

PHOTOGRAPHIC LOG

Site Location: Swansea University Bay Campus, Swansea

Photo No.
25

Date:
22/01/2020

General view of arisings from WS3 between 3.2m and 4.2m



Photo No.
26

Date:
22/01/2020

General view of attempted hand pits for WS4. All failed at similar depths on concrete.



PHOTOGRAPHIC LOG

Site Location: Swansea University Bay Campus, Swansea

Photo No.
27

Date:
22/01/2020

General
view of
arising
WS4.

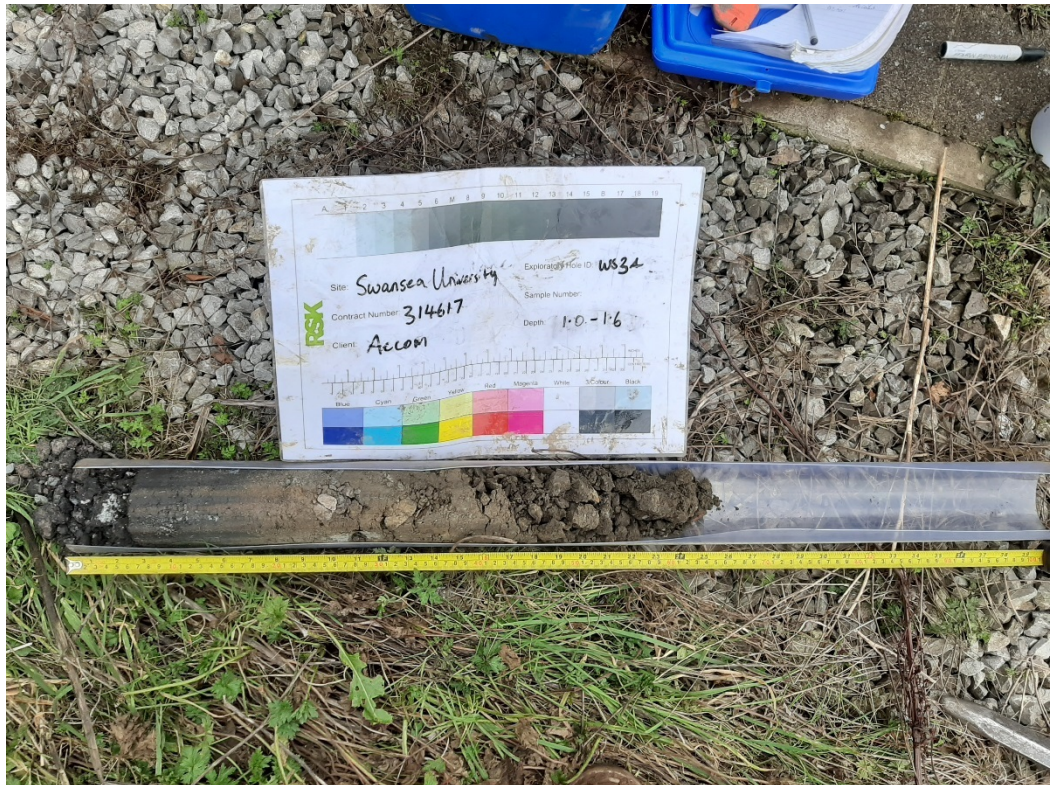


Photo No.
28

Date:
22/01/2020

General
view failed
hand pit for
WS4. Note
concrete in
centre of pit.



APPENDIX C

EXPLORATORY HOLE RECORDS

BOREHOLE LOG

Contract: Swansea University Bay Campus			Client: AECOM		Borehole: BH1
Contract Ref: 314617	Start: 22.01.20 End: 24.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 2	

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.60-1.20	1	B				MADE GROUND: Scrub grass followed by brownish black slightly clayey gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded brick, concrete, slag and clinker.	0.40	
1.20-1.45	1	SPT	3,7/30,20 for 25mm			MADE GROUND: Blackish grey slightly clayey gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded brick, concrete and rare slag and clinker.	(0.90)	
1.20-1.45	2	D				MADE GROUND: Blackish grey slightly gravelly silty fine to coarse SAND. Gravels are fine to coarse and angular to subrounded sandstone and mudstone. Rare brick and concrete.	1.30	
1.50-2.00	3	B						
2.00-2.45	2	SPT	N=35				(1.90)	
2.00-2.45	4	D						
2.50-3.00	5	B						
3.00-3.45	3	SPT	N=20				3.20	
3.00-3.45	6	D				Medium dense grey fine to coarse SAND. Frequent shells. (BLOWN SAND)		
3.50-4.00	7	B						
4.00-4.45	4	SPT	N=20				(2.80)	
4.00-4.45	8	D						
4.50-5.00	9	B						
5.00-5.45	5	SPT	N=24				6.00	
5.00-5.45	10	D						
5.50-6.00	11	B						
6.00-6.45	6	SPT	N=27			Medium dense brownish grey gravelly fine to coarse SAND. Gravels are fine to coarse angular to rounded sandstone and occasional shells. (BLOWN SAND)	(2.00)	
6.00-6.45	12	D						
7.00-7.50	13	B					8.00	
7.50-7.95	7	SPT	N=28					
7.50-7.95	14	D						
8.50-9.00	15	B				Medium dense grey fine to coarse SAND. Thin grey soft silt layers. (BLOWN SAND)		

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	
						1.60 14.70	1.80 15.00	00:45 02:45	1. Position scanned with a CAT and Genny prior to excavation. 2. Inspection pit hand dug to 1.20m depth. 3. Groundwater strike at 6.80m, rising to 3.8m at end of shift. 4. No visual or olfactory evidence of contamination.
Method Used: Cable percussion						All dimensions in metres			Scale: 1:50
Plant Used: Dando 3000			Drilled By: P.Chaple			Logged By: CLewis		Checked By:	

BOREHOLE LOG

Contract: Swansea University Bay Campus		Client: AECOM		Borehole: BH1
Contract Ref: 314617	Start: 22.01.20 End: 24.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 2 of 2

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
9.00-9.45 9.00-9.45	8 16	SPT D	N=36			Medium dense grey fine to coarse SAND. Thin grey soft silt layers. (BLOWN SAND) <i>(stratum copied from 8.00m from previous sheet)</i>	(6.30)	
10.00-10.50	17	B						
10.50-10.95 10.50-10.95	9 18	SPT D	N=12					
11.50-11.70	19	B						
11.70-12.00	20	D						
12.00-12.45 12.00-12.45	10 21	SPT(c) D	N=18					
13.00-13.50	22	B						
13.50-13.80	11	SPT(c)	3,5/22,28 for 75mm					
13.80-14.00	24	B						
14.50-15.00	25	B						
15.00-15.25	12	SPT(c)	10,15/32,18 for 20mm					
						Very stiff brown gravelly CLAY. Gravels are fine to coarse subangular to rounded sandstone and mudstone. (GLACIAL TILL)	(1.15)	
						Borehole terminated at 15.45m depth due to CPT refusal.	15.45	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diamter (mm)	Water Depth	From	To	Duration (hh:mm)		
									5. 50mm diameter standpipe piezometer (complete with Flush protective cover) installed to 10.0m depth on completion. Response zone 3.0m to 10.00m depth.	
									All dimensions in metres Scale: 1:50	
Method Used: Cable percussion			Plant Used: Dando 3000			Drilled By: P.Chaple		Logged By: CLewis		Checked By: 

BOREHOLE LOG

Contract: Swansea University Bay Campus			Client: AECOM		Borehole: BH2
Contract Ref: 314617	Start: 24.01.20 End: 28.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 3	

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.60-1.20	1	B				MADE GROUND: Grass surface followed by reddish brown sandy gravelly CLAY. Gravel is fine to coarse angular to subrounded sandstone, mudstone, brick and concrete. Reworked topsoil.	(0.50) 0.50	
1.20-1.65	1	SPT	N=48			MADE GROUND: Greyish brown slightly gravelly fine to coarse SAND. Gravel is subrounded fine to coarse mudstone. (MADE GROUND)	(1.10) 1.60	
1.20-1.65	2	D						
1.60-2.00	3	B				MADE GROUND: Grey silty gravelly COBBLES of angular <100mm of concrete and slag. Gravel is angular to subangular fine to coarse mudstone. Organic odour noted. (MADE GROUND)	2.00	
2.00-2.11	2	SPT	NP					
2.00-3.00	5	B				Very stiff dark grey sandy SILT with rare organic matter. Sand is fine to coarse. (BLOWN SAND)	(1.00) 3.00	
3.00-3.17	2	SPT(c)	15,10/50 for 75mm			Very dense dark grey silty fine to coarse SAND with rare subangular to subrounded fine to medium gravel of mudstone and frequent organic matter. (BLOWN SAND)	(0.50) 3.50	
3.00-3.50	7	B						
3.50-4.00	8	B				Medium dense to dense brown silty fine to coarse SAND with occasional shell fragments. (BLOWN SAND)		
4.00-4.45	3	SPT(c)	N=35					
4.00-4.50	10	B						
4.50-5.00	11	B						
5.00-5.45	4	SPT(c)	N=27					
5.00-5.50	13	B						
5.50-6.00	14	B						
6.00-6.45	5	SPT(c)	N=21			... Between 6.00 - 6.50 mbgl: with rare cobble of mudstone <120mm		
6.00-6.50	16	B						
7.00-7.50	17	B						
7.50-7.95	6	SPT(c)	N=40				(8.00)	
7.50-8.00	19	B						
8.50-9.00	20	B						

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	
									1. Position scanned with a CAT and Genny prior to excavation. 2. Inspection pit hand dug to 1.20m depth. 3. Groundwater strike at 10.0m, rising to 9.7m at end of shift. 4. No visual or olfactory evidence of contamination.
Method Used: Cable percussion						Plant Used: Dando 3000			All dimensions in metres Scale: 1:50
Drilled By: P.Chaple						Logged By: O.Gluck			Checked By: 

BOREHOLE LOG

Contract: Swansea University Bay Campus			Client: AECOM		Borehole: BH2
Contract Ref: 314617	Start: 24.01.20 End: 28.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 2 of 3	

Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
9.00-9.45 9.00-9.50	7 22	SPT(c) B	N=12			Medium dense to dense brown silty fine to coarse SAND with occasional shell fragments. (BLOWN SAND) (stratum copied from 3.50m from previous sheet)		
10.00-10.50	23	B						
10.50-10.95 10.50-11.00	8 25	SPT(c) B	N=34				11.50	
11.50-12.00	26	B				Very stiff greyish brown organic sandy silty CLAY. Sand is fine to coarse. (BLOWN SAND) ... Between 12.00 - 12.50 mbgl: with occasional cobble of mudstone <90mm	(1.50)	
12.00-12.45 12.00-12.50	9 28	SPT(c) B	N=37				13.00	
13.00-13.50	29	B				Medium dense brownish grey silty sandy angular to subrounded fine to coarse GRAVEL of mudstone, siltstone, sandstone and quartzite. Sand is fine to coarse. (GLACIAL TILL)	(0.50)	
13.50-13.95 13.50-14.00	10 31	SPT(c) B	N=30			Very stiff brownish grey gravelly CLAY. Gravel is angular to subrounded fine to coarse mudstone, sandstone, siltstone, quartzite. (GLACIAL TILL)	(1.00)	
14.50-15.00	32	B				Dense brownish grey silty sandy angular to subrounded fine to coarse GRAVEL of mudstone, sandstone, siltstone, quartzite with low cobble content. Cobble is angular <100mm mudstone. (GLACIAL TILL)	(1.50)	
15.00-15.45 15.00-15.50	11 34	SPT(c) B	N=32				16.00	
16.00-16.50	35	B				Very stiff brownish grey sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse mudstone, siltstone, sandstone and quartzite. Cobble is angular <100mm mudstone and sandstone. (GLACIAL TILL)		
16.50-16.87 16.50-16.65	12 36	SPT(c) D	7,9/26,12,12 for 65mm					
17.50-18.00	37	B						

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	
									5. 50mm diameter standpipe piezometer (complete with Flush protective cover) installed to 10.0m depth on completion. Response zone 3.0m to 10.00m depth.
Method Used: Cable percussion						Drilled By: P.Chaple			All dimensions in metres Scale: 1:50
Plant Used: Dando 3000						Logged By: OGLuck			Checked By:

BOREHOLE LOG

Contract: Swansea University Bay Campus			Client: AECOM		Borehole: BH2
Contract Ref: 314617	Start: 24.01.20 End: 28.01.20	Ground Level: ---	Co-ordinates: ---		Sheet: 3 of 3

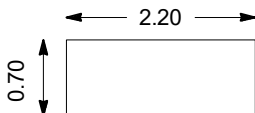
Samples and In-situ Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
18.00-18.30	13	SPT(c)	14,11/17,23,10 for 15mm			Very stiff brownish grey sandy gravelly CLAY with medium cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse mudstone, siltstone, sandstone and quartzite. Cobble is angular <100mm mudstone and sandstone. (GLACIAL TILL) (stratum copied from 16.00m from previous sheet)	(5.20)	
18.00-18.30	38	D						
19.00-19.50	39	B						
19.50-19.86	14	SPT(c)	9,15/16,19,15 for 55mm					
19.50-19.55	40	D						
20.50-21.00	41	B						
21.00-21.12	15	SPT(c)	NP			Grey SILTSTONE and SANDSTONE recovered as dark grey angular to subangular fine to coarse gravel. (MIDDLE COAL MEASURES) Borehole terminated at 21.60m depth within bedrock.	21.20	
21.00-21.15	42	D						
21.20-21.50	43	B						
21.50-21.56	16	SPT(c)	NP				21.60	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks	
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)		

TRIAL PIT LOG

Contract: Swansea University Bay Campus		Client: AECOM		Trial Pit: TP1
Contract Ref: 314617	Start: 21.01.20 End: 21.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

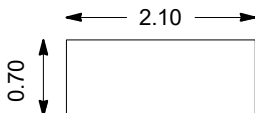
Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30	1	ES	1xT,J+V			MADE GROUND: Scrub grass followed by brownish black slightly clayey gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded brick, concrete, slag and clinker. Terram layer encountered at 0.90m within southern face of pit, underlain by limestone cobbles and gravels, potentially associated with nearby drainage.		
0.70	2	ES	1xT,J+V				(1.90)	
							1.90	
						Trial pit terminated due to collapse of pit and proximity of drainage.		

Plan (Not to Scale)		General Remarks		
		- Position scanned with a CAT and Genny prior to excavation. - Trial pit was unstable below 0.9m depth. - Trial pit remained dry during excavation. - Ease of trial pit excavation: difficult. - Trial pit backfilled with arisings in reverse order upon completion. - Trial pit terminated at 1.9m depth due to collapse of pit.		
		All dimensions in metres		Scale: 1:25
Method Used: Machine dug	Plant Used: JCB-3CX Backhoe Excavator	Logged By: CLewis	Checked By:	

TRIAL PIT LOG

Contract: Swansea University Bay Campus		Client: AECOM		Trial Pit: TP2
Contract Ref: 314617	Start: 21.01.20 End: 21.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.30	1	ES	1xT,J+V			MADE GROUND: Scrub grass followed by brownish black slightly clayey gravelly fine to coarse SAND with medium cobble content. Gravels are fine to coarse. Gravels and cobbles are angular to subrounded brick, concrete, slag and clinker.	(1.20)	
1.20	2	ES	1xT,J+V			Medium dense brownish yellow fine to coarse SAND. (BLOWN SAND)	(1.00)	
						Trial pit terminated to undertake infiltration test.	2.20	

Plan (Not to Scale) 		General Remarks 1. Position scanned with a CAT and Genny prior to excavation. 2. Trial pit was unstable below 1.05 m depth. 3. Trial pit remained dry during excavation. 4. Ease of trial pit excavation: difficult. 5. Trial pit backfilled with arisings in reverse order upon completion. 6. Trial pit terminated at 2.20m depth to undertake infiltration test.		
Method Used: Machine dug		Plant Used: JCB-3CX Backhoe Excavator		Logged By: CLewis
Scale: 1:25		Checked By:		

TRIAL PIT LOG

Contract: Swansea University Bay Campus		Client: AECOM		Trial Pit: TP3
Contract Ref: 314617	Start: 21.01.20 End: 21.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.20	1	ES	1xT,J+V			MADE GROUND: Scrub grass followed by brownish black slightly clayey gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded brick, concrete, slag and clinker.	(0.40) 0.40	
0.50	2	ES	1xT,J+V			MADE GROUND: Blackish grey slightly clayey gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded brick, concrete and rare slag and clinker.	(0.90) 1.30	
						MADE GROUND: Grey slightly sandy slightly gravelly angular to rounded sandstone COBBLES.	(0.70) 2.00	
2.10	3	ES	1xT,J+V			MADE GROUND: Brownish yellow gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded sandstone with rare brick.	(0.70) 2.70	
Trial pit terminated at 2.70m depth.								

Plan (Not to Scale)		General Remarks		
		- Position scanned with a CAT and Genny prior to excavation. - Trial pit was unstable below 1.35 m depth. - Trial pit remained dry during excavation. - Ease of trial pit excavation: difficult. - Trial pit backfilled with arisings in reverse order upon completion. - Trial pit terminated at 2.70m depth due to pit collapse.		
All dimensions in metres		Scale: 1:25		
Method Used: Machine dug	Plant Used: JCB-3CX Backhoe Excavator	Logged By: CLewis	Checked By:	

WINDOW SAMPLE LOG

Contract: Swansea University Bay Campus		Client: AECOM		Window Sample: WS1
Contract Ref: 314617	Start: 22.01.20 End: 22.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	1.20-1.65	1	SPT	N=30			MADE GROUND: Scrub grass followed by brownish black slightly clayey gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded brick, concrete, slag and clinker. Thin sandy layer between 1.73m and 1.80m. Concrete present at base of run.	(1.90)	
	1.90-1.97	2	SPT	25/50 for 15mm			Window sample hole terminated at 1.90m depth.	1.90	

Drilling Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)		
						1. Position scanned with a CAT and Genny prior to excavation. 2. Inspection pit hand dug to 1.20m depth. 3. No groundwater encountered. 4. No visual or olfactory evidence of contamination. 5. Window sample hole refused at 1.90m depth. 6. 50mm diameter standpipe piezometer (with Flush protective cover) installed to 1.90m depth on completion. Response zone 0.50m to 1.90m depth.	
All dimensions in metres						Scale:	1:25
Method Used:	Tracked window sampling			Plant Used:	Dando Terrier		Drilled By: P. Chaple Logged By: CLewis Checked By:



WINDOW SAMPLE LOG

Contract: Swansea University Bay Campus		Client: AECOM		Window Sample: WS2A	
Contract Ref: 314617		Start: 22.01.20 End: 22.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Scrub grass followed by brownish black slightly clayey gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded brick, concrete, slag and clinker. Concrete/cobble obstruction at base of pit.	(0.50)	
							Window sample hole terminated at 0.50m depth.	0.50	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Position scanned with a CAT and Genny prior to excavation. 2. Inspection pit hand dug to 0.50m depth. 3. No groundwater encountered. 4. No visual or olfactory evidence of contamination. 5. Hole refused within hand pit at 0.50m depth on concrete obstruction.			
All dimensions in metres						Scale:		1:25	
Method Used:	Inspection pit + Tracked window			Plant Used:	Dando Terrier		Drilled By:	P. Chaple	
							Logged By:	CLewis	
							Checked By:		

WINDOW SAMPLE LOG

Contract: Swansea University Bay Campus		Client: AECOM		Window Sample: WS2B
Contract Ref: 314617	Start: 22.01.20 End: 22.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Scrub grass followed by brownish black slightly clayey gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded brick, concrete, slag and clinker. Concrete/cobble obstruction at base of pit.	(0.60)	
							Window sample hole terminated at 0.60m depth.	0.60	

Drilling Progress and Water Observations						General Remarks
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	
						1. Position scanned with a CAT and Genny prior to excavation. 2. Inspection pit hand dug to 0.60m depth. 3. No groundwater encountered. 4. No visual or olfactory evidence of contamination. 5. Hole refused within hand pit at 0.60m depth on concrete obstruction.
All dimensions in metres						Scale: 1:25
Method Used:	Inspection pit + Tracked window		Plant Used:	Dando Terrier		Drilled By: P. Chaple Logged By: CLewis
					Checked By:	

WINDOW SAMPLE LOG

Contract: Swansea University Bay Campus			Client: AECOM		Window Sample: WS2C
Contract Ref: 314617	Start: 22.01.20 End: 22.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1	

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.30	1	ES	1xT,J+V			MADE GROUND: Scrub grass followed by brownish black slightly clayey gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded brick, concrete, slag and clinker.	(0.40)	
	0.50	2	ES	1xT,J+V			MADE GROUND: Grey slightly clayey gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded sandstone and rare brick	(0.70)	
	1.20-1.65	1	SPT	N=39			MADE GROUND: Black sandy gravelly SILT. Sand is fine to medium. Gravel is fine to coarse angular to subrounded sandstone and concrete.	1.10	
	1.20	3	ES	1xT,J+V			MADE GROUND: Dense brownish yellow fine to coarse SAND.	1.30	
							MADE GROUND: Dense grey slightly clayey gravelly fine to coarse SAND. Gravels are fine to coarse angular to subrounded sandstone and rare brick. Concrete at base of run.	1.50	
	2.20-2.65	2	SPT	N=38				(1.50)	
								3.00	
							Window sample hole terminated at 3.00m depth.		

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Position scanned with a CAT and Genny prior to excavation. 2. Inspection pit hand dug to 1.20m depth. 3. No groundwater encountered. 4. No visual or olfactory evidence of contamination. 5. Window sample hole refused at 3.00m depth. 6. On completion, borehole backfilled with arisings.			
All dimensions in metres						Scale:	1:25		
Method Used:	Inspection pit + Tracked window			Plant Used:	Dando Terrier		Drilled By:	P. Chaple	Logged By: CLewis Checked By: 



WINDOW SAMPLE LOG

Contract: Swansea University Bay Campus		Client: AECOM		Window Sample: WS3A	
Contract Ref: 314617		Start: 22.01.20 End: 22.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Grass surface followed by reddish brown sandy gravelly CLAY with medium cobble content. Gravels are fine to coarse angular to subrounded sandstone and rare brick. Concrete/cobble obstruction at base of pit.	(0.50)	
							Window sample hole terminated at 0.50m depth.	0.50	

Drilling Progress and Water Observations						General Remarks						
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Position scanned with a CAT and Genny prior to excavation. 2. Inspection pit hand dug to 0.50m depth. 3. No groundwater encountered. 4. No visual or olfactory evidence of contamination. 5. Hole refused within hand pit at 0.50m depth on concrete obstruction.						
						All dimensions in metres		Scale:	1:25			
Method Used:	Inspection pit + Tracked window			Plant Used:	Dando Terrier		Drilled By:	P. Chaple	Logged By:	CLewis	Checked By:	AGS

WINDOW SAMPLE LOG

Contract: Swansea University Bay Campus			Client: AECOM		Window Sample: WS3B
Contract Ref: 314617	Start: 22.01.20	Ground Level: ---	Co-ordinates: ---		Sheet: 1 of 1
	End: 22.01.20				

Progress		Samples / Tests			Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.30	1	ES	1xT,J+V			MADE GROUND: Gravel surface followed by reddish brown sandy gravelly CLAY with medium cobble content. Gravels are fine to coarse angular to subrounded sandstone and rare brick.	(0.80)	
	1.00-1.45	1	SPT	N=15			MADE GROUND: Brownish yellow fine to coarse SAND.	(0.40)	
	1.30	2	ES	1xT,J+V			MADE GROUND: Concrete/Sandstone cobble obstruction.	1.30	
							MADE GROUND: Brownish yellow fine to coarse SAND.	(0.50)	
	2.00-2.45	2	SPT	N=35			MADE GROUND: Brown sandy gravelly CLAY. Gravels are fine to coarse angular to subrounded sandstone and rare brick.	2.00	
	2.05	3	ES	1xT,J+V			MADE GROUND: Black gravelly fine to coarse SAND. Moderate hydrocarbon odour.	2.10	
							Dense yellow fine to coarse SAND.	(1.10)	
	3.00-3.45	3	SPT	N=24				3.20	
							Firm black sandy slightly clayey SILT. Hydrocarbon odour.	3.25	
							Medium dense yellow fine to coarse SAND. Occasional thin black layers with slight hydrocarbon odour.	(0.95)	
								4.20	
							Window sample hole terminated at 4.20m depth.		

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	- Position scanned with a CAT and Genny prior to excavation. - Inspection pit hand dug to 1.20m depth. - No groundwater encountered. - Slight Hydrocarbon odour at 3.20m within a thin black layer. 50mm diameter standpipe piezometer (complete with Flush protective cover) installed to 4.20m depth on completion. Response zone 2.00m to 4.20m depth.			
						All dimensions in metres		Scale:	1:25
Method Used:	Inspection pit + Tracked window			Plant Used:	Dando Terrier		Drilled By:	P.Chaple	Logged By: CLewis
							Checked By:		



Contract: Swansea University Bay Campus			Client: AECOM		Window Sample: WS4A
Contract Ref: 314617	Start: 22.01.20 End: 22.01.20	Ground Level: ---	Co-ordinates: ---		Sheet: 1 of 1

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Grass surface followed by reddish brown sandy gravelly CLAY with medium cobble content. Gravels are fine to coarse angular to subrounded sandstone and rare brick. Concrete/cobble obstruction at base of pit.	(0.45)	
							Window sample hole terminated at 0.45m depth.	0.45	

Drilling Progress and Water Observations						General Remarks						
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)							
						1. Position scanned with a CAT and Genny prior to excavation. 2. Inspection pit hand dug to 0.45m depth. 3. No groundwater encountered. 4. No visual or olfactory evidence of contamination. 5. Hole refused within hand pit at 0.45m depth on concrete obstruction.						
						All dimensions in metres	Scale:	1:25				
Method Used:	Inspection pit + Tracked window			Plant Used:	Dando Terrier		Drilled By:	P. Chaple	Logged By:	CLewis	Checked By:	



Contract: Swansea University Bay Campus		Client: AECOM		Window Sample: WS4B
Contract Ref: 314617	Start: 22.01.20 End: 22.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Grass surface followed by reddish brown sandy gravelly CLAY with medium cobble content. Gravels are fine to coarse angular to subrounded sandstone and rare brick. Concrete/cobble obstruction at base of pit.	(0.50)	
							Window sample hole terminated at 0.50m depth.	0.50	

Drilling Progress and Water Observations						General Remarks						
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)							
						1. Position scanned with a CAT and Genny prior to excavation. 2. Inspection pit hand dug to 0.50m depth. 3. No groundwater encountered. 4. No visual or olfactory evidence of contamination. 5. Hole refused within hand pit at 0.50m depth on concrete obstruction.						
						All dimensions in metres		Scale: 1:25				
Method Used:	Inspection pit + Tracked window			Plant Used:	Dando Terrier		Drilled By:	P.Chaple	Logged By:	CLewis	Checked By:	 AGS

WINDOW SAMPLE LOG

Contract: Swansea University Bay Campus		Client: AECOM		Window Sample: WS4C
Contract Ref: 314617	Start: 22.01.20 End: 22.01.20	Ground Level: ---	Co-ordinates: ---	Sheet: 1 of 1

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Grass surface followed by greyish brown gravelly fine to coarse SAND with medium cobble content. Gravels are fine to coarse angular to subrounded sandstone, mudstone, concrete and brick.	(0.30)	
							MADE GROUND: Reddish brown sandy gravelly CLAY with medium cobble content. Gravels are fine to coarse angular to subrounded sandstone and rare brick. Concrete/cobble obstruction at base of pit.	0.30	
							Window sample hole terminated at 0.55m depth.	0.55	

Drilling Progress and Water Observations						General Remarks	
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)		
						1. Position scanned with a CAT and Genny prior to excavation. 2. Inspection pit hand dug to 0.55m depth. 3. No groundwater encountered. 4. No visual or olfactory evidence of contamination. 5. Hole refused within hand pit at 0.55m depth on concrete obstruction.	
All dimensions in metres						Scale:	1:25
Method Used:	Inspection pit + Tracked window		Plant Used:	Dando Terrier		Drilled By:	P. Chaple
						Logged By:	CLewis
						Checked By:	AGS

WINDOW SAMPLE LOG

Contract: Swansea University Bay Campus			Client: AECOM		Window Sample: WS4D
Contract Ref: 314617	Start: 22.01.20 End: 22.01.20	Ground Level: ---	Co-ordinates: ---		Sheet: 1 of 1

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.30	1	ES	1xT,J+V			MADE GROUND: Grass surface followed by greyish brown gravelly fine to coarse SAND with medium cobble content. Gravels are fine to coarse angular to subrounded sandstone, mudstone, concrete and brick.	(0.30)	
	0.60	2	ES	1xT,J+V			MADE GROUND: Reddish brown sandy gravelly CLAY with medium cobble content. Gravels are fine to coarse angular to subrounded sandstone and rare brick.	(0.70)	
	1.00-1.45	1	SPT	N=35			MADE GROUND: Black gravelly fine to coarse SAND. Concrete at base of run.	1.00	
	1.20	3	ES	1xT,J+V				(0.50)	
							Window sample hole terminated at 1.50m depth.	1.50	

Drilling Progress and Water Observations						General Remarks			
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)	1. Position scanned with a CAT and Genny prior to excavation. 2. Inspection pit hand dug to 1.20m depth. 3. No groundwater encountered. 4. No visual or olfactory evidence of contamination. 5. Windowless sampler refused at 1.50m depth on probable concrete obstruction. 6. On completion, borehole backfilled with arisings.			
Method Used: Tracked window sampling						All dimensions in metres		Scale: 1:25	
Plant Used: Dando Terrier			Drilled By: P. Chaple		Logged By: CLewis		Checked By:		

APPENDIX D

MONITORING RECORDS

IN-SITU GAS MONITORING RESULTS

	Start Date	End Date	[Pressures]	Previous	During	Start	End	Equipment Used & Remarks
Round 1	18/02/2020	18/02/2020		Constant	Constant	1022	1022	GA2000 SN-GA13842 + Interface meter 20m SN-9886 + Weather: Heavy rain and blustery winds + Ground: Wet + Wind: Strong + Air Temp: 6DegC
Round 2	25/02/2020	25/02/2020		Constant	Constant	999	999	GA2000 SN-GA13842 + Interface meter 20m SN-9886 + Weather: Heavy rain showers, hail, sleet and blustery winds + Ground: Wet + Wind: Strong + Air Temp: 7DegC

Exploratory Position ID	Monitoring Round	Measured Installation Depth (mbgl)	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Nitrogen (% / vol)	
BH1	1	10.04	18/02/2020 07:00:00	1022	1022	0.0 _(l)	3.17	0.0 _(l)	0.0 _(l)	20.5 _(l)	0.0 _(l)	0.0 _(l)	0 _(SS)	0 _(l)	79.5 _(l)	
BH1	1	---	15 secs	-	-	0.0 _(SS)	-	0.0 _(SS)	0.0 _(SS)	20.5	0.0 _(SS)	0.0 _(SS)	0	0 _(SS)	79.5	
BH1	1	---	30 secs	-	-	-	-	0.0	0.0	20.6	0.0	0.0	-	0	79.4	
BH1	1	---	60 secs	-	-	-	-	0.1	0.0	20.5	0.0	0.0	-	0	79.4	
BH1	1	---	90 secs	-	-	-	-	0.1	0.0	20.5	0.0	0.0	-	0	79.4	
BH1	1	---	120 secs	-	-	-	-	0.0	0.0	20.6	0.0	0.0	-	0	79.4	
BH1	1	---	180 secs	-	-	-	-	0.0	0.0	20.7 _(SS)	0.0	0.0	-	0	79.3 _(SS)	
BH1	1	---	240 secs	-	-	-	-	0.0	0.0	20.7	0.0	0.0	-	0	79.3	
BH1	1	---	300 secs	-	-	-	-	0.0	0.0	20.7	0.0	0.0	-	0	79.3	
BH1	2	10.40	25/02/2020 06:30:00	1022	1022	0.1 _(l)	2.76	0.0	0.0	20.7	0.0	-	0	0	79.3	
BH1	2	---	15 secs	-	-	0.0 _(SS)	-	0.0	0.0	20.6	0.0	-	0	0	79.3	
BH1	2	---	30 secs	-	-	-	-	0.1	0.0	20.5	0.0	-	-	0	79.4	
BH1	2	---	60 secs	-	-	-	-	0.1	0.0	20.5	0.0	-	-	0	79.4	
BH1	2	---	90 secs	-	-	-	-	0.1	0.0	20.5	0.0	-	-	0	79.4	
BH1	2	---	120 secs	-	-	-	-	0.1	0.0	20.5	0.0	-	-	0	79.4	
BH1	2	---	180 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	-	0	79.3	
BH1	2	---	240 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	-	0	79.3	
BH1	2	---	300 secs	-	-	-	-	0.0	0.0	20.7	0.0	-	-	0	79.3	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Monitoring Round	Installation Depth (mbgl)	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	PID (ppm)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Nitrogen (% / vol)	
BH2	1	12.58	18/02/2020 07:15:00	1022	1022	0.0 _(l)	1.90	0.0 _(l)	0.0 _(l)	20.7 _(l)	0.0 _(l)	0.0 _(l)	0 _(SS)	0 _(l)	79.3 _(l)	
BH2	1	---	15 secs	-	-	0.0 _(SS)	-	0.2 _(SS)	0.0 _(SS)	19.1	0.0 _(SS)	0.0 _(SS)	0	0 _(SS)	80.7	
BH2	1	---	30 secs	-	-	-	-	0.2	0.0	19.2	0.0	0.0	-	0	80.6	
BH2	1	---	60 secs	-	-	-	-	0.1	0.0	19.2	0.0	0.0	-	0	80.7	
BH2	1	---	90 secs	-	-	-	-	0.1	0.0	19.2	0.0	0.0	-	0	80.7	
BH2	1	---	120 secs	-	-	-	-	0.0	0.0	20.3	0.0	0.0	-	0	79.7 _(SS)	
BH2	1	---	180 secs	-	-	-	-	0.0	0.0	20.3 _(SS)	0.0	0.0	-	0	79.7	
BH2	1	---	240 secs	-	-	-	-	0.0	0.0	20.3	0.0	0.0	-	0	79.7	
BH2	1	---	300 secs	-	-	-	-	0.0	0.0	20.3	0.0	0.0	-	0	79.7	
BH2	2	12.58	25/02/2020 07:20:00	999	999	0.0	1.78	0.1	0.0	20.6	0.0	0.0	0	0	79.3	
BH2	2	---	15 secs	-	-	0.1	-	0.0	0.0	20.7	0.0	0.0	0	0	79.3	
BH2	2	---	30 secs	-	-	-	-	0.0	0.0	20.7	0.0	0.0	-	0	79.3	
BH2	2	---	60 secs	-	-	-	-	0.0	0.0	20.7	0.0	0.0	-	0	79.3	
BH2	2	---	90 secs	-	-	-	-	0.0	0.0	20.7	0.0	0.0	-	0	79.3	
BH2	2	---	120 secs	-	-	-	-	0.0	0.0	20.7	0.0	0.0	-	0	79.3	
BH2	2	---	180 secs	-	-	-	-	0.0	0.0	20.7	0.0	0.0	-	0	79.3	
BH2	2	---	240 secs	-	-	-	-	0.0	0.0	20.7	0.0	0.0	-	0	79.3	
BH2	2	---	300 secs	-	-	-	-	0.0	0.0	20.7	0.0	0.0	-	0	79.3	
WS1	2	1.80	18/02/2020 06:50:00	999	999	0.1	DRY	0.0	0.0	20.6	0.0	-	-	0	79.4	
WS1	2	---	15 secs	-	-	0.0	-	0.0	0.0	20.6	0.0	-	-	0	79.4	
WS1	2	---	30 secs	-	-	-	-	0.0	0.0	20.5	0.0	-	-	0	79.5	
WS1	2	---	60 secs	-	-	-	-	0.0	0.0	20.6	0.0	-	-	0	79.4	
WS1	2	---	90 secs	-	-	-	-	0.0	0.0	20.6	0.0	-	-	0	79.4	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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