B	N=13 x6 2.5ppm	Window run 115mm dia (80% rec)							SAND. Gravel is subangular to subrounded fine to medium of concrete, sandstone and brick.	1.75	4.80		
5.00-5.45 5.00 5.00-5.45 5.00 5.20	17 107 18 19	SPT ES D PID D	N=8 x6 1.2ppm												
5.40-5.90	20	B	Window run 115mm dia (90% rec)				MADE GROUND: Dark brownish grey sandy clayey subangular fine to coarse GRAVEL of brick and sandstone with low cobble content. Sand is medium. Cobbles are subangular of sandstone and brick.				1.25	5.30			
6.00 6.00-6.45 6.00	108 21 UT _(UT100) PID	ES 22 blows 100% recovery 0.8ppm													
6.45-6.60	22	D	Window run 115mm dia (100% rec)				MADE GROUND: Dark grey gravelly clayey medium SAND. Gravel is subangular medium to coarse of clinker, sandstone and brick.				-0.55	7.10			
6.60-7.05 6.80	23 24	SPT _(NR) D													
7.00 7.00 7.10-7.55	109 25 UT _(UT100)	ES PID 45 blows 100% recovery	Window run 98mm dia (70% rec)				MADE GROUND: Dark grey gravelly medium to coarse SAND with low cobble content. Gravel is subangular fine to medium of brick and sandstone. Cobbles are subangular of sandstone. Occasional fine to medium gravel sized shell fragments.		(1.70)						
7.60-8.15 7.70-8.15 7.70-8.15	26 27 28	D SPT D									N=27				

Boring Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth				
						6. SPT hammer JT.01 2017 ($E_r = 72.00\%$) used.			
						All dimensions in metres		Scale:	1:22
Method Used:		Concrete core + Inspection pit + Dynamic sampling + Rotary Cored		Plant Used:	Hilti Concrete Corer + Hand tools + Comacchio GEO 205	Drilled By:	Jonathan Newby	Logged By:	TBeeson
						Checked By:	AS	AGS	





Contract: Project Blue			Client: Buro Happold		Borehole: BH101
Contract Ref: 764393	Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6		Sheet: 4 of 13

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
12.01-12.20	201	C									with soft reddish brown clay (<10mm). ... from 11.50m to 11.61m, recovered as non-intact core (medium to coarse gravel sized fragments).			
12.37-12.48	202	C		100	42	27					... at 12.60m, 1 No 50° fracture planar rough clean. ... from 12.85m to 12.90m, recovered as non-intact core (fine to medium sand). ... from 13.00m to 13.15m, recovered as non-intact core (medium to coarse gravel sized fragments).		(3.50)	
13.00-14.50														
13.50-13.60	203	C		100	56	16	NI 60 200				... at 13.74m, rounded inclusion of mudstone. ... from 14.11 to 14.27m, 1 No thin bed of medium strong greyish yellow medium grained sandstone.			
14.50-16.00														
14.57-14.77	204	C									... from 14.50m to 14.94m, 1 No medium bed of medium strong thickly laminated light grey, orangish and reddish brown medium grained sandstone. ... from 14.80m to 14.90m, recovered as non-intact core (fine to coarse gravel sized fragments). Weak locally medium strong reddish brown medium grained SANDSTONE. Discontinuities: 1) closely locally medium and very closely spaced 5-15° planar rough clean locally clay smeared.	-8.35	14.90	
15.46-15.57	205	C		100	56	32	NI 45 300				... from 15.57m to 15.65m, 2 No 80° fractures undulating rough clay smeared. ... from 15.59m to 17.45m, with 4 No closely to medium spaced very thin and thin beds of medium		(1.60)	

Boring Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth				
Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored			Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205		Drilled By: Jonathan Newby	Logged By: TBeeson	Checked By:	AGS	



Contract: Project Blue			Client: Buro Happold		Borehole: BH101
Contract Ref: 764393	Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6		Sheet: 5 of 13


Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
16.00-17.50											strong light grey fine to medium grained sandstone.			
16.32-16.50	206	C										-9.95	16.50	
				100	83	79	NI 45 300				Weak locally medium strong reddish brown medium to coarse grained SANDSTONE. Discontinuities: 1) closely to medium spaced 5-20° planar rough clean locally infilled with reddish brown fine to medium sand (<5mm). ... from 16.85m to 16.90m and 16.98m to 17.02m, extremely weak and recovered as non-intact core (sandy angular fine to coarse gravel sized fragments).			
17.02-17.27	207	C												
17.50-19.00														
17.50-17.64	208	C												
18.16-18.34	209	C		100	97	61		90-100% return Air+Mist (Red)			... from 18.02m to 19.00m, 4 No closely to medium spaced very thin beds of medium strong light grey fine to medium grained sandstone.			
							NI 150 310				... from 18.60m to 18.64m, recovered as non-intact core (sandy angular fine to coarse gravel sized fragments).			
19.00-20.50														
				100	98	95								
19.57-19.88	210	C									... at 19.80m, stained yellowish brown.			

Boring Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth				



Contract: Project Blue			Client: Buro Happold		Borehole: BH101
Contract Ref: 764393	Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6		Sheet: 6 of 13

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
20.50-22.00				100	98	95	NI 150 310				... from 19.94m to 20.09m, 1 No thin bed of medium strong light grey locally stained yellow fine to medium grained sandstone.		(8.50)	
21.14-21.29	211	C		100	99	55					... at 21.29m. 1 No 80° fracture, planar rough clean (possibly drilling induced).			
21.54-21.73	212	C												
22.00-23.50							60 170 440	90-100% return Air+Mist (Red)			... from 22.29m to 23.50m, with frequent very closely to medium spaced very thin and thin beds of medium strong light grey and yellowish brown fine to medium grained sandstone.			
22.50-22.94	213	C		100	100	86								
23.50-25.00				100	98	73								

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						All dimensions in metres	Scale: 1:22
Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored		Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205		Drilled By: Jonathan Newby		Logged By: TBeeson	Checked By:  AGS



Contract: Project Blue			Client: Buro Happold			Borehole: BH101
Contract Ref: 764393		Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6		Sheet: 7 of 13

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
24.31-24.58	214	C		100	98	73	60 170 440	90-100% return Air+Mist (Red)			... from 24.70m to 24.80m, 1 No 70° fracture planar rough clean.	-18.45	25.00	
											Borehole terminated at 25.00m depth.			

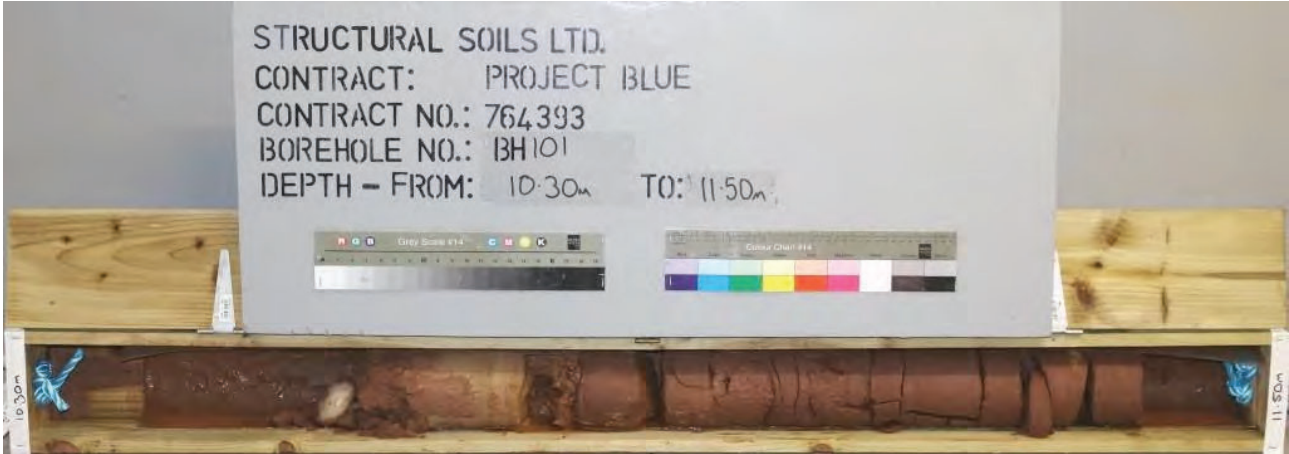
Boring Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth				
Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored			Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205		Drilled By: Jonathan Newby	Logged By: TBeeson	Checked By:	AGS	

GINT LIBRARY V8 06.GLB LibVersion: v8.06.018 ProjVersion: v8.06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8.06. Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552299, Fax: 01977-552255, Email: ask@soils.co.uk, Web: www.soils.co.uk, | 31/05/18 - 16:30 | AJ4 |



Contract: Project Blue		Client: Buro Happold		Borehole: BH101
Contract Ref: 764393	Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6	Sheet: 8 of 13

BH101 - Concrete Core



BH101 - Box 1

Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205	Drilled By: Jonathan Newby	Logged By: TBeeson	Checked By:	
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Contract: Project Blue		Client: Buro Happold		Borehole: BH101
Contract Ref: 764393	Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6	Sheet: 9 of 13

BH101 - Box 2



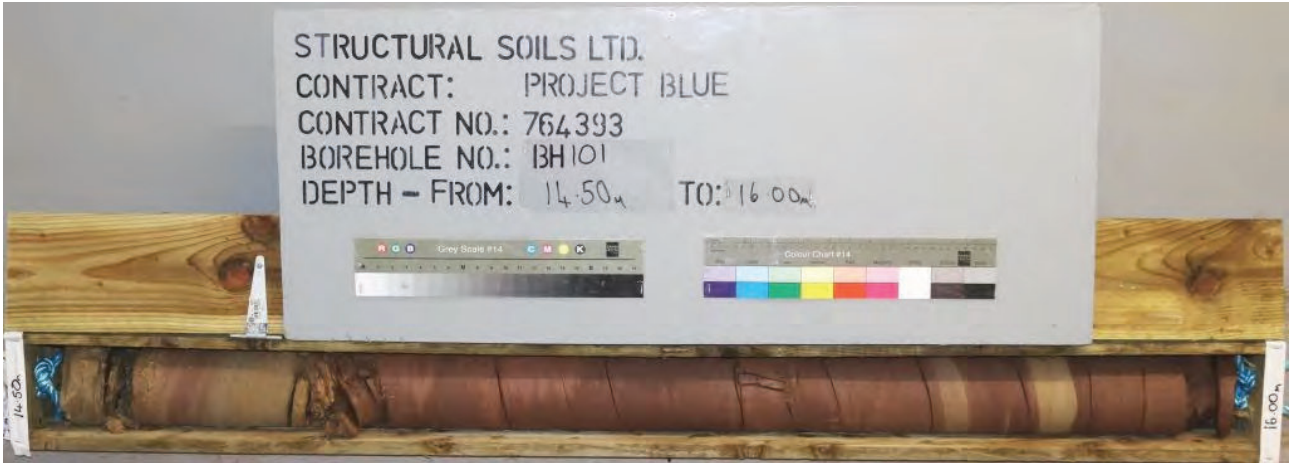
BH101 - Box 3

Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205	Drilled By: Jonathan Newby	Logged By: TBeeson	Checked By:	
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Contract: Project Blue		Client: Buro Happold		Borehole: BH101
Contract Ref: 764393	Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6	Sheet: 10 of 13

BH101 - Box 4



BH101 - Box 5

Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205	Drilled By: Jonathan Newby	Logged By: TBeeson	Checked By:	
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Contract: Project Blue		Client: Buro Happold		Borehole: BH101
Contract Ref: 764393	Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6	Sheet: 11 of 13

BH101 - Box 6



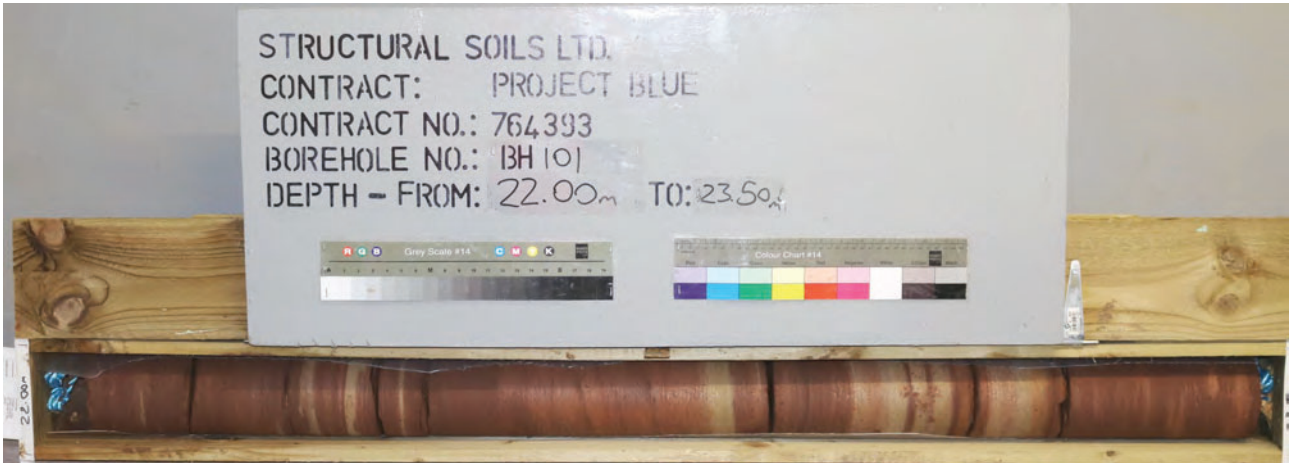
BH101 - Box 7

Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205	Drilled By: Jonathan Newby	Logged By: TBeeson	Checked By: 	
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Contract: Project Blue		Client: Buro Happold		Borehole: BH101
Contract Ref: 764393	Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6	Sheet: 12 of 13

BH101 - Box 8



BH101 - Box 9

Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205	Drilled By: Jonathan Newby	Logged By: TBeeson	Checked By: AGS
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Contract: Project Blue		Client: Buro Happold		Borehole: BH101
Contract Ref: 764393	Start: 01.12.17 End: 18.12.17	Ground Level (m): 6.55	National Grid Co-ordinate: E:333259.5 N:392529.6	Sheet: 13 of 13

BH101 - Box 10



Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 205	Drilled By: Jonathan Newby	Logged By: TBeeson	Checked By:	
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Contract: Project Blue			Client: Buro Happold		Borehole: BH102
Contract Ref: 764393	Start: 01.12.17 End: 13.12.17	Ground Level (m): 6.73	National Grid Co-ordinate: E:333278.4 N:392411.3		Sheet: 2 of 14

Depth (m)	Samples & Testing			Mechanical Log				Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)				
4.00-4.45 4.00 4.00	13 106	SPT _(NR) ES PID	N=1 x6 2.5ppm					MADE GROUND: Dark brownish grey gravelly very clayey fine to coarse SAND with low cobble content. Gravel is subangular fine of mixed lithologies including sandstone, brick and clinker. Cobbles are subangular of sandstone and brick.		(0.90)	
4.50	14	D							1.93	4.80	
5.00-5.45 5.00 5.00-5.45 5.00 5.10-5.60	15 107 16 17	SPT ES D PID B	N=4 x6 4.0ppm					MADE GROUND: Grey sandy locally very sandy CLAY. Sand is medium.		(0.70)	
									1.23	5.50	
6.00-6.45 6.00 6.00 6.10 6.30-6.80	18 108 19 20	SPT _(NR) ES PID D B	N=13 x6 3.6ppm					MADE GROUND: Dark grey sandy subangular medium to coarse GRAVEL of mixed lithologies including sandstone, clinker, concrete and brick. Sand is fine to medium. Occasional fine to medium gravel sized shell fragments.		(0.70)	
									0.53	6.20	
7.00-7.45 7.00 7.00-7.45 7.00	21 109 22	SPT ES D PID	N=25 x6 0.0ppm					MADE GROUND: Dark grey gravelly very clayey fine to coarse SAND. Gravel is subangular fine to medium of sandstone and brick.		(0.80)	
									-0.27	7.00	
								MADE GROUND: Dark grey gravelly silty fine to medium SAND. Gravel is subangular fine to medium of sandstone and brick.		(1.00)	
									-1.27	8.00	

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						6. SPT hammer JT.01 2017 ($E_r = 72.00\%$) used.	
All dimensions in metres						Scale:	1:22
Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored		Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305		Drilled By: Joseph Taylor	Logged By: TBeeson	Checked By:	



Contract: Project Blue			Client: Buro Happold		Borehole: BH102
Contract Ref: 764393	Start: 01.12.17 End: 13.12.17	Ground Level (m): 6.73	National Grid Co-ordinate: E:333278.4 N:392411.3		Sheet: 3 of 14

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
8.00-8.45	23	SPT	N=9	Window run 115mm dia (100% rec)							Loose dark grey very gravelly very silty fine to medium SAND with medium cobble content. Gravel is angular to subangular fine to coarse of sandstone. Cobbles are angular of sandstone.		(1.40)	
8.00	110	ES	x6											
8.00-8.45	24	D												
8.00		PID	2.8ppm											
8.30-8.80	26	B												
8.50	25	D												
9.00	111	ES	x6											
9.00-9.20	27	UT _(UT100)	100 blows 0% recovery											
9.00-9.20	28	B		↑	↑	↑	↑	↑						
9.00		PID	3.7ppm											
9.20-10.20														
9.20	29	D												
9.20-9.54	30	SPT	10,15/36,35,39 for 60mm											
9.20-9.54	31	D		90	60	10	NI 25 100							
9.95-10.05	201	C		↓	↓	↓	↓							
10.20-11.20				↑	↑	↑	↑							
				90	84	42		100% return Air+Mist (Red)						
10.90-11.05	202	C		↓	↓	↓	NI 120 180							
11.20-12.70				↑	↑	↑								
				100	90	21								

Boring Progress and Water Observations						General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	
						</



Contract: Project Blue			Client: Buro Happold		Borehole: BH102
Contract Ref: 764393	Start: 01.12.17 End: 13.12.17	Ground Level (m): 6.73		National Grid Co-ordinate: E:333278.4 N:392411.3	Sheet: 4 of 14

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
12.45-12.65	203	C		100	90	21					... from 12.00m to 12.70m locally very weak. ... from 12.15m to 12.20m and 12.35m to 12.40m, extremely weak and recovered as non-intact core (gravelly silty fine to medium sand).			
12.70-14.20											... from 12.70m to 12.80m, recovered as non-intact core (coarse gravel sized fragments). Drilling induced.			
13.05-13.20	204	C									... from 13.10m to 13.70m, 3 No closely spaced very thin to thin beds of weak to medium strong grey and brown fine to medium grained sandstone.			
13.50-13.70	205	C		100	93	37					... from 13.80m to 14.00m, 1 No 60 to 80° fracture undulating rough infilled with red fine to medium sand (<3mm).			
14.20-15.70							NI 120 180	100% return	Air+Mist (Red)		... from 14.63m to 14.80m, 1 No thin bed of weak to medium strong grey stained orangish brown fine to medium grained sandstone.			
14.35-14.50	206	C									... from 14.90m to 15.00m, recovered as non-intact core (sandy fine to medium gravel sized fragments). Localised orangish brown staining.			
15.00-15.20	207	C		100	80	42					... from 15.30m to 15.38m, with localised orangish brown staining.			
15.70-17.20				100	97	62	NI 120 400				... from 15.65m to 15.70, recovered as non-intact core (angular coarse gravel sized fragments).	(9.70)		

Boring Progress and Water Observations						General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	
						</

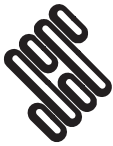


Contract: Project Blue			Client: Buro Happold			Borehole: BH102	
Contract Ref: 764393		Start: 01.12.17 End: 13.12.17	Ground Level (m): 6.73		National Grid Co-ordinate: E:333278.4 N:392411.3		Sheet: 5 of 14

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
16.20-16.60	208	C		100	97	62					... from 16.51 to 16.55m, 1 No very thin bed of weak grey and brown fine to medium grained sandstone. ... from 16.75m to 16.80m, recovered as non-intact core (sandy fine to medium gravel sized fragments).			
17.20-17.70											... from 17.15m to 17.17m, 1 No thick lamination of grey and brown fine to medium grained sandstone. ... from 17.50m to 17.95m, 1 No medium bed of weak grey and brown fine to medium grained sandstone. ... from 17.95m to 18.30m, locally extremely weak to very weak. 2 No 60° fractures planar rough clay smeared.			
18.30-18.50	209	C		100	93	43	NI 120 400	100% return Air+Mist (Red)						
18.70-20.20														
19.10-19.35	210	C		100	90	50					... from 18.80m to 18.85m 1 No very thin bed of weak grey and brown fine to medium grained sandstone.			

Boring Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth				
Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored			Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305		Drilled By: Joseph Taylor	Logged By: TBeeson	Checked By:		

GINT LIBRARY V8 06.GLB LibVersion: v8 06 018 ProjVersion: v8 06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8 06.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk | 31/05/18 - 16:32 | AJ4 |



Contract: Project Blue			Client: Buro Happold		Borehole: BH102
Contract Ref: 764393	Start: 01.12.17 End: 13.12.17	Ground Level (m): 6.73		National Grid Co-ordinate: E:333278.4 N:392411.3	Sheet: 6 of 14

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
19.95-20.10	211	C		100	90	50								
20.20-21.70											... from 20.15m to 20.40m 1 No thin bed of weak grey and brown fine to medium grained sandstone. 1 No 60° fracture planar rough clean.	-13.67	20.40	
20.70-20.95	212	C		100	93	51					Weak locally medium strong reddish brown medium grained SANDSTONE. Discontinuities: 1) closely to medium spaced locally very closely spaced 5-15° planar rough clean locally infilled with reddish brown silty fine sand (<5mm). Rare dark grey siltstone inclusions (<10mm).			
21.10-21.22	213	C									... from 21.07m to 21.22m, 1 No thin bed of weak grey and brown fine to medium grained sandstone with extremely closely spaced thin and thick laminations of siltstone.			
21.70-23.20							NI 120 400							
22.10-22.20	214	C						100% return						
22.30-22.50	215	C		100	100	44		Air+Mist (Red)			... from 22.52m to 23.10m, very weak to weak and recovered locally as non-intact core (sandy angular fine to medium gravel sized fragments).			
23.20-24.70														
23.20-23.50	216	C		100	100	87	30 150 350				... from 23.65m to 23.75m, 1 No thin bed of weak grey and brown fine to medium grained sandstone.		(5.80)	

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		





Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instru- mentation	Water	Description of Strata	Reduced Level	Depth (Thick- ness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
24.45-24.70	217	C		100	100	87					... from 23.95m to 24.30m, 1 No medium bed of weak grey stained orangish brown fine to medium grained sandstone. Discontinuities locally clay smeared.			
24.70-26.20				↓	↓	↓								
25.30-25.62	218	C		100	100	87		30 150 350	100% return Air+Mist (Red)		... from 25.05m to 25.25m, 1 No thin bed of weak grey and brown fine to medium grained sandstone.			
				↓	↓	↓	↓	↓	↓			-19.47	26.20	
											Borehole terminated at 26.20m depth.			

Contract:			Client:		Borehole:
Project Blue			Buro Happold		BH102
Contract Ref:	Start: 01.12.17	Ground Level (m):	National Grid Co-ordinate:	Sheet:	
764393	End: 13.12.17	6.73	E:333278.4 N:392411.3	8 of 14	

BH102 - Concrete Core



BH102 - Box 1

Method Used:	Concrete core + Inspection pit + Dynamic sampling + Rotary Core	Plant Used:	Hilti Concrete Corer + Hand tools + Comacchio GEO 305	Drilled By:	Joseph Taylor	Logged By:	TBeeson	Checked By:		
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Contract: Project Blue		Client: Buro Happold		Borehole: BH102
Contract Ref: 764393	Start: 01.12.17 End: 13.12.17	Ground Level (m): 6.73	National Grid Co-ordinate: E:333278.4 N:392411.3	Sheet: 9 of 14

BH102 - Box 2



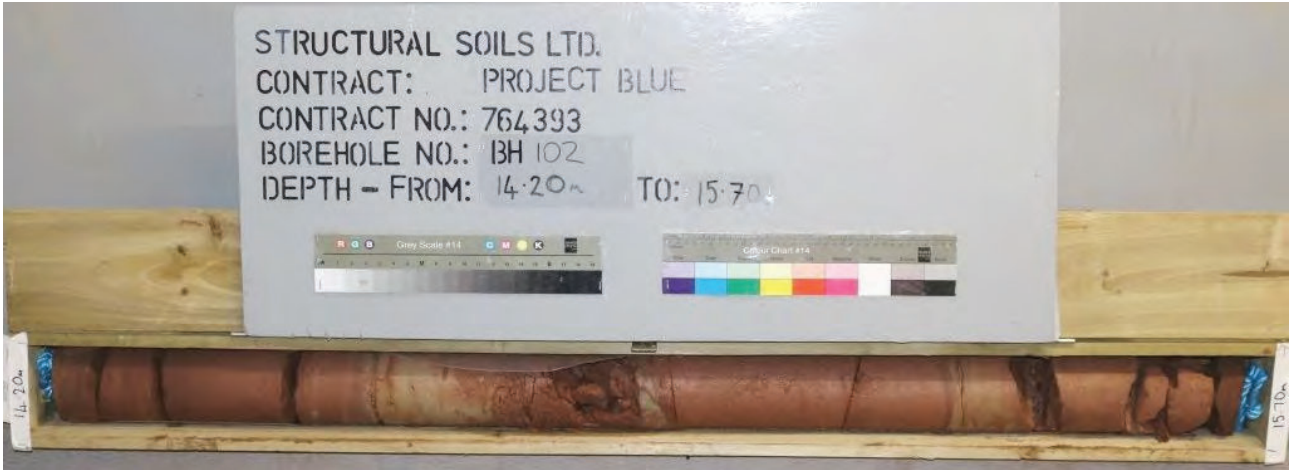
BH102 - Box 3

Method Used:	Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used:	Hilti Concrete Corer + Hand tools + Comacchio GEO 305	Drilled By:	Joseph Taylor	Logged By:	TBeeson	Checked By:	AS	AGS
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Contract: Project Blue		Client: Buro Happold		Borehole: BH102
Contract Ref: 764393	Start: 01.12.17 End: 13.12.17	Ground Level (m): 6.73	National Grid Co-ordinate: E:333278.4 N:392411.3	Sheet: 10 of 14

BH102 - Box 4



BH102 - Box 5

Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305	Drilled By: Joseph Taylor	Logged By: TBeeson	Checked By:	
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Contract: Project Blue		Client: Buro Happold		Borehole: BH102
Contract Ref: 764393	Start: 01.12.17 End: 13.12.17	Ground Level (m): 6.73	National Grid Co-ordinate: E:333278.4 N:392411.3	Sheet: 11 of 14

BH102 - Box 6



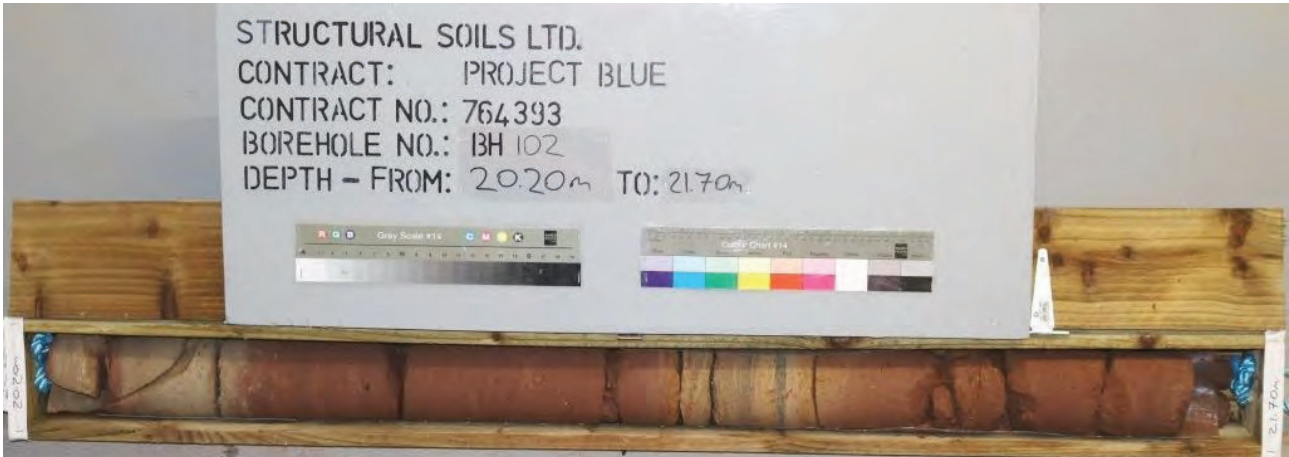
BH102 - Box 7

Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305	Drilled By: Joseph Taylor	Logged By: TBeeson	Checked By:	
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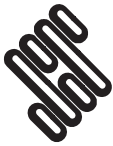
Contract: Project Blue			Client: Buro Happold		Borehole: BH102
Contract Ref: 764393	Start: 01.12.17 End: 13.12.17	Ground Level (m): 6.73	National Grid Co-ordinate: E:333278.4 N:392411.3		Sheet: 12 of 14

BH102 - Box 8



BH102 - Box 9

Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305	Drilled By: Joseph Taylor	Logged By: TBeeson	Checked By:	
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Contract: Project Blue		Client: Buro Happold		Borehole: BH102
Contract Ref: 764393	Start: 01.12.17 End: 13.12.17	Ground Level (m): 6.73	National Grid Co-ordinate: E:333278.4 N:392411.3	Sheet: 13 of 14

BH102 - Box 10



BH102 - Box 11

Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305	Drilled By: Joseph Taylor	Logged By: TBeeson	Checked By:	
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Contract: Project Blue		Client: Buro Happold		Borehole: BH102
Contract Ref: 764393	Start: 01.12.17 End: 13.12.17	Ground Level (m): 6.73	National Grid Co-ordinate: E:333278.4 N:392411.3	Sheet: 14 of 14

BH102 - Box 12



Method Used: Concrete core + Inspection pit + Dynamic sampling + Rotary Cored	Plant Used: Hilti Concrete Corer + Hand tools + Comacchio GEO 305	Drilled By: Joseph Taylor	Logged By: TBeeson	Checked By:	
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Contract: Project Blue			Client: Buro Happold		Borehole: BH102A
Contract Ref: 764393	Start: 26.01.18 End: 26.01.18	Ground Level (m): 6.72	National Grid Co-ordinate: E:333278.3 N:392411.8		Sheet: 1 of 2

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
											MADE GROUND: CONCRETE (Driller's Description).	6.32	(0.40)	
											MADE GROUND: Reddish brown gravelly SAND (Driller's description).	5.52	(0.80)	
											MADE GROUND: Sandstone GRAVEL and cobbles (Driller's Description).	4.22	(1.30)	
											MADE GROUND: Brown CLAY with bands of sand and cobbles (Driller's Description).		(3.00)	

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
26/01/18	12:00	5.50	None	100	-	1. Hand dug inspection pit to 1.20m. 2. Openhole borehole for installation of standpipe. 3. Drilled using air-mist flush. 4. 35mm ID standpipe installed on completion, response zone 1.00m to 5.50m. Data logger (diver) installed at 4.50m.	
						All dimensions in metres	Scale: 1:22
Method Used: Inspection pit + Rotary open hole	Plant Used: Comacchio GEO 205			Drilled By: Lee Smith	Logged By: AJones	Checked By: pmr	

GINT LIBRARY V8 06.GLB LibVersion: v8.06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8.06.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk | 31/05/18 - 15:56 | AJ4 |



Contract: Project Blue			Client: Buro Happold			Borehole: BH102A		
Contract Ref: 764393		Start: 26.01.18	Ground Level (m): 6.72		National Grid Co-ordinate: E:333278.3 N:392411.8		Sheet: 2 of 2	
		End: 26.01.18						

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
4.20		EW						100% return Air+Mist (Brown)						
4.50		EW												
												1.22	5.50	
											Borehole terminated at 5.50m depth.			

Boring Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth				





Contract: Project Blue			Client: Buro Happold		Borehole: BH103
Contract Ref: 764393	Start: 23.01.18 End: 24.01.18	Ground Level (m): -3.16	National Grid Co-ordinate: E:333298.3 N:392491.8		Sheet: 2 of 9

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
4.31-4.56	204	C		100	88	53	NI				brown fine to medium grained sandstone. ... from 4.13m to 4.31m, 1 No 70-80° fracture undulating rough clean. Locally weak and recovered as non-intact core (angular to subangular fine to coarse gravel sized fragments).		(3.70)	
5.00-6.50											... from 5.00m to 6.00m, locally stained dark brown (possibly drilling induced).			
5.42-5.66	205	C		100	100	93	20 90 220				... from 5.79m to 5.90m, locally fine grained.			
6.50-8.00											... from 6.23m to 6.36m, 1 No thin bed of medium strong thickly laminated grey fine grained sandstone.	-9.66	6.50	
6.50-6.86	206	C		100	99	73	NI 120 270				Medium strong dark reddish brown fine to medium locally coarse grained SANDSTONE. Discontinuities: 1) closely spaced 0-15° planar rough clean. ... from 6.98m to 7.04m, with localised irregular thin lenses of light grey fine grained sandstone. ... from 7.07m to 7.24m, discontinuity set 1 is extremely closely to very closely spaced. ... from 7.16m to 7.18m, very weak and recovered as non-intact core (sandy subangular fine to medium gravel sized fragments). Medium strong locally weak reddish brown fine to medium grained SANDSTONE with localised very thin to thin beds of	-10.40	7.24	

Boring Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth				
Method Used: Dynamic sampling + Rotary Cored			Plant Used: Comacchio GEO 205			All dimensions in metres		Scale: 1:22	
						Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By:	





Contract: Project Blue			Client: Buro Happold		Borehole: BH103
Contract Ref: 764393	Start: 23.01.18 End: 24.01.18	Ground Level (m): -3.16	National Grid Co-ordinate: E:333298.3 N:392491.8		Sheet: 4 of 9

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
12.50-14.00	210	C		100	72	58	NI 160 290				... from 11.48m to 11.58m, recovered locally as non-intact core (angular to subangular fine to coarse gravel sized fragments).		(2.02)	
12.87-13.09											... from 12.46m to 12.50m, 1 No. 48° fracture undulating rough clean. ... from 12.50m to 12.91m, 1 No. 80-90° fracture planar locally undulating rough clean.	-16.28	13.12	
				100	81	70	30 80 320				Medium strong locally weak thinly and thickly laminated light grey and dark grey fine grained SANDSTONE with very closely spaced thick laminations to very thin beds of yellowish grey fine grained sandstone. Discontinuities: 1) closely to medium spaced locally very closely spaced 0-10° planar smooth clean.	-16.90	13.74	
14.00-15.50							NI	0% return Water (N/A)			... from 13.21m to 13.27m and 13.44m to 15.50m, 2 No very thin beds of medium strong reddish brown fine grained sandstone. Weak to medium strong reddish brown fine to medium grained SANDSTONE. Discontinuities: 1) extremely closely to closely spaced 0-10° planar rough locally smooth clean.		(1.76)	
				100	91	55	NI 90 240				... from 13.74m to 14.00m, locally weak with frequent incipient fractures, Recovered partially as non-intact core (subangular coarse gravel and cobble sized fragments) ... from 14.26m to 14.40m, 1 No. 85-90° fracture undulating rough clean. ... from 14.44m to 14.50m, weak and recovered locally as non-intact core (angular medium to coarse gravel sized fragments).	-18.66	15.50	
15.26-15.50	211	C									... from 15.46m to 15.50m, 1 No very thin bed of medium strong brown fine grained sandstone. Borehole terminated at 15.50m depth.			

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						All dimensions in metres	Scale: 1:22
Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205		Drilled By: Joseph Taylor		Logged By: MGalan + TBeeson	Checked By:	



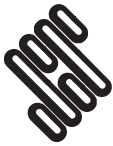
Contract: Project Blue		Client: Buro Happold		Borehole: BH103
Contract Ref: 764393	Start: 23.01.18 End: 24.01.18	Ground Level (m): -3.16	National Grid Co-ordinate: E:333298.3 N:392491.8	Sheet: 5 of 9

BH103 - Box 1



BH103 - Box 2

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Contract: Project Blue		Client: Buro Happold		Borehole: BH103
Contract Ref: 764393	Start: 23.01.18 End: 24.01.18	Ground Level (m): -3.16	National Grid Co-ordinate: E:333298.3 N:392491.8	Sheet: 6 of 9

BH103 - Box 3



BH103 - Box 4

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Contract: Project Blue		Client: Buro Happold		Borehole: BH103
Contract Ref: 764393	Start: 23.01.18 End: 24.01.18	Ground Level (m): -3.16	National Grid Co-ordinate: E:333298.3 N:392491.8	Sheet: 7 of 9

BH103 - Box 5



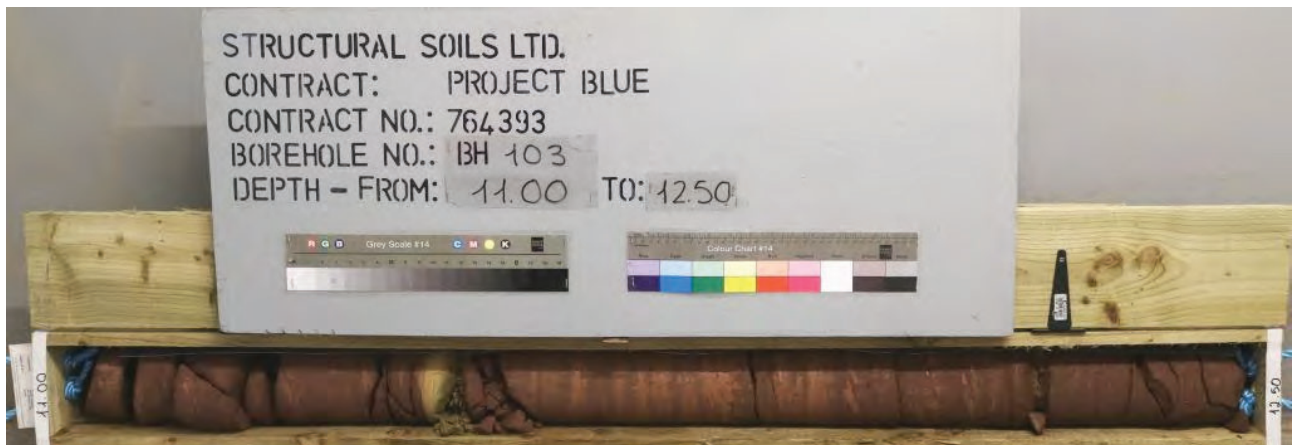
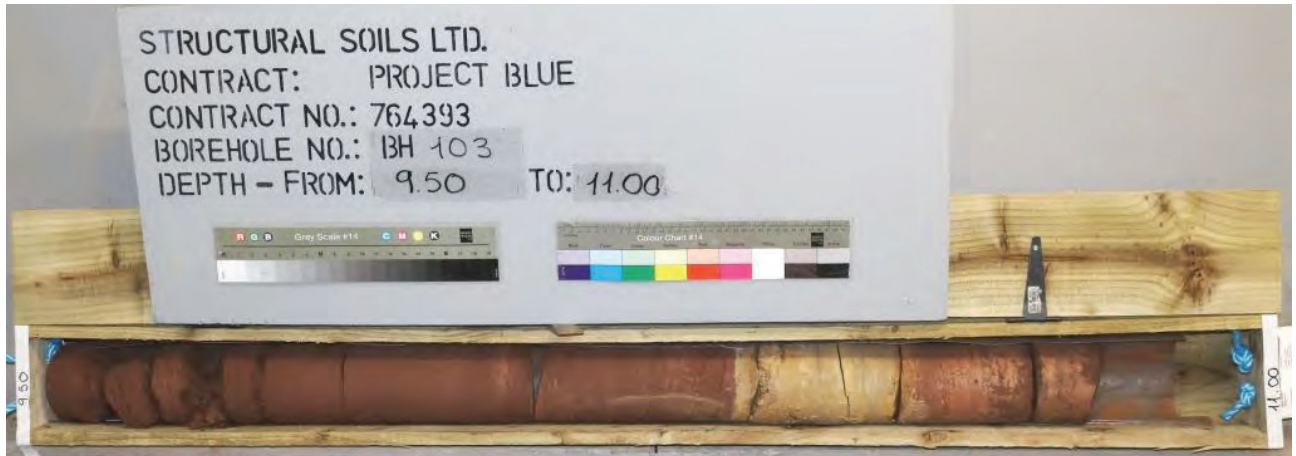
BH103 - Box 6

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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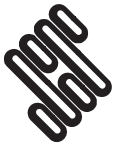
Contract: Project Blue		Client: Buro Happold		Borehole: BH103
Contract Ref: 764393	Start: 23.01.18 End: 24.01.18	Ground Level (m): -3.16	National Grid Co-ordinate: E:333298.3 N:392491.8	Sheet: 8 of 9

BH103 - Box 7



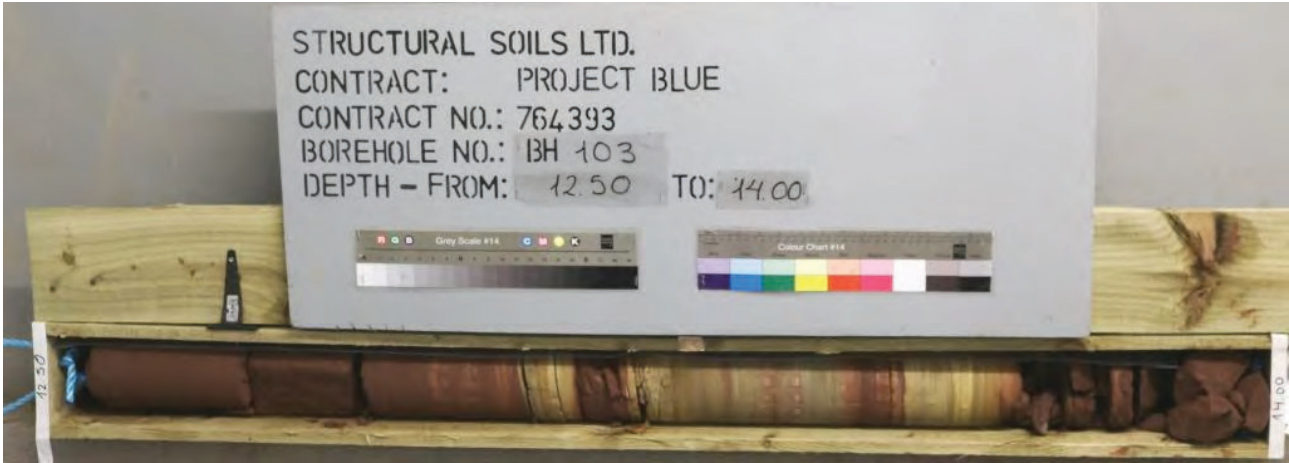
BH103 - Box 8

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Contract: Project Blue		Client: Buro Happold		Borehole: BH103
Contract Ref: 764393	Start: 23.01.18 End: 24.01.18	Ground Level (m): -3.16	National Grid Co-ordinate: E:333298.3 N:392491.8	Sheet: 9 of 9

BH103 - Box 9





BH103 - Box 10

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thick- ness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
0.00-1.00	1	P	0% recovery								Very soft black slightly sandy clayey SILT. Sand is fine. Rare fine to medium gravel sized shell fragments.			
1.00-2.00	2	P	90% recovery										(2.05)	
2.00-3.50	3	SPT	2,4/2,45,53 for 40mm	↑	↑	↑	↑	↑	100% return Water (Reddish Brown)		Very soft to soft dark brown and black sandy gravelly SILT. Sand is fine to coarse. Gravel is angular to subangular fine to medium of sandstone.	-3.93	2.05	
2.00-2.34		D					NA						(0.29)	
2.00-2.34													-4.22	2.34
2.54-2.74	201	C		100	77	30					Weak to medium strong reddish brown medium locally coarse grained SANDSTONE. With closely to medium spaced very thin beds of grey fine to medium grained sandstone. Discontinuities: 1) very closely to closely spaced 0-10° planar rough clean locally stained black. . . . from 2.34m to 2.60m, silt smearing on core surface.			
3.50-5.00													(2.01)	
3.64-3.80	202	C		100	99	20								
Description on next sheet														

Boring Progress and Water Observations						<h2 style="text-align: center;">General Remarks</h2> <ol style="list-style-type: none"> 1. Deck to silt level - 7.50m. Silt level used as reference for GL. 2. UXO clearance performed by magnetometer adjacent to position. 3. Driller notes loss of flush return from 9.50m. 4. SPT hammer JT.01 2017 ($E_r = 72.00\%$) used.
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	
25/01/18	13:30	17.00	3.50	146	5.40	
Method Used: Dynamic sampling + Rotary Cored			Plant Used: Comacchio GEO 205		All dimensions in metres Scale: 1:22	
			Drilled By: Joseph Taylor		Logged By: MGalan + TBeeson	
			Checked By: 			

SGINT_LIBRARY_v8_06.GLB LibVersion: v8_06_018 PdfVersion: v8_06_018 Core+Full Castledford SI - 008 | Log COMPOSITE LOG - AAP | 764393 - PROJECT BLUE GPJ - v8_06_06
The Potteries, Pottery Street, Castledford, West Yorkshire, WF10 1NJ. Tel: 01977-552255 Fax: 01977-552299, Web: www.sols.co.uk, Email: ask@soils.co.uk, 31/05/18 - 16:34 | A4 |



Contract: Project Blue			Client: Buro Happold		Borehole: BH104
Contract Ref: 764393	Start: 25.01.18 End: 25.01.18	Ground Level (m): -1.88	National Grid Co-ordinate: E:333338.4 N:392535.5		Sheet: 2 of 10

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
4.40-4.58	203	C		100	99	20					... from 3.88m to 4.01m, with thick laminations of bluish grey fine grained sandstone.	-6.23	4.35	
5.00-6.50	204	C									Medium strong reddish brown fine to medium grained SANDSTONE. Discontinuities: 1) very closely to closely locally medium spaced 0-20° planar rough clean. ... from 4.46m to 4.49m, 1 No 78° fracture planar rough clean. ... from 4.50m to 4.92m, 1 No 72° fracture undulating rough clean. ... from 5.10m - 5.15m, 1 No 45° fracture planar rough clean.			
5.13-5.35											... from 5.29m to 5.42m, 1 No thin bed of medium strong light grey fine to medium grained sandstone with very closely spaced thin laminations of dark grey siltstone. ... from 5.54m to 5.72m, 1 No. 74° fracture undulating rough clean.			
6.50-8.00				100	98	56					... from 7.05m to 7.20m, very weak to weak with very closely spaced bedding fractures. Recovered locally as non-intact core (subangular fine to medium gravel sized fragments). ... from 7.11m to 7.20m, with occasional clasts of weak reddish brown mudstone and occasional black staining.		(3.70)	
7.45-7.72	205	C		100	93	65					Description on next sheet			

Boring Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth				
Method Used: Dynamic sampling + Rotary Cored			Plant Used: Comacchio GEO 205			All dimensions in metres		Scale: 1:22	
						Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By:	

GINT LIBRARY V8 06.GLB LibVersion: v8 06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8 06.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk | 31/05/18 - 16:34 | AJ4 |



Contract: Project Blue			Client: Buro Happold		Borehole: BH104
Contract Ref: 764393	Start: 25.01.18 End: 25.01.18	Ground Level (m): -1.88	National Grid Co-ordinate: E:333338.4 N:392535.5		Sheet: 3 of 10

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
8.00-9.50	206	C		100	100	91	30 170 230	100% return Water (Reddish Brown)			... from 7.87m to 8.00m, 1 No. 90° fracture undulating rough clean. Medium strong to strong reddish brown fine grained SANDSTONE with closely to medium spaced thick laminations to very thin beds of medium strong light grey and yellowish brown fine grained sandstone. Discontinuities: 1) very closely to closely locally medium spaced 5-20° planar smooth clean. ... from 8.60m to 8.63m, 2 No. 25-30° fractures planar rough clean. ... at 9.14m, 1 No thin lamination of reddish brown mudstone.	-9.93	8.05	
8.63-8.86													(1.90)	
9.50-11.00	207	C		100	93	78	NI 130 290	0% return Water (NA)			Medium strong locally weak reddish brown fine to medium grained SANDSTONE. Discontinuities: 1) closely to medium spaced 0-15° planar and undulating rough clean. ... from 9.95m to 10.03m, very weak to weak and recovered as non-intact core (angular fine to coarse gravel sized fragments). ... at 10.16m, 1 No. thick lamination of light grey fine to medium grained sandstone. ... at 10.54m, 1 No. 10° fracture (locally incipient) planar smooth clean (possibly drilling induced).	-11.83	9.95	
9.61-9.90													(1.33)	
11.00-12.50	208	C		100	96	71	50 130 200				Thinly interbedded medium strong grey and yellowish brown fine to medium grained SANDSTONE and medium strong to strong reddish brown medium grained sandstone. Discontinuities: 1) very closely to closely spaced 0-10° planar smooth clean. ... from 11.62m to 11.72m, with extremely closely spaced thin	-13.16	11.28	
11.05-11.24													(0.93)	

Boring Progress and Water Observations						General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	



Contract: Project Blue			Client: Buro Happold		Borehole: BH104
Contract Ref: 764393	Start: 25.01.18 End: 25.01.18	Ground Level (m): -1.88	National Grid Co-ordinate: E:333338.4 N:392535.5		Sheet: 4 of 10

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
12.50-14.00	209	C		100	96	71	50 130 200				laminations of dark grey siltstone. ... from 12.15m, 2 No. irregular thin lenses of light grey fine grained sandstone. Medium strong reddish brown fine to medium grained SANDSTONE. Discontinuities: 1) closely to medium locally very closely spaced 0-10° planar rough clean. ... from 12.26m to 12.32m, 1 No. 90° fracture undulating rough clean. ... from 12.44m to 12.50m, 1 No. 75° fracture undulating rough clean. ... from 12.55m to 12.65m, recovered as non-intact core (angular to subangular medium to coarse gravel sized fragments).	-14.09	12.21	
12.76-13.06							NI 220 300						(1.25)	
14.00-15.50	210	C		100	83	76					... from 12.61m to 12.94m, 3 No very thin to thin beds of medium strong light grey and yellowish brown fine to medium grained sandstone. Medium strong locally weak reddish brown fine to medium grained SANDSTONE. With medium spaced very thin to medium beds of medium strong grey and yellowish brown fine grained sandstone. Discontinuities: 1) very closely to closely locally medium spaced 0-10° planar rough locally smooth clean. ... from 13.47m to 13.55m, weak and recovered as non-intact core (angular fine to medium gravel sized fragments). ... from 14.00m to 14.20m, assumed zone of core loss.	-15.34	13.46	
14.32-14.50							NI 90 230						(2.04)	
15.50-17.00				87	87	49	40 120 170							

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						All dimensions in metres	Scale: 1:22
Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205		Drilled By: Joseph Taylor		Logged By: MGalan + TBeeson	Checked By:	

GINT LIBRARY V8 06.GLB LibVersion: v8 06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8 06.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk | 31/05/18 - 16:34 | AJ4 |



Contract: Project Blue			Client: Buro Happold			Borehole: BH104		
Contract Ref: 764393		Start: 25.01.18	Ground Level (m): -1.88		National Grid Co-ordinate: E:333338.4 N:392535.5		Sheet: 5 of 10	
		End: 25.01.18						

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
16.08-16.24	211	C		100	93	57	40 120 170	0% return Water (NA)			... at 15.70m, 1 No. 35° fracture planar rough clean. ... from 16.60m to 16.75m, 1 No. 75° fracture undulating rough clean. Borehole terminated at 17.00m depth.	-18.88	17.00	

Boring Progress and Water Observations						General Remarks		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth			



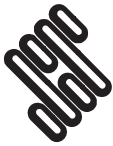
Contract: Project Blue		Client: Buro Happold		Borehole: BH104
Contract Ref: 764393	Start: 25.01.18 End: 25.01.18	Ground Level (m): -1.88	National Grid Co-ordinate: E:333338.4 N:392535.5	Sheet: 6 of 10

BH104 - Box 1



BH104 - Box 2

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Contract: Project Blue			Client: Buro Happold	Borehole: BH104
Contract Ref: 764393	Start: 25.01.18 End: 25.01.18	Ground Level (m): -1.88	National Grid Co-ordinate: E:333338.4 N:392535.5	Sheet: 7 of 10

BH104 - Box 3



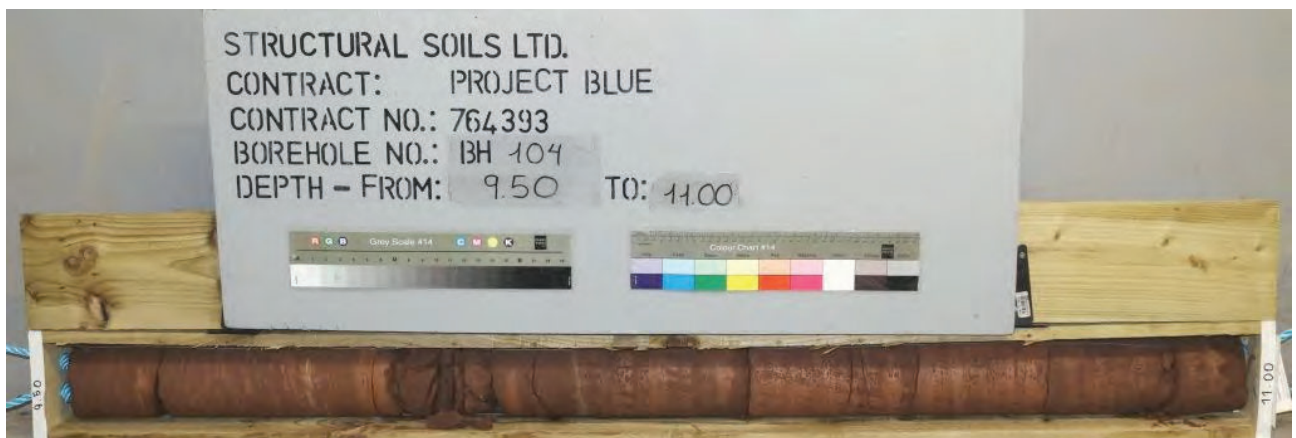
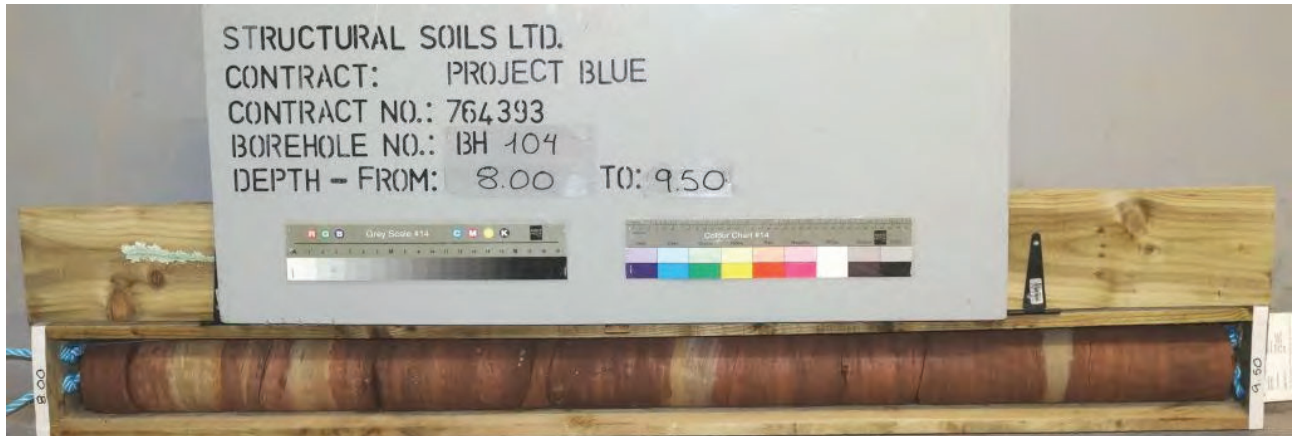
BH104 - Box 4

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	
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Contract: Project Blue		Client: Buro Happold		Borehole: BH104
Contract Ref: 764393	Start: 25.01.18 End: 25.01.18	Ground Level (m): -1.88	National Grid Co-ordinate: E:333338.4 N:392535.5	Sheet: 8 of 10

BH104 - Box 5



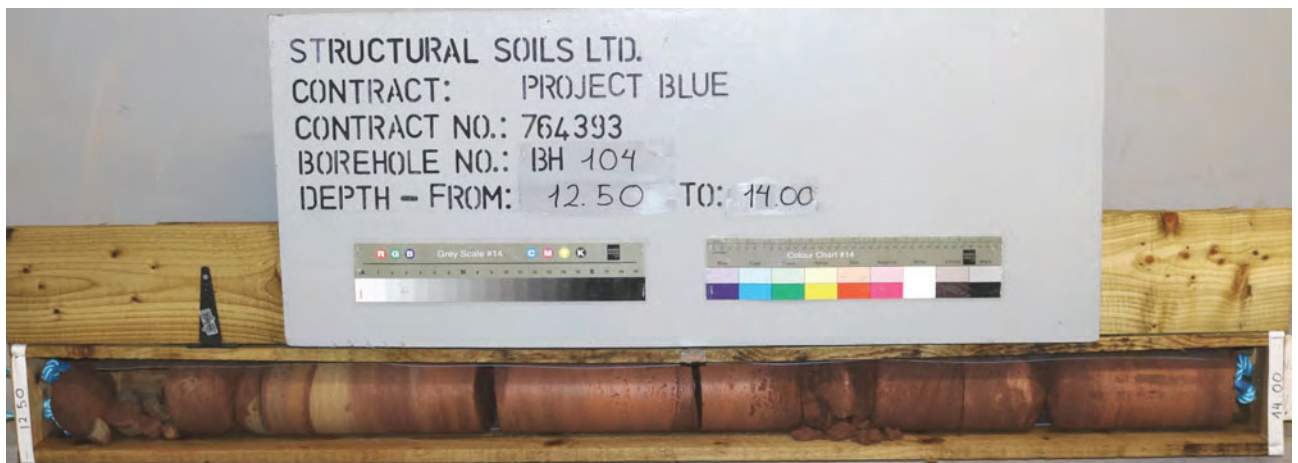
BH104 - Box 6

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Contract: Project Blue		Client: Buro Happold		Borehole: BH104
Contract Ref: 764393	Start: 25.01.18 End: 25.01.18	Ground Level (m): -1.88	National Grid Co-ordinate: E:333338.4 N:392535.5	Sheet: 9 of 10

BH104 - Box 7



BH104 - Box 8

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Contract: Project Blue		Client: Buro Happold		Borehole: BH104
Contract Ref: 764393	Start: 25.01.18 End: 25.01.18	Ground Level (m): -1.88	National Grid Co-ordinate: E:333338.4 N:392535.5	Sheet: 10 of 10



BH104 - Box 9



BH104 - Box 10

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Boring Progress and Water Observations						<div>General Remarks</div> <div>1. Deck to silt level - 8.50m. Silt level used as reference for GL. 2. UXO clearance performed by magnetometer adjacent to position. 3. No recovery of UT sample due to very soft nature of silt. 4. SPT hammer JT.01 2017 ($E_r = 72.00\%$) used.</div>			
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth				
18/01/18	16:00	0.60	None	140	-8.10				
19/01/18	08:00	0.60	None	140	-8.10				
19/01/18	15:00	10.10	1.10	146	1.80				
22/01/18	08:00	10.10	1.10	146	2.80				
22/01/18	11:00	16.00	1.10	146	4.70				
All dimensions in metres					Scale:		1:22		
Method Used:	Dynamic sampling + Rotary Cored		Plant Used:	Comacchio GEO 205		Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: 	

GINT LIBRARY V8 06.GLB LibVersion: v8 06 018 PrIVersion: v8 06 - Core+Full Castleford SI - 008 | Log COMPOSITE LOG - A4P | 764393 - PROJECT BLUE.GPJ - v8 06.



Contract: Project Blue			Client: Buro Happold		Borehole: BH105
Contract Ref: 764393	Start: 18.01.18 End: 22.01.18	Ground Level (m): -2.86	National Grid Co-ordinate: E:333327.2 N:392443.9		Sheet: 2 of 11

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
4.10-5.60	204	C		100	100	83							(3.40)	
				100	100	83	20 120 230				... from 4.90m to 5.15m, 1 No medium bed of medium strong light grey fine to medium grained sandstone with very closely spaced thick laminations of dark grey siltstone. ... from 5.20m to 5.40m, discontinuity set 1 is 10-20°.			
5.60-7.10 5.60-5.78														
	205	C						100% return Water (Reddish brown)				-8.86	6.00	
				100	87	37	NI 80 120				Weak to medium strong reddish brown fine to medium grained SANDSTONE. Discontinuities: 1) very closely to closely spaced 0-20° planar smooth locally rough clean. 2) medium spaced 65-75° planar rough clean. ... from 6.00m to 6.10m, 3 No. 90° fractures planar rough clean (drilling induced). ... from 6.37m to 6.48m, and 6.76m to 6.98m, very weak to weak and recovered partially as non-intact core (angular fine to coarse gravel sized fragments). ... from 6.50m to 6.70m, 1 No very thin bed of medium strong light grey fine to medium grained sandstone with very closely spaced thick laminations of dark grey siltstone. ... from 7.13m to 7.27m and 7.43m to 7.50m and 8.08m to 8.20m, recovered as non-intact core (sandy angular to subangular fine to coarse gravel sized fragments).			
7.10-8.60													(2.60)	
7.69-7.85				100	43	22	NI 80 130							

Boring Progress and Water Observations						General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	





Contract: Project Blue			Client: Buro Happold		Borehole: BH105
Contract Ref: 764393	Start: 18.01.18 End: 22.01.18	Ground Level (m): -2.86	National Grid Co-ordinate: E:333327.2 N:392443.9		Sheet: 3 of 11

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
8.60-10.10				100	43	22	NI 80 130				... from 8.23m to 8.30m, 1 No thin bed of medium strong light grey fine to medium grained sandstone.	-11.46	8.60	
9.42-9.70	206	C		100	65	59					Medium strong reddish brown fine to medium grained SANDSTONE. With very closely to closely spaced very thin beds of light grey fine to medium grained sandstone. Discontinuities: 1) very closely to medium spaced planar smooth locally rough clean. ... from 8.60m to 8.90m, 1 No medium bed of weak light grey fine locally medium grained sandstone. 3 No 80-90° parallel fractures undulating rough clean. Recovered partially as non-intact core (subangular medium to coarse gravel sized fragments) ... from 9.00m to 9.09m, recovered as non-intact core (angular medium to coarse gravel sized fragments).	-12.36	9.50	
10.10-11.60								100% return Water (Reddish brown)			Medium strong reddish brown fine to medium grained SANDSTONE. With widely spaced thin beds of medium strong thickly laminated light grey fine grained sandstone. Discontinuities: 1) closely to medium spaced locally very closely spaced 0-15° planar rough clean.			
10.57-10.90	207	C		100	97	71					... from 11.03m to 11.42m, 1 No. 70° fracture undulating rough clean.			
11.60-13.10				100	100	69	30 120 320				... from 11.60m to 11.80m, 1 No. 75° fracture undulating rough clean.			

Boring Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth				
Method Used: Dynamic sampling + Rotary Cored			Plant Used: Comacchio GEO 205			All dimensions in metres		Scale: 1:22	
						Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By:	

Contract:		Client:		Borehole:
Project Blue		Buro Happold		BH105
Contract Ref:	Start: 18.01.18	Ground Level (m):	National Grid Co-ordinate:	Sheet:
764393	End: 22.01.18	-2.86	E:333327.2 N:392443.9	4 of 11

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
12.19-12.51	208	C		100	100	69					... from 11.97m to 12.07m, 1 No thin bed of medium strong thinly and thickly laminated light grey and light greenish grey fine to medium grained sandstone.			
13.10-14.50							30 120 320				... from 12.68m to 12.76m, 1 No thin bed of medium strong grey fine to medium grained sandstone ... from 12.88m to 13.05m, with localised thick laminations of light grey fine to medium grained sandstone. ... from 13.26m to 13.38m, 1 No thin bed of medium strong light grey fine to medium grained sandstone. ... from 13.43m to 13.80m, 1 No. 75-90° fracture undulating rough clean.		(6.50)	
14.14-14.35	209	C		100	93	57		100% return Water (Reddish brown)						
14.50-16.00											... from 14.38m to 14.60m, 1 No medium bed of medium strong light grey fine to medium grained sandstone. ... from 14.63m to 14.64m, 1 No thick lamination of light grey fine to medium grained sandstone.			
15.61-15.86	210	C		100	92	49	NI 95 250				... from 15.39m to 15.41m recovered as non-intact core (subrounded fine to medium gravel sized fragments). ... from 15.42m to 15.65m, 1 No medium bed of weak light grey fine to medium grained sandstone. 1 No 80-90° fracture			

Boring Progress and Water Observations						General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	
All dimensions in metres						Scale: 1:22
Method Used:	Dynamic sampling + Rotary Cored		Plant Used:	Comacchio GEO 205		Drilled By: Joseph Taylor Logged By: MGalan + TBeeson Checked By: 
						



Contract: Project Blue			Client: Buro Happold			Borehole: BH105			
Contract Ref: 764393		Start: 18.01.18 End: 22.01.18		Ground Level (m): -2.86		National Grid Co-ordinate: E:333327.2 N:392443.9		Sheet: 5 of 11	

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
											undulating rough clean. Recovered partially as non-intact core (angular to subangular fine to coarse gravel sized fragments). Borehole terminated at 16.00m depth.			

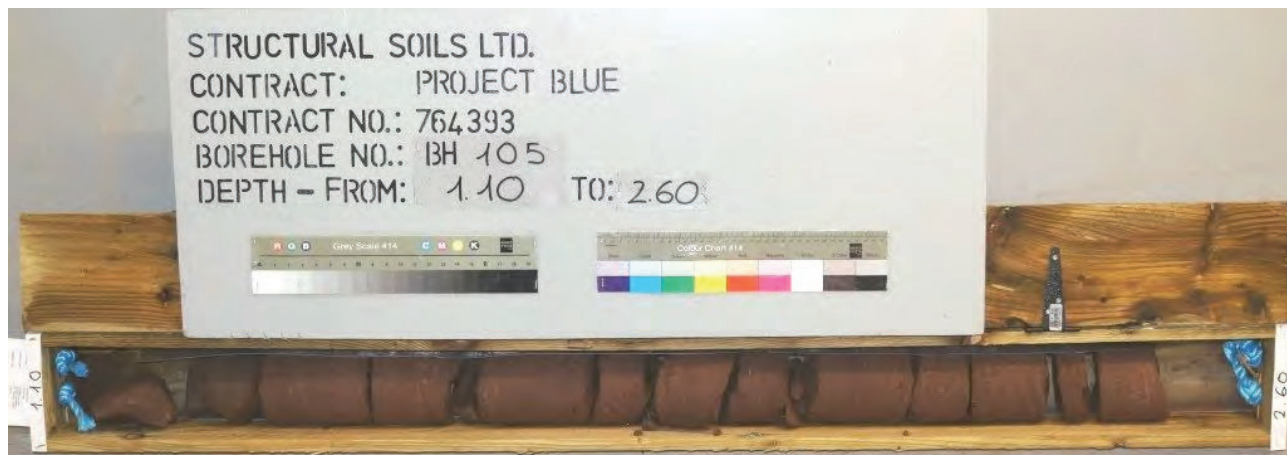
Boring Progress and Water Observations						General Remarks							
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth								
						All dimensions in metres		Scale:	1:22				
Method Used:	Dynamic sampling + Rotary Cored			Plant Used:	Comacchio GEO 205		Drilled By:	Joseph Taylor	Logged By:	MGalan + TBeeson	Checked By:		

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Contract: Project Blue		Client: Buro Happold		Borehole: BH105
Contract Ref: 764393	Start: 18.01.18 End: 22.01.18	Ground Level (m): -2.86	National Grid Co-ordinate: E:333327.2 N:392443.9	Sheet: 6 of 11

BH105 - Box 1



BH105 - Box 2

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Contract: Project Blue			Client: Buro Happold	Borehole: BH105
Contract Ref: 764393	Start: 18.01.18 End: 22.01.18	Ground Level (m): -2.86	National Grid Co-ordinate: E:333327.2 N:392443.9	Sheet: 7 of 11

BH105 - Box 3



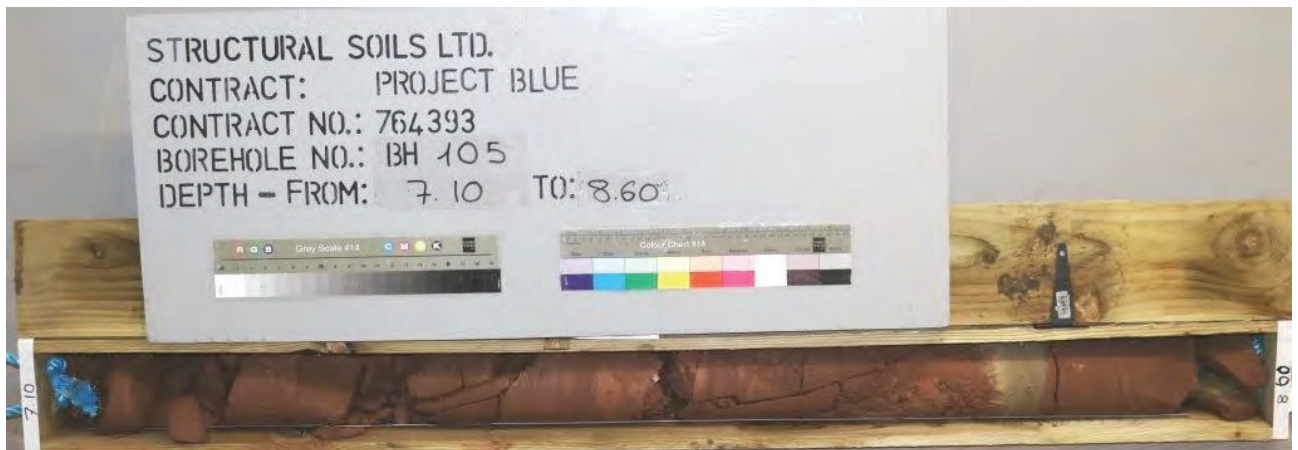
BH105 - Box 4

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Contract: Project Blue		Client: Buro Happold		Borehole: BH105
Contract Ref: 764393	Start: 18.01.18 End: 22.01.18	Ground Level (m): -2.86	National Grid Co-ordinate: E:333327.2 N:392443.9	Sheet: 8 of 11

BH105 - Box 5



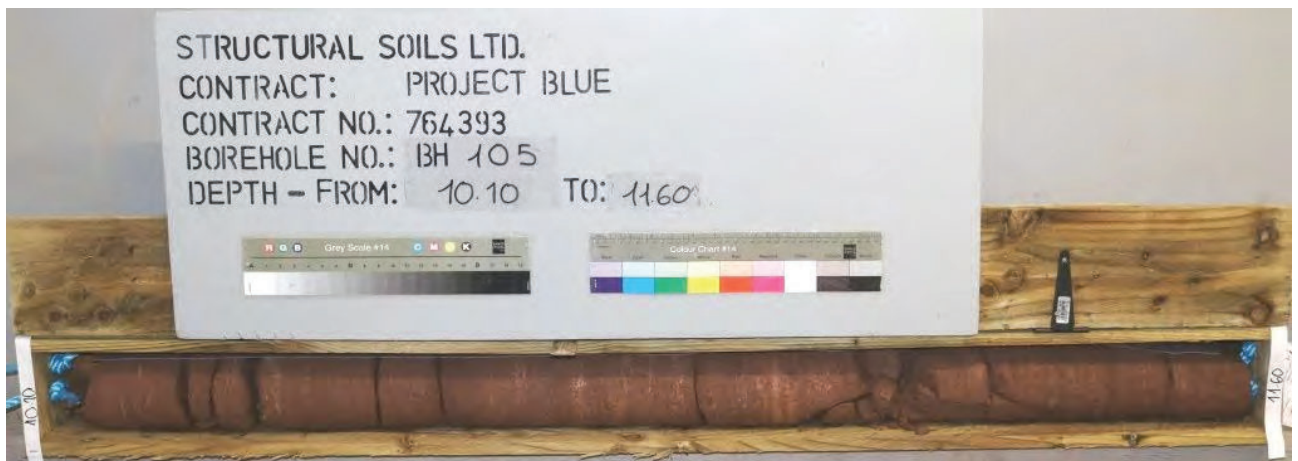
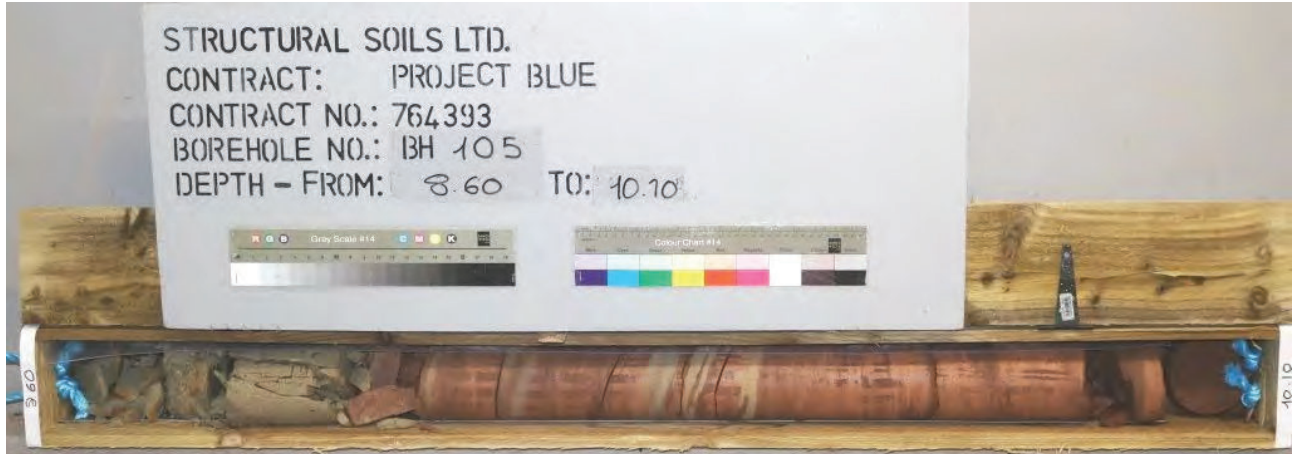
BH105 - Box 6

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Contract: Project Blue		Client: Buro Happold		Borehole: BH105
Contract Ref: 764393	Start: 18.01.18 End: 22.01.18	Ground Level (m): -2.86	National Grid Co-ordinate: E:333327.2 N:392443.9	Sheet: 9 of 11

BH105 - Box 7



BH105 - Box 8

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Contract: Project Blue		Client: Buro Happold		Borehole: BH105
Contract Ref: 764393	Start: 18.01.18 End: 22.01.18	Ground Level (m): -2.86	National Grid Co-ordinate: E:333327.2 N:392443.9	Sheet: 10 of 11

BH105 - Box 9



BH105 - Box 10

Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	AGS
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Contract: Project Blue		Client: Buro Happold		Borehole: BH105
Contract Ref: 764393	Start: 18.01.18 End: 22.01.18	Ground Level (m): -2.86	National Grid Co-ordinate: E:333327.2 N:392443.9	Sheet: 11 of 11



BH105 - Box 11



Method Used: Dynamic sampling + Rotary Cored	Plant Used: Comacchio GEO 205	Drilled By: Joseph Taylor	Logged By: MGalan + TBeeson	Checked By: AS	
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Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thick- ness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
0.00-1.00	1	P	0% recovery								Very soft dark bluish grey sandy clayey SILT. Sand is fine. Occasional fine to medium gravel sized shell fragments.			
1.00-1.80	2	P	0% recovery										(1.80)	
1.80-2.70														
1.80-2.13	3	SPT	6,19/26,47,27 for 30mm	↑	↑	↑	NI	↑			Extremely weak reddish brown SANDSTONE. Recovered predominantly as non-intact core (very sandy subangular to subrounded fine to coarse gravel sized fragments).	-4.62	2.00	
1.80-2.13	4	D												
2.59-2.70	201	C		94	27	0	20 40 60				Very thinly interbedded medium strong light grey fine to medium grained SANDSTONE and weak to medium strong yellow medium grained sandstone. Localised thin and thick laminations of dark grey and black siltstone. Discontinuities: 1) very closely spaced 0-10° planar rough clean locally stained black.			(0.96)
2.70-4.20														
								90-100% return Water (Reddish brown)				-5.58	2.96	
3.08-3.25	202	C		93	80	55	20 100 200				Medium strong locally weak reddish brown fine to coarse medium SANDSTONE. Discontinuities 1) closely locally very closely and medium spaced 0-10° planar rough clean. ... from 3.39m to 3.42m, with extremely spaced thin laminations of black siltstone. ... from 3.40m to 3.55m, dark brown.			(1.24)

Boring Progress and Water Observations						<div>General Remarks</div> <div>1. Deck to silt level - 7.60m. Silt level used as reference for GL. 2. UXO clearance performed by magnetometer adjacent to position. 3. No recovery of piston samples due to very soft nature of silt. 4. SPT hammer JT.01 2017 ($E_r = 72.00\%$) used.</div>		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth			
09/01/18	16:00	2.70	2.70	150	-7.40			
10/01/18	08:00	2.70	2.70	150	-6.60			
10/01/18	16:00	19.20	3.40	146	8.10			
11/01/18	08:00	19.20	3.40	146	5.80			
11/01/18	14:00	32.70	3.40	146	15.80			
All dimensions in metres					Scale: 1:22			
Method Used:	Dynamic sampling + Rotary Cored		Plant Used:	Comacchio GEO 205	Drilled By: Ashley Everill	Logged By: MGalan + TBeeson	Checked By: 	

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Contract: Project Blue			Client: Buro Happold		Borehole: BH106
Contract Ref: 764393	Start: 09.01.18 End: 11.01.18	Ground Level (m): -2.62	National Grid Co-ordinate: E:333375.7 N:392522.9		Sheet: 2 of 20

Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thickness)	Material Graphic Legend
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)							
4.20-5.70	203	C		93	80	55	20 100 200				Medium strong reddish brown medium to coarse grained SANDSTONE. Discontinuities: 1) closely to medium spaced locally very closely spaced 0-15° planar rough clean. Occasional lenses of reddish brown fine grained sandstone. ... from 4.20m to 4.41m, with extremely closely spaced thin laminations of dark grey siltstone.	-6.82	4.20	
5.01-5.37				100	100	75	20 200 360							
5.70-7.20														
5.89-6.06	204	C						90-100% return Water (Reddish brown)					(3.56)	
				100	100	46	20 130 170							
7.20-8.70	205	C									Medium strong to strong reddish brown fine to medium grained SANDSTONE with rare to			
7.36-7.56				100	100	75						-10.38	7.76	

Boring Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth		
						All dimensions in metres	
						Scale:	1:22
Method Used:	Dynamic sampling + Rotary Cored		Plant Used:	Comacchio GEO 205		Drilled By:	Ashley Everill
						Logged By:	MGalan + TBeeson
						Checked By:	AGS

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Depth (m)	Samples & Testing			Mechanical Log				Flush Returns & Details	Backfill	Water	Description of Strata	Reduced Level	Depth (Thick ness)	Material Graphic Legend	
	No	Type	Results	TCR (%)	SCR (%)	RQD (%)	If (mm)								
8.70-10.20	206	C		100	100	75		90-100% return Water (Reddish brown)			occasional lenses of grey fine to medium grained sandstone. Discontinuities: 1) closely to medium spaced locally very closely spaced 0-10° planar rough clean. ... from 7.76m to 7.92m, weak to medium strong light grey and darkish green SILTSTONE with localised very closely spaced thin laminations of grey mudstone. Discontinuities: 1) very closely to closely spaced 0-10° planar smooth clean. ... from 8.36m to 8.50m, 3 No. lenses of grey fine to medium grained sandstone. ... from 8.74m to 8.78m, 1 No very thin bed of medium strong grey medium grained sandstone.	-12.82	(2.44)		
8.90-9.19															20 250 280
10.20-11.70	207	C		100	100	74					Medium strong reddish brown fine to medium grained SANDSTONE with closely to medium spaced very thin beds of medium strong light grey fine to coarse grained sandstone. Discontinuities: 1) very closely to closely spaced 0-10° planar smooth clean.	-13.44	10.82		
								20 80 150							
10.93-11.27						100	99	63				Medium strong to strong reddish brown medium grained SANDSTONE. Discontinuities: 1) medium spaced locally very closely to closely spaced 0-10° planar rough clean. ... from 10.99m to 11.01m, 2 No thick laminations of grey fine to coarse grained sandstone.			
									20 320 330						
11.70-13.20				100	91	62							(1.87)		
							40 100 200								