

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 05/01/17 Date Completed 10/01/17	Ground Level (mOD) 4.88	Co-Ordinates E 542716.5 N 180368.2	Final Depth 34.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
09/01/17	17.50	0.90					20.50-21.00	B15			
							21.00		N63	14, 7 / 13, 14, 22, 14	
							21.00	D16			
							21.50-22.00	B17			
09/01/17	17.50	1.00			(14.50)		22.50		N50/ 180 mm	8, 12 / 16, 22, 12	
							22.50	D18			
09/01/17	17.50	1.20					23.50-24.00	B19			
10/01/17	24.00	1.20				24.00 ... becoming very clayey	24.00		N50/ 220 mm	7, 11 / 13, 20, 17	
							24.00	D20			
							24.50-25.00	B21			
10/01/17	25.00	1.20					25.50		N50/ 155 mm	10, 15 / 20, 27, 3	
							25.50	D22			
							26.00-26.50	B23			
10/01/17	25.50	1.10					27.00		N50/ 200 mm	6, 10 / 17, 20, 13	
							27.00	D24			
							27.50-28.00	B25			
10/01/17	25.50	1.50					28.50		N39	5, 5 / 8, 8, 10, 13	
							28.50	D26			
							28.50-29.00	B27			
			-24.62		29.50		29.50-30.00	B28			
10/01/17	25.50	1.60	-25.12		(0.50) 30.00	Black angular to subangular fine to coarse rinded flint GRAVEL with rare flint cobbles and occasionally weak, medium density chalk	30.00		N27	5, 5 / 3, 6, 10, 8	

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started	05/01/17	Ground Level (mOD) 4.88	Co-Ordinates E 542716.5 N 180368.2	Final Depth 34.50m
	Date Completed	10/01/17			
Client London City Airport Limited				Method/ Plant Used	Cable Percussion
				Sheet	4 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
10/01/17	25.50	2.00				fragments. (THANET SAND FORMATION: BULLHEAD BED) White CHALK recovered as: soft to firm, silty gravelly SILT. Gravel comprises weak medium density, angular to subangular fine to coarse chalk fragments. (SEAFORD CHALK FORMATION) 31.00 ... [NI] recovered as: silty angular to subangular fine to coarse GRAVEL. Gravel comprises weak, medium density white chalk fragments and black rinded flint 31.50 ... [NI] recovered as: soft to firm, white gravelly SILT. Gravel comprises weak, medium density angular to subangular fine to coarse chalk fragments	30.00 31.00-31.50 31.50 31.50 32.50-33.00	D29 B30 D31 B32	N38	4, 4 / 6, 7, 10, 15	
10/01/17	25.50	1.60			(4.50)	32.50 ... becoming very gravelly. Gravel comprises weak, medium density angular to subangular fine to coarse chalk fragments and black rinded flint 33.00 ... becoming slightly gravelly. Gravel is weak, medium density angular to subangular fine to coarse chalk fragments	33.00 33.00 34.00	D33 D34	N50	7, 8 / 8, 12, 15, 15	
10/01/17	25.50	1.15	-29.62		34.50	34.49 ... becoming gravelly. Gravel comprises angular to subangular fine to coarse black rinded flint and rare weak, medium density angular to subangular fine to coarse chalk fragments End of Borehole	34.50 34.50	D35	N50/ 70 mm	6, 19 / 50	

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 13/12/16 Date Completed 15/12/16	Ground Level (mOD) 4.67	Co-Ordinates E 542716.9 N 180326.6	Final Depth 31.50m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	31.50	CP	13/12/2016	15/12/2016	ST	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks
					19.00	23.50	26.50	28.00	1:00	Gravel

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
24.00	200	16.80	200				
31.50	150	26.40	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
12.50	31.50	Cement / Bentonite Grout	15/12/2016

Issue No: 01

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Approved By: OS

Log Print Date & Time: 03/03/2017 17:42

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 13/12/16 Date Completed 15/12/16	Ground Level (mOD) 4.67	Co-Ordinates E 542716.9 N 180326.6	Final Depth 31.50m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
13/12/16	0.00			... see Remark 3	C	13.50	N9	2, 2 / 3, 3, 2, 1	13.45	3.50
13/12/16	13.50	13.45	3.50		C	14.50	N50/0.295	3, 3 / 7, 7, 13, 23	14.30	2.00
13/12/16	14.50	14.30	2.00		S	15.50	N50/0.17	2, 8 / 15, 20, 15	15.40	1.50
13/12/16	15.50	15.40	1.50		S	16.50	N50/0.22	3, 5 / 11, 20, 19	15.90	4.00
13/12/16	16.50	15.90	4.00		S	17.50	N50/0.21	4, 7 / 15, 20, 15	15.90	3.10
13/12/16	17.50	15.90	3.10		S	19.00	N50/0.225	5, 8 / 11, 17, 22	15.90	5.00
13/12/16	19.00	15.90	5.00		S	20.50	N50/0.285	3, 7 / 16, 12, 13, 9	15.90	
13/12/16	23.50	15.90	1.50		S	22.00	N50/0.19	6, 5 / 16, 22, 12	15.90	
14/12/16	23.50	15.90	2.00		S	23.50	N50/0.195	7, 11 / 17, 12, 21	15.90	1.50
14/12/16	25.00	24.90	1.00		S	25.00	N30	4, 7 / 7, 8, 6, 9	24.90	1.00
14/12/16	26.50	26.40	2.00		S	26.50	N43	5, 6 / 9, 9, 10, 15	26.40	2.00
14/12/16	28.00	26.40	1.90		S	28.00	N45	4, 7 / 10, 11, 7, 17	26.40	1.90
14/12/16	29.50	26.40	1.30		S	29.50	N29	5, 5 / 7, 6, 6, 10	26.40	1.30
15/12/16	29.50	26.40	3.50		S	31.00	N50	5, 5 / 13, 10, 14, 13	26.40	5.00
15/12/16	31.00	26.40	5.00							
15/12/16	31.50	26.40	5.00							

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Water present in the borehole from casing installation through the dock.
- Ø200mm casing used from pontoon level to 16.80m depth. Bentonite seal inserted between 22.00m and 24.00m and borehole re-drilled with Ø150mm casing to 26.40m depth.
- Borehole blowing in the gravels between 19.00m and 23.50m depth.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
- U - 100mm Diameter Undisturbed Sample
- UT - 100mm Diameter Thin Wall Undisturbed Sample
- U38 - 38mm Diameter Undisturbed Sample
- D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
- C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
- SPGW - Groundwater Monitor Standpipe
- SPG/GW - Gas / Groundwater Monitor Standpipe
- VWP - Vibrating Wire Piezometer
- ICM - Inclinator
- HOLE TYPES
- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
- CP - Cable Percussion, RC-Rotary Coring, RS-Rotary/Sonic
- DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
- DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 13/12/16 Date Completed 15/12/16	Ground Level (mOD) 4.67	Co-Ordinates E 542716.9 N 180326.6	Final Depth 31.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 1 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
13/12/16					(12.50)	Water					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 13/12/16	Ground Level (mOD) 4.67	Co-Ordinates E 542716.9 N 180326.6	Final Depth 31.50m
Date Completed 15/12/16				
Client London City Airport Limited	Method/ Plant Used Cable Percussion			Sheet 2 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
			-7.83		12.50		12.50-13.00	B01			
13/12/16	13.45	3.50	-8.83		(1.00) 13.50	Dark grey silty very clayey angular to well rounded fine to coarse flint GRAVEL with rare angular to subrounded flint cobbles and strong hydrocarbon odour. (DOCK SEDIMENT / RIVER TERRACE DEPOSITS)	13.50 13.50-14.00	B02	N9	2, 2 / 3, 3, 2, 1	
13/12/16	14.30	2.00			(2.00) 14.50	Yellowish brown very sandy angular to well rounded fine to coarse flint GRAVEL. Sand is fine to coarse. (RIVER TERRACE DEPOSITS)	14.50 14.50-15.00	B03	N50/ 295 mm	3, 3 / 7, 7, 13, 23	
13/12/16	15.40	1.50	-10.83		15.50	Light grey silty fine SAND. (THANET SAND FORMATION: THANET SAND)	15.50 15.50-16.00	D04 B05	N50/ 170 mm	2, 8 / 15, 20, 15	
13/12/16	15.90	4.00			16.00 ... becoming slightly clayey		16.00-16.50 16.50	D06 B07	N50/ 220 mm	3, 5 / 11, 20, 19	
13/12/16	15.90	3.10					16.50 17.00-17.50	D08 B09	N50/ 210 mm	4, 7 / 15, 20, 15	
13/12/16	15.90	5.00					17.50 18.00-18.50				
							17.50 18.00-18.50	D08 B09			
							19.00 19.00-20.00	D10 B11	N50/ 225 mm	5, 8 / 11, 17, 22	
						19.50 ... becoming clayey					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 13/12/16	Ground Level (mOD) 4.67	Co-Ordinates E 542716.9 N 180326.6	Final Depth 31.50m
Date Completed 15/12/16				
Client London City Airport Limited	Method/ Plant Used Cable Percussion			Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
13/12/16	15.90	1.50					20.50		N50/ 285 mm	3, 7 / 16, 12, 13, 9	
14/12/16	15.90	2.00			(11.00)	21.00 ... becoming very clayey	20.50 21.00-21.50	D12 B13			
							22.00		N50/ 190 mm	6, 5 / 16, 22, 12	
							22.00	D14			
							23.00-23.50	B15			
							23.50		N50/ 195 mm	7, 11 / 17, 12, 21	
							23.50 24.00-24.50	D16 B17			
14/12/16	24.90	1.00					25.00 25.00	D18	N30	4, 7 / 7, 8, 6, 9	
							25.50-26.00	B19			
14/12/16	26.40	2.00	-21.83		26.50	White CHALK recovered as: firm, white slightly gravelly SILT. Gravel is angular to subangular fine to coarse black rinded flint. (SEAFORD CHALK FORMATION) 27.00 - 27.50 ... with angular to subangular fine to coarse black rinded flint with occasional flint cobbles	26.50 26.50	D20	N43	5, 6 / 9, 9, 10, 15	
							27.00-27.50	B21			
14/12/16	26.40	1.90				28.00 ... becoming soft	28.00 28.00	D22	N45	4, 7 / 10, 11, 7, 17	
							28.50-29.00	B23			
					(5.00)	28.50 ... [NI] recovered as: angular to subangular fine to coarse GRAVEL. Gravel comprises weak, medium density chalk fragments and black rinded flint					
14/12/16	26.40	1.30				29.50 ... [NI] recovered as: soft, white slightly gravelly SILT. Gravel is weak, medium density angular to subangular fine to coarse	29.50 29.50	D24	N29	5, 5 / 7, 6, 6, 10	
15/12/16	26.40	3.50					30.00-30.50	B25			

Issue No: 01

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Approved By: OS

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Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 13/12/16 Date Completed 15/12/16	Ground Level (mOD) 4.67	Co-Ordinates E 542716.9 N 180326.6	Final Depth 31.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 4 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
15/12/16	26.40	5.00				chalk fragments	31.00 31.00	D26	N50	5, 5 / 13, 10, 14, 13	
15/12/16	26.40	5.00	-26.83		31.50	31.00 ... [NI] recovered as: soft, white slightly gravelly SILT. Gravel is weak, medium density angular to subangular fine to coarse chalk fragments End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 08/12/16 Date Completed 12/12/16	Ground Level (mOD) 4.10	Co-Ordinates E 542718.8 N 180279.0	Final Depth 30.45m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	30.45	CP	08/12/2016	12/12/2016	SW	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks
							24.60 26.50	25.00 28.50	1:00 2:00	Gravel Gravel

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
23.50	200	15.10	200				
30.45	150	23.80	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
10.60	30.45	Cement / Bentonite Grout	12/12/2016

Issue No: 01

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Approved By: OS

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Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 08/12/16	Ground Level (mOD) 4.10	Co-Ordinates E 542718.8 N 180279.0	Final Depth 30.45m
Date Completed 12/12/16				

Client

London City Airport Limited

PROGRESS					SPT DETAILS						
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)	
08/12/16	0.00			... see Remark 3	S	12.00	N18	0, 0 / 2, 4, 6, 6	12.00	1.30	
08/12/16	11.00	11.00	1.10		C	13.00	N50/0.182	4, 7 / 10, 19, 21	13.00	1.10	
08/12/16	12.00	12.00	1.30		S	14.00	N50/0.065	13, 12 / 50	14.00	1.30	
08/12/16	13.00	13.00	1.10		S	15.00	N50/0.135	10, 15 / 20, 30	15.00	1.00	
08/12/16	14.00	14.00	1.30		S	16.50	N50/0.15	7, 13 / 20, 30	15.00	1.30	
08/12/16	14.50	14.50	1.35		S	18.00	N50/0.21	9, 11 / 12, 19, 19	15.00	0.50	
09/12/16	14.50	14.50	1.10		S	19.50	N50/0.22	10, 13 / 15, 17, 18	15.00	0.40	
09/12/16	15.00	15.10	1.00		S	21.00	N50/0.19	10, 15 / 17, 20, 13	15.00	0.90	
09/12/16	16.50	15.10	1.30		S	22.50	N50/0.225	5, 10 / 15, 16, 19	15.00	0.50	
09/12/16	18.00	15.10	0.50		S	24.00	N43	4, 6 / 7, 9, 15, 12	23.80	1.00	
09/12/16	19.50	15.10	0.40		S	25.50	N25	4, 7 / 7, 6, 5, 7	23.80	1.40	
09/12/16	21.00	15.10	0.90		S	27.00	N50/0.22	15, 10 / 16, 16, 18	23.80	1.25	
09/12/16	22.50	15.10	0.50		S	28.50	N41	5, 4 / 7, 7, 8, 19	23.80	1.40	
09/12/16	24.00	23.80	1.00		S	30.00	N50	9, 13 / 9, 13, 18, 10	23.80	1.35	
09/12/16	25.50	23.80	1.40								
09/12/16	26.50	23.80	1.85								
12/12/16	26.50	23.80	1.25								
12/12/16	28.50	23.80	1.40								
12/12/16	30.00	23.80	1.35								
GENERAL REMARKS											
1. Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level. 2. Clearance by UXO Magnetometer probe. 3. Water present in the borehole from casing installation through the dock. 4. Ø200mm casing used from pontoon level to 15.10m depth. Bentonite seal inserted between 21.50m and 23.50m and borehole re-drilled with Ø150mm casing to 23.80m depth.											
KEY											
SAMPLES											
ES - Environmental Sample (Tub, Vial, Jar)											
U - 100mm Diameter Undisturbed Sample											
UT - 100mm Diameter Thin Wall Undisturbed Sample											
U38 - 38mm Diameter Undisturbed Sample											
D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample											
C - Core Sample, W-Water Sample, R-Root Sample											
INSTALLATION DETAILS											
SPIE - Standpipe Piezometer											
SPGW - Groundwater Monitor Standpipe											
SPG/GW - Gas / Groundwater Monitor Standpipe											
VWP - Vibrating Wire Piezometer											
ICM - Inclinator											
HOLE TYPES											
IP - Inspection Pit, TP-Trial Pit TT - Trial Trench											
CP - Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic											
DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary											
DC - Diamond Coring, CP/R-Cable Percussion Rotary follow on											
TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds											
Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key											



Borehole No

BH15

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 08/12/16 Date Completed 12/12/16	Ground Level (mOD) 4.10	Co-Ordinates E 542718.8 N 180279.0	Final Depth 30.45m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 1 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result					
08/12/16					(10.60)	Water								

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

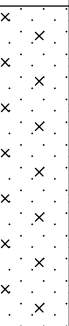
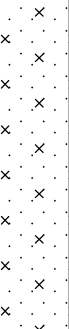
Job No 16/2900	Date Started 08/12/16 Date Completed 12/12/16	Ground Level (mOD) 4.10	Co-Ordinates E 542718.8 N 180279.0	Final Depth 30.45m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 2 of 4

PROGRESS			STRATA				SAMPLES & TESTS				Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result			
08/12/16	11.00	1.10	-6.50		10.60		10.60-11.00	B01		N18	0, 0 / 2, 4, 6, 6	
				(1.60)	Very soft, dark grey clayey slightly gravelly SILT with strong hydrocarbon odour. Gravel is angular to subangular fine to coarse flint. (DOCK SEDIMENT) 11.50 ... becoming firm with occasional fine red brick gravel	11.00-11.45	UT02					
						11.50	D03					
08/12/16	12.00	1.30	-8.10		12.20	12.00 ... with no gravel	12.00	B04				
				12.20-12.50	B05							
08/12/16	13.00	1.10	-8.65		12.75	Dark grey sandy angular to subangular fine to coarse flint GRAVEL with strong hydrocarbon odour and rare pieces of metal pipe. Sand is fine to coarse. (DOCK SEDIMENT / RIVER TERRACE DEPOSIT)	12.75	D06	N50/ 182 mm			4, 7 / 10, 19, 21
				(1.25)	Yellowish brown to dark grey very gravelly fine to coarse SAND with strong hydrocarbon odour. Gravel is angular to well rounded fine to coarse flint. (RIVER TERRACE DEPOSITS) 13.00 ... becoming fine to medium sand with no gravel	13.00						
						13.00-13.20 13.20-13.50	B07 B08					
08/12/16	14.00	1.30	-9.90		14.00	Light grey silty fine SAND. (THANET SAND FORMATION: THANET SAND)	14.00	N50/ 65 mm	13, 12 / 50			10, 15 / 20, 30
08/12/16	14.50	1.35			14.50 - 15.00 ... becoming dark grey with strong hydrocarbon odour (possibly from above)	14.00	D09					
09/12/16	14.50	1.10				14.50-15.00	B10					
09/12/16	15.10	1.00						15.50 ... becoming clayey	15.00	N50/ 135 mm		
			15.50-16.00	D11 B12								
				16.50	N50/ 150 mm							
09/12/16	15.10	1.30				18.00 ... becoming very clayey	16.50	D13				
					17.00-17.50		B14					
					09/12/16		15.10	0.50			18.00 ... becoming very clayey	
18.00-18.50	D15 B16											
	19.50	N50/ 220 mm										
09/12/16	15.10		0.40				19.50					
		20.00-20.50					D17 B18					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 08/12/16	Ground Level (mOD) 4.10	Co-Ordinates	Final Depth 30.45m
	Date Completed 12/12/16		E 542718.8 N 180279.0	
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
09/12/16	15.10	0.90					21.00	D19 B20	N50/ 190 mm	10, 15 / 17, 20, 13	
							21.00				
							21.50-22.00				
09/12/16	15.10	0.50					22.50	D21 B22	N50/ 225 mm	5, 10 / 15, 16, 19	
							22.50				
							23.00-23.50				
09/12/16	23.80	1.00	-20.40		24.50		24.00	D23	N43	4, 6 / 7, 9, 15, 12	
							24.00				
							24.50-25.00				
09/12/16	23.80	1.40	-21.40		(1.00) 25.50	Black angular to subangular fine to coarse rinded flint and weak, medium density white chalk GRAVEL with occasional flint cobbles. (THANET SAND FORMATION: BULLHEAD BED)	25.50	D25	N25	4, 7 / 7, 6, 5, 7	
						25.50					
09/12/16	23.80	1.85			(4.95)	White CHALK recovered as: firm, white SILT. (SEAFORD CHALK FORMATION) 26.00 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL. Gravel comprises weak, medium density white chalk fragments and black rinded flint 27.00 ... with a band of fine to coarse rinded flint gravel and flint cobbles 28.50 ... [NI] recovered as: firm, slightly gravelly SILT. Gravel is fine to coarse weak, medium density chalk fragments 29.00 ... with rare weak, medium density white chalk cobbles	26.00-26.50	B26	N50/ 220 mm	15, 10 / 16, 16, 18	
12/12/16	23.80	1.25					27.00				
							27.00				
							28.00				
12/12/16	23.80	1.40					28.50	D29	N41	5, 4 / 7, 7, 8, 19	
						28.50					
							29.00-29.50	D30			
12/12/16	23.80	1.35					30.00		N50	9, 13 / 9, 13, 18, 10	

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 08/12/16 Date Completed 12/12/16	Ground Level (mOD) 4.10	Co-Ordinates E 542718.8 N 180279.0	Final Depth 30.45m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 4 of 4

PROGRESS			STRATA			SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	
			-26.35		30.45	30.00 ... [NI] recovered as: firm white SILT	30.00	D31		
						End of Borehole				

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 17/01/17 Date Completed 24/01/17	Ground Level (mOD) 5.01	Co-Ordinates E 542785.3 N 180379.7	Final Depth 39.00m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	39.00	RC	17/01/2017	24/01/2017	FD	CB	112	PDC	Geotec 350	AR779

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	150	0.00	150	13.00	16.50		0
16.00	150	16.00	150	16.50	18.00		0
39.00	146			18.00	19.50		0
				19.50	21.00		0
				21.00	22.50		0
				22.50	24.00		100
				24.00	25.50		100
				25.50	27.00		100
				27.00	28.50		67
				28.50	30.00		40
				30.00	31.50		93
				31.50	33.00		100
				33.00	34.50		33
				34.50	36.00		67
				36.00	37.50		67
				37.50	39.00		100

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour
13.00	36.00	Water	100	
36.00	39.00	Water	0	

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
13.00	39.00	Cement / Bentonite Grout	24/01/2017

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 17/01/17 Date Completed 24/01/17	Ground Level (mOD) 5.01	Co-Ordinates E 542785.3 N 180379.7	Final Depth 39.00m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
17/01/17	0.00				S	18.00	N50/0.04	25 / 50	16.00	
17/01/17	19.50	16.00	13.00	... Rotary flush	S	19.50	N50/0.11	3, 9 / 30, 20	16.00	
17/01/17	22.50	16.00	13.00		S	21.00	N50/0.075	9, 16 / 50	16.00	
18/01/17	22.50	16.00	13.00		S	22.50	N50/0.125	13, 12 / 30, 20	16.00	
18/01/17	31.50	16.00	13.00		S	24.00	N50/0.125	8, 14 / 20, 30	16.00	
19/01/17	31.50	16.00	13.00		S	25.50	N50/0.09	7, 18 / 26, 24	16.00	
19/01/17	36.00	16.00	13.00		S	27.00	N50/0.17	8, 13 / 18, 25, 7	16.00	
24/01/17	36.00	16.00	13.00		S	28.50	N50/0.195	5, 9 / 16, 19, 15	16.00	
24/01/17	39.00	16.00	13.00		S	30.00	N50/0.175	7, 16 / 21, 22, 7	16.00	
					S	31.50	N50/0.175	6, 12 / 20, 23, 7	16.00	
					S	33.00	N50/0.21	5, 7 / 11, 18, 21	16.00	
					S	34.50	N36	5, 4 / 6, 7, 9, 14	16.00	
					S	36.00	N49	15, 10 / 12, 12, 12, 13	16.00	
					S	37.50	N36	5, 6 / 8, 9, 9, 10	16.00	
					S	39.00	N50/0.01	11, 14 / 50	16.00	

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Water present in the borehole from casing installation through the dock.
- Borehole carried out open hole between 13.00m and 16.50m depth.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
- U - 100mm Diameter Undisturbed Sample
- UT - 100mm Diameter Thin Wall Undisturbed Sample
- U38 - 38mm Diameter Undisturbed Sample
- D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
- C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
- SPGW - Groundwater Monitor Standpipe
- SPG/GW - Gas / Groundwater Monitor Standpipe
- VWP - Vibrating Wire Piezometer
- ICM - Inclinator
- HOLE TYPES
- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
- CP - Cable Percussion, RC-Rotary Coring, RS-Rotary/Sonic
- DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
- DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Sheet 1 of 4

AGS ASSOCIATION OF GRASSLAND SCIENTISTS

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 17/01/17 Date Completed 24/01/17	Ground Level (mOD) 5.01	Co-Ordinates E 542785.3 N 180379.7	Final Depth 39.00m
Client London City Airport Limited			Method/ Plant Used Rotary	Sheet 2 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
17/01/17	16.00	13.00	0			-7.99		13.00	Open Hole.	18.00	D01	N50/ 40 mm	25 / 50	
								(3.50)						
						-11.49		16.50						
								(3.00)						
						-14.49		19.50						
			0			x x x		Light grey, slightly clayey silty fine SAND. (THANET SAND FORMATION: THANET SAND)	19.50		N50/ 110 mm	3, 9 / 30, 20		

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 17/01/17 Date Completed 24/01/17	Ground Level (mOD) 5.01	Co-Ordinates E 542785.3 N 180379.7	Final Depth 39.00m
Client London City Airport Limited			Method/ Plant Used Rotary	Sheet 3 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
17/01/17 18/01/17	16.00 16.00	13.00 13.00	0				x .							

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 17/01/17 Date Completed 24/01/17	Ground Level (mOD) 5.01	Co-Ordinates E 542785.3 N 180379.7	Final Depth 39.00m
Client London City Airport Limited			Method/ Plant Used Rotary	Sheet 4 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill							
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result									
18/01/17 19/01/17	16.00 16.00	13.00 13.00	93							30.00	D12	N50/ 175 mm	6, 12 / 20, 23, 7								
										31.00	B13										
										31.50											
										31.50	D14										
						100						32.50	B15	N50/ 210 mm	5, 7 / 11, 18, 21						
			33.00																		
			33.00	D16																	
			34.00	B17																	
			33					34.50 34.50	D18	N36	5, 4 / 6, 7, 9, 14										
19/01/17 24/01/17	16.00 16.00	13.00 13.00	67	13	7				Black, angular to subangular fine to coarse rinded flint GRAVEL with occasional black angular to subangular rinded flint cobbles. (THANET SAND FORMATION: BULLHEAD BED) [NI] White CHALK recovered as: soft, white slightly gravelly SILT. Gravel comprises angular to subangular fine to medium black rinded flint and rare weak, medium density chalk fragments. (SEAFORD CHALK FORMATION) 35.60 - 35.80 ... becoming strong, medium density chalk 35.80 ... [NI] recovered as: very silty angular to subangular fine to coarse GRAVEL. Gravel comprises black rinded flint and weak, medium density white chalk fragments with rare black rinded flint cobbles 36.00 ... [NI] recovered as: white, weak to moderately weak medium density chalk COBBLES 36.50 ... with rare coarse gravel size and cobble size angular to subangular black rinded flint 37.50 - 38.00 ... [NI] recovered as: silty angular to subangular fine to coarse GRAVEL. Gravel comprises weak, medium density chalk fragments and black rinded flint Strong, medium density white CHALK. (SEAFORD CHALK FORMATION) 38.00 ... becoming strong, medium density CHALK 38.20 ... with 1No subhorizontal fracture 38.50 ... with 1No subhorizontal fracture and at 38.60m 38.65 ... with rare black rinded flint cobbles 38.70 ... with 1No subhorizontal fracture and at 38.80m 38.90 ... with 1No angular to subangular black rinded flint cobble End of Borehole	35.00 35.10											
										36.00 36.00	D19	N49	15, 10 / 12, 12, 12, 13								
										36.50	B20										
										37.50 37.50	D21	N36	5, 6 / 8, 9, 9, 10								
						100	67	60					38.00-38.30	C22							
24/01/17	16.00	13.00				-33.99				39.00		N50/ 10 mm	11, 14 / 50								
										39.00	D23										

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 18/11/16 Date Completed 22/11/16	Ground Level (mOD) 5.24	Co-Ordinates E 542780.8 N 180342.4	Final Depth 35.90m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00 15.90	15.90 35.90	DS RC	18/11/2016 21/11/2016	21/11/2016 22/11/2016	TC TC	CB CB	112	PDC	Geotec 350 Geotec 350	AR779 AR779

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	150	0.00	150	11.70	12.70		100
12.50	150	12.50	150	12.70	13.60		100
35.90	146			13.60	14.00		100
				14.00	14.20		100
				14.20	15.70		0
				15.70	15.90		100
				15.90	17.00		100
				17.00	18.50		0
				18.50	20.00		13
				20.00	21.30		100
				21.30	23.00		0
				23.00	24.50		80
				24.50	26.00		100
				26.00	27.50		0
				27.50	29.00		93
				29.00	30.40		86
				30.40	31.40		100
				31.40	32.90		100
				32.90	34.40		100
				34.40	35.90		100

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour
15.90	17.00	Water	30	
18.50	21.30	Water	30	
23.00	24.50	Water	20	
26.00	27.50	Water	90	
27.50	29.00	Water	10	

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
11.70	35.90	Cement / Bentonite Grout	22/11/2016

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 18/11/16	Ground Level (mOD) 5.24	Co-Ordinates E 542780.8 N 180342.4	Final Depth 35.90m
Date Completed 22/11/16				

Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
18/11/16	0.00			... see Remark 3 & 4	C	12.70	N50/0.115	2, 14 / 21, 29	12.50	
18/11/16	14.00	12.50	3.80		C	13.60	N50/0.17	6, 5 / 18, 24, 8	12.50	
21/11/16	14.00	12.50	6.10		S	15.70	N50/0.155	2, 14 / 22, 26, 2	12.50	
21/11/16	21.30	12.50	3.10		S	18.50	N50/0.15	3, 14 / 21, 29	12.50	
22/11/16	21.30	12.50	2.10		S	20.00	N50/0.135	8, 17 / 26, 24	12.50	
22/11/16	35.90	12.50	3.80		S	23.00	N50/0.155	3, 14 / 18, 24, 8	12.50	
					S	24.50	N50/0.155	6, 15 / 22, 26, 2	12.50	
					S	27.50	N50/0.17	3, 11 / 18, 21, 11	12.50	
					S	29.00	N50/0.125	11, 14 / 24, 26	12.50	
					S	30.40	N50/0.04	25 / 50	12.50	
					S	31.40	N48	10, 9 / 7, 11, 11, 19	12.50	
					S	32.90	N50/0.06	25 / 50	12.50	
					S	34.40	N50/0.18	6, 6 / 10, 26, 14	12.50	

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Dynamic sampling techniques used from 11.70m to 15.90m. Rotary boring carried out thereafter.
- Water present in the borehole from casing installation through the dock.
- Pressuremeter tests carried out at 14.80m, 17.60m, 21.90m and 26.60m.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
- U - 100mm Diameter Undisturbed Sample
- UT - 100mm Diameter Thin Wall Undisturbed Sample
- U38 - 38mm Diameter Undisturbed Sample
- D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
- C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
- SPGW - Groundwater Monitor Standpipe
- SPG/GW - Gas / Groundwater Monitor Standpipe
- VWP - Vibrating Wire Piezometer
- ICM - Inclinator

HOLE TYPES

- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
- CP - Cable Percussion, RC-Rotary Coring, RS-Rotary/Sonic
- DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
- DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Sheet 1 of 4

AGS ASSOCIATION OF GRASSLAND SCIENTISTS

Sheet 2 of 4

Issue No: 01	Checked By: AN	Approved By: OS	Log Print Date & Time: 03/03/2017 17:48	 AGS
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Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 18/11/16 Date Completed 22/11/16	Ground Level (mOD) 5.24	Co-Ordinates E 542780.8 N 180342.4	Final Depth 35.90m
Client London City Airport Limited			Method/ Plant Used Dynamic Sampling / Rotary	Sheet 3 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
21/11/16 22/11/16	12.50 12.50	3.10 2.10	100							20.00	D09			
										20.70	B10			
			0							22.30		... Pressuremeter Test at 21.90m		
											23.00	D11		N50/ 155 mm
			80							23.00				
											24.50	D12	N50/ 155 mm	6, 15 / 22, 26, 2
			100							24.50				
											25.80 25.80	B13 B14		
			0							26.60			... Pressuremeter Test at 26.60m	
											27.50		N50/ 170 mm	
			93						27.50 ... becoming clayey					
										28.75 ... becoming very clayey				
			86						29.00 ... becoming clayey	29.00	D15 B16	N50/ 125 mm	11, 14 / 24, 26	
										29.00 29.50				
									29.80 ... becoming very clayey					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 18/11/16	Ground Level (mOD) 5.24	Co-Ordinates E 542780.8 N 180342.4	Final Depth 35.90m
Date Completed 22/11/16				
Client London City Airport Limited	Method/ Plant Used Dynamic Sampling / Rotary		Sheet 4 of 4	

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill	
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No			Test Result
22/11/16	12.50	3.80	86			-25.16	X	30.40	Black angular to subangular fine to coarse rindled flint GRAVEL with rare flint cobbles. (THANET SAND FORMATION: BULLHEAD BED) White CHALK recovered as: weak, medium density silty chalk cobbles. (SEAFORD CHALK FORMATION) 30.80 ... [NI] recovered as: angular to subangular medium to coarse silty GRAVEL. Gravel comprises weak, medium density white chalk fragments with occasional grey marling and rare black rindled flint 30.85 ... fractures very closely spaced horizontal occasionally vertical 30.90 ... [NI] recovered as: silty angular to subangular COBBLES 31.10 - 31.30 ... with occasional subvertical to subhorizontal fractures 31.40 - 31.60 ... [NI] recovered as: white slightly gravelly SILT. Gravel comprises angular to subangular fine to coarse extremely weak, low density chalk fragments and medium to coarse black rindled flint Strong, high density white CHALK with occasional dark grey marling. (SEAFORD CHALK FORMATION) 32.40 - 32.65 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL with rare moderately weak, medium density chalk cobbles. Gravel comprises weak, medium density white chalk fragments and medium to coarse black rindled flint 32.80 - 32.85 ... with wide open fractures infilled with gravel size angular to subangular fine to coarse weak, medium density chalk fragments 32.85 ... with rare gravel size black rindled flint 32.90 - 33.00 ... with a band of gravel size and rare cobble size angular to subangular medium to coarse black rindled flint 33.10 - 33.30 ... with occasional subvertical and subhorizontal fractures 33.75 ... with occasional fractures very closely spaced and horizontal 34.05 ... with horizontal fractures infilled with coarse gravel size angular to subangular black rindled flint 34.10 - 34.25 ... with subvertical fractures 34.35 - 34.40 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL with rare moderately weak, medium density white chalk cobbles. Gravel is weak, medium density white chalk fragments 34.55 ... with 1No open fracture infilled with gravel size angular to subangular fine to coarse extremely weak, low density chalk fragments 34.80 ... with 1No horizontal fracture 34.90 - 35.10 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL with rare black rindled flint cobbles. Gravel comprises weak to moderately weak, medium density white chalk fragments and black rindled flint 35.15 - 35.38 ... with 1No vertical fracture 35.40 ... with 1No horizontal fracture 35.55 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL with occasional weak, medium density white chalk cobbles. Gravel is weak, medium density white chalk fragments End of Borehole	30.40		N50/ 40 mm	25 / 50	
						-25.46	0	30.70		30.40	D17			
			100	60	15			(0.90)		31.20	B18			
										31.40			N48	10, 9 / 7, 11, 11, 19
						-26.36		31.60		31.40	D19			
										31.80-32.10	C20			
			100	60	46									

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 07/12/16 Date Completed 08/12/16	Ground Level (mOD) 4.18	Co-Ordinates E 542783.2 N 180300.6	Final Depth 33.50m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	33.50	CP	07/12/2016	08/12/2016	SW	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
24.00	200	15.10	200				
33.50	150	24.40	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
11.50	33.50	Cement / Bentonite Grout	22/11/2016

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 07/12/16 Date Completed 08/12/16	Ground Level (mOD) 4.18	Co-Ordinates E 542783.2 N 180300.6	Final Depth 33.50m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
07/12/16	0.00			... see Remark 3	C	12.50	N43	4, 6 / 7, 8, 10, 18	12.50	1.10
07/12/16	12.50	12.50	1.10		C	13.50	N50/0.153	5, 9 / 17, 27, 6	13.50	1.00
07/12/16	13.50	13.50	1.00		S	14.50	N50/0.08	14, 11 / 38, 12	14.50	1.30
07/12/16	14.50	14.50	1.30		S	15.50	N50/0.07	18, 7 / 50	15.10	1.50
07/12/16	15.50	15.10	1.50		S	16.50	N50/0.08	13, 12 / 40, 10	15.10	1.20
07/12/16	16.50	15.10	1.20		S	18.00	N50/0.155	7, 17 / 17, 28, 5	15.10	1.10
07/12/16	18.00	15.10	1.10		S	19.50	N50/0.15	7, 15 / 22, 28	15.10	1.40
07/12/16	19.50	15.10	1.40		S	21.00	N50/0.085	15, 10 / 39, 11	15.10	1.60
07/12/16	21.00	15.10	1.60		S	22.50	N50/0.153	8, 15 / 21, 26, 3	15.10	1.40
07/12/16	22.50	15.10	1.40		S	24.00	N50/0.145	8, 16 / 21, 29	15.10	1.60
07/12/16	24.00	15.10	1.60		S	25.50	N50/0.228	7, 14 / 15, 17, 15, 3	24.40	1.20
07/12/16	25.00	15.10	1.25		S	27.00	N50/0.24	6, 12 / 13, 15, 12, 10	24.40	0.50
08/12/16	25.00	15.10	1.00		S	28.60	N30	5, 6 / 7, 7, 6, 10	24.40	0.70
08/12/16	25.50	24.40	1.20		S	30.00	N50/0.22	6, 6 / 9, 14, 27	24.40	1.00
08/12/16	27.00	24.40	0.50		S	31.50	N40	5, 7 / 8, 10, 10, 12	24.40	1.30
08/12/16	28.60	24.40	0.70		S	33.00	N49	5, 8 / 11, 13, 11, 14	24.40	1.70
08/12/16	30.00	24.40	1.00							
08/12/16	31.50	24.40	1.30							
08/12/16	33.50	24.40	1.70							
GENERAL REMARKS 1. Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level. 2. Clearance by UXO Magnetometer probe. 3. Water present in the borehole from casing installation through the dock. 4. Ø200mm casing used from pontoon level to 15.10m depth. Bentonite seal inserted between 22.00m and 24.00m and borehole re-drilled with Ø150mm casing to 24.40m depth.										
KEY SAMPLES ES - Environmental Sample (Tub, Vial, Jar) U - 100mm Diameter Undisturbed Sample UT - 100mm Diameter Thin Wall Undisturbed Sample U38 - 38mm Diameter Undisturbed Sample D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample C - Core Sample, W-Water Sample, R-Root Sample INSTALLATION DETAILS SPIE - Standpipe Piezometer SPGW - Groundwater Monitor Standpipe SPG/GW - Gas / Groundwater Monitor Standpipe VWP - Vibrating Wire Piezometer ICM - Inclinator TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds										
HOLE TYPES IP - Inspection Pit, TP-Trial Pit TT - Trial Trench CP - Cable Percussion, RC-Rotary Coring, RS-Rotary/Sonic DS - Dynamic Sampling, DS/R-Dynamic Sampling / Rotary DC - Diamond Coring, CPR-Cable Percussion Rotary follow on										
Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key										

Sheet

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Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 07/12/16 Date Completed 08/12/16	Ground Level (mOD) 4.18	Co-Ordinates E 542783.2 N 180300.6	Final Depth 33.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 3 of 4

PROGRESS			STRATA		SAMPLES & TESTS					Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
07/12/16	15.10	1.60			(14.60)		21.00		N50/ 85 mm	15, 10 / 39, 11	
							21.00 21.50-22.00	D19 B20			
07/12/16	15.10	1.40					22.50		N50/ 153 mm	8, 15 / 21, 26, 3	
							22.50 23.00-23.50	D21 B22			
						23.00 ... becoming very clayey					
07/12/16	15.10	1.60					24.00		N50/ 145 mm	8, 16 / 21, 29	
							24.00 24.50-25.00	D23 B24			
07/12/16	15.10	1.25									
08/12/16	15.10	1.00									
08/12/16	24.40	1.20					25.50		N50/ 228 mm	7, 14 / 15, 17, 15, 3	
							25.50 26.00-26.50	D25 B26			
08/12/16	24.40	0.50					27.00		N50/ 240 mm	6, 12 / 13, 15, 12, 10	
							27.00 27.50-28.00	D27 B28			
			-24.12		28.30		28.30-28.60	B29			
08/12/16	24.40	0.70	-24.42		28.60	Dark grey angular to subangular fine to coarse rinded flint GRAVEL with occasional flint cobbles. (THANET SAND FORMATION: BULLHEAD BED)	28.60 28.60 29.00-29.50	D30 B31	N30	5, 6 / 7, 7, 6, 10	
						White CHALK recovered as: firm gravelly SILT. Gravel comprises angular to subangular fine to coarse rinded flint and chalk fragments. (SEAFORD CHALK FORMATION) 29.00 - 29.50 ... becoming very gravelly					
08/12/16	24.40	1.00					30.00		N50/ 220 mm	6, 6 / 9, 14, 27	

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 07/12/16 Date Completed 08/12/16	Ground Level (mOD) 4.18	Co-Ordinates E 542783.2 N 180300.6	Final Depth 33.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 4 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
08/12/16	24.40	1.30			(4.90)	30.00 ... becoming slightly gravelly 30.50 ... [NI] recovered as: silty white chalk GRAVEL 31.50 ... [NI] recovered as: white slightly gravelly SILT 32.00 ... gravel becoming angular to subangular fine to coarse dark grey rinded flint and angular to subangular fine to medium weak, medium density chalk fragments	30.00 30.50-31.00 31.50 31.50 32.00-32.50 33.00 33.00	D32 B33 D34 B35 D36	N40 N49	5, 7 / 8, 10, 10, 12 5, 8 / 11, 13, 11, 14	
08/12/16	24.40	1.70	-29.32		33.50	End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 05/12/16 Date Completed 06/12/16	Ground Level (mOD) 4.34	Co-Ordinates E 542846.4 N 180360.8	Final Depth 36.60m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	36.60	CP	05/12/2016	06/12/2016	SW	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks
					26.00	33.00	33.05	33.30	0:45	Gravel

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
25.00	200	15.85	200				
36.60	150	25.30	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
12.00	36.60	Cement / Bentonite Grout	06/12/2016

Issue No: 01

Checked By: AN

Approved By: OS

Log Print Date & Time: 03/03/2017 17:43

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 05/12/16 Date Completed 06/12/16	Ground Level (mOD) 4.34	Co-Ordinates E 542846.4 N 180360.8	Final Depth 36.60m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
05/12/16	0.00			... see Remark 3	C	13.50	N23	4, 6 / 5, 5, 6, 7	13.50	1.00
05/12/16	12.50	12.50	1.20		C	14.50	N50/0.28	3, 8 / 11, 13, 15, 11	14.50	1.10
05/12/16	13.50	13.50	1.00		S	15.50	N50/0.055	14, 11 / 50	15.50	1.30
05/12/16	14.50	14.50	1.10		S	16.50	N50/0.078	16, 9 / 46, 4	15.85	1.10
05/12/16	15.50	15.50	1.30		S	18.00	N50/0.07	19, 6 / 50	15.85	1.20
05/12/16	16.50	15.85	1.10		S	19.50	N50/0.08	13, 12 / 41, 9	15.85	1.40
05/12/16	18.00	15.85	1.20		S	21.00	N50/0.125	9, 16 / 22, 28	15.85	1.40
05/12/16	19.50	15.85	1.40		S	22.50	N50/0.153	7, 14 / 19, 27, 4	15.85	1.10
05/12/16	21.00	15.85	1.40		S	24.00	N50/0.12	10, 15 / 23, 27	15.85	1.30
05/12/16	22.50	15.85	1.10		S	25.50	N50/0.205	7, 13 / 16, 20, 14	25.30	1.50
05/12/16	24.00	15.85	1.30		S	27.00	N50/0.2	7, 15 / 15, 17, 18	25.30	
05/12/16	25.50	25.30	1.50		S	28.50	N50/0.23	6, 10 / 13, 16, 16, 5	25.30	
05/12/16	26.00	25.30	1.25		S	30.00	N36	3, 5 / 6, 10, 9, 11	25.30	
06/12/16	26.00	25.30	1.05		S	31.50	N31	4, 4 / 5, 6, 7, 13	25.30	
06/12/16	27.00	25.30		... Water added	S	33.00	N46	5, 19 / 20, 12, 7, 7	25.30	
06/12/16	28.50	25.30			S	34.50	N34	6, 8 / 7, 6, 6, 15	25.30	
06/12/16	30.00	25.30			S	36.00	N50/0.245	6, 7 / 11, 17, 15, 7	25.30	
06/12/16	31.50	25.30								
06/12/16	33.00	25.30								
06/12/16	34.50	25.30								
06/12/16	36.00	25.30								
06/12/16	36.60	25.30								

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Water present in the borehole from casing installation through the dock.
- Ø200mm casing used from pontoon level to 15.85m depth. Bentonite seal inserted between 23.00m and 25.00m and borehole re-drilled with Ø150mm casing to 25.30m depth.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
- U - 100mm Diameter Undisturbed Sample
- UT - 100mm Diameter Thin Wall Undisturbed Sample
- U38 - 38mm Diameter Undisturbed Sample
- D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
- C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
- SPGW - Groundwater Monitor Standpipe
- SPG/GW - Gas / Groundwater Monitor Standpipe
- VWP - Vibrating Wire Piezometer
- ICM - Inclinator
- HOLE TYPES
- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
- CP - Cable Percussion, RC-Rotary Coring, RS-Rotary/Sonic
- DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
- DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 05/12/16 Date Completed 06/12/16	Ground Level (mOD) 4.34	Co-Ordinates E 542846.4 N 180360.8	Final Depth 36.60m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 1 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
05/12/16					(12.00)	Water					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 05/12/16	Ground Level (mOD) 4.34	Co-Ordinates E 542846.4 N 180360.8	Final Depth 36.60m
Date Completed 06/12/16				
Client London City Airport Limited	Method/ Plant Used Cable Percussion			Sheet 2 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
05/12/16	12.50	1.20	-7.66		12.00		12.00			... VOC 1.2ppm	
						Dark grey slightly gravelly clayey SILT with strong hydrocarbon odour. Gravel is angular to subangular fine to coarse flint. (DOCK SEDIMENT)	12.00	ES01			
							12.00	B02			
							12.50-12.95	UT03	8 blows	100% Recovery	
05/12/16	13.50	1.00			(1.25)		13.00	D04			
							13.25	D05			
							13.50		N23	4, 6 / 5, 5, 6, 7	
							13.50			... VOC 0.4ppm	
05/12/16	14.50	1.10	-8.91		13.25	Yellowish brown to dark grey slightly clayey angular to well rounded fine to coarse flint GRAVEL with strong hydrocarbon odour. (RIVER TERRACE DEPOSITS)	13.50-14.00	ES06 B07			
					(2.00)		14.25	D08			
						14.50 ... becoming very sandy with rare flint cobbles. Sand is fine to coarse	14.50		N50/ 280 mm	3, 8 / 11, 13, 15, 11	
							14.50			... VOC 0.1ppm	
05/12/16	15.50	1.30					14.50-15.00	ES09 B10 D11			
						Light grey silty fine SAND. (THANET SAND FORMATION: THANET SAND)	15.50		N50/ 55 mm	14, 11 / 50	
						15.50 ... becoming slightly clayey	15.50	D12		... VOC 0.1ppm	
							16.00				
05/12/16	15.85	1.10					16.00-16.50	ES13 B14			
						16.50 ... becoming clayey	16.50		N50/ 78 mm	16, 9 / 46, 4	
						17.00 ... becoming locally clayey	16.50	D15			
							17.00-17.50	B16			
05/12/16	15.85	1.20					18.00		N50/ 70 mm	19, 6 / 50	
						18.00 ... with no clay	18.00				
							18.50-19.00	D17 B18			
							19.50		N50/ 80 mm	13, 12 / 41, 9	
05/12/16	15.85	1.40					19.50				
							20.00-20.50	D19 B20			

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

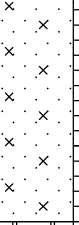
Job No 16/2900	Date Started 05/12/16 Date Completed 06/12/16	Ground Level (mOD) 4.34	Co-Ordinates E 542846.4 N 180360.8	Final Depth 36.60m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth <i>(Thickness)</i>	Strata Description	Depth (m)	Type No	Test Result		
05/12/16	15.85	1.40		x x <							

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 05/12/16 Date Completed 06/12/16	Ground Level (mOD) 4.34	Co-Ordinates E 542846.4 N 180360.8	Final Depth 36.60m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 4 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
06/12/16	25.30		-27.16		31.50	White CHALK recovered as: firm, white SILT. (SEAFORD CHALK FORMATION)	30.00 30.50-31.00 31.50 31.50 32.00-32.50	D33 B34 D35 B36	N31	4, 4 / 5, 6, 7, 13	
06/12/16	25.30				(5.10)	32.00 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL with occasional weak, medium density white chalk cobbles. Gravel is weak to moderately weak, medium density white chalk fragments	33.00 33.00-33.50 33.50-34.00	B37 B38	N46	5, 19 / 20, 12, 7, 7	
06/12/16	25.30					34.50 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel is weak, medium density angular to subangular fine to coarse chalk fragments	34.50 34.50 35.00-35.50	D39 B40	N34	6, 8 / 7, 6, 6, 15	
06/12/16	25.30					35.00 ... [NI] recovered as: soft to firm, white slightly gravelly SILT. Gravel comprises weak, low density angular to subangular fine to medium chalk fragments and black rinded flint	36.00 36.00	D41	N50/ 245 mm	6, 7 / 11, 17, 15, 7	
06/12/16	25.30		-32.26		36.60	36.00 ... [NI] recovered as: soft, white slightly gravelly SILT. Gravel comprises weak, medium density angular to subangular fine to medium chalk fragments and fine black rinded flint					
						End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 11/01/17 Date Completed 13/01/17	Ground Level (mOD) 4.92	Co-Ordinates E 542853.1 N 180316.1	Final Depth 35.50m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	35.50	CP	11/01/2017	13/01/2017	ST	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
18.00	200	17.50	200				
35.50	150	25.50	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
12.50	35.50	Cement / Bentonite Grout	13/01/2017

Issue No: 01

Checked By: AN

Approved By: OS

Log Print Date & Time: 03/03/2017 17:43

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 11/01/17 Date Completed 13/01/17	Ground Level (mOD) 4.92	Co-Ordinates E 542853.1 N 180316.1	Final Depth 35.50m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
11/01/17	0.00			... see Remark 3	C	13.00	N9	2, 3 / 2, 2, 2, 3	12.90	1.05
11/01/17	12.50		1.05		C	14.00	N50/0.145	10, 15 / 25, 25	13.50	1.40
11/01/17	13.00	12.90	1.05		S	15.00	N45/0.005	4, 21 / 45	14.50	1.00
11/01/17	14.00	13.50	1.40		S	16.00	N50/0.075	12, 13 / 50	15.50	1.50
11/01/17	15.00	14.50	1.00		S	17.00	N50/0.075	12, 13 / 50	16.50	1.30
11/01/17	16.00	15.50	1.50		S	18.00	N50/0.09	11, 14 / 30, 20	17.50	1.00
11/01/17	17.00	16.50	1.30		S	19.50	N50/0.22	7, 13 / 13, 20, 17	17.50	1.20
11/01/17	18.00	17.50	1.00		S	21.00	N50/0.21	9, 13 / 17, 20, 13	17.50	1.70
12/01/17	18.00	17.50	2.00		S	22.50	N50/0.185	6, 12 / 16, 20, 14	17.50	1.70
12/01/17	19.50	17.50	1.20		S	24.00	N38/0.19	9, 11 / 13, 20, 5	17.50	2.00
12/01/17	21.00	17.50	1.70		S	25.50	N50/0.115	8, 14 / 27, 23	25.00	2.30
12/01/17	22.50	17.50	1.70		S	27.00	N50/0.155	10, 13 / 20, 25, 5	26.00	2.60
12/01/17	24.00	17.50	2.00		S	28.50	N34	4, 5 / 8, 9, 7, 10	25.50	1.30
12/01/17	25.50	25.00	2.30		S	30.00	N23	5, 5 / 6, 3, 4, 10	25.50	2.10
12/01/17	27.00	26.00	2.60		S	31.50	N39	4, 6 / 6, 8, 10, 15	25.50	2.50
13/01/17	27.00	25.50	1.00		S	33.00	N50/0.225	8, 8 / 10, 10, 30	25.50	4.00
13/01/17	28.50	25.50	1.30		S	34.50	N39	6, 9 / 11, 7, 9, 12	25.50	4.10
13/01/17	30.00	25.50	2.10							
13/01/17	31.50	25.50	2.50							
13/01/17	33.00	25.50	4.00							
13/01/17	34.50	25.50	4.10							
13/01/17	35.50	25.50	4.10							

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Water present in the borehole from casing installation through the dock.
- As the casing was being retracted one of the joints sheared off leaving 13.50m of 150mm casing at the bottom of the borehole between the depths of 12.00m and 25.50m below ground level. Attempts to recover the casing involved the use of a fishing tool and hydraulic jacks with maximum pull capacity of 100 ton. Attempts to recover this casing were unsuccessful and were eventually abandoned. The casing was left in-situ and the borehole was backfilled with cement/bentonite grout between 35.50m and 12.50m depth.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
U - 100mm Diameter Undisturbed Sample
UT - 100mm Diameter Thin Wall Undisturbed Sample
U38 - 38mm Diameter Undisturbed Sample
D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
SPGW - Groundwater Monitor Standpipe
SPG/GW - Gas / Groundwater Monitor Standpipe
VWP - Vibrating Wire Piezometer
ICM - Inclinator

HOLE TYPES

- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
CP - Cable Percussion, RC-Rotary Coring, RS-Rotary/Sonic
DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
DC - Diamond Coring, C/P-R-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 11/01/17 Date Completed 13/01/17	Ground Level (mOD) 4.92	Co-Ordinates E 542853.1 N 180316.1	Final Depth 35.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 1 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
11/01/17											

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 11/01/17 Date Completed 13/01/17	Ground Level (mOD) 4.92	Co-Ordinates E 542853.1 N 180316.1	Final Depth 35.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 2 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
11/01/17		1.05	-7.58		12.50		12.50-13.00	B01			
11/01/17	12.90	1.05	-8.08		(0.50) 13.00	Dark grey, very clayey silty angular to well rounded flint GRAVEL. (DOCK SEDIMENT / RIVER TERRACE DEPOSIT)	13.00 13.00-13.50	B02	N9	2, 3 / 2, 2, 2, 3	
					(1.00) 14.00	Dark brown, angular to subangular fine to coarse flint GRAVEL. (RIVER TERRACE DEPOSITS)	14.00		N50/ 145 mm	10, 15 / 25, 25	
11/01/17	13.50	1.40	-9.08			Light grey fine silty SAND. (THANET SAND FORMATION: THANET SAND)	14.00-14.50	B03			
11/01/17	14.50	1.00					15.00		N45/ 5 mm	4, 21 / 45	
							15.00 15.50-16.00	D04 B05			
11/01/17	15.50	1.50					16.00		N50/ 75 mm	12, 13 / 50	
							16.00 16.50-17.00	D06 B07			
11/01/17	16.50	1.30					17.00		N50/ 75 mm	12, 13 / 50	
							17.00 17.50-18.00	D08 B09			
11/01/17	17.50	1.00				17.50 ... becoming slightly clayey	18.00		N50/ 90 mm	11, 14 / 30, 20	
12/01/17	17.50	2.00					18.00	D10			
						19.00 ... becoming clayey	19.00-19.50	B11			
12/01/17	17.50	1.20					19.50		N50/ 220 mm	7, 13 / 13, 20, 17	
							19.50	D12			

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 11/01/17 Date Completed 13/01/17	Ground Level (mOD) 4.92	Co-Ordinates E 542853.1 N 180316.1	Final Depth 35.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
12/01/17	17.50	1.70					20.50-21.00	B13			
							21.00		N50/ 210 mm	9, 13 / 17, 20, 13	
							21.00	D14			
					(16.00)		22.00-22.50	B15			
12/01/17	17.50	1.70					22.50		N50/ 185 mm	6, 12 / 16, 20, 14	
							22.50	D16			
						23.50 ... becoming very clayey	23.50-24.00	B17			
12/01/17	17.50	2.00					24.00		N38/ 190 mm	9, 11 / 13, 20, 5	
							24.00	D18			
							25.00-25.50	B19			
12/01/17	25.00	2.30					25.50		N50/ 115 mm	8, 14 / 27, 23	
							25.50	D20			
							26.50-27.00	B21			
12/01/17	26.00	2.60					27.00		N50/ 155 mm	10, 13 / 20, 25, 5	
13/01/17	25.50	1.00					27.00	D22			
							28.00-28.50	B23			
13/01/17	25.50	1.30					28.50		N34	4, 5 / 8, 9, 7, 10	
							28.50	D24			
							29.50-30.00	B25			
13/01/17	25.50	2.10	-25.08		30.00		30.00		N23	5, 5 / 6, 3, 4, 10	

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 11/01/17 Date Completed 13/01/17	Ground Level (mOD) 4.92	Co-Ordinates E 542853.1 N 180316.1	Final Depth 35.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 4 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
13/01/17	25.50	2.50	-26.08		(1.00)	Black, angular to subangular fine to coarse rinded flint GRAVEL with rare cobble size of angular to subangular black rinded flint. (THANET SAND FORMATION: BULLHEAD BEDS)	30.00 30.00-30.50	D26 B27		4, 6 / 6, 8, 10, 15	
					31.00		31.00-31.50	B28			
13/01/17	25.50	4.00			(4.50)	White CHALK [NI] recovered as: firm, white SILT. (SEAFORD CHALK FORMATION) 31.00 ... [NI] recovered as: silty, angular to subangular fine to coarse GRAVEL. Gravel comprises weak, medium density chalk fragments and black rinded flint with rare angular to subangular cobble size black rinded flint 32.00 ... with rare cobble size weak, medium density angular to subangular chalk fragments	31.50 31.50	D29	N39	8, 8 / 10, 10, 30	
							32.50-33.00	B30			
13/01/17	25.50	4.10			(4.50)	33.00 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel comprises weak to extremely weak, medium density angular to subangular fine to coarse chalk fragments and angular to subangular fine to coarse black rinded flint 34.00 ... becoming very silty	33.00 33.00	D31	N50/ 225 mm	6, 9 / 11, 7, 9, 12	
							34.00-34.50	B32			
13/01/17	25.50	4.10			(4.50)	34.50 ... [NI] recovered as: soft, white slightly gravelly SILT. Gravel is angular to subangular fine to coarse black rinded flint	34.50 34.50	D33	N39		
							35.00-35.50	B34			
13/01/17	25.50	4.10	-30.58		35.50	End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 25/11/16 Date Completed 28/11/16	Ground Level (mOD) 4.25	Co-Ordinates E 542847.1 N 180282.3	Final Depth 33.00m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	33.00	CP	25/11/2016	28/11/2016	SW	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks
					21.00	23.00				

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
19.00	200	19.00	200				
33.00	150	24.00	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
11.80	33.00	Cement / Bentonite Grout	28/11/2016

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 25/11/16 Date Completed 28/11/16	Ground Level (mOD) 4.25	Co-Ordinates E 542847.1 N 180282.3	Final Depth 33.00m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS						
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)	
25/11/16	0.00			... see Remark 3	C	13.50	N50/0.18	4, 7 / 11, 26, 13	13.50	0.90	
25/11/16	12.50	12.50	1.00		S	14.50	N50/0.08	12, 13 / 38, 12	14.50	1.10	
25/11/16	13.50	13.50	0.90		S	15.50	N50/0.07	16, 9 / 50	15.10	1.00	
25/11/16	14.50	14.50	1.10		S	16.50	N50/0.228	8, 16 / 17, 14, 16, 3	15.10	1.20	
25/11/16	15.50	15.10	1.00		S	18.00	N50/0.155	10, 15 / 21, 23, 6	15.10	1.10	
25/11/16	16.50	15.10	1.20		S	19.50	N50/0.225	6, 9 / 12, 17, 21	19.50	1.30	
25/11/16	18.00	15.10	1.10		S	21.00	N50/0.22	5, 14 / 14, 16, 20	21.00	1.80	
25/11/16	19.50	19.50	1.30		S	22.50	N50/0.21	6, 12 / 13, 19, 18	21.00	0.40	
25/11/16	21.00	21.00	1.80		S	24.00	N50/0.23	7, 13 / 12, 15, 15, 8	24.00	0.60	
25/11/16	22.50	21.00	0.40		S	25.50	N50/0.29	6, 7 / 9, 12, 14, 15	24.00	0.50	
25/11/16	24.00	24.00	0.60		S	27.00	N43	4, 8 / 8, 10, 12, 13	24.00	0.70	
25/11/16	25.50	24.00	0.50		S	28.50	N27	4, 5 / 6, 5, 8, 8	24.00	0.50	
25/11/16	26.00	24.00	0.50		S	30.00	N31	5, 7 / 9, 7, 7, 8	24.00	1.20	
28/11/16	26.00	24.00	0.90		S	31.50	N50/0.23	4, 8 / 10, 19, 15, 6	24.00	1.70	
28/11/16	27.00	24.00	0.70		S	32.50	N44	6, 8 / 9, 11, 11, 13	24.00	1.90	
28/11/16	28.50	24.00	0.50								
28/11/16	30.00	24.00	1.20								
28/11/16	31.50	24.00	1.70								
28/11/16	32.50	24.00	1.90								
28/11/16	33.00	24.00	1.90								
GENERAL REMARKS											
1. Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level. 2. Clearance by UXO Magnetometer probe. 3. Water present in the borehole from casing installation through the dock. 4. Ø200mm casing used from pontoon level to 19.00m depth. Bentonite seal inserted between 17.50m and 19.00m and borehole re-drilled with Ø150mm casing to 24.00m depth.											
KEY											
SAMPLES											
ES - Environmental Sample (Tub, Vial, Jar)											
U - 100mm Diameter Undisturbed Sample											
UT - 100mm Diameter Thin Wall Undisturbed Sample											
U38 - 38mm Diameter Undisturbed Sample											
D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample											
C - Core Sample, W-Water Sample, R-Root Sample											
INSTALLATION DETAILS											
SPIE - Standpipe Piezometer											
SPGW - Groundwater Monitor Standpipe											
SPG/GW - Gas / Groundwater Monitor Standpipe											
VWP - Vibrating Wire Piezometer											
ICM - Inclinator											
HOLE TYPES											
IP - Inspection Pit, TP-Trial Pit TT - Trial Trench											
CP - Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic											
DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary											
DC -Diamond Coring, CP/R-Cable Percussion Rotary follow on											
TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds											
Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key											

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 25/11/16 Date Completed 28/11/16	Ground Level (mOD) 4.25	Co-Ordinates E 542847.1 N 180282.3	Final Depth 33.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 1 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
25/11/16					(11.80)	Water					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

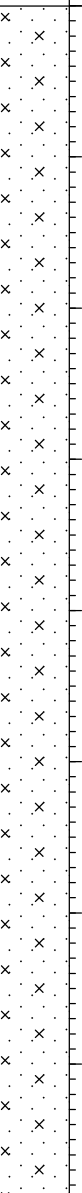
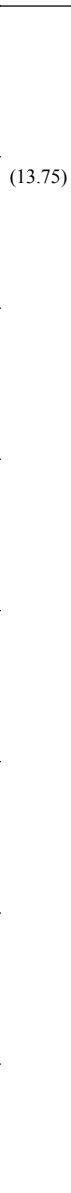
Job No 16/2900	Date Started 25/11/16 Date Completed 28/11/16	Ground Level (mOD) 4.25	Co-Ordinates E 542847.1 N 180282.3	Final Depth 33.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 2 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
25/11/16	12.50	1.00	-7.55		11.80		11.80			... VOC 0.2ppm	
				x x x x	(1.30)	Soft, dark grey SILT with strong hydrocarbon odour. (DOCK SEDIMENT)	11.80-12.30	ES01 B02			
				x x x x			12.50-12.95	UT03	6 blows	100% Recovery	
			-8.85	x x x x	13.10		13.00	D04		... VOC 0.7ppm	
25/11/16	13.50	0.90		o o o o	(0.40)	Dark grey sandy angular to well rounded fine to coarse flint GRAVEL with occasional angular to rounded flint cobbles and strong hydrocarbon odour. Sand is fine to coarse. (RIVER TERRACE DEPOSITS)	13.10-13.50	ES05 B06			
			-9.25	o o o o	13.50		13.50		N50/180 mm	4, 7 / 11, 26, 13	
				o o o o	(0.75)	Dark grey very gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse flint with strong hydrocarbon odour. (RIVER TERRACE DEPOSITS)	13.50-13.80	B07		... VOC 0.1ppm	
25/11/16	14.50	1.10	-10.00	x x x x	14.25	13.80 ... becoming slightly gravelly to gravelly fine to medium sand	13.80-14.00	ES08 B09			
				x x x x		Light grey fine silty SAND. (THANET SAND FORMATION: THANET SAND)	14.25	D10			
				x x x x			14.50		N50/80 mm	12, 13 / 38, 12	
				x x x x			15.00-15.50	D11 B12			
25/11/16	15.10	1.00		x x x x			15.50		N50/70 mm	16, 9 / 50	
				x x x x			15.50	D13			
				x x x x			16.00-16.50	B14			
25/11/16	15.10	1.20		x x x x		16.50 ... becoming slightly clayey	16.50		N50/228 mm	8, 16 / 17, 14, 16, 3	
				x x x x			16.50	D15			
				x x x x			17.00-17.50	B16			
25/11/16	15.10	1.10		x x x x		18.00 ... becoming locally clayey	18.00		N50/155 mm	10, 15 / 21, 23, 6	
				x x x x			18.00	D17			
				x x x x			18.50-19.00	B18			
25/11/16	19.50	1.30		x x x x			19.50		N50/225 mm	6, 9 / 12, 17, 21	
				x x x x			19.50	D19			
				x x x x			20.00-20.50	B20			

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 25/11/16 Date Completed 28/11/16	Ground Level (mOD) 4.25	Co-Ordinates E 542847.1 N 180282.3	Final Depth 33.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill		
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result				
25/11/16	21.00	1.80			(13.75)	21.00 ... becoming clayey	21.00	D21 B22	N50/ 220 mm	5, 14 / 14, 16, 20			
							21.00 21.50-22.00						
25/11/16	21.00	0.40							22.50	D23 B24	N50/ 210 mm	6, 12 / 13, 19, 18	
									22.50 23.00-23.50				
25/11/16	24.00	0.60							24.00	D25 B26	N50/ 230 mm	7, 13 / 12, 15, 15, 8	
									24.00 24.50-25.00				
25/11/16	24.00	0.50							25.50 ... becoming very clayey	25.50	D27 B28	N50/ 290 mm	6, 7 / 9, 12, 14, 15
25/11/16 28/11/16	24.00 24.00	0.50 0.90								25.50 26.00-26.50			
28/11/16	24.00	0.70							27.00 - 27.90 ... with occasional angular to subangular fine to coarse black rinded flint gravel with occasional black rinded flint cobbles	27.00 27.00	D29	N43	4, 8 / 8, 10, 12, 13
										27.50-28.00	B30		
										28.00-28.50	B31		
28/11/16	24.00	0.50				-23.75		28.00	White CHALK recovered as: angular to subangular fine to coarse silty GRAVEL with rare black rinded flint cobbles. Gravel comprises weak, medium density chalk fragments and occasional black rinded flint. (SEAFORD CHALK FORMATION) 28.50 ... [NI] recovered as: firm, white SILT. 29.00 - 29.50 ... becoming very silty with no cobbles	28.50 28.50	D32	N27	4, 5 / 6, 5, 8, 8
										29.00-29.50	B33		
28/11/16	24.00	1.20								30.00		N31	5, 7 / 9, 7, 7, 8

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 25/11/16 Date Completed 28/11/16	Ground Level (mOD) 4.25	Co-Ordinates E 542847.1 N 180282.3	Final Depth 33.00m
Client London City Airport Limited	Method/ Plant Used Cable Percussion	Sheet 4 of 4		

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
28/11/16	24.00	1.70			(5.00)	30.00 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel is angular to subangular medium, weak, medium density chalk fragments	30.00 30.50-31.00	D34 B35			
						31.50 ... [NI] recovered as: white gravelly SILT. Gravel is angular to subangular fine to coarse weak, medium density chalk fragments with fine to medium black rinded flint	31.50 31.50 32.00	D36 D37	N50/ 230 mm	4, 8 / 10, 19, 15, 6	
28/11/16	24.00	1.90				32.00 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL with rare moderately weak, medium density white chalk cobbles. Gravel is weak, medium density white chalk fragments	32.50 32.50	D38	N44	6, 8 / 9, 11, 11, 13	
28/11/16	24.00	1.90	-28.75		33.00	32.50 ... [NI] recovered as: white slightly gravelly SILT. Gravel is angular to subangular fine to coarse weak, medium density chalk fragments					
						End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 05/12/16 Date Completed 06/12/16	Ground Level (mOD) 4.54	Co-Ordinates E 542843.0 N 180278.2	Final Depth 33.50m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	33.50	RC	05/12/2016	06/12/2016	TC	CB	112	PCD	Geotec 350	AR779

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	146	0.00	150	11.50	12.50		100
33.50	146	14.50	150	12.50	13.50		100
				13.50	14.50		100
				14.50	16.00		0
				16.00	17.00		100
				17.00	18.50		100
				18.50	20.00		100
				20.00	21.40		100
				21.40	23.00		100
				23.00	24.50		100
				24.50	26.00		100
				26.00	27.50		0
				27.50	29.00		100
				29.00	30.50		100
				30.50	32.00		100
				32.00	33.50		100

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour
24.50	27.50	Water	80	
27.50	33.50	Water	50	

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
11.50	33.50	Cement / Bentonite Grout	05/12/2016

Issue No: 01

Checked By: AN

Approved By: OS

Log Print Date & Time: 03/03/2017 17:43

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 05/12/16 Date Completed 06/12/16	Ground Level (mOD) 4.54	Co-Ordinates E 542843.0 N 180278.2	Final Depth 33.50m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
05/12/16	0.00									
05/12/16	11.50		1.50	... see Remark 3						
05/12/16	24.50		1.10							
06/12/16	24.50		1.20							
06/12/16	33.50									
GENERAL REMARKS 1. Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level. 2. Clearance by UXO Magnetometer probe. 3. Water present in the borehole from casing installation through the dock. 4. Poor flush return throughout. 5. Pressuremeter tests carried out at 15.00m and 26.60m.										
KEY SAMPLES ES - Environmental Sample (Tub, Vial, Jar) U - 100mm Diameter Undisturbed Sample UT - 100mm Diameter Thin Wall Undisturbed Sample U38 - 38mm Diameter Undisturbed Sample D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample C - Core Sample, W-Water Sample, R-Root Sample INSTALLATION DETAILS SPIE - Standpipe Piezometer SPGW - Groundwater Monitor Standpipe SPG/GW - Gas / Groundwater Monitor Standpipe VWP - Vibrating Wire Piezometer ICM - Inclinator TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key										
HOLE TYPES IP - Inspection Pit, TP-Trial Pit TT - Trial Trench CP - Cable Percussion, RC-Rotary Coring, RS-Rotary/Sonic DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary DC -Diamond Coring, CPR-Cable Percussion Rotary follow on										

Sheet 1 of 4

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Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 05/12/16	Ground Level (mOD) 4.54	Co-Ordinates E 542843.0 N 180278.2	Final Depth 33.50m
Date Completed 06/12/16				
Client London City Airport Limited	Method/ Plant Used Dynamic Sampling / Rotary	Sheet 2 of 4		

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result	
05/12/16		1.50	100			-6.96		11.50	Very soft, dark grey slightly gravelly very clayey SILT. Gravel is angular to well rounded fine to coarse flint. (DOCK SEDIMENT) 11.80 ... with no gravel 12.50 ... becoming soft and slightly gravelly 13.00 ... becoming very gravelly 13.40 ... with strong hydrocarbon odour and pieces of geotextile membrane Dark grey and yellowish brown slightly clayey very gravelly fine to coarse SAND with strong hydrocarbon odour. Gravel is angular to well rounded fine to coarse flint. (RIVER TERRACE DEPOSITS) Light grey silty fine SAND. (THANET SAND FORMATION : THANET SAND) 18.50 ... becoming clayey	11.90	D01	... VOC 1.0ppm ... VOC 0.3ppm ... VOC 0.1ppm ... Pressuremeter test at 15.00m ... VOC 0.1ppm	
								(2.00)		12.00	ES02		
										12.70	D03		
										13.00	ES04		
										13.50-13.70	B05		
						-8.96		13.50		14.00	ES06		
								(2.50)		15.00			
										16.10	ES07		
						-11.46		16.00		16.80-17.00	B08		
										17.50	B09		
										19.00	B10		

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 05/12/16	Ground Level (mOD) 4.54	Co-Ordinates E 542843.0 N 180278.2	Final Depth 33.50m
Date Completed 06/12/16				
Client London City Airport Limited	Method/ Plant Used Dynamic Sampling / Rotary	Sheet 3 of 4		

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill					
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth <i>(Thickness)</i>	Strata Description	Depth (m)	Type No			Test Result				
05/12/16 06/12/16		1.10 1.20	100								21.00	B11						
										(11.50)		22.00	B12					
			100															
			100								24.00	B13						
										24.50 ... becoming very clayey	25.00	B14						
											26.60							
			0															... Pressuremeter test at 26.60m

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 05/12/16 Date Completed 06/12/16	Ground Level (mOD) 4.54	Co-Ordinates E 542843.0 N 180278.2	Final Depth 33.50m
Client London City Airport Limited			Method/ Plant Used Dynamic Sampling / Rotary	Sheet 4 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
06/12/16			100						29.10 ... with 1No wide open horizontal fracture 29.20 ... with rare weak medium density angular to subangular coarse gravel sized chalk fragments 29.30 ... with 2No wide open fractures infilled infilled with weak medium density angular to subangular fine to coarse chalk fragments and black rinded flint 29.55 - 29.70 ... with a band of weak medium density fine to coarse gravel sized chalk fragments and black rinded flint cobbles 29.70 - 29.90 ... with 1No vertical and 1No open horizontal fracture infilled with weak medium density angular to subangular fine to coarse chalk fragments and black rinded flint 30.20 ... with 1No horizontal fracture and at 30.25m 30.60 ... with 1No wide open fracture 30.70 - 30.80 ... [NI] recovered as : moderately weak medium density angular to subangular fine to coarse chalk fragments and black rinded flint 30.80 ... with rare black rinded flint cobbles 30.90 ... with 1No wide open horizontal fracture 31.50 - 31.70 ... with 1No vertical and occasional horizontal fractures 31.80 ... with occasional wide open horizontal and vertical fractures 32.00 ... with rare weak medium density angular to subangular medium to coarse chalk fragments and black rinded flint 32.10 ... with 1No horizontal fracture 32.15 ... with 1No wide open horizontal fracture infilled with moderately weak medium density angular to subangular medium to coarse chalk fragments and black rinded flint 32.50 ... with 1No horizontal fracture at 32.50m, 32.60m, 32.70m and 32.90m End of Borehole	31.30-31.55	C17			
			100	83	63									
			100	90	57					33.10-33.50	B18			
						-28.96		33.50						

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 16/12/16 Date Completed 21/12/16	Ground Level (mOD) 4.44	Co-Ordinates E 542914.0 N 180377.1	Final Depth 37.50m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00 16.70	16.70 37.50	DS RC	16/12/2016 19/12/2016	16/12/2016 21/12/2016	TC BF	CB CB	112	PDC	Geotec 350 Geotec 350	AR779 AR779

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	150	0.00	150	12.70	13.70		100
16.70	150	14.00	150	13.70	14.70		100
32.00	146			14.70	15.70		100
				15.70	16.70		100
				16.70	18.00		85
				18.00	19.50		40
				19.50	21.00		100
				21.00	22.50		90
				22.50	24.00		100
				24.00	25.50		73
				25.50	27.00		100
				27.00	28.50		47
				28.50	30.00		100
				30.00	31.50		93
				31.50	33.00		73
				33.00	34.50		93
				34.50	36.00		100
				36.00	37.50		87

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour
16.70	22.50	Water	95	
22.50	31.50	Water	90	
31.50	37.50	Water	95	

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
12.70	37.50	Cement / Bentonite Grout	21/12/2016

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 16/12/16	Ground Level (mOD) 4.44	Co-Ordinates E 542914.0 N 180377.1	Final Depth 37.50m
Date Completed 21/12/16				

Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
16/12/16	0.00				S	18.00	N50/0.11	17, 8 / 25, 25	14.00	
16/12/16	16.70	14.00	1.90	... see Remark 4	S	19.50	N50/0.075	16, 9 / 50	14.00	
19/12/16	16.70	14.00	3.50		S	21.00	N50/0.12	11, 14 / 23, 27	14.00	
19/12/16	22.50	14.00	5.00		S	22.50	N50/0.185	7, 12 / 16, 20, 14	14.00	
20/12/16	22.50	14.00	3.50		S	24.00	N50/0.225	8, 13 / 13, 17, 20	14.00	
20/12/16	31.50	14.00	5.00		S	25.50	N50/0.205	6, 13 / 22, 23, 5	14.00	
21/12/16	31.50	14.00	3.00		S	27.00	N50/0.22	3, 8 / 14, 18, 18	14.00	
21/12/16	37.50	14.00	5.00		S	28.50	N50/0.215	5, 10 / 16, 23, 11	14.00	
					S	30.00	N50/0.23	4, 8 / 12, 16, 18, 4	14.00	
					S	31.50	N50/0.265	5, 6 / 12, 13, 16, 9	14.00	
					S	33.00	N50/0.205	6, 17 / 15, 18, 17	14.00	
					S	34.50	N50/0.175	9, 17 / 24, 19, 7	14.00	
					S	36.00	N50/0.175	5, 7 / 11, 11, 28	14.00	
					S	37.50	N50/0.15	6, 8 / 11, 12, 27	14.00	

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Dynamic sampling techniques used from 12.70m to 16.70m. Rotary boring carried out thereafter.
- Water present in the borehole from casing installation through the dock.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
- U - 100mm Diameter Undisturbed Sample
- UT - 100mm Diameter Thin Wall Undisturbed Sample
- U38 - 38mm Diameter Undisturbed Sample
- D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
- C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
- SPGW - Groundwater Monitor Standpipe
- SPG/GW - Gas / Groundwater Monitor Standpipe
- VWP - Vibrating Wire Piezometer
- ICM - Inclinator

HOLE TYPES

- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
- CP - Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic
- DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
- DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key



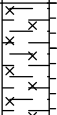
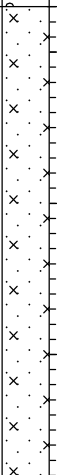
Sheet 1 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
16/12/16								</						

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 16/12/16 Date Completed 21/12/16	Ground Level (mOD) 4.44	Co-Ordinates E 542914.0 N 180377.1	Final Depth 37.50m
Client London City Airport Limited			Method/ Plant Used Dynamic Sampling / Rotary	Sheet 2 of 4

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill	
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No			Test Result
16/12/16 19/12/16	14.00 14.00	1.90 3.50	100			-8.26		12.70	Soft, light brown silty CLAY with occasional dark grey staining and strong hydrocarbon odour. (DOCK SEDIMENT) 12.90 ... becoming very soft and dark grey	12.90	D01			
						-9.06		13.50	Dark grey sandy angular to well rounded fine to coarse flint GRAVEL with strong hydrocarbon odour. Sand is fine to coarse. (RIVER TERRACE DEPOSITS) 13.90 ... with no clay 14.00 ... with no hydrocarbon odour and no sand	14.00	B02			
			100								15.00		B03	
											16.00		B04	
											16.50 ... with rare flint cobbles			
			85								17.00		B05	N50/ 110 mm 17, 8 / 25, 25
											18.00		D06	
											18.00			
											19.00			
											40			
19.50	D08 B09													
20.00														

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 16/12/16 Date Completed 21/12/16	Ground Level (mOD) 4.44	Co-Ordinates E 542914.0 N 180377.1	Final Depth 37.50m
Client London City Airport Limited			Method/ Plant Used Dynamic Sampling / Rotary	Sheet 3 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill	
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result			
19/12/16	14.00	5.00	100												
20/12/16	14.00	3.50								21.00	D10	N50/ 120 mm	11, 14 / 23, 27		
			90							21.00					
										22.10	B11				
										22.50		N50/ 185 mm	7, 12 / 16, 20, 14		
										22.50 23.00	D12 B13				
			100												
										23.50 ... becoming locally clayey					
										24.00		N50/ 225 mm	8, 13 / 13, 17, 20		
										24.00	D14				
			73					(15.90)		25.00	B15				
										25.50		N50/ 205 mm	6, 13 / 22, 23, 5		
										25.50 26.00	D16 B17				
			100							26.40 ... becoming clayey					
										27.00		N50/ 220 mm	3, 8 / 14, 18, 18		
										27.00 27.50	D18 B19				
			47							27.00 ... becoming very clayey					
										28.50		N50/ 215 mm	5, 10 / 16, 23, 11		
										28.50 29.00	D20 B21				
			100												
										30.00		N50/	4, 8 / 12, 16, 18, 4		

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 16/12/16 Date Completed 21/12/16	Ground Level (mOD) 4.44	Co-Ordinates E 542914.0 N 180377.1	Final Depth 37.50m
Client London City Airport Limited			Method/ Plant Used Dynamic Sampling / Rotary	Sheet 4 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill	
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result			
20/12/16 21/12/16	14.00 14.00	5.00 3.00	93							30.00	D22	N50/ 265 mm	5, 6 / 12, 13, 16, 9		
										31.00	B23				
										31.50					
										31.50 32.00	D24 B25				
						73									
			-28.16	32.60	Black, angular to subangular fine to coarse rinded flint GRAVEL. (THANET SAND FORMATION: BULLHEAD BED) White CHALK recovered as: white SILT. (SEAFORD CHALK FORMATION) 33.20 ... [NI] recovered as: very gravelly SILT. Gravel comprises angular to subangular fine extremely weak, low density chalk fragments and angular to subangular fine to medium black rinded flint Strong, medium density white CHALK. (SEAFORD CHALK FORMATION) 33.30 ... becoming strong, medium density white CHALK 33.50 ... [NI] recovered as: fine to coarse weak, medium density GRAVEL. Gravel comprises angular to subangular chalk fragments and black rinded flint 33.65 ... with 1No wide open fracture infilled with extremely weak, low density angular to subangular fine to medium chalk fragments 33.80 - 34.00 ... [NI] recovered as: angular to subangular fine to coarse GRAVEL. Gravel comprises weak medium density chalk fragments and black rinded flint 34.10 - 34.20 ... [NI] recovered as: GRAVEL comprising angular to subangular fine to coarse weak, medium density chalk fragments 34.50 ... with rare coarse gravel size angular to subangular black rinded flint 34.60 - 35.00 ... [NI] recovered as: white angular to subangular fine to coarse silty GRAVEL. Gravel comprises weak medium density chalk fragments and rare weak medium density cobble size chalk fragments 35.10 ... with 1No wide open fracture 35.10 - 35.50 ... with 1No wide open fracture at 35.10m and at 35.20m, 35.40m and 35.50m 35.30 ... with 1No wide open fracture 36.20 - 36.50 ... [NI] recovered as: gravelly SILT. Gravel is angular to subangular extremely weak to weak, chalk fragments 36.40 ... with 1No fracture 36.70 - 36.75 ... with 1No fracture and at 36.75m 36.80 ... with 1No wide open fracture 37.10 ... with 1No wide open fracture infilled with angular to subangular fine to coarse gravel comprising weak, medium density chalk fragments and black rinded flint End of Borehole										
			-28.26	32.70											
				(0.60)											
						93	46	43				33.00		N50/ 205 mm	6, 17 / 15, 18, 17
			-28.86	33.30	33.00							D26			
		34.00-34.40	B27												
		34.50		N50/ 175 mm	9, 17 / 24, 19, 7										
			100	47	32				34.50	D28					
									35.70	B29					
									36.00				N50/ 175 mm	5, 7 / 11, 11, 28	
									36.00	D30					
			87	69	75				36.80-37.10	C31					
									37.20-37.40	C32					
									37.50				N50/ 150 mm	6, 8 / 11, 12, 27	
									37.50	D33					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 01/12/16 Date Completed 02/12/16	Ground Level (mOD) 4.55	Co-Ordinates E 542909.7 N 180338.9	Final Depth 36.50m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	33.00	CP	01/12/2016	02/12/2016	SW	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks
					25.00	31.50	31.10	31.40	1:00	Gravel

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
25.00	200	15.10	200				
36.50	150	25.50	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
12.00	36.50	Cement / Bentonite Grout	02/12/2016

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 01/12/16 Date Completed 02/12/16	Ground Level (mOD) 4.55	Co-Ordinates E 542909.7 N 180338.9	Final Depth 36.50m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS						
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)	
01/12/16	0.00			... see Remark 3	C	13.50	N27	5, 7 / 6, 6, 7, 8	13.50	1.30	
01/12/16	12.50	12.50	1.10		S	14.50	N50/0.07	5, 18 / 50	14.50	1.00	
01/12/16	13.50	13.50	1.30		S	15.50	N50/0.08	13, 12 / 41, 9	15.10	1.10	
01/12/16	14.50	14.50	1.00		S	16.50	N50/0.1	14, 11 / 33, 17	15.10	1.30	
01/12/16	15.50	15.10	1.10		S	18.00	N50/0.125	8, 16 / 29, 21	15.10	1.50	
01/12/16	16.50	15.10	1.30		S	19.50	N50/0.14	10, 15 / 26, 24	15.10	1.20	
01/12/16	18.00	15.10	1.50		S	21.00	N50/0.135	7, 15 / 25, 25	15.10	1.10	
01/12/16	19.50	15.10	1.20		S	22.50	N50/0.165	9, 12 / 17, 22, 11	15.10	1.10	
01/12/16	21.00	15.10	1.10		S	24.00	N50/0.155	7, 15 / 19, 24, 7	15.10	1.30	
01/12/16	22.00	15.10	1.05		S	25.50	N50/0.19	4, 11 / 16, 20, 14	25.50	1.00	
02/12/16	22.00	15.10	0.95		S	27.00	N50/0.285	5, 9 / 12, 14, 13, 11	25.50	0.50	
02/12/16	22.50	15.10	1.10		S	28.50	N46	5, 7 / 8, 11, 12, 15	25.50	0.80	
02/12/16	24.00	15.10	1.30		S	30.00	N43	4, 8 / 10, 9, 11, 13	25.50	1.10	
02/12/16	25.50	25.50	1.00		S	31.50	N50	4, 9 / 13, 12, 13, 12	25.50	0.50	
02/12/16	27.00	25.50	0.50		S	33.00	N50/0.295	5, 7 / 10, 14, 14, 12	25.50	1.20	
02/12/16	28.50	25.50	0.80		S	34.50	N49	4, 6 / 9, 12, 15, 13	25.50	1.60	
02/12/16	30.00	25.50	1.10		S	36.00	N50/0.27	6, 10 / 10, 13, 15, 12	25.50	1.90	
02/12/16	31.50	25.50	0.50								
02/12/16	33.00	25.50	1.20								
02/12/16	34.50	25.50	1.60								
02/12/16	36.00	25.50	1.90								
02/12/16	36.50	25.50	1.90								
GENERAL REMARKS											
1. Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.											
2. Clearance by UXO Magnetometer probe.											
3. Water present in the borehole from casing installation through the dock.											
4. Ø200mm casing used from pontoon level to 15.10m depth. Bentonite seal inserted between 23.00m and 25.00m and borehole re-drilled with Ø150mm casing to 25.50m depth.											
KEY											
SAMPLES											
ES - Environmental Sample (Tub, Vial, Jar)											
U - 100mm Diameter Undisturbed Sample											
UT - 100mm Diameter Thin Wall Undisturbed Sample											
U38 - 38mm Diameter Undisturbed Sample											
D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample											
C - Core Sample, W-Water Sample, R-Root Sample											
INSTALLATION DETAILS											
SPIE - Standpipe Piezometer											
SPGW - Groundwater Monitor Standpipe											
SPG/GW - Gas / Groundwater Monitor Standpipe											
VWP - Vibrating Wire Piezometer											
ICM - Inclinator											
HOLE TYPES											
IP - Inspection Pit, TP-Trial Pit TT - Trial Trench											
CP - Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic											
DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary											
DC - Diamond Coring, CP/R-Cable Percussion Rotary follow on											
TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds											
Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key											

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 01/12/16 Date Completed 02/12/16	Ground Level (mOD) 4.55	Co-Ordinates E 542909.7 N 180338.9	Final Depth 36.50m
Client London City Airport Limited	Method/ Plant Used Cable Percussion	Sheet 2 of 4		

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
01/12/16	12.50	1.10	-7.45		12.00		12.00			... VOC 0.3ppm	
					(1.50)	Very soft, dark grey clayey SILT with strong hydrocarbon odour. (DOCK SEDIMENT)	12.00-12.50	ES01 B02			
							12.50-12.95	UT03			
01/12/16	13.50	1.30	-8.95		13.50	13.00 ... becoming gravelly. Gravel is angular to rounded fine to coarse flint	13.00	D04			
					(0.60)		13.25	D05			
							13.50		N27	5, 7 / 6, 6, 7, 8 ... VOC 1.3ppm	
01/12/16	14.50	1.00	-9.55		14.10	Dark grey angular to well rounded fine to coarse flint GRAVEL with strong hydrocarbon odour. (RIVER TERRACE DEPOSITS)	13.50-14.00	ES06 B07		... VOC 0.1ppm	
							14.10				
							14.10-14.50	ES08 B09			
01/12/16	15.10	1.10				Light grey silty fine SAND. (THANET SAND FORMATION: THANET SAND)	14.50		N50/ 70 mm	5, 18 / 50	
							14.50				
							15.00-15.50	D10 B11			
01/12/16	15.10	1.30				15.50 ... becoming clayey	15.50		N50/ 80 mm	13, 12 / 41, 9	
							15.50				
							16.00-16.50	D12 B13			
01/12/16	15.10	1.50					16.50		N50/ 100 mm	14, 11 / 33, 17	
							16.50				
							17.00-17.50	D14 B15			
01/12/16	15.10	1.20					18.00		N50/ 125 mm	8, 16 / 29, 21	
							18.00				
							18.50-19.00	D16 B17			
01/12/16	15.10	1.20					19.50		N50/ 140 mm	10, 15 / 26, 24	
							19.50				
							20.00-20.50	D18 B19			

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 01/12/16 Date Completed 02/12/16	Ground Level (mOD) 4.55	Co-Ordinates E 542909.7 N 180338.9	Final Depth 36.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
01/12/16	15.10	1.10		x			21.00		N50/ 135 mm	7, 15 / 25, 25	
				x			21.00	D20			
				x			21.50-22.00	B21			
01/12/16	15.10	1.05		x							
02/12/16	15.10	0.95		x							
02/12/16	15.10	1.10		x			22.50		N50/ 165 mm	9, 12 / 17, 22, 11	
				x			22.50	D22			
				x			23.00-23.50	B23			
02/12/16	15.10	1.30		x			24.00		N50/ 155 mm	7, 15 / 19, 24, 7	
				x			24.00	D24			
				x			24.50-25.00	B25			
02/12/16	25.50	1.00		x		25.50 ... becoming slightly clayey	25.50		N50/ 190 mm	4, 11 / 16, 20, 14	
				x			25.50	D26			
				x			26.00-26.50	B27			
02/12/16	25.50	0.50		x			27.00		N50/ 285 mm	5, 9 / 12, 14, 13, 11	
				x			27.00	D28			
				x			27.50-28.00	B29			
02/12/16	25.50	0.80		x		28.50 ... becoming very clayey	28.50		N46	5, 7 / 8, 11, 12, 15	
				x			28.50	D30			
				x			29.00-29.50	B31			
02/12/16	25.50	1.10		x			30.00		N43	4, 8 / 10, 9, 11, 13	

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 01/12/16 Date Completed 02/12/16	Ground Level (mOD) 4.55	Co-Ordinates E 542909.7 N 180338.9	Final Depth 36.50m
Client London City Airport Limited	Method/ Plant Used Cable Percussion	Sheet 4 of 4		

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
02/12/16	25.50	0.50	-26.55		31.10	Black angular to subangular fine to coarse rinded flint GRAVEL with occasional rinded flint cobbles. (THANET SAND FORMATION: BULLHEAD BED) White CHALK recovered as: white slightly gravelly SILT. Gravel is angular to subangular medium to coarse, weak, medium density chalk fragments. (SEAFORD CHALK FORMATION) 32.00 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL with rare flint cobbles. Gravel is weak, medium density white chalk fragments 33.00 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel is angular to subangular fine to coarse black rinded flint 33.50 ... with occasional cobble size moderately strong, medium density chalk fragments and black rinded flint	30.00	D32		4, 9 / 13, 12, 13, 12	
			-26.95		(0.40) 31.50		30.50-31.00	B33			
							31.10-31.50	B34			
							31.50 31.50	D35	N50		
02/12/16	25.50	1.20			(5.00)		32.00-32.50	B36		5, 7 / 10, 14, 14, 12	
							33.00		N50/ 295 mm		
							33.00 33.50-34.00	D37 B38			
02/12/16	25.50	1.60					34.50 34.50	D39	N49		
							35.00-35.50	B40		6, 10 / 10, 13, 15, 12	
02/12/16	25.50	1.90					36.00		N50/ 270 mm		
02/12/16	25.50	1.90	-31.95		36.50		36.00	D41			
						End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 28/11/16 Date Completed 29/11/16	Ground Level (mOD) 3.54	Co-Ordinates E 542909.9 N 180291.6	Final Depth 33.00m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	33.00	CP	28/11/2016	29/11/2016	SW	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks
					23.50	28.00	31.30	31.60	0:45	Gravel

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
23.50	200	16.60	200				
33.00	150	25.00	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
11.50	32.50	Cement / Bentonite Grout	29/11/2016

Issue No: 01

Checked By: AN

Approved By: OS

Log Print Date & Time: 03/03/2017 17:43

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 28/11/16 Date Completed 29/11/16	Ground Level (mOD) 3.54	Co-Ordinates E 542909.9 N 180291.6	Final Depth 33.00m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS						
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)	
28/11/16	0.00			... see Remark 3	S	12.00	N1	0, 0 / 0, 1, 0, 0	12.00	1.00	
28/11/16	12.00	12.00	1.00		C	13.00	N26	5, 7 / 7, 7, 7, 5	13.00	1.20	
28/11/16	13.00	13.00	1.20		C	14.00	N21	3, 4 / 4, 6, 5, 6	14.00	1.00	
28/11/16	14.00	14.00	1.00		C	15.00	N32	3, 5 / 7, 7, 8, 10	15.00	1.40	
28/11/16	15.00	15.00	1.40		C	16.00	N50/0.21	5, 7 / 12, 19, 19	16.00	1.60	
28/11/16	16.00	16.00	1.60		S	17.50	N50/0.09	11, 14 / 36, 14	16.60	1.10	
28/11/16	17.50	16.60	1.10		S	19.00	N50/0.21	5, 10 / 14, 17, 19	16.60	1.10	
28/11/16	18.00	16.60	0.95		S	20.50	N50/0.23	5, 11 / 14, 13, 16, 7	16.60	1.00	
29/11/16	18.00	16.60	0.95		S	22.00	N50/0.265	6, 8 / 11, 13, 15, 11	16.60	1.30	
29/11/16	19.00	16.60	1.10		S	23.50	N50/0.23	5, 9 / 12, 15, 18, 5	16.60	0.60	
29/11/16	20.50	16.60	1.00		S	25.00	N47	6, 8 / 9, 11, 14, 13	25.00	0.30	
29/11/16	22.00	16.60	1.30		S	26.50	N45	4, 7 / 8, 11, 12, 14	25.00	0.90	
29/11/16	23.50	16.60	0.60		S	28.00	N34	4, 5 / 7, 8, 9, 10	25.00	0.50	
29/11/16	25.00	25.00	0.30		S	29.50	N37	3, 5 / 7, 9, 9, 12	25.00	1.10	
29/11/16	26.50	25.00	0.90		S	31.00	N50/0.295	4, 9 / 11, 13, 11, 15	25.00	1.30	
29/11/16	28.00	25.00	0.50		S	32.50	N48	5, 8 / 10, 12, 13, 13	25.00	1.10	
29/11/16	29.50	25.00	1.10								
29/11/16	31.00	25.00	1.30								
29/11/16	32.50	25.00	1.10								
29/11/16	33.00	25.00	1.10								
GENERAL REMARKS											
1. Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level. 2. Clearance by UXO Magnetometer probe. 3. Water present in the borehole from casing installation through the dock. 4. Ø200mm casing used from pontoon level to 16.60m depth. Bentonite seal inserted between 22.00m and 23.50m and borehole re-drilled with Ø150mm casing to 25.00m depth.											
KEY											
SAMPLES											
ES - Environmental Sample (Tub, Vial, Jar)											
U - 100mm Diameter Undisturbed Sample											
UT - 100mm Diameter Thin Wall Undisturbed Sample											
U38 - 38mm Diameter Undisturbed Sample											
D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample											
C - Core Sample, W-Water Sample, R-Root Sample											
INSTALLATION DETAILS											
SPIE - Standpipe Piezometer											
SPGW - Groundwater Monitor Standpipe											
SPG/GW - Gas / Groundwater Monitor Standpipe											
VWP - Vibrating Wire Piezometer											
ICM - Inclinator											
HOLE TYPES											
IP - Inspection Pit, TP-Trial Pit TT - Trial Trench											
CP - Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic											
DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary											
DC - Diamond Coring, CP/R-Cable Percussion Rotary follow on											
TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds											
Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key											



Sheet 1 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
28/11/16					(11.50)	Water.					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 28/11/16	Ground Level (mOD) 3.54	Co-Ordinates E 542909.9 N 180291.6	Final Depth 33.00m
Date Completed 29/11/16				
Client London City Airport Limited	Method/ Plant Used Cable Percussion			Sheet 2 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
28/11/16	12.00	1.00	-7.96		11.50		11.50			... VOC 0.7ppm	
				x x x x		Very soft, dark grey SILT with strong hydrocarbon odour. (DOCK SEDIMENT)	11.50-12.00	ES01 B02			
				x x x x	(1.30)	12.00 ... becoming soft and slight gravelly. Gravel is angular to subangular fine to medium flint	12.00		N1	0, 0 / 0, 1, 0, 0	
				x x x x			12.00	ES03 B04		... VOC 0.8ppm	
28/11/16	13.00	1.20	-9.26	x x x x	12.80		12.00-12.50				
				x x x x			12.80	D05			
				x x x x		Dark grey angular to well rounded fine to coarse silty flint GRAVEL with strong hydrocarbon odour and rare wood fragments (<25mm). (RIVER TERRACE DEPOSITS)	13.00		N26	5, 7 / 7, 7, 7, 5	
				x x x x	(0.95)	13.00 ... becoming sandy with rare angular to well rounded flint cobbles. Sand is fine to coarse	13.00-13.50	ES06 B07		... VOC 0.3ppm	
28/11/16	14.00	1.00	-10.21	x x x x	13.75		13.75	D08			
				x x x x		Dark brown angular to well rounded fine to coarse very sandy flint GRAVEL with rare angular to subangular flint cobbles. Sand is fine to coarse. (RIVER TERRACE DEPOSITS)	14.00		N21	3, 4 / 4, 6, 5, 6	
				x x x x			14.00-14.50	ES09 B10		... VOC 0.4ppm	
				x x x x			14.75	D11			
28/11/16	15.00	1.40		x x x x	(2.45)		15.00		N32	3, 5 / 7, 7, 8, 10	
				x x x x			15.00-15.50	B12			
				x x x x		15.75 ... becoming sandy	15.75	D13			
				x x x x			16.00		N50/ 210 mm	5, 7 / 12, 19, 19	
28/11/16	16.00	1.60	-12.66	x x x x	16.20		16.00-16.20	B14			
				x x x x		Light grey fine slightly clayey SAND. (THANET SAND FORMATION: THANET SAND)	16.20-16.50	B15			
				x x x x			17.00	D16			
				x x x x			17.50		N50/ 90 mm	11, 14 / 36, 14	
28/11/16	16.60	1.10		x x x x			17.50				
				x x x x			18.00-18.50	D17 B18			
				x x x x		18.00 ... becoming clayey					
				x x x x							
29/11/16	16.60	1.10		x x x x			19.00		N50/ 210 mm	5, 10 / 14, 17, 19	
				x x x x			19.00				
				x x x x			19.50-20.00	D19 B20			
				x x x x							

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 28/11/16 Date Completed 29/11/16	Ground Level (mOD) 3.54	Co-Ordinates E 542909.9 N 180291.6	Final Depth 33.00m
Client London City Airport Limited	Method/ Plant Used Cable Percussion	Sheet 3 of 4		

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
29/11/16	16.60	1.00					20.50		N50/ 230 mm	5, 11 / 14, 13, 16, 7	
							20.50 21.00-21.50	D21 B22			
29/11/16	16.60	1.30			(11.40)		22.00		N50/ 265 mm	6, 8 / 11, 13, 15, 11	
							22.00 22.50-23.00	D23 B24			
29/11/16	16.60	0.60					23.50		N50/ 230 mm	5, 9 / 12, 15, 18, 5	
						24.00 ... becoming very clayey	23.50 24.00-24.50	D25 B26			
29/11/16	25.00	0.30					25.00 25.00	D27	N47	6, 8 / 9, 11, 14, 13	
							25.50-26.00	B28			
29/11/16	25.00	0.90					26.50 26.50	D29	N45	4, 7 / 8, 11, 12, 14	
							27.00-27.50	B30			
			-24.06		27.60		27.60-28.00	B31			
29/11/16	25.00	0.50	-24.46		(0.40) 28.00	Black angular to subangular fine to coarse rinded flint GRAVEL with rare black rinded flint cobbles. (THANET SAND FORMATION: BULLHEAD BED)	28.00 28.00	D32	N34	4, 5 / 7, 8, 9, 10	
						White CHALK recovered as: firm, slightly gravelly SILT. Gravel comprises angular to subangular fine to medium, extremely weak, low density chalk fragments. (SEAFORD CHALK FORMATION)	28.50-29.00	B33			
29/11/16	25.00	1.10				28.50 ... [NI] recovered as: angular to subangular fine to coarse very silty GRAVEL with occasional angular to subangular black rinded flint cobbles. Gravel is extremely weak, low density white chalk fragments 29.50 ... [NI] recovered as: firm, white SILT	29.50 29.50	D34	N37	3, 5 / 7, 9, 9, 12	
							30.00-30.50	B35			

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 28/11/16 Date Completed 29/11/16	Ground Level (mOD) 3.54	Co-Ordinates E 542909.9 N 180291.6	Final Depth 33.00m
Client London City Airport Limited	Method/ Plant Used Cable Percussion	Sheet 4 of 4		

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
29/11/16	25.00	1.30			(5.00)	30.00 ... recovered as: GRAVEL comprising weak, medium density chalk fragments with rare cobble size moderately weak, medium density chalk fragments	31.00		N50/ 295 mm	4, 9 / 11, 13, 11, 15	
						31.00 ... [NI] recovered as: firm, white SILT	31.00 31.50-32.00	D36 B37			
						32.00 ... with no chalk cobbles					
29/11/16	25.00	1.10				32.50 ... [NI] recovered as: firm, white SILT	32.50 32.50	D38	N48	5, 8 / 10, 12, 13, 13	
29/11/16	25.00	1.10	-29.46		33.00	End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 22/11/16 Date Completed 23/11/16	Ground Level (mOD) 4.31	Co-Ordinates E 542968.5 N 180348.4	Final Depth 32.00m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	32.00	CP	22/11/2016	23/11/2016	SW	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks
							22.10 28.55	22.40 28.90	0:30 0:45	Gravel Gravel

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
16.50	200	15.10	200				
32.00	150	18.00	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
11.90	32.00	Cement / Bentonite Grout	23/11/2016

Issue No: 01

Checked By: AN

Approved By: OS

Log Print Date & Time: 03/03/2017 17:43

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 22/11/16 Date Completed 23/11/16	Ground Level (mOD) 4.31	Co-Ordinates E 542968.5 N 180348.4	Final Depth 32.00m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS						
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)	
22/11/16	0.00			... see Remark 3	C	12.50	N12	2, 2 / 3, 3, 3, 3	12.50	1.00	
22/11/16	12.50	12.50	1.00		C	13.50	N14	3, 4 / 4, 3, 4, 3	13.50	1.10	
22/11/16	13.50	13.50	1.10		C	14.50	N19	5, 6 / 5, 5, 4, 5	14.50	1.30	
22/11/16	14.50	14.50	1.30		S	15.50	N34	4, 5 / 6, 8, 10, 10	15.10	1.00	
22/11/16	15.50	15.10	1.00		S	16.50	N50/0.295	4, 5 / 9, 10, 14, 17	15.10	1.20	
22/11/16	16.50	15.10	1.20		S	18.00	N44	4, 6 / 8, 10, 12, 14	18.00	0.90	
22/11/16	18.00	18.00	0.90		S	19.50	N45	3, 5 / 9, 9, 13, 14	18.00	1.10	
22/11/16	19.50	18.00	1.10		S	21.00	N33	4, 5 / 7, 8, 8, 10	18.00	1.00	
22/11/16	21.00	18.00	1.00		S	22.50	N23	3, 4 / 5, 7, 6, 5	18.00	1.40	
22/11/16	22.50	18.00	1.40		S	24.00	N25	2, 3 / 5, 6, 6, 8	18.00	1.00	
22/11/16	24.00	18.00	1.00		S	25.50	N36	3, 4 / 4, 11, 10, 11	18.00	1.10	
22/11/16	25.50	18.00	1.10		S	27.00	N36	5, 7 / 9, 10, 8, 9	18.00	0.90	
22/11/16	27.00	18.00	0.90		S	28.50	N50/0.18	9, 14 / 20, 19, 11	18.00	1.00	
22/11/16	27.50	18.00	0.90		S	30.00	N39	4, 6 / 8, 9, 11, 11	18.00	1.10	
23/11/16	27.50	18.00	0.95		S	31.50	N37	4, 6 / 7, 9, 10, 11	18.00	1.40	
23/11/16	28.50	18.00	1.00								
23/11/16	30.00	18.00	1.10								
23/11/16	31.50	18.00	1.40								
23/11/16	32.00	18.00	1.40								
GENERAL REMARKS											
1. Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.											
2. Clearance by UXO Magnetometer probe.											
3. Water present in the borehole from casing installation through the dock.											
4. Ø200mm casing used from pontoon level to 15.10m depth. Bentonite seal inserted between 15.00m and 16.50m and borehole re-drilled with Ø150mm casing to 18.00m depth.											
KEY											
SAMPLES											
ES - Environmental Sample (Tub, Vial, Jar)											
U - 100mm Diameter Undisturbed Sample											
UT - 100mm Diameter Thin Wall Undisturbed Sample											
U38 - 38mm Diameter Undisturbed Sample											
D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample											
C - Core Sample, W-Water Sample, R-Root Sample											
INSTALLATION DETAILS											
SPIE - Standpipe Piezometer											
SPGW - Groundwater Monitor Standpipe											
SPG/GW - Gas / Groundwater Monitor Standpipe											
VWP - Vibrating Wire Piezometer											
ICM - Inclinator											
HOLE TYPES											
IP - Inspection Pit, TP-Trial Pit TT - Trial Trench											
CP - Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic											
DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary											
DC - Diamond Coring, CP/R-Cable Percussion Rotary follow on											
TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds											
Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key											

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 22/11/16 Date Completed 23/11/16	Ground Level (mOD) 4.31	Co-Ordinates E 542968.5 N 180348.4	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 2 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
22/11/16	12.50	1.00	-7.59		11.90		11.90			... VOC 0.0ppm	
				x x x	(0.40)	Soft, dark grey very gravelly SILT with strong hydrocarbon odour and viscous texture. Gravel is angular to well rounded fine to coarse flint. (DOCK SEDIMENT)	11.90	ES01			
			-7.99	x x x	12.30		11.90-12.40	B02			
				o o o			12.50		N12	2, 2 / 3, 3, 3, 3 ... VOC 0.3ppm	
22/11/16	13.50	1.10		o o o		Brown, very sandy angular to well rounded fine to coarse flint GRAVEL with occasional flint cobbles. Sand is fine to coarse. (RIVER TERRACE DEPOSIT)	12.50	ES03			
				o o o			12.50	B04			
				o o o		13.25 ... becoming sandy with no cobbles	12.50-13.00				
				o o o	(2.40)		13.25	D05		N14	3, 4 / 4, 3, 4, 3 ... VOC 0.9ppm
22/11/16	14.50	1.30		o o o			13.50				
				o o o			13.50				
				o o o		14.25 ... with rare flint cobbles	13.70	ES06			
				o o o			13.70-14.00	B07			
22/11/16	15.10	1.00	-10.39		14.70		14.25	D08		N19	5, 6 / 5, 5, 4, 5
						Light grey clayey silty fine SAND. (THANET SAND FORMATION: THANET SAND)	14.50				
							14.50-14.70	B09			
							14.70-15.00	B10			
22/11/16	15.10	1.20					15.25	D11		N34	4, 5 / 6, 8, 10, 10
							15.50				
							15.50	D12			
							16.00-16.50	B13			
22/11/16	18.00	0.90					16.50		N50/ 295 mm	4, 5 / 9, 10, 14, 17	
							16.50				
						17.00 - 17.50 ... becoming very clayey	17.00-17.50	D14 B15			
							18.00				
22/11/16	18.00	1.10					18.00	D16		N44	4, 6 / 8, 10, 12, 14
							18.50-19.00	B17			
							19.50				
						19.50 ... becoming very clayey	19.50	D18		N45	3, 5 / 9, 9, 13, 14
							20.00-20.50	B19			

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 22/11/16 Date Completed 23/11/16	Ground Level (mOD) 4.31	Co-Ordinates E 542968.5 N 180348.4	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
22/11/16	18.00	1.00					21.00 21.00	D20	N33	4, 5 / 7, 8, 8, 10	
							21.50-22.00	B21			
						21.50 - 22.00 ... becoming slightly gravelly. Gravel is angular to subangular fine to coarse flint (possible from above)					
			-17.79		22.10		22.10-22.50	B22			
22/11/16	18.00	1.40	-18.09		22.40	Black angular to subangular fine to coarse rinded flint GRAVEL with occasional rinded flint cobbles. (THANET SAND FORMATION: BULLHEAD BED)	22.50 22.50	D23	N23	3, 4 / 5, 7, 6, 5	
						White CHALK recovered as: firm, white slightly gravelly SILT. Gravel is extremely weak, low density angular to subangular fine to coarse chalk fragments. (SEAFORD CHALK FORMATION)	23.00-23.50	B24			
						23.00 - 23.50 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL with occasional flint black rinded flint cobbles. Gravel comprises extremely weak, medium density white chalk fragments and angular to rounded black rinded flint	24.00 24.00	D25	N25	2, 3 / 5, 6, 6, 8	
22/11/16	18.00	1.00					24.50-25.00	B26			
						25.00 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL with rare cobble size moderately weak, medium density white chalk fragments. Gravel comprises extremely weak, medium density white chalk fragments and black rinded flint	25.50 25.50	D27	N36	3, 4 / 4, 11, 10, 11	
22/11/16	18.00	1.10					26.50	D28			
						26.50 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL with rare cobble size moderately weak, medium density white chalk fragments. Gravel comprises extremely weak to weak, medium density white chalk fragments and black rinded flint	27.00 27.00	D29	N36	5, 7 / 9, 10, 8, 9	
22/11/16	18.00	0.90					27.50-28.00	B30			
23/11/16	18.00	0.95				27.00 ... gravel becoming angular to subangular fine to medium extremely weak, medium density chalk fragments and rare black rinded flint					
						27.50 ... [NI] recovered as: moderately weak, medium density angular to subangular silty white chalk COBBLES with occasional cobble size weak, medium density chalk fragments and angular to rounded black rinded flint	28.50		N50/ 180 mm	9, 14 / 20, 19, 11	
23/11/16	18.00	1.00				28.50 ... with angular to subangular black rinded flint cobbles	28.50-29.00	B31			
						29.50 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL with rare cobble size moderately weak, medium	29.50	D32			
23/11/16	18.00	1.10					30.00		N39	4, 6 / 8, 9, 11, 11	

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 22/11/16 Date Completed 23/11/16	Ground Level (mOD) 4.31	Co-Ordinates E 542968.5 N 180348.4	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 4 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
23/11/16	18.00	1.40				density white chalk fragments and black rinded flint. Gravel comprises extremely weak, medium density white chalk fragments and black rinded flint	30.00	D33		4, 6 / 7, 9, 10, 11	
						30.00 ... [NI] recovered as: soft, white slightly gravelly SILT. Gravel is angular to subangular fine to coarse black rinded flint	30.50-31.00	B34			
											
											
											
23/11/16	18.00	1.40	-27.69		32.00	31.50 ... [NI] recovered as: white slightly gravelly SILT. Gravel is angular to subrounded fine to coarse black rinded flint	31.50 31.50	D35	N37		
						End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 23/11/16 Date Completed 28/11/16	Ground Level (mOD) 4.31	Co-Ordinates E 542970.6 N 180356.4	Final Depth 32.00m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00 14.50	14.50 32.00	DS RC	23/11/2016 24/11/2016	23/11/2016 28/11/2016	TC TC	CB CB	112	PDC	Geotec 350 Geotec 350	AR779 AR779

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	150	0.00	150	12.20	12.70		100
14.50	150	14.50	150	12.70	13.50		100
32.00	146			13.50	14.50		100
				14.50	16.50		0
				16.50	17.00		100
				17.00	18.50		87
				18.50	20.00		0
				20.00	21.50		100
				21.50	23.00		100
				23.00	24.50		100
				24.50	26.00		100
				26.00	27.50		100
				27.50	28.80		100
				28.80	30.40		69
				30.40	32.00		100

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour
14.50	16.50	Water	90	
16.50	17.00	Water	80	
17.00	18.50	Water	0	
18.50	20.00	Water	90	
20.00	32.00	Water	30	

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
12.20	32.00	Cement / Bentonite Grout	28/11/2016

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 23/11/16 Date Completed 28/11/16	Ground Level (mOD) 4.31	Co-Ordinates E 542970.6 N 180356.4	Final Depth 32.00m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
23/11/16	0.00				C	12.70	N19	1, 2 / 4, 4, 7, 4	12.00	
23/11/16	14.50	12.50			C	13.50	N20	2, 2 / 5, 6, 5, 4	12.00	
24/11/16	14.50	12.50	2.80	... Rotary flush	S	17.00	N35	2, 4 / 6, 7, 11, 11	14.00	
24/11/16	20.00	14.00	0.90		S	20.00	N46	3, 7 / 7, 11, 13, 15	14.00	
28/11/16	20.00	14.50	6.10		S	21.50	N45	3, 6 / 8, 9, 12, 16	14.50	
28/11/16	32.00	14.50	1.70		S	23.00	N50/0.17	4, 6 / 12, 24, 14	14.50	
					S	24.50	N50/0.015	25 / 50	14.50	
					S	26.00	N50/0.08	18, 7 / 42, 8	14.50	
					S	27.50	N50/0.155	8, 17 / 29, 17, 4	14.50	
					S	28.80	N50/0.245	6, 6 / 8, 9, 20, 13	14.50	
					S	30.40	N50/0.16	16, 7 / 20, 26, 4	14.50	

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Dynamic sampling techniques used from 12.20m to 14.50m. Rotary boring carried out thereafter.
- Water present in the borehole from casing installation through the dock.
- Pressuremeter tests carried out at 16.20m and 19.10m.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
- U - 100mm Diameter Undisturbed Sample
- UT - 100mm Diameter Thin Wall Undisturbed Sample
- U38 - 38mm Diameter Undisturbed Sample
- D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
- C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
- SPGW - Groundwater Monitor Standpipe
- SPG/GW - Gas / Groundwater Monitor Standpipe
- VWP - Vibrating Wire Piezometer
- ICM - Inclinator
- HOLE TYPES
- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
- CP - Cable Percussion, RC-Rotary Coring, RS-Rotary/Sonic
- DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
- DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Sheet 1 of 4

AGS ASSOCIATION OF GRASSLAND SCIENTISTS

Job No 16/2900	Date Started 23/11/16 Date Completed 28/11/16	Ground Level (mOD) 4.31	Co-Ordinates E 542970.6 N 180356.4	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Dynamic Sampling / Rotary	Sheet 2 of 4

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill								
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No			Test Result							
23/11/16 24/11/16	12.50 12.50	2.80	100			-7.89		12.20	Soft, brown silty CLAY with frequent dark grey staining. (DOCK SEDIMENT) Very soft, dark grey very clayey SILT with strong hydrocarbon odour. (DOCK SEDIMENT) Dark grey clayey very sandy angular to well rounded fine to coarse flint GRAVEL with hydrocarbon odour. Sand is fine to coarse. (RIVER TERRACE DEPOSIT) 12.90 ... becoming slightly sandy with no clay 13.10 ... becoming sandy 13.40 ... with rare angular to rounded flint cobbles 13.50 ... with no hydrocarbon odour 14.00 ... becoming very sandy 14.25 ... with rare angular to rounded flint cobbles	12.30	ES01 B02	N19	... VOC 0.3ppm								
						-7.99	x	12.30		12.30			12.50		12.70	13.00	13.00	ES03	1, 2 / 4, 4, 7, 4	... VOC 0.7ppm	
						-8.14	x	12.45		13.40			13.40		13.50	13.90	ES04	... VOC 0.0ppm			
										13.50-14.00			B05		2, 2 / 5, 6, 5, 4	... VOC 0.8ppm					
										13.90			ES06								
									100				(1.90)								
									100												
									100												
									100												
									100												
			0																		
			100																		
			87																		
			0																		

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 23/11/16 Date Completed 28/11/16	Ground Level (mOD) 4.31	Co-Ordinates E 542970.6 N 180356.4	Final Depth 32.00m
Client London City Airport Limited	Method/ Plant Used Dynamic Sampling / Rotary	Sheet 3 of 4		

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill							
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result									
28/11/16	14.50	6.10	100						20.00 ... becoming very clayey	20.00	D10		3, 6 / 8, 9, 12, 16								
									20.70 ... becoming clayey	20.70	B11										
									21.50 ... becoming very clayey	21.50	D12			N45							
			100	23	20						Black angular to subangular medium to coarse rinded flint GRAVEL with rare angular to subangular black rinded flint cobbles. (THANET SAND FORMATION: BULLHEAD BED)	22.65-23.00	C13	4, 6 / 12, 24, 14							
			100	87	40							White CHALK recovered as: silty angular to subangular fine to coarse GRAVEL with rare moderately weak, medium density white chalk cobbles. Gravel comprises weak to moderately weak, medium density white chalk fragments and rare black rinded flint. (SEAFORD CHALK FORMATION)	23.00	N50/ 170 mm	25 / 50						
												22.25 ... with occasional subangular black rinded flint cobbles	23.00	D14							
												22.30 ... with occasional black rinded flint gravel and occasional chalk cobbles	24.30-24.45	D15							
												Strong, medium density white CHALK. (SEAFORD CHALK FORMATION)	24.50	N50/ 15 mm							
			100	77	57							22.60 ... becoming strong and medium density	25.00-25.30	C16	18, 7 / 42, 8						
												23.00 - 23.10 ... [NI] recovered as: angular to subangular coarse GRAVEL. Gravel is extremely weak, low density white chalk fragments									
												23.25 ... [NI] recovered as: angular to subangular fine to coarse GRAVEL. Gravel is weak, medium density white chalk fragments									
												23.30 - 23.60 ... with vertical fractures									
			100	80	57							24.20 - 24.30 ... [NI] recovered as: angular to subangular fine to coarse GRAVEL. Gravel comprises weak, medium density white chalk fragments and black rinded flint	26.00	N50/ 80 mm	8, 17 / 29, 17, 4						
												24.40 ... [NI] recovered as: angular to subangular COBBLES. Cobbles comprise moderately weak, medium density white chalk fragments and occasional black rinded flint	26.00	D17							
												24.50 ... with rare cobble size black rinded flint and rare coarse gravel size extremely weak, low density chalk fragments	26.80-27.10	C18							
												24.65 ... with open horizontal fracture and purple staining									
			100	65	58							24.95 - 25.10 ... with purple staining	27.50	N50/ 155 mm	6, 6 / 8, 9, 20, 13						
												25.30 - 25.40 ... [NI] recovered as: angular to subangular fine to coarse GRAVEL with rare black rinded flint cobbles. Gravel comprises weak, medium density white chalk fragments and medium to coarse black rinded flint	27.50	D19							
25.60 - 25.70 ... [NI] recovered as: angular to subangular COBBLES with angular to subangular fine to coarse weak, medium density white chalk gravel. Cobbles are angular to subangular fine to coarse gravel size weak, medium density white chalk fragments	28.10-28.30	C20																			
25.90 - 26.00 ... with 1No horizontal fracture with purple staining	28.80	N50/ 245 mm																			
69	38	31							26.00 - 26.20 ... with a band of angular to subangular medium to coarse gravel and cobble size black rinded flint	28.80	D21										
									26.45 ... with wide fractures												
									26.57 ... with fractures infilled with fine to medium gravel size extremely weak, medium density chalk fragments	29.80-30.15	C22										

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 23/11/16	Ground Level (mOD) 4.31	Co-Ordinates E 542970.6 N 180356.4	Final Depth 32.00m
Date Completed 28/11/16				
Client London City Airport Limited	Method/ Plant Used Dynamic Sampling / Rotary		Sheet 4 of 4	

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No		
28/11/16	14.50	1.70	69	38	31	-27.69		32.00	26.65 ... with occasional subvertical fractures 26.80 ... with 1No wide vertical fracture 27.10 - 27.20 ... with subhorizontal and subvertical fractures and light grey staining 27.30 - 27.40 ... with occasional subvertical fractures 27.40 - 27.50 ... [NI] recovered as: angular to subangular fine to coarse GRAVEL. Gravel is weak, medium density white chalk fragments 27.50 - 27.80 ... [NI] recovered as: angular to subangular fine to coarse very silty GRAVEL with rare moderately weak, medium density white chalk cobbles. Gravel is weak, medium density white chalk fragments 27.95 ... with rare open, horizontal fractures 28.40 ... with occasional subhorizontal fractures infilled with fine to coarse gravel size weak, chalk fragments 28.50 ... with 1No horizontal fracture infilled with angular to subangular medium to coarse black rinded flint gravel and occasional light grey staining 28.60 ... with rare angular to subangular medium to coarse black rinded flint gravel 29.20 - 29.50 ... [NI] recovered as: angular to subangular fine to coarse GRAVEL with rare locally frequent moderately weak, medium density white chalk cobbles. Gravel is weak, medium density white chalk fragments and black rinded flint 29.55 - 29.65 ... with rare vertical fractures with dark grey staining 29.70 ... with 1No horizontal fracture 30.40 - 30.50 ... [NI] recovered as: angular to subangular COBBLES with angular to subangular coarse black rinded flint gravel. Cobbles are weak, medium density white chalk fragments 30.50 - 30.60 ... with vertical fracture with light grey staining 30.60 - 30.70 ... [NI] recovered as: angular to subangular fine to coarse GRAVEL. Gravel is weak, medium density white chalk fragments 31.00 - 31.10 ... with 1No horizontal fracture 31.15 - 31.30 ... [NI] recovered as: angular to subangular fine to coarse GRAVEL. Gravel is weak, medium density white chalk fragments 31.15 - 31.60 ... with 1No wide open, vertical fracture and angular to subangular medium to coarse black rinded flint gravel 31.80 - 31.90 ... with 1No horizontal fracture End of Borehole	30.40	D23	N50/ 160 mm	16, 7 / 20, 26, 4

London City Airport Limited

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 30/11/16 Date Completed 01/12/16	Ground Level (mOD) 4.41	Co-Ordinates E 542966.0 N 180322.2	Final Depth 32.00m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
30/11/16	0.00			... see Remark 3	C	12.50	N21	4, 6 / 6, 5, 4, 6	12.50	1.00
30/11/16	12.50	12.50	1.00		C	13.50	N18	3, 4 / 5, 4, 4, 5	13.50	1.20
30/11/16	13.50	13.50	1.20		C	14.50	N32	4, 7 / 6, 9, 9, 8	14.50	1.50
30/11/16	14.50	14.50	1.50		C	15.50	N24	3, 4 / 6, 7, 6, 5	15.50	1.20
30/11/16	15.50	15.50	1.20		C	16.50	N26	4, 5 / 6, 6, 6, 8	16.50	1.80
30/11/16	16.50	16.50	1.80		S	17.50	N39	4, 7 / 8, 9, 11, 11	17.50	1.50
30/11/16	17.50	17.50	1.50		S	18.50	N20	4, 5 / 6, 5, 5, 4	18.10	1.10
30/11/16	17.50	17.50	1.50		S	20.00	N32	2, 4 / 5, 7, 9, 11	20.00	1.20
30/11/16	18.50	18.10	1.10		S	21.50	N38	3, 4 / 6, 8, 12, 12	21.50	1.40
30/11/16	20.00	20.00	1.20		S	23.00	N21	4, 6 / 5, 5, 6, 5	22.10	1.00
30/11/16	21.50	21.50	1.40		S	24.50	N27	5, 6 / 6, 7, 7, 7	22.10	1.40
30/11/16	23.00	22.10	1.00		S	26.00	N41	6, 8 / 10, 9, 9, 13	22.10	1.00
30/11/16	24.50	22.10	1.40		S	27.50	N50/0.23	7, 9 / 12, 14, 16, 8	22.10	1.20
30/11/16	26.00	22.10	1.00		S	29.00	N48	7, 6 / 8, 10, 13, 17	22.10	1.40
30/11/16	27.50	22.10	1.20		S	30.50	N31	4, 6 / 6, 7, 8, 10	22.10	1.60
30/11/16	28.50	22.10	1.15		S	31.50	N50/0.285	6, 9 / 10, 13, 15, 12	22.10	1.90
01/12/16	28.50	22.10	1.05							
01/12/16	29.00	22.10	1.40							
01/12/16	30.50	22.10	1.60							
01/12/16	31.50	22.10	1.90							
01/12/16	32.00	22.10	1.90							
GENERAL REMARKS 1. Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level. 2. Clearance by UXO Magnetometer probe. 3. Water present in the borehole from casing installation through the dock. 4. Ø200mm casing used from pontoon level to 18.10m depth. Bentonite seal inserted between 17.50m and 19.00m and borehole re-drilled with Ø150mm casing to 22.10m depth.										
KEY SAMPLES ES - Environmental Sample (Tub, Vial, Jar) U - 100mm Diameter Undisturbed Sample UT - 100mm Diameter Thin Wall Undisturbed Sample U38 - 38mm Diameter Undisturbed Sample D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample C - Core Sample, W-Water Sample, R-Root Sample INSTALLATION DETAILS SPIE - Standpipe Piezometer SPGW - Groundwater Monitor Standpipe SPG/GW - Gas / Groundwater Monitor Standpipe VWP - Vibrating Wire Piezometer ICM - Inclinator TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds										
HOLE TYPES IP - Inspection Pit, TP-Trial Pit TT - Trial Trench CP - Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary DC -Diamond Coring, CPR-Cable Percussion Rotary follow on										
Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key										

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 30/11/16	Ground Level (mOD) 4.41	Co-Ordinates	Final Depth 32.00m
	Date Completed 01/12/16		E 542966.0 N 180322.2	
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 1 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
30/11/16					(12.00)	Water.					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 30/11/16 Date Completed 01/12/16	Ground Level (mOD) 4.41	Co-Ordinates E 542966.0 N 180322.2	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 2 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
30/11/16	12.50	1.00	-7.59		12.00		12.00			... VOC 0.1ppm	
			-8.09	x x x x	(0.50) 12.50	Soft, dark brown to dark grey clayey SILT with strong hydrocarbon odour. (DOCK SEDIMENT)	12.00-12.40	ES01 B02	N21	4, 6 / 6, 5, 4, 6 ... VOC 0.1ppm	
			-8.84	o o o o	(0.75) 13.25	Dark grey sandy angular to well rounded fine to coarse flint GRAVEL with occasional flint cobbles, rare pockets of soft, dark grey clay and strong hydrocarbon odour. (RIVER TERRACE DEPOSITS)	12.50-13.00	ES03 B04			
30/11/16	13.50	1.20		o o o o		Brown sandy angular to well rounded fine to coarse flint GRAVEL. Sand is fine to coarse. (RIVER TERRACE DEPOSITS) 13.50 - 14.00 ... becoming very sandy	13.25	D05	N18	3, 4 / 5, 4, 4, 5 ... VOC 0.0ppm	
30/11/16	14.50	1.50		o o o o	(3.65)		13.50 13.50 13.50 13.50-14.00	ES06 B07			
				o o o o			14.25	D08			
				o o o o			14.50 14.50-15.00	B09	N32	4, 7 / 6, 9, 9, 8	
30/11/16	15.50	1.20		o o o o			15.25	D10			
				o o o o			15.50 15.50-16.00	B11	N24	3, 4 / 6, 7, 6, 5	
				o o o o			16.25	D12			
30/11/16	16.50	1.80		o o o o			16.50 16.50-17.00	B13	N26	4, 5 / 6, 6, 6, 8	
			-12.49	o o o o	16.90		17.00-17.50	B14			
				o o o o	(1.30)	Light grey very clayey fine SAND. (THANET SAND FORMATION: THANET SAND)	17.50 17.50	D15	N39	4, 7 / 8, 9, 11, 11	
30/11/16	18.10	1.10		o o o o			18.20-18.50	B16			
			-13.79	o o o o	18.20		18.50 18.50	D17	N20	4, 5 / 6, 5, 5, 4	
				o o o o		White CHALK recovered as: silty angular to subangular fine to coarse GRAVEL with rare cobble size moderately weak, medium density chalk fragments. Gravel comprises weak, medium density chalk fragments and black rinded flint. (SEAFORD CHALK FORMATION) 18.50 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel is angular to subangular fine to medium black rinded flint 19.00 ... with occasional moderately weak, medium density chalk fragments and rare angular to subangular black rinded flint	19.00-19.50	B18			
30/11/16	20.00	1.20		o o o o			20.00		N32	2, 4 / 5, 7, 9, 11	

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 30/11/16 Date Completed 01/12/16	Ground Level (mOD) 4.41	Co-Ordinates E 542966.0 N 180322.2	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
30/11/16	21.50	1.40				cobbles 20.00 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel is angular to subangular fine to coarse moderately weak, medium density chalk fragments	20.00	D19		3, 4 / 6, 8, 12, 12	
							20.50-21.00	B20			
						21.50 ... [NI] recovered as: firm, white gravelly SILT. Gravel is angular to subangular fine to coarse black rinded flint	21.50	D21	N38		
						22.00 ... with occasional angular to subangular black rinded flint cobbles	22.00-22.50	B22			
30/11/16	22.10	1.00				23.00 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel is angular to subangular fine to coarse moderately weak to weak, medium density chalk fragments	23.00	D23	N21	4, 6 / 5, 5, 6, 5	
						23.50 - 24.00 ... becoming very silty	23.50-24.00	B24			
						24.50 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel is angular to subangular fine to coarse moderately weak to weak, medium density chalk fragments	24.50	D25	N27		
							25.00-25.50	B26			
30/11/16	22.10	1.40			(13.80)	26.00 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel comprises angular to subangular fine to coarse weak, medium density chalk fragments and black rinded flint	26.00	D27	N41	6, 8 / 10, 9, 9, 13	
						26.50 ... with rare angular to subangular black rinded flint cobbles	26.50-27.00	B28			
						27.50 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel is angular to subangular fine to medium black rinded flint	27.50		N50/ 230 mm		
						28.00 ... with no chalk cobbles	28.00-28.50	D29 B30			
30/11/16 01/12/16	22.10	1.15 1.05								7, 9 / 12, 14, 16, 8	
01/12/16	22.10	1.40				29.00 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel comprises angular to subangular fine to coarse weak, medium density chalk fragments and black rinded flint	29.00	D31	N48	7, 6 / 8, 10, 13, 17	
							29.50-30.00	B32			

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 30/11/16 Date Completed 01/12/16	Ground Level (mOD) 4.41	Co-Ordinates E 542966.0 N 180322.2	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 4 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
01/12/16	22.10	1.60				30.00 ... [NI] recovered as: firm, white SILT.	30.50 30.50	D33	N31	4, 6 / 6, 7, 8, 10	
01/12/16	22.10	1.90				31.00 ... with rare cobble size weak, medium density chalk fragments	31.00-31.50	B34			
01/12/16	22.10	1.90	-27.59		32.00	31.50 ... [NI] recovered as: firm, white gravelly SILT. Gravel comprises angular to subangular fine to coarse weak, medium density chalk fragments and black rinded flint	31.50	D35	N50/ 285 mm	6, 9 / 10, 13, 15, 12	
						End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 25/01/17 Date Completed 27/01/17	Ground Level (mOD) 4.88	Co-Ordinates E 542971.4 N 180248.9	Final Depth 33.00m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	33.00	RC	25/01/2017	27/01/2017	FD	CB	112	PDC	Geotec 350	AR779

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	150	0.00	150	13.50	15.00		0
33.00	150	15.00	150	15.00	16.50		0
				16.50	18.00		0
				18.00	19.50		80
				21.00	22.50		20
				22.50	24.00		73
				24.00	25.50		93
				25.50	27.00		100
				27.00	28.50		100
				28.50	30.00		33
				30.00	31.50		53
				31.50	33.00		80

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour
13.50	33.00	Water	100	

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
13.50	33.00	Cement / Bentonite Grout	27/01/2017

Issue No: 01

Checked By: AN

Approved By: OS

Log Print Date & Time: 03/03/2017 17:43

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 25/01/17 Date Completed 27/01/17	Ground Level (mOD) 4.88	Co-Ordinates E 542971.4 N 180248.9	Final Depth 33.00m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
25/01/17	0.00			... Rotary flush	S	16.50	N32	3, 8 / 8, 7, 8, 9	15.00	
25/01/17	13.50	15.00			S	18.00	N26	2, 12 / 10, 7, 5, 4	15.00	
25/01/17	18.00	15.00			S	19.50	N17	2, 3 / 3, 5, 4, 5	15.00	
26/01/17	18.00	15.00			S	21.00	N22	5, 5 / 4, 5, 6, 7	15.00	
26/01/17	27.00	15.00			S	22.50	N18	3, 5 / 5, 5, 3, 5	15.00	
27/01/17	27.00	15.00			S	24.00	N14	3, 3 / 3, 4, 4, 3	15.00	
27/01/17	33.00	15.00			S	25.50	N40	7, 9 / 8, 9, 11, 12	15.00	
					S	27.00	N45	6, 12 / 13, 8, 11, 13	15.00	
					S	28.50	N50/0.235	5, 9 / 11, 15, 20, 4	15.00	
					S	30.00	N44	8, 14 / 13, 11, 10, 10	15.00	
					S	31.50	N44	5, 7 / 11, 11, 10, 12	15.00	
					S	33.00	N31	2, 4 / 6, 7, 8, 10	15.00	

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Water present in the borehole from casing installation through the dock.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
U - 100mm Diameter Undisturbed Sample
UT - 100mm Diameter Thin Wall Undisturbed Sample
U38 - 38mm Diameter Undisturbed Sample
D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
SPGW - Groundwater Monitor Standpipe
SPG/GW - Gas / Groundwater Monitor Standpipe
VWP - Vibrating Wire Piezometer
ICM - Inclinator

HOLE TYPES

- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
CP - Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic
DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue No: 01

Checked By: AN

Approved By: OS

Log Print Date & Time: 03/03/2017 17:44

Sheet 1 of 4

Issue No: 01	Checked By: AN	Approved By: OS	Log Print Date & Time: 03/03/2017 17:48	
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Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 25/01/17 Date Completed 27/01/17	Ground Level (mOD) 4.88	Co-Ordinates E 542971.4 N 180248.9	Final Depth 33.00m
Client London City Airport Limited			Method/ Plant Used Rotary	Sheet 2 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill	
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result			
25/01/17	15.00														
				</											



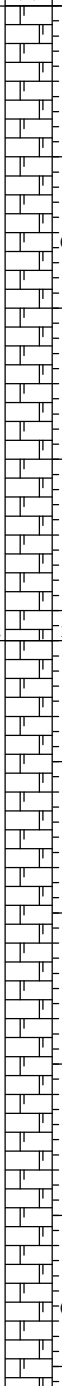
Borehole No

BH27

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

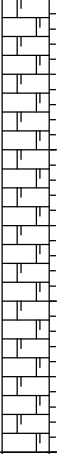
Job No 16/2900	Date Started	25/01/17	Ground Level (mOD)	Co-Ordinates	Final Depth	
	Date Completed	27/01/17				4.88
Client London City Airport Limited				Method/ Plant Used	Rotary	Sheet 3 of 4

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth <i>(Thickness)</i>	Strata Description	Depth (m)	Type No		
26/01/17 27/01/17	15.00 15.00		20			-19.32		(5.30)	21.00 ... becoming very silty well-rounded angular to subangular fine to coarse black rinded flint GRAVEL, with rare angular to subangular black rinded flint cobbles	21.00 21.00	D05	N22	5, 5 / 4, 5, 6, 7
										22.50 22.50			
			73	13	10			23.30 - 23.40 ... becoming strong medium density	24.00 24.00	D07	N14	3, 3 / 3, 4, 4, 3	
			93	13	7				24.00 ... [NI] recovered as: silty, angular to subangular fine to coarse GRAVEL. Gravel is weak to moderately weak, medium density chalk fragments Strong, medium density white CHALK. (SEAFORD CHALK FORMATION) 24.20 ... becoming strong, white medium density chalk 24.25 ... with 1No wide open fracture, infilled with angular to subangular fine to coarse weak, medium density chalk fragments 24.80 ... with occasional angular to subangular fine to coarse black rinded flint gravel 25.50 ... [NI] recovered as: silty angular to subangular fine to coarse GRAVEL with rare moderately weak, medium density chalk cobbles and rare angular to subangular black rinded flint cobbles. Gravel comprises weak, medium density chalk fragments and black rinded flint. 26.10 - 26.50 ... with horizontal fractures at 26.15m, 26.30m and at 26.40m 26.40 ... with angular to subangular medium to coarse black rinded flint gravel 26.50 ... [NI] recovered as: silty angular to subangular fine to coarse GRAVEL. Gravel comprises weak, medium density white chalk fragments and black rinded flint 26.90 ... becoming strong, medium density CHALK with occasional purple staining 26.95 ... with 1No horizontal fracture 27.00 ... becoming very silty 27.50 ... becoming silty with occasional moderately weak to strong, medium density chalk cobbles				25.50 25.50
			100	27	20			26.10		B09			
			100					27.00 27.00	D10				N45
			33								28.00	B11	
				28.50	N50/ 235 mm				5, 9 / 11, 15, 20, 4				
				28.50 28.50							D12 B13		
			30.00		N44			8, 14 / 13, 11, 10, 10					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 25/01/17 Date Completed 27/01/17	Ground Level (mOD) 4.88	Co-Ordinates E 542971.4 N 180248.9	Final Depth 33.00m
Client London City Airport Limited			Method/ Plant Used Rotary	Sheet 4 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill						
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result								
27/01/17	15.00		53						30.00 ... with occasional angular to subangular fine to coarse black rinded flint gravel and rare angular to subangular black rinded flint cobbles	30.50	B14		5, 7 / 11, 11, 10, 12							
										31.50 31.50	D15	N44								
			80																	
						-28.12		33.00	32.60 ... [NI] recovered as: silty, angular to subangular fine to coarse GRAVEL. Gravel is weak, medium density chalk fragments with rare strong, medium density angular to subangular chalk cobbles 32.90 ... with rare angular to subangular black rinded flint cobbles End of Borehole	33.00 33.00	D16	N31	2, 4 / 6, 7, 8, 10							

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 18/11/16 Date Completed 21/11/16	Ground Level (mOD) 4.79	Co-Ordinates E 543034.6 N 180352.2	Final Depth 32.00m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	32.00	CP	18/11/2016	21/11/2016	SW	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks
							27.10	27.50	0:45	Gravel

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
18.50	200	18.10	200				
32.00	150	25.50	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
12.00	32.00	Cement / Bentonite Grout	21/11/2016

Issue No: 01

Checked By: AN

Approved By: OS

Log Print Date & Time: 03/03/2017 17:43

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 18/11/16	Ground Level (mOD) 4.79	Co-Ordinates E 543034.6 N 180352.2	Final Depth 32.00m
Date Completed 21/11/16				

Client

London City Airport Limited

PROGRESS					SPT DETAILS						
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)	
18/11/16	0.00			... see Remark 3	C	13.50	N10	4, 8 / 3, 2, 3, 2	13.50	1.70	
18/11/16	12.50	12.50	1.00		C	14.50	N12	3, 3 / 2, 3, 4, 3	14.50	1.30	
18/11/16	13.50	13.50	1.70		C	15.50	N12	2, 3 / 4, 3, 2, 3	15.50	2.00	
18/11/16	14.50	14.50	1.30		C	16.50	N11	2, 2 / 3, 2, 3, 3	16.50	1.80	
18/11/16	15.50	15.50	2.00		S	18.00	N20	3, 5 / 4, 6, 5, 5	18.00	2.10	
18/11/16	16.50	16.50	1.80		S	19.50	N15	2, 3 / 3, 3, 4, 5	19.50	0.90	
18/11/16	18.00	18.00	2.10		S	21.00	N17	2, 3 / 3, 4, 5, 5	21.00	1.00	
18/11/16	18.50	18.10	1.70		S	22.50	N20	2, 3 / 4, 5, 5, 6	22.50	0.60	
21/11/16	18.50	18.10	1.95		S	24.00	N19	3, 5 / 4, 4, 6, 5	24.00	0.40	
21/11/16	19.50	19.50	0.90		S	25.50	N50/0.23	6, 12 / 14, 17, 13, 6	25.50	1.00	
21/11/16	21.00	21.00	1.00		S	27.00	N50/0.04	8, 17 / 50	25.50	1.10	
21/11/16	22.50	22.50	0.60		S	28.50	N30	5, 8 / 8, 7, 8, 7	25.50	0.90	
21/11/16	24.00	24.00	0.40		S	30.00	N38	6, 8 / 9, 10, 9, 10	25.50	0.70	
21/11/16	25.50	25.50	1.00		S	31.50	N50/0.29	5, 8 / 9, 9, 13, 19	25.50	1.00	
21/11/16	27.00	25.50	1.10								
21/11/16	28.50	25.50	0.90								
21/11/16	30.00	25.50	0.70								
21/11/16	31.50	25.50	1.00								
21/11/16	32.00	25.50	1.00								



Borehole No

BH28

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 18/11/16 Date Completed 21/11/16	Ground Level (mOD) 4.79	Co-Ordinates E 543034.6 N 180352.2	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 1 of 4

PROGRESS			STRATA			SAMPLES & TESTS				Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth <i>(Thickness)</i>	Strata Description	Depth (m)	Type No	Test Result		
18/11/16					(12.00)	Water.					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 18/11/16	Ground Level (mOD) 4.79	Co-Ordinates E 543034.6 N 180352.2	Final Depth 32.00m
Date Completed 21/11/16				
Client London City Airport Limited	Method/ Plant Used Cable Percussion			Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
21/11/16	21.00	1.00				medium density chalk fragments 20.00 - 20.50 ... with rare cobble size angular to subangular black rinded flint	21.00 21.00	D20	N17	2, 3 / 3, 4, 5, 5	
						21.00 ... [NI] recovered as: firm, white slightly gravelly SILT. Gravel is angular to subangular fine to medium extremely weak, medium density chalk fragments 21.50 ... with occasional angular to subangular black rinded flint cobbles	21.50-22.00	B21			
21/11/16	22.50	0.60				22.50 ... [NI] recovered as: soft, white gravelly SILT. Gravel comprises angular to subangular fine to medium black rinded flint and extremely weak, medium density chalk fragments 23.00 ... with rare angular to subangular black rinded flint cobbles	22.50 22.50	D22	N20	2, 3 / 4, 5, 5, 6	
							23.00-23.50	B23			
21/11/16	24.00	0.40				24.00 ... [NI] recovered as: soft, white slightly gravelly SILT. Gravel is angular to subangular fine to medium black rinded flint	24.00 24.00	D24	N19	3, 5 / 4, 4, 6, 5	
							24.50-25.00	B25			
21/11/16	25.50	1.00				25.50 ... [NI] recovered as: soft, white slightly gravelly SILT. Gravel comprises angular to subangular fine to medium black rinded flint and extremely weak, low density chalk fragments	25.50 25.50	D26	N50/ 230 mm	6, 12 / 14, 17, 13, 6	
							26.50	D27			
21/11/16	25.50	1.10				26.50 ... [NI] recovered as: very soft, white very gravelly SILT. Gravel comprises angular to subangular fine to medium black rinded flint and fine to coarse extremely weak, medium density chalk fragments 27.00 ... [NI] recovered as: soft, white gravelly SILT. Gravel is angular to subangular fine to medium black rinded flint 27.10 ... with occasional angular to subangular black rinded flint cobbles	27.00 27.10-27.50	D28 B29	N50/ 40 mm	8, 17 / 50	
21/11/16	25.50	0.90				28.00 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL. Gravel comprises moderately weak, medium density white chalk fragments and black rinded flint 28.50 ... [NI] recovered as: soft, white slightly gravelly SILT. Gravel is angular to subangular fine to medium black rinded flint	28.10 28.50 28.50	D30 D31	N30	5, 8 / 8, 7, 8, 7	
							29.00-29.50	B32			
21/11/16	25.50	0.70					30.00		N38	6, 8 / 9, 10, 9, 10	

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 18/11/16 Date Completed 21/11/16	Ground Level (mOD) 4.79	Co-Ordinates E 543034.6 N 180352.2	Final Depth 32.00m
Client London City Airport Limited	Method/ Plant Used Cable Percussion	Sheet 4 of 4		

PROGRESS			STRATA			SAMPLES & TESTS				Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
21/11/16	25.50	1.00				30.00 ... [NI] recovered as: soft to firm, white slightly gravelly SILT. Gravel is angular to subangular fine to medium black rinded flint	30.00	D33			
						30.50 ... with occasional angular to subangular fine to coarse black rinded flint gravel and rare angular to subangular black rinded flint cobbles	30.50-31.00	B34			
						31.50 ... [NI] recovered as: firm, white SILT.	31.50		N50/ 290 mm	5, 8 / 9, 9, 13, 19	
21/11/16	25.50	1.00	-27.21		32.00	End of Borehole	31.50	D35			

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 10/01/17 Date Completed 16/01/17	Ground Level (mOD) 4.93	Co-Ordinates E 543114.1 N 180368.0	Final Depth 45.50m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00 17.00	17.00 45.50	OH RC	10/01/2017 10/01/2017	10/01/2017 16/01/2017	FD FD	CB CB	112 112	PDC PDC	Geotec 350 Geotec 350	AR779

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	150	0.00	150	12.50	17.00		0
17.00	150	17.00	150	17.00	18.50		47
45.50	146			18.50	20.00		93
				20.00	21.50		100
				21.50	23.00		93
				23.00	24.50		80
				24.50	26.00		86
				26.00	27.50		60
				27.50	29.00		73
				29.00	30.50		87
				30.50	32.00		67
				32.00	33.50		80
				33.50	35.00		87
				35.00	36.50		60
				36.50	38.00		87
				38.00	39.50		80
				39.50	41.00		87
				41.00	42.50		67
				42.50	44.00		100
				44.00	45.50		100

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour
17.00	39.50	Water	100	
39.50	45.50	Water	50	

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
17.00	46.00	Cement / Bentonite Grout	16/01/2017

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 10/01/17 Date Completed 16/01/17	Ground Level (mOD) 4.93	Co-Ordinates E 543114.1 N 180368.0	Final Depth 45.50m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
10/01/17	0.00				S	17.00	N37	4, 6 / 7, 8, 10, 12		
10/01/17	17.00	15.00	2.00	... Rotary flush	S	18.50	N34	4, 7 / 9, 8, 9, 8		
10/01/17	24.50	15.00	2.00		S	20.00	N22	3, 5 / 5, 5, 4, 8		
11/01/17	24.50	15.00	2.00		S	21.50	N30	5, 6 / 5, 8, 8, 9		
11/01/17	30.50	15.00	5.00		S	23.00	N36	5, 10 / 9, 9, 8, 10		
12/01/17	30.50	17.00	4.00		S	24.50	N35	4, 7 / 9, 9, 8, 9		
12/01/17	39.50	17.00	4.00		S	26.00	N30	6, 4 / 6, 7, 8, 9		
13/01/17	39.50	17.00			S	27.50	N37	5, 7 / 8, 10, 9, 10		
13/01/17	42.50	17.00			S	29.00	N34	6, 7 / 4, 8, 10, 12		
16/01/17	42.50	17.00			S	30.50	N37	3, 7 / 8, 9, 9, 11		
16/01/17	45.50	17.00			S	32.00	N47	5, 6 / 9, 10, 11, 17		
					S	33.50	N50/0.265	5, 8 / 7, 13, 16, 14		
					S	35.00	N29	3, 6 / 5, 8, 8, 8		
					S	36.50	N50/0.15	4, 10 / 11, 9, 30		
					S	38.00	N39	5, 7 / 7, 9, 11, 12		
					S	39.50	N36	4, 5 / 7, 9, 10, 10		
					S	41.00	N39	4, 6 / 9, 9, 10, 11		
					S	42.50	N41	4, 7 / 6, 8, 12, 15		
					S	44.00	N39	4, 8 / 9, 8, 10, 12		
					S	45.50	N36	5, 6 / 8, 10, 9, 9		

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Borehole drilled open hole between 12.50m and 17.00m depth.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
- U - 100mm Diameter Undisturbed Sample
- UT - 100mm Diameter Thin Wall Undisturbed Sample
- U38 - 38mm Diameter Undisturbed Sample
- D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
- C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
- SPGW - Groundwater Monitor Standpipe
- SPG/GW - Gas / Groundwater Monitor Standpipe
- VWP - Vibrating Wire Piezometer
- ICM - Inclinator

HOLE TYPES

- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
- CP - Cable Percussion, RC-Rotary Coring, RS-Rotary/Sonic
- DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
- DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Issue No: 01

Checked By: AN

Approved By: OS

Log Print Date & Time: 03/03/2017 17:44

Sheet 1 of 5

Issue No: 01	Checked By: AN	Approved By: OS	Log Print Date & Time: 03/03/2017 17:48	
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Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 10/01/17 Date Completed 16/01/17	Ground Level (mOD) 4.93	Co-Ordinates E 543114.1 N 180368.0	Final Depth 45.50m
Client London City Airport Limited			Method/ Plant Used Rotary	Sheet 2 of 5

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
10/01/17	15.00	2.00	0			-7.57		12.50		17.00 17.00 17.50 18.50 19.10 20.00	D01 B02 B03	N37 N34 N22	4, 6 / 7, 8, 10, 12 4, 7 / 9, 8, 9, 8 3, 5 / 5, 5, 4, 8	
			47			-12.07		17.00	Light grey, very clayey fine SAND. (THANET SAND FORMATION: THANET SAND)					
						-13.57		18.50	White CHALK [NI] recovered as: soft to firm, white very gravelly SILT. Gravel is weak, low to medium density chalk fragments with rare gravel to cobble size angular to subangular coarse black rinded flint. (SEAFORD CHALK FORMATION) 19.00 ... chalk fragments becoming fine to coarse 19.60 - 19.80 ... becoming strong, white CHALK					
			93	36	32									

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 10/01/17 Date Completed 16/01/17	Ground Level (mOD) 4.93	Co-Ordinates E 543114.1 N 180368.0	Final Depth 45.50m
Client London City Airport Limited	Method/ Plant Used Rotary	Sheet 3 of 5		

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
10/01/17 11/01/17	15.00 15.00	2.00 2.00	100				(4.10)	20.40 ... becoming weak, medium density with occasional subvertical and subhorizontal fractures	20.00	D04	N30	5, 6 / 5, 8, 8, 9	
								20.75 ... with 1No wide open fracture infilled with angular to subangular fine to coarse gravel size moderately weak to weak, chalk fragments	21.50 21.50	D05			
								21.50 - 22.00 ... becoming very silty					
			93	21	18		-17.67		22.30 ... with rare angular to subangular black rinded flint cobbles	22.50-22.80	B06	N36	5, 10 / 9, 9, 8, 10
									Strong, medium density white CHALK. (SEAFORD CHALK FORMATION)	23.00 23.00	D07		
									22.60 ... becoming strong and medium density 22.80 ... with 1No horizontal fracture 23.00 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL. Gravel is weak to moderately weak, medium density chalk fragments with occasional angular to subangular moderately weak chalk cobbles	23.50	B08		
									24.00 ... with 1No subhorizontal fracture 24.20 ... with occasional cobble size and fine to coarse gravel size black rinded flint	24.50 24.50	D09		
			86	29	21				24.90 ... [NI] recovered as: soft, gravelly SILT. Gravel is angular to subangular fine to coarse weak, medium density chalk fragments	25.00	B10	N35	4, 7 / 9, 9, 8, 9
									25.40 ... with 1No horizontal fracture				
									25.70 ... with 1No horizontal fracture with purple staining 25.80 - 26.00 ... with 1No open wide horizontal fracture	26.00 26.00	D11		
			60	44	28				26.80 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL. Gravel is angular to subangular fine to coarse, weak medium density chalk fragments	27.00	B12	N37	5, 7 / 8, 10, 9, 10
									26.90 - 27.30 ... becoming intact CHALK 27.00 ... with 1No horizontal fracture	27.50 27.50	D13		
			73	50	23				28.10 ... [NI] recovered as: angular to subangular fine to coarse silty GRAVEL. Gravel is weak, medium density chalk fragments			N34	6, 7 / 4, 8, 10, 12
									28.40 ... with 1No horizontal fracture 28.45 - 28.55 ... becoming very silty angular to subangular fine to coarse GRAVEL. Gravel comprises weak, medium density chalk fragments and black rinded flint	28.90 29.00 29.00	B14 D15		
									28.60 - 28.70 ... with occasional subvertical and subhorizontal fractures 28.80 ... with 1No vertical fracture 28.85 ... with 1No subhorizontal fracture	29.70	B16		
									29.00 - 29.60 ... [NI] recovered as: soft to firm, slightly gravelly SILT. Gravel comprises angular to	30.00-30.20	C17		

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 10/01/17 Date Completed 16/01/17	Ground Level (mOD) 4.93	Co-Ordinates E 543114.1 N 180368.0	Final Depth 45.50m
Client London City Airport Limited			Method/ Plant Used Rotary	Sheet 4 of 5

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
11/01/17	15.00	5.00	87	46	35				subangular fine to coarse, weak, medium density chalk fragments and angular to subangular black rinded flint	30.50		N37	3, 7 / 8, 9, 9, 11	
12/01/17	17.00	4.00							29.60 ... with rare angular to subangular black rinded flint cobbles	30.50	D18			
									29.80 ... with 1No horizontal fracture					
									30.00 ... with 1No wide open fracture infilled with angular to subangular fine to coarse extremely weak to moderately weak, medium to low density chalk fragments					
			67						30.00 - 30.15 ... becoming strong and medium density					
									30.00 - 30.20 ... with 1No subhorizontal fracture					
									30.15 ... [NI] recovered as: silty angular to subangular fine to coarse GRAVEL and occasional angular to subangular moderately weak chalk cobbles. Gravel is weak, medium density white chalk fragments	32.00		N47	5, 6 / 9, 10, 11, 17	
									30.20 - 30.50 ... [NI] recovered as: silty angular to subangular fine to coarse GRAVEL with occasional weak to moderately weak, medium density chalk cobbles and rare black rinded flint cobbles. Gravel comprises weak, medium density chalk fragments and black rinded flint	32.00	D19			
			80	71	63				31.00 ... [NI] recovered as: silty, angular to subangular fine to coarse GRAVEL with rare moderately weak medium density chalk cobbles. Gravel comprises weak, medium density chalk fragments and black rinded flint.	32.70	B20			
									32.00 ... becoming very silty with rare black rinded flint cobbles	33.50		N50/ 265 mm	5, 8 / 7, 13, 16, 14	
									32.70 ... with 1No wide open subhorizontal fracture	33.50	D21			
									32.80 ... with 1No open horizontal fracture	34.10	B22			
			87	62	35			(22.90)	33.00 ... with 1No wide open fracture infilled with angular to subangular fine to coarse weak, medium density chalk fragments and rare flint cobbles					
									33.20 ... with 1No subhorizontal fracture					
									33.40 ... with 1No horizontal fracture					
									33.50 - 34.00 ... [NI] recovered as: silty, angular to subangular fine to coarse chalk GRAVEL.	35.00		N29	3, 6 / 5, 8, 8, 8	
									34.20 ... with subhorizontal fractures	35.00	D23			
									34.50 ... with 1No horizontal fracture and at 34.70m					
									34.50 - 34.90 ... with 1No vertical wide open fracture with purple staining					
			60	28	17				34.90 - 35.00 ... with angular to subangular coarse black rinded flint gravel and cobbles					
									35.50 - 36.10 ... [NI] recovered as: angular to subangular fine to coarse GRAVEL. Gravel comprises weak, medium density chalk fragments and black rinded flint	36.00-36.50	B24			
									36.10 - 36.20 ... with 1No subvertical fracture	36.50		N50/ 150 mm	4, 10 / 11, 9, 30	
									36.30 ... with 1No horizontal fracture infilled rare angular to subangular fine to coarse black rinded flint					
									36.35 ... with 1No horizontal fracture infilled with angular to subangular fine to coarse black rinded flint	36.50	D25			
			87						36.45 ... with 1No wide open horizontal fracture					
									36.50 ... [NI] recovered as: soft, white gravelly SILT. Gravel is angular to subangular fine to coarse black rinded flint	37.50	B26			
									37.10 ... [NI] recovered as: very silty angular to subangular fine to coarse GRAVEL with rare angular to subangular weak, medium density chalk cobbles. Gravel comprises weak, medium density chalk fragments	38.00		N39	5, 7 / 7, 9, 11, 12	
										38.00	D27			
									38.45 ... with 1No wide open subvertical fracture					
			80	71	54				38.50 ... with 1No horizontal fracture and at 38.70m, 38.80m					
									38.90 ... with 1No subhorizontal fracture and at 38.95m					
									39.10 ... with 1No wide open horizontal fracture	39.20-39.50	C28			
12/01/17	17.00	4.00								39.50		N36	4, 5 / 7, 9, 10, 10	
13/01/17	17.00		87	54	39				39.50 - 39.80 ... [NI] recovered as: silty angular to subangular fine to coarse GRAVEL with occasional angular to subangular moderately weak, medium	39.50	D29			

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 10/01/17 Date Completed 16/01/17	Ground Level (mOD) 4.93	Co-Ordinates E 543114.1 N 180368.0	Final Depth 45.50m
Client London City Airport Limited	Method/ Plant Used Rotary	Sheet 5 of 5		

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
13/01/17 16/01/17	17.00 17.00		87	54	39				density chalk cobbles. Gravel is weak, medium density chalk fragments 39.90 - 40.00 ... with 1No subvertical fracture 40.20 - 40.30 ... [NI] recovered as: silty angular to subangular fine to coarse GRAVEL. Gravel comprises weak to moderately weak, medium density chalk fragments and black rinded flint 40.40 ... with 1No subvertical fracture 40.50 - 40.70 ... with 1No wide open subvertical fracture 40.80 ... with 1No horizontal fracture 41.40 - 41.80 ... [NI] recovered as: very silty angular to subangular fine to coarse GRAVEL. Gravel comprises weak, medium density chalk fragments and black rinded flint 41.90 ... with 1No horizontal fracture	40.50	B30		4, 6 / 9, 9, 10, 11	
										41.00 41.00	D31	N39		
			67	55	50					41.90-42.30	C32			
										42.50 42.50	D33	N41		4, 7 / 6, 8, 12, 15
16/01/17	17.00		100	87	80				42.30 ... with 1No wide open horizontal fracture and weak, medium density angular to subangular fine to coarse chalk fragments 42.50 - 42.60 ... [NI] recovered as: very silty angular to subangular fine to coarse GRAVEL with rare black rinded flint cobbles. Gravel comprises weak, medium density chalk fragments and black rinded flint 42.70 ... with 1No wide open fracture infilled with angular to subangular fine to coarse weak, medium density chalk fragments and black rinded flint 42.70 ... with 1No horizontal fracture and at 43.10m, 43.20m 42.80 ... with 1No horizontal fracture 44.00 - 44.40 ... [NI] recovered as: very silty, angular to subangular fine to coarse GRAVEL with rare weak, medium density chalk cobbles. Gravel comprises weak, medium density chalk fragments and black rinded flint	43.20-43.60	C34		4, 8 / 9, 8, 10, 12	
										44.00 44.00	D35	N39		
			100	60	57					45.00-45.30	C36			
										45.50 45.50	D37	N36		5, 6 / 8, 10, 9, 9
						-40.57		45.50	45.40 ... with 1No wide open fracture End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 14/12/16 Date Completed 16/12/16	Ground Level (mOD) 4.23	Co-Ordinates E 543181.6 N 180343.2	Final Depth 33.00m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	15.50	OH	14/12/2016	14/12/2016	TC	CB			Geotec 350	
15.50	18.00	DS	14/12/2016	15/12/2016	TC	CB			Geotec 350	AR779
18.00	33.00	RC	15/12/2016	16/12/2016	TC	CB	112	PDC	Geotec 350	AR779

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	150	0.00	150	15.50	17.00		67
18.00	150	14.00	150	17.00	18.00		100
33.00	146			18.00	18.50		100
				18.50	23.00		100
				23.00	24.50		87
				24.50	26.00		100
				26.00	27.50		80
				27.50	29.00		80
				29.00	30.20		100
				30.20	31.50		100
				31.50	33.00		100

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour
18.00	33.00	Water	70	

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
12.50	33.00	Cement / Bentonite Grout	16/12/2016

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 14/12/16	Ground Level (mOD) 4.23	Co-Ordinates E 543181.6 N 180343.2	Final Depth 33.00m
Date Completed 16/12/16				

Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
14/12/16	0.00				S	15.50	N15	2, 2 / 3, 3, 4, 5	14.00	
14/12/16	15.50	14.00	2.10	... see Remark 5	S	17.00	N16	3, 2 / 3, 4, 4, 5	14.00	
15/12/16	15.50	14.00	3.10		S	18.50	N29	3, 4 / 4, 8, 8, 9	14.00	
15/12/16	29.00	14.00	1.90		S	20.00	N31	3, 3 / 6, 8, 9, 8	14.00	
16/12/16	29.00	14.00	3.10		S	21.50	N50/0.005	25 / 50	14.00	
16/12/16	33.00	14.00	1.90		S	23.00	N50/0.005	25 / 50	14.00	
					S	24.50	N40	3, 6 / 8, 9, 11, 12	14.00	
					S	26.00	N40	3, 7 / 7, 10, 11, 12	14.00	
					S	27.50	N50	4, 7 / 11, 12, 16, 11	14.00	
					S	29.00	N50/0.105	7, 12 / 21, 29	14.00	
					S	30.20	N28/0.19	6, 13 / 16, 2, 10	14.00	

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Borehole drilled open hole between 12.50m and 15.50m depth.
- Dynamic sampling techniques used from 15.50m to 18.00m. Rotary boring carried out thereafter.
- Water present in the borehole from casing installation through the dock.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
- U - 100mm Diameter Undisturbed Sample
- UT - 100mm Diameter Thin Wall Undisturbed Sample
- U38 - 38mm Diameter Undisturbed Sample
- D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
- C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
- SPGW - Groundwater Monitor Standpipe
- SPG/GW - Gas / Groundwater Monitor Standpipe
- VWP - Vibrating Wire Piezometer
- ICM - Inclinator

HOLE TYPES

- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
- CP - Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic
- DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
- DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 14/12/16 Date Completed 16/12/16	Ground Level (mOD) 4.23	Co-Ordinates E 543181.6 N 180343.2	Final Depth 33.00m
Client London City Airport Limited			Method/ Plant Used Dynamic Sampling / Rotary	Sheet 2 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill				
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result						
14/12/16 15/12/16	14.00 14.00	2.10 3.10				-8.27		12.50	Open hole									
						-11.27		15.50	15.50 15.50 15.50-15.70	D01 B02	N15	2, 2 / 3, 3, 4, 5						
									</									

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 14/12/16	Ground Level (mOD) 4.23	Co-Ordinates E 543181.6 N 180343.2	Final Depth 33.00m
Date Completed 16/12/16				
Client London City Airport Limited	Method/ Plant Used Dynamic Sampling / Rotary		Sheet 3 of 4	

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill	
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No			Test Result
15/12/16 16/12/16	14.00 14.00	1.90 3.10	100					(15.90)		20.00	D06		25 / 50	
										21.50		N50/ 5 mm		25 / 50
										23.00		N50/ 5 mm		
			23.30 ... with rare rinded flint cobbles	24.00	B07									
			24.10 ... becoming strong, medium density white chalk	24.50					N40	3, 6 / 8, 9, 11, 12				
			24.20 ... with a horizontal fracture and at 24.45m, 25.40m and 25.70m	24.50	D08									
			24.70 - 24.90 ... becoming weak chalk, with rare flint cobbles	25.10	B09									
			25.00 - 25.40 ... with a vertical fracture	26.00					N40	3, 7 / 7, 10, 11, 12				
				26.00	D10									
			26.30 - 27.40 ... [NI] recovered as: firm, white very gravelly SILT. Gravel comprises angular to subangular fine to coarse weak, medium density chalk fragments and black rinded flint	27.00	B11									
			26.80 ... with subvertical and subhorizontal fractures	27.10 ... with a black rinded flint cobble	27.50					N50	4, 7 / 11, 12, 16, 11			
				27.50	D12									
			27.40 - 27.75 ... [NI] recovered as: white angular to subangular fine to coarse silty GRAVEL with rare black rinded flint cobbles. Gravel comprises weak to moderately weak, medium density chalk fragments	28.00	B13									
			27.75 - 30.70 ... [NI] recovered as: firm, white very gravelly SILT. Gravel comprises angular to subangular fine to coarse weak, medium density chalk fragments and black rinded flint	27.90 ... with a wide open horizontal fracture infilled with weak, medium density angular to subangular fine to coarse chalk fragments with occasional purple staining	29.00					N50/ 105 mm	7, 12 / 21, 29			
			28.00 ... with a wide open subhorizontal fracture and at 28.10m	29.00										
28.40 - 28.60 ... [NI] recovered as: white angular to subangular fine to coarse silty GRAVEL with rare cobble size black rinded flint. Gravel comprises weak, medium density chalk fragments and black rinded flint	29.40	D14 B15												

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 14/12/16 Date Completed 16/12/16	Ground Level (mOD) 4.23	Co-Ordinates E 543181.6 N 180343.2	Final Depth 33.00m
Client London City Airport Limited			Method/ Plant Used Dynamic Sampling / Rotary	Sheet 4 of 4

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No		
16/12/16	14.00	1.90	100	75	50	-28.77		-33.00	28.75 ... with a wide open horizontal fracture infilled with weak to moderately weak, medium density coarse chalk fragments	30.20	C16	N28/ 190 mm	6, 13 / 16, 2, 10
									29.00 - 29.20 ... with a wide open vertical fracture with occasional purple staining	30.60-30.85			
			100	85	62				29.25 ... with a wide open vertical fracture and at 29.35m				
									29.50 - 29.70 ... with rare angular to subangular fine to coarse black rinded flint gravel				
									29.70 - 29.80 ... with a wide open horizontal fracture infilled with weak, medium density angular to subangular fine to coarse chalk fragments and rare cobble size chalk fragments				
									29.95 ... with a horizontal fracture and at 30.40m and 30.45m				
			100						30.10 ... with a wide open horizontal fracture infilled with weak, medium density angular to subangular fine to coarse chalk fragments	32.10-32.40	C17		
									30.70 ... with a horizontal fracture and at 30.90m, 31.00m, 31.10m, 31.20m and 31.40m				
									31.40 - 31.50 ... [NI] recovered as: firm, white very gravelly SILT with rare black rinded flint cobbles. Gravel is angular to subangular fine to coarse black rinded flint				
									31.50 ... with a wide open vertical fracture and at 31.70m				
			31.75 ... with a wide open vertical fracture and at 31.85m and 32.00m				32.40 - 32.50 ... [NI] recovered as: white angular to subangular fine to coarse silty GRAVEL with rare cobble size black rinded flint. Gravel comprises weak to moderately weak, medium density chalk fragments and black rinded flint						
								End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 17/11/16 Date Completed 18/11/16	Ground Level (mOD) 4.69	Co-Ordinates E 543245.5 N 180364.4	Final Depth 32.00m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	32.00	CP	17/11/2016	18/11/2016	SW	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks
							31.10	31.40	0:45	Gravel

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
16.00	200	15.10	200				
32.00	150	27.30	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
12.00	32.00	Cement / Bentonite Grout	18/11/2016

Issue No: 02

Checked By: AN

Approved By: OS

Log Print Date & Time:

28/03/2017 12:57

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 17/11/16 Date Completed 18/11/16	Ground Level (mOD) 4.69	Co-Ordinates E 543245.5 N 180364.4	Final Depth 32.00m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
17/11/16	0.00			... see Remark 3	C	12.50	N22	1, 2 / 7, 6, 5, 4	12.50	1.10
17/11/16	12.50	12.50	1.10		C	13.50	N15	4, 4 / 5, 3, 4, 3	13.50	1.60
17/11/16	13.50	13.50	1.60		C	14.50	N12	5, 4 / 4, 3, 2, 3	14.50	1.40
17/11/16	14.50	14.50	1.40		S	15.50	N5	5, 3 / 2, 1, 1, 1	15.10	1.90
17/11/16	15.50	15.10	1.90		S	16.50	N9	1, 2 / 2, 3, 2, 2	16.50	2.30
17/11/16	16.50	16.50	2.30		S	18.00	N11	3, 2 / 3, 2, 3, 3	18.00	3.10
17/11/16	18.00	18.00	3.10		S	19.50	N11	3, 2 / 2, 3, 4, 2	19.50	2.90
17/11/16	19.50	19.50	2.90		S	21.00	N21	2, 3 / 5, 5, 6, 5	21.00	3.20
17/11/16	21.00	21.00	3.20		S	22.50	N34	3, 4 / 5, 13, 8, 8	22.50	2.80
17/11/16	22.50	22.50	2.80		S	24.00	N28	5, 5 / 6, 7, 8, 7	24.00	3.00
17/11/16	24.00	24.00	3.00		S	27.00	N45	4, 7 / 9, 11, 11, 14	27.00	2.80
17/11/16	26.00	25.30	2.95		S	28.50	N50/0.28	5, 8 / 10, 12, 14, 14	27.30	3.10
18/11/16	26.00	25.30	2.90		S	30.00	N50/0.235	12, 13 / 18, 13, 14, 5	27.30	2.90
18/11/16	27.00	27.00	2.80		S	31.50	N50/0.235	9, 12 / 13, 16, 15, 6	27.30	3.00
18/11/16	28.50	27.30	3.10							
18/11/16	30.00	27.30	2.90							
18/11/16	31.50	27.30	3.00							
18/11/16	32.00	27.30	3.00							

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Water present in the borehole from casing installation through the dock.
- Ø200mm casing used from pontoon level to 15.10m depth. Bentonite seal inserted between 14.50m and 16.00m and borehole re-drilled with Ø150mm casing to 27.30m depth.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
- U - 100mm Diameter Undisturbed Sample
- UT - 100mm Diameter Thin Wall Undisturbed Sample
- U38 - 38mm Diameter Undisturbed Sample
- D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
- C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
- SPGW - Groundwater Monitor Standpipe
- SPG/GW - Gas / Groundwater Monitor Standpipe
- VWP - Vibrating Wire Piezometer
- ICM - Inclinator
- HOLE TYPES
- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
- CP - Cable Percussion, RC-Rotary Coring, RS-Rotary/Sonic
- DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
- DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

Sheet 1 of 4

Issue No: 02	Checked By: AN	Approved By: OS	Log Print Date & Time: 28/03/2017 12:58
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Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 17/11/16 Date Completed 18/11/16	Ground Level (mOD) 4.69	Co-Ordinates E 543245.5 N 180364.4	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 2 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
17/11/16	12.50	1.10	-7.31		12.00		12.00			... VOC 0.5ppm	
				x x x	(0.50)	Soft, dark to light grey SILT with strong hydrocarbon odour and rare glass fragments (<85mm). (DOCK SEDIMENT)	12.00-12.50	ES01 B02			
			-7.81	x x x	12.50		12.50		N22	1, 2 / 7, 6, 5, 4 ... VOC 0.5ppm	
17/11/16	13.50	1.60				Grey sandy angular to well-rounded fine to coarse flint GRAVEL with hydrocarbon odour. Sand is fine to coarse. (RIVER TERRACE DEPOSITS)	12.50-13.00	ES03 B04			
					(2.00)		13.25	D05			
						13.50 ... becoming very sandy with no hydrocarbon odour	13.50		N15	4, 4 / 5, 3, 4, 3 ... VOC 0.1ppm	
17/11/16	14.50	1.40					13.50-14.00	ES06 B07			
			-9.81		14.50		14.25	D08			
						Off-white to brown very sandy angular to subangular fine to medium flint GRAVEL with occasional black rinded flint cobbles. Sand is fine to coarse. (RIVER TERRACE DEPOSITS)	14.50-15.00	B09	N12	5, 4 / 4, 3, 2, 3	
17/11/16	15.10	1.90	-10.31		(0.50)		15.00-15.50	B10			
						[NI] White CHALK recovered as: angular to subangular fine to coarse white silty GRAVEL. Gravel is extremely weak, medium density chalk and angular to subangular fine to coarse black rinded flint. (SEAFORD CHALK FORMATION)	15.50		N5	5, 3 / 2, 1, 1, 1	
						15.50 ... [NI] recovered as: firm to stiff, white SILT	15.50	D11			
17/11/16	16.50	2.30				16.00 ... becoming angular to subangular strong, chalk fragments with no rinded flint	16.00-16.50	B12			
						16.50 ... [NI] recovered as: firm to stiff, white SILT	16.50		N9	1, 2 / 2, 3, 2, 2	
						17.00 ... with cobble size strong, medium density chalk fragments and coarse gravel and cobble size angular to subangular black rinded flint	17.00-17.50	B14			
17/11/16	18.00	3.10					18.00		N11	3, 2 / 3, 2, 3, 3	
						18.00 ... [NI] recovered as: firm, white SILT	18.00	D15			
						18.50 ... with rare pockets of white chalk SILT (<200mm)	18.50-19.00	B16			
17/11/16	19.50	2.90					19.50		N11	3, 2 / 2, 3, 4, 2	
						19.50 ... becoming firm SILT	19.50	D17			
							20.00-20.50	B18			

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 17/11/16 Date Completed 18/11/16	Ground Level (mOD) 4.69	Co-Ordinates E 543245.5 N 180364.4	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
17/11/16	21.00	3.20				20.00 - 20.50 ... with rare angular to subangular coarse black rinded flint gravel	21.00 21.00	D19	N21	2, 3 / 5, 5, 6, 5	
						21.00 ... [NI] recovered as: white gravelly SILT. Gravel is angular to subangular medium to coarse black rinded flint	21.50-22.00	B20			
						21.50 - 22.00 ... with no rinded flint					
17/11/16	22.50	2.80				22.50 ... [NI] recovered as: firm, white SILT	22.50 22.50	D21	N34	3, 4 / 5, 13, 8, 8	
							23.00-23.50	B22			
17/11/16	24.00	3.00					24.00 24.00	D23	N28	5, 5 / 6, 7, 8, 7	
						24.50 - 25.00 ... with no rinded flint	24.50-25.00	B24			
						25.50 ... [NI] recovered as: firm, white SILT					
17/11/16	25.30	2.95					26.00-26.50	B25			
18/11/16	25.30	2.90									
18/11/16	27.00	2.80				27.00 ... [NI] recovered as: white SILT	27.00 27.00	D26	N45	4, 7 / 9, 11, 11, 14	
							28.00	D27			
18/11/16	27.30	3.10				28.00 ... [NI] recovered as: white gravelly SILT. Gravel is angular to subangular fine, extremely weak, low density white chalk and angular to subangular coarse gravel to cobble size black rinded flint	28.50		N50/ 280 mm	5, 8 / 10, 12, 14, 14	
						28.50 ... [NI] recovered as: firm, white SILT	28.50	D28			
							29.50	D29			
18/11/16	27.30	2.90				29.50 ... becoming very silty	30.00		N50/ 233 mm	12, 13 / 18, 13, 14, 5	

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 17/11/16 Date Completed 18/11/16	Ground Level (mOD) 4.69	Co-Ordinates E 543245.5 N 180364.4	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 4 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
18/11/16	27.30	3.00				30.00 ... [NI] recovered as: firm, white gravelly SILT. Gravel is angular to subangular fine to coarse black rinded flint 30.50 ... with no cobble size chalk fragments	30.00	D30			
							31.00 31.10-31.40	D31 B32			
							31.50		N50/ 235 mm	9, 12 / 13, 16, 15, 6	
18/11/16	27.30	3.00	-27.31		32.00	31.50 ... [NI] recovered as: firm, white SILT	31.50	D33			
						End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 09/12/16 Date Completed 14/12/16	Ground Level (mOD) 4.61	Co-Ordinates E 543300.7 N 180351.6	Final Depth 31.40m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00 20.00	20.00 31.40	DS RC	09/12/2016 13/12/2016	13/12/2016 14/12/2016	TC TC	CB CB	112	PDC	Geotec 350 Geotec 350	AR779 AR779

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	150	0.00	150	11.20	11.50		100
20.00	150	14.80	150	11.50	12.00		100
31.40	146			12.00	13.00		100
				13.00	14.00		100
				14.00	14.80		50
				14.80	15.80		40
				15.80	16.80		100
				16.80	17.80		100
				17.80	18.90		100
				18.90	20.00		100
				20.00	21.00		100
				21.00	22.50		100
				22.50	24.00		100
				24.00	25.50		100
				25.50	27.00		100
				27.00	28.00		80
				28.00	28.50		100
				28.50	29.90		100
				29.90	31.40		100

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour
20.00	28.00	Water	70	
28.00	31.40	Water	75	

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
11.20	31.40	Cement / Bentonite Grout	14/12/2016

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 09/12/16 Date Completed 14/12/16	Ground Level (mOD) 4.61	Co-Ordinates E 543300.7 N 180351.6	Final Depth 31.40m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
09/12/16	0.00			... see Remark 4	C	12.00	N5	0, 0 / 1, 1, 2, 1	11.00	
09/12/16	11.20	11.00			C	13.00	N10	1, 3 / 2, 3, 3, 2	12.00	
09/12/16	12.00	12.00			C	14.00	N9	2, 2 / 2, 2, 2, 3	14.00	
09/12/16	14.80	14.80			S	14.80	N10	2, 2 / 2, 3, 2, 3	14.80	
09/12/16	16.80	14.80	2.20		S	15.80	N10	3, 2 / 2, 2, 3, 3	14.80	
13/12/16	16.80	14.80	1.90		S	16.80	N15	1, 1 / 3, 5, 4, 3	14.80	
13/12/16	28.00	14.80	1.10		S	17.80	N22	3, 3 / 6, 5, 5, 6	14.80	
14/12/16	28.00	14.80	2.80		S	18.90	N20	3, 4 / 5, 5, 5, 5	14.80	
14/12/16	31.40	14.80			S	20.00	N16	3, 2 / 4, 3, 4, 5	14.80	
					S	21.00	N17	4, 3 / 3, 4, 4, 6	14.80	
					S	22.50	N44	6, 7 / 9, 11, 11, 13	14.80	
					S	24.00	N49	3, 4 / 8, 12, 13, 16	14.80	
					S	25.50	N50/0.285	2, 4 / 6, 10, 16, 18	14.80	
					S	27.00	N50/0.245	5, 9 / 11, 14, 17, 8	14.80	
					S	28.50	N50/0.285	4, 6 / 11, 12, 14, 13	14.80	
					S	29.90	N50/0.255	3, 6 / 12, 14, 14, 10	14.80	

GENERAL REMARKS

- Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
- Clearance by UXO Magnetometer probe.
- Water present in the borehole from casing installation through the dock.
- Dynamic sampling techniques used from 11.20m to 20.00m. Rotary boring carried out thereafter.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
- U - 100mm Diameter Undisturbed Sample
- UT - 100mm Diameter Thin Wall Undisturbed Sample
- U38 - 38mm Diameter Undisturbed Sample
- D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample
- C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
- SPGW - Groundwater Monitor Standpipe
- SPG/GW - Gas / Groundwater Monitor Standpipe
- VWP - Vibrating Wire Piezometer
- ICM - Inclinator

HOLE TYPES

- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
- CP - Cable Percussion, RC-Rotary Coring, RS-Rotary/Sonic
- DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
- DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

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Sheet 1 of 4

AGS ASSOCIATION OF GRASSLAND SCIENTISTS

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 09/12/16	Ground Level (mOD) 4.61	Co-Ordinates E 543300.7 N 180351.6	Final Depth 31.40m
Date Completed 14/12/16				
Client London City Airport Limited	Method/ Plant Used Dynamic Sampling / Rotary	Sheet 2 of 4		

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill	
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result			
09/12/16	11.00					-6.59		11.20	Soft, brown silty CLAY with occasional dark grey staining and strong hydrocarbon odour. (DOCK SEDIMENT)	11.90 12.00	D01	N5	0, 0 / 1, 1, 2, 1		
			100												
09/12/16	12.00		100				(1.30)								
			</												

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

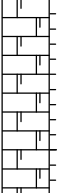
Job No 16/2900	Date Started 09/12/16 Date Completed 14/12/16	Ground Level (mOD) 4.61	Co-Ordinates E 543300.7 N 180351.6	Final Depth 31.40m
Client London City Airport Limited			Method/ Plant Used Dynamic Sampling / Rotary	Sheet 3 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill	
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result			
13/12/16 14/12/16	14.80 14.80	1.10 2.80	100						20.00 ... becoming sandy	20.00	D11		4, 3 / 3, 4, 4, 6		
									20.50 - 20.80 ... with occasional black rinded flint gravel	20.50	B12				
			100	20	10	-17.19		21.80	20.90 ... with 1No subvertical fracture with purple staining	21.00		N17	6, 7 / 9, 11, 11, 13		
									21.50	B13					
			100						Strong, medium density white CHALK with occasional subvertical and subhorizontal fractures with purple staining. (SEAFORD CHALK FORMATION)	22.50	D14	N44	2, 4 / 6, 10, 16, 18		
									White CHALK recovered as: firm to stiff, SILT. (SEAFORD CHALK FORMATION)	22.50					
			100						23.40 ... with horizontal fractures at 23.40m, 23.50m and 23.70m	23.50	B15	N49	3, 4 / 8, 12, 13, 16		
									24.00	D16					
			100	40	27				24.50 ... with 1No subhorizontal fracture at 24.50m and 1No vertical open fracture between 24.50m and 24.70m	24.70	B17		5, 9 / 11, 14, 17, 8		
									24.70 ... with 1No horizontal fracture and at 24.80m, 24.85m and 24.90m	25.50				N50/ 285 mm	
			100	43	41				(9.30)	26.40 - 26.50 ... [NI] recovered as: silty angular to subangular fine to coarse GRAVEL with rare black rinded flint cobbles. Gravel comprises weak, medium density white chalk fragments and rare black rinded flint	26.50-26.70	C19		4, 6 / 11, 12, 14, 13	
										26.65 ... with 1No horizontal fracture and at 26.80m and 26.90m	27.00				N50/ 245 mm
			80							27.00 ... [NI] recovered as: silty angular to subangular fine to coarse GRAVEL. Gravel comprises weak, medium density white chalk fragments and rare black rinded flint	27.00	D20 B21		3, 6 / 12, 14, 14, 10	
										27.40 ... with rare stong, medium density chalk cobbles	27.50				
			100	80	76					27.90 - 28.10 ... with angular to subangular fine to coarse black rinded flint gravel and rare black rinded flint cobbles	28.50		N50/ 285 mm		
										28.20 ... with 1No subvertical fracture	28.50	D22			
			100	71	64					28.35 ... with 1No wide open fracture infilled with angular to subangular fine to coarse weak, medium density chalk fragments	29.40-29.70	C23			
										28.70 ... becoming very silty with frequent angular to subangular fine to coarse black rinded flint	29.90				N50/ 255 mm
										28.90 ... with subvertical fractures					
										29.20 - 29.30 ... with 1No wide open fracture infilled with angular to subangular fine to coarse weak, medium density chalk fragments and rare black rinded flint cobbles					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 09/12/16 Date Completed 14/12/16	Ground Level (mOD) 4.61	Co-Ordinates E 543300.7 N 180351.6	Final Depth 31.40m
Client London City Airport Limited			Method/ Plant Used Dynamic Sampling / Rotary	Sheet 4 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
14/12/16	14.80		100	67	63				29.40 ... with 1No horizontal fracture 29.60 - 29.70 ... with 1No wide open fracture infilled with angular to subangular fine to coarse weak, medium density chalk fragments and black rinded flint and rare black rinded flint cobbles 30.20 - 30.30 ... [NI] recovered as: silty angular to subangular fine to coarse GRAVEL. Gravel comprises weak to moderately weak, medium density white chalk fragments and rare black rinded flint 30.55 ... with 1No horizontal fracture 30.60 ... with 1No vertical fracture 30.90 ... with 1No wide open fracture infilled with angular to subangular fine to coarse moderately weak to weak, medium density chalk fragments 31.10 ... with 1No horizontal fracture End of Borehole	29.90 30.20-30.40	D24 C25			
			100	67	63							31.10-31.40		C26
						-26.79		31.40						

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 07/12/16 Date Completed 08/12/16	Ground Level (mOD) 4.19	Co-Ordinates E 543391.0 N 180334.1	Final Depth 32.00m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00 18.50	18.50 32.00	DS RC	07/12/2016 07/12/2016	07/12/2016 08/12/2016	TC TC	CB CB	112	PCD	Geotec 350 Geotec 350	AR779 AR779

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	150	0.00	200	12.00	12.50		100
18.50	150	17.50	150	12.50	13.50		100
32.00	146			13.50	14.50		100
				14.50	15.20		100
				15.20	16.20		100
				16.20	17.20		80
				17.20	18.50		100
				18.50	19.50		60
				19.50	20.00		100
				20.00	20.60		100
				20.60	21.50		78
				21.50	23.00		100
				23.00	24.50		100
				24.50	26.00		100
				26.00	27.50		100
				27.50	29.00		100
				29.00	30.50		100
				30.50	32.00		100

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour
18.50	19.50	Water	25	
19.50	32.00	Water	75	

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
12.00	32.00	Cement / Bentonite Grout	08/12/2016

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 07/12/16 Date Completed 08/12/16	Ground Level (mOD) 4.19	Co-Ordinates E 543391.0 N 180334.1	Final Depth 32.00m
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Client

London City Airport Limited

PROGRESS					SPT DETAILS					
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)
07/12/16	0.00			... see Remark 4	C	13.50	N9	0, 0 / 1, 3, 2, 3	12.50	
07/12/16	12.00	12.50			C	14.50	N9	0, 1 / 2, 2, 2, 3	12.50	
07/12/16	18.50	12.50			S	15.20	N10	1, 2 / 2, 2, 3, 3	12.50	
07/12/16	19.50	17.50			S	16.20	N6	3, 4 / 1, 1, 2, 2	12.50	
08/12/16	19.50	17.50	1.70		S	17.20	N10	2, 3 / 3, 3, 2, 2	12.50	
08/12/16	32.00	17.50	0.90		S	18.50	N12	2, 3 / 3, 3, 3, 3	17.50	
					S	20.00	N13	3, 3 / 3, 3, 3, 4	17.50	
					S	21.50	N15	3, 3 / 4, 4, 3, 4	17.50	
					S	23.00	N42	5, 8 / 9, 10, 11, 12	17.50	
					S	24.50	N44	6, 6 / 9, 11, 11, 13	17.50	
					S	26.00	N50/0.24	6, 11 / 13, 18, 15, 4	17.50	
					S	27.50	N42	5, 7 / 8, 11, 11, 12	17.50	
					S	29.00	N50/0.255	4, 8 / 12, 13, 17, 8	17.50	
					S	30.50	N50/0.015	18, 7 / 50	17.50	

GENERAL REMARKS

1. Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.
2. Clearance by UXO Magnetometer probe.
3. Water present in the borehole from casing installation through the dock.
4. Dynamic sampling techniques used from 12.00m to 18.50m. Rotary boring carried out thereafter.

KEY

SAMPLES

- ES - Environmental Sample (Tub, Vial, Jar)
- U - 100mm Diameter Undisturbed Sample
- UT - 100mm Diameter Thin Wall Undisturbed Sample
- U38 - 38mm Diameter Undisturbed Sample
- D - Disturbed Sample, B-Bulk Sample, L-B- Large Bulk Sample, BLK-Block Sample
- C - Core Sample, W-Water Sample, R-Root Sample

INSTALLATION DETAILS

- SPIE - Standpipe Piezometer
- SPGW - Groundwater Monitor Standpipe
- SPG/GW - Gas / Groundwater Monitor Standpipe
- VWP - Vibrating Wire Piezometer
- ICM - Inclinator

HOLE TYPES

- IP - Inspection Pit, TP-Trial Pit TT - Trial Trench
- CP - Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic
- DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary
- DC - Diamond Coring, CPR-Cable Percussion Rotary follow on

TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds

Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key

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Sheet 1 of 4

AGS Association of Geriatricians of Singapore

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 07/12/16	Ground Level (mOD) 4.19	Co-Ordinates E 543391.0 N 180334.1	Final Depth 32.00m
Date Completed 08/12/16				
Client London City Airport Limited	Method/ Plant Used Dynamic Sampling / Rotary		Sheet 2 of 4	

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill	
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
07/12/16	12.50					-7.81		12.00	Soft, light brown silty CLAY. (DOCK SEDIMENT) 12.20 ... becoming very soft, dark grey with strong hydrocarbon odour	12.40	D01			
			100					(1.50)						
						-9.31		13.50	Dark grey sandy angular to well rounded fine to coarse flint GRAVEL with slightly strong hydrocarbon odour. Sand is fine to coarse. (RIVER TERRACE DEPOSITS) 13.70 ... becoming yellowish brown and very sandy	13.40 13.50 13.70	D02 B03	N9	0, 0 / 1, 3, 2, 3	
						-9.81		14.00		14.10	B04			
			100					(0.50)						
									White CHALK [NI] recovered as : soft to firm, gravelly SILT. Gravel is angular to subangular fine to coarse moderately weak to weak, medium density chalk fragments. (SEAFORD CHALK FORMATION) 14.50 ... with 1No black rinded flint cobble 14.70 ... [NI] recovered as: very silty angular to subangular fine to coarse GRAVEL. Gravel is weak, medium density white chalk fragments and black rinded flint 15.10 ... with 1No black rinded flint cobble 15.40 - 15.90 ... with angular to subangular fine to coarse black rinded flint 15.90 ... with rare angular to subangular moderately weak, medium density chalk cobbles 16.20 ... with angular to subangular medium to coarse moderately weak, medium density chalk fragments and black rinded flint 16.40 ... with rare moderately weak, medium density chalk cobbles 16.65 ... with rare black rinded flint cobbles 16.70 ... with angular to subangular fine to coarse moderately weak to weak, medium density chalk fragments and black rinded flint 17.20 ... becoming very silty with rare angular to subangular rinded flint 17.30 ... [NI] recovered as : very gravelly SILT. Gravel is angular to subangular fine to coarse weak medium density chalk fragments 17.80 ... with rare moderately weak chalk cobbles 18.20 ... with rare black rinded flint cobbles 18.30 ... [NI] recovered as: angular to subangular fine to coarse GRAVEL. Gravel comprises moderately weak, medium density chalk fragments and black rinded flint 18.50 ... with rare medium density chalk cobbles	14.50 15.00 15.20 15.20 15.70 16.20 16.20-17.20 17.20 17.20 18.10 18.50 18.50	B05 B06 B07 B08 D09 B10 D11	N9 N10 N6 N10 N12	0, 1 / 2, 2, 2, 3 1, 2 / 2, 2, 3, 3 3, 4 / 1, 1, 2, 2 2, 3 / 3, 3, 2, 2 2, 3 / 3, 3, 3, 3	
07/12/16	12.50													
07/12/16	17.50									19.50-20.00	B12			
08/12/16	17.50	1.70							19.50 ... with angular to subangular fine to coarse moderately weak to weak, medium density chalk fragments	20.00	N13		3, 3 / 3, 3, 3, 4	

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 07/12/16	Ground Level (mOD) 4.19	Co-Ordinates E 543391.0 N 180334.1	Final Depth 32.00m
Date Completed 08/12/16				
Client London City Airport Limited	Method/ Plant Used Dynamic Sampling / Rotary		Sheet 3 of 4	

PROGRESS			STRATA						SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No		
			100						19.60 ... [NI] recovered as : firm, very gravelly SILT. Gravel is angular to subangular fine to coarse moderately weak to weak, medium density chalk fragments and black rinded flint	20.60-21.50	B13		
			78					20.00 - 20.50 ... [NI] recovered as : angular to subangular fine to coarse silty GRAVEL with occasional black rinded flint cobbles. Gravel comprises moderately weak to weak, medium density chalk fragments and black rinded flint					
								20.60 ... [NI] recovered as : angular to subangular fine to coarse GRAVEL with occasional black rinded flint cobbles and rare chalk cobbles. Gravel comprises moderately weak to weak, medium density chalk fragments and black rinded flint	21.50 21.50	D14	N15	3, 3 / 4, 4, 3, 4	
			100	73	63			21.50 ... with a band of angular to subangular black rinded flint cobbles	22.00				
								21.70 ... with occasional medium to coarse black rinded flint, rare black rinded flint cobbles and weak, medium density chalk cobbles					
								21.80 ... becoming medium to strong, medium density white CHALK with occasional subvertical fractures and purple staining	23.00 23.00	D16	N42	5, 8 / 9, 10, 11, 12	
								22.60 - 22.90 ... [NI] recovered as : angular to subangular fine to coarse GRAVEL with rare chalk cobbles. Gravel is weak, medium density chalk fragments					
								22.90 ... with 1No angular to subangular black rinded flint cobble	23.80	B17			
			100	53	43			23.00 ... with occasional angular to subangular medium to coarse black rinded flint					
								23.20 - 23.60 ... [NI] becoming gravelly SILT. Gravel is angular to subangular fine to coarse black rinded flint	24.50 24.50	D18	N44	6, 6 / 9, 11, 11, 13	
								24.30 ... with occasional angular to subrounded medium to coarse flint gravel and subvertical and subhorizontal fractures					
								24.50 - 24.70 ... [NI] recovered as : angular to subangular fine to coarse GRAVEL. Gravel is weak medium density chalk fragments					
								25.00 - 25.30 ... [NI] recovered as : angular to subangular fine to coarse GRAVEL with rare moderately weak, medium density chalk cobbles and occasional black rinded flint cobbles. Gravel is weak, medium density chalk fragments	25.40-25.70	C19			
								25.70 - 26.00 ... [NI] recovered as : angular to subangular fine to coarse GRAVEL with rare black rinded flint cobbles and rare moderately weak, medium density chalk cobbles. Gravel is weak, medium density chalk fragments and black rinded flint	26.00				
								26.00 - 26.30 ... [NI] recovered as : firm, white gravelly SILT with weak medium density chalk cobbles. Gravel is angular to subangular fine to coarse weak, medium density chalk fragments	26.00 26.50-26.80	D20 C21	N50/ 240 mm	6, 11 / 13, 18, 15, 4	
			100	60	53			26.45 ... with 1No horizontal fracture infilled with extremely weak, low density angular to subangular fine to coarse chalk fragments					
								26.75 ... with 1No subhorizontal fracture	27.50 27.50	D22	N42	5, 7 / 8, 11, 11, 12	
								26.85 ... with 1No wide open subhorizontal fracture					
								27.00 ... with 1No wide open horizontal fracture infilled with weak, medium density angular to subangular fine to coarse chalk fragments					
								27.30 ... with 1No wide open horizontal fracture					
								27.50 - 27.60 ... [NI] recovered as : angular to subangular fine to coarse GRAVEL. Gravel comprises weak, medium density chalk fragments and black rinded flint	28.70	B23			
								27.80 ... with 1No subvertical fracture	29.00				
								28.00 - 28.10 ... with 1No vertical fracture infilled with angular to subangular fine to coarse weak, medium density chalk fragments and black rinded flint	29.00	D24	N50/ 255 mm	4, 8 / 12, 13, 17, 8	
			100	73	50			28.30 ... with 1No subvertical fracture					
								28.50 ... with 1No wide open horizontal fracture	29.80-30.00	C25			
								28.70 - 28.90 ... with 1No wide open horizontal fracture					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 07/12/16 Date Completed 08/12/16	Ground Level (mOD) 4.19	Co-Ordinates E 543391.0 N 180334.1	Final Depth 32.00m
Client London City Airport Limited			Method/ Plant Used Dynamic Sampling / Rotary	Sheet 4 of 4

PROGRESS			STRATA							SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	TCR %	SCR %	RQD %	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
08/12/16	17.50	0.90	100	73	50				29.00 - 29.40 ... [NI] recovered as : angular to subangular fine to coarse GRAVEL with rare black rinded flint cobbles and rare moderately weak, medium density chalk cobbles. Gravel is weak, medium density chalk fragments and black rinded flint	30.10-30.35	C26	N50/ 15 mm	18, 7 / 50	
									29.55 ... with 1No horizontal fracture and at 29.65m, 29.80m, 30.00m, 30.10m, 30.40m	30.50				
			100	73	60				30.50 - 30.70 ... [NI] becoming very silty GRAVEL with rare black rinded flint cobbles and rare moderately weak, medium density chalk cobbles. Gravel is angular to subangular fine to coarse weak, medium density chalk fragments and black rinded flint	31.70-32.00	C27			
						-27.81		32.00	30.85 ... with 1No wide open horizontal fracture infilled with angular to subangular fine to coarse weak, medium density chalk fragments					
									31.00 - 31.15 ... with rare angular to subangular black rinded flint cobbles					
									31.35 ... with 1No horizontal fracture					
									31.55 ... with 1No horizontal fracture					
									31.70 ... with 1No open wide fracture infilled with angular to subangular fine to coarse weak, medium density chalk fragments and with rare medium weak, chalk cobbles					
									End of Borehole					

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 15/11/16 Date Completed 16/11/16	Ground Level (mOD) 4.96	Co-Ordinates E 543460.0 N 180338.9	Final Depth 31.50m
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Client

London City Airport Limited

BOREHOLE SUMMARY

Top (m)	Base (m)	Type	Date Started	Date Ended	Crew	Logged By	Core Barrel (mm)	Core Bit	Plant Used/ Method	SPT Hammer Reference
0.00	31.50	CP	15/11/2016	16/11/2016	SW	CB			Dando 175	AR909

WATER STRIKES

WATER ADDED

CHISELLING / SLOW DRILLING

Strike at (m)	Rise to (m)	Time to Rise (min)	Casing Depth (m)	Sealed (m)	From (m)	To (m)	From (m)	To (m)	Duration (hr)	Remarks

HOLE

CASING

ROTARY RECOVERY

Depth (m)	Diameter (mm)	Depth (m)	Diameter (mm)	From (m)	To (m)	Blows	Recovery (%)
0.00	200	0.00	200				
16.50	200	15.10	200				
31.50	150	26.50	150				

ROTARY FLUSH DETAIL

From (m)	To (m)	Flush Type	Flush Return (%)	Flush Colour

INSTALLATION DETAILS

Type	Diameter (mm)	Depth of Installation (m)	Top of Response Zone (m)	Bottom of Response Zone (m)	Date of Installation

BACKFILL DETAILS

Top (m)	Bottom (m)	Material	Backfill Date
11.50	31.50	Cement / Bentonite Grout	16/11/2016

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 15/11/16	Ground Level (mOD) 4.96	Co-Ordinates E 543460.0 N 180338.9	Final Depth 31.50m
Date Completed 16/11/16				

Client

London City Airport Limited

PROGRESS					SPT DETAILS						
Date	Hole Depth (m)	Casing Depth (m)	Water Depth (m)	Remarks	Type	Depth (m)	N Value	Blow Count / 75mm	Casing Depth (m)	Water Depth (m)	
15/11/16	0.00			... see Remark 3	S	12.00	N0	0, 0 / 0, 0, 0, 0	12.00	0.90	
15/11/16	12.00	12.00	0.90		C	14.00	N48	7, 9 / 11, 12, 14, 11	14.00	0.90	
15/11/16	13.00	13.00	1.20		S	15.00	N14	2, 3 / 3, 5, 3, 3	15.00	1.00	
15/11/16	14.00	14.00	0.90		S	15.10	N10	2, 2 / 3, 2, 2, 3	15.10	1.00	
15/11/16	15.00	15.00	1.00		S	17.50	N8	3, 2 / 1, 2, 3, 2	17.50	1.60	
15/11/16	16.00	15.10	1.00		S	19.00	N8	2, 2 / 1, 2, 3, 2	19.00	2.20	
15/11/16	16.50	15.10	0.95		S	20.50	N11	9, 7 / 3, 2, 3, 3	20.50	1.40	
16/11/16	16.50	15.10	0.90		S	22.00	N13	2, 2 / 3, 2, 3, 5	22.00	2.00	
16/11/16	17.50	17.50	1.60		S	23.50	N38	5, 6 / 6, 5, 17, 10	23.50	2.80	
16/11/16	19.00	19.00	2.20		S	25.00	N24	4, 7 / 7, 6, 5, 6	25.00	1.60	
16/11/16	20.50	20.50	1.40		S	26.50	N38	3, 5 / 7, 9, 12, 10	26.50	1.40	
16/11/16	22.00	22.00	2.00		S	28.00	N44	6, 8 / 10, 10, 11, 13	26.50	1.10	
16/11/16	23.50	23.50	2.80		S	29.50	N50/0.275	10, 11 / 10, 12, 11, 17	26.50	1.50	
16/11/16	25.00	25.00	1.60		S	31.00	N50/0.295	8, 10 / 12, 12, 14, 12	26.50	2.10	
16/11/16	26.50	26.50	1.40								
16/11/16	28.00	26.50	1.10								
16/11/16	29.50	26.50	1.50								
16/11/16	31.00	26.50	2.10								
16/11/16	31.50	26.50	2.10								
GENERAL REMARKS											
1. Borehole carried out from a pontoon. All levels are recorded relative to the pontoon level.											
2. Clearance by UXO Magnetometer probe.											
3. Water present in the borehole from casing installation through the dock.											
4. Ø200mm casing used from pontoon level to 15.10m depth. Bentonite seal inserted between 14.50m and 16.50m and borehole re-drilled with Ø150mm casing to 26.50m depth.											
KEY											
SAMPLES											
ES - Environmental Sample (Tub, Vial, Jar)											
U - 100mm Diameter Undisturbed Sample											
UT - 100mm Diameter Thin Wall Undisturbed Sample											
U38 - 38mm Diameter Undisturbed Sample											
D - Disturbed Sample, B-Bulk Sample, LB- Large Bulk Sample, BLK-Block Sample											
C - Core Sample, W-Water Sample, R-Root Sample											
INSTALLATION DETAILS											
SPIE - Standpipe Piezometer											
SPGW - Groundwater Monitor Standpipe											
SPG/GW - Gas / Groundwater Monitor Standpipe											
VWP - Vibrating Wire Piezometer											
ICM - Inclinator											
HOLE TYPES											
IP - Inspection Pit, TP-Trial Pit TT - Trial Trench											
CP - Cable Percussion, RC-Rotary Coring, R/S-Rotary/Sonic											
DS - Dynamic Sampling, DS/R-Dynamic Sampling /Rotary											
DC - Diamond Coring, CP/R-Cable Percussion Rotary follow on											
TESTS S/C-SPT / CPT, V-Shear Vane, PP-Pocket Penetrometer, MP-Mackintosh Probe, VOC-Volatile Organic Compounds											
Note: All depths are in metres, all diameters in millimetres, water strike rise time in minutes. For details of abbreviations see Key											

Sheet 2 of 4

Log Print Date & Time: 03/03/2017 17:46

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 15/11/16 Date Completed 16/11/16	Ground Level (mOD) 4.96	Co-Ordinates E 543460.0 N 180338.9	Final Depth 31.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 3 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
16/11/16	20.50	1.40				black rinded flint and rare black angular rinded flint cobbles	20.50 20.50	D21	N11	9, 7 / 3, 2, 3, 3	
						21.00 ... becoming very silty with rare angular to subangular coarse black rinded flint	21.00-21.50	B22			
16/11/16	22.00	2.00				22.00 ... [NI] recovered as: slightly gravelly SILT. Gravel is angular to subangular fine to coarse extremely weak, low density chalk fragments	22.00 22.00	D23	N13	2, 2 / 3, 2, 3, 5	
						22.50 ... becoming silty	22.50-23.00	B24			
16/11/16	23.50	2.80			(16.50)	23.50 ... [NI] recovered as: firm SILT	23.50 23.50	D25	N38	5, 6 / 6, 5, 17, 10	
							24.00-24.50	B26			
16/11/16	25.00	1.60				25.00 - 26.50 ... [NI] recovered as: firm SILT	25.00 25.00	D27	N24	4, 7 / 7, 6, 5, 6	
							25.50-26.00	B28			
16/11/16	26.50	1.40				27.00 - 27.50 with frequent angular to subangular black rinded flint cobbles	26.50 26.50	D29	N38	3, 5 / 7, 9, 12, 10	
							27.00-27.50	B30			
16/11/16	26.50	1.10				28.00 ... [NI] recovered as: firm gravelly SILT. Gravel is medium to coarse black rinded flint	28.00 28.00	D31	N44	6, 8 / 10, 10, 11, 13	
							29.00	B32			
16/11/16	26.50	1.50				29.00 ... [NI] recovered as: very silty angular to subangular fine to coarse GRAVEL with occasional black rinded flint cobbles. Gravel is very weak, medium density chalk fragments	29.50		N50/ 275 mm	10, 11 / 10, 12, 11, 17	
						29.50 ... [NI] recovered as: firm slightly gravelly SILT. Gravel is fine black rinded flint	29.50 30.00	D33 B34			

Project

CADP Surveys Ground Investigation (Dock) - Phase 2

Job No 16/2900	Date Started 15/11/16 Date Completed 16/11/16	Ground Level (mOD) 4.96	Co-Ordinates E 543460.0 N 180338.9	Final Depth 31.50m
Client London City Airport Limited			Method/ Plant Used Cable Percussion	Sheet 4 of 4

PROGRESS			STRATA				SAMPLES & TESTS			Field Records	Instrument/ Backfill
Date	Casing	Water	Level (mOD)	Legend	Depth (Thickness)	Strata Description	Depth (m)	Type No	Test Result		
16/11/16	26.50	2.10					31.00		N50/ 295 mm	8, 10 / 12, 12, 14, 12	
16/11/16	26.50	2.10	-26.55		31.50	End of Borehole	31.00	D35			

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: C1
Test Date: 06/06/2016
Report Date: 6/6/2016
File Name: C1.spt
Test Operator: SH

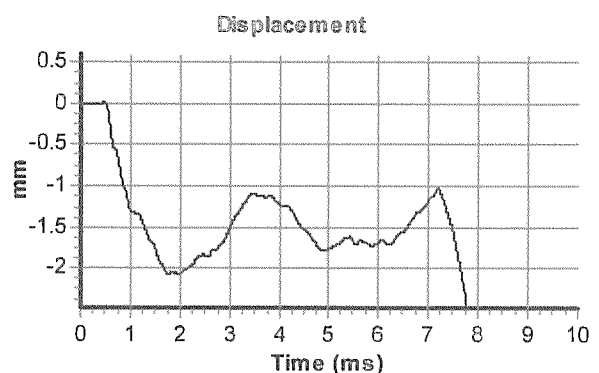
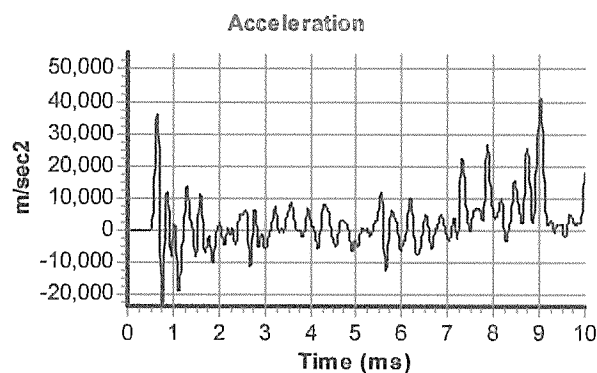
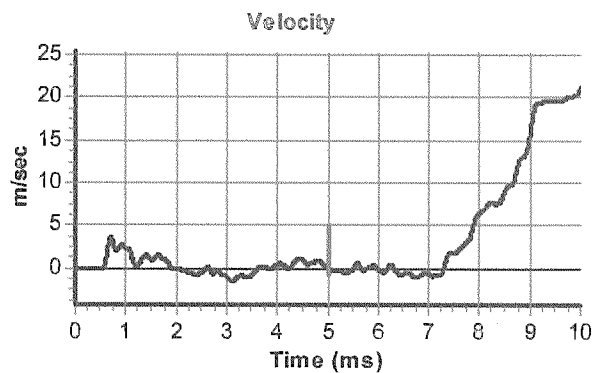
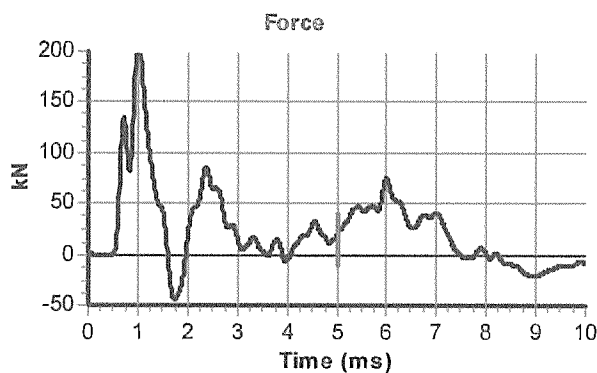
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.1
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 7079

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location
CALIBRATION



Calculations

Area of Rod A (mm²): 918
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 274

Energy Ratio E_r (%): 58

Signed: M.GARDNER
Title: FITTER

The recommended calibration interval is 12 months

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: AR909
Test Date: 06/06/2016
Report Date: 6/6/2016
File Name: AR909.spt
Test Operator: SH

Instrumented Rod Data

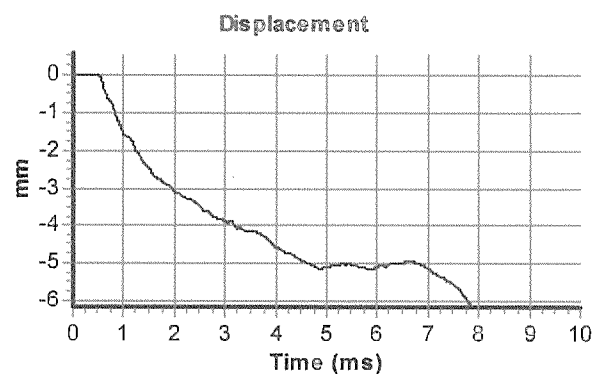
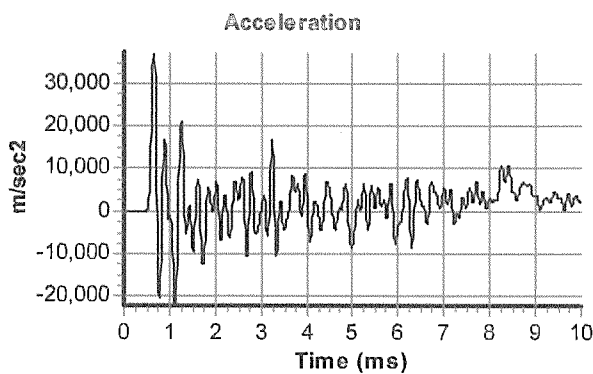
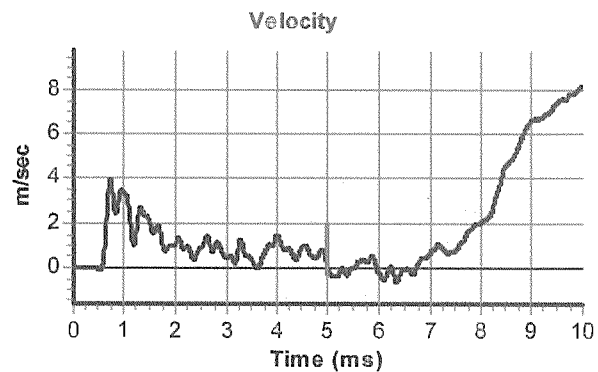
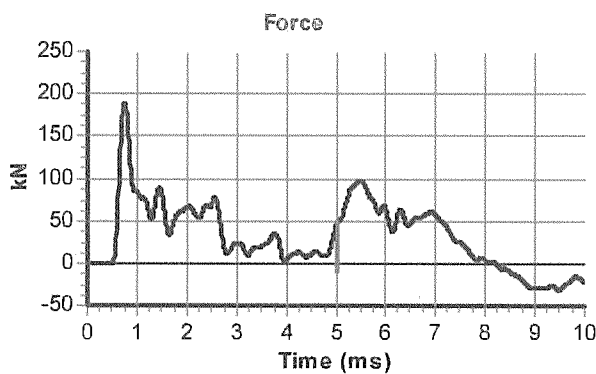
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.1
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 7079

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location

CALIBRATION



Calculations

Area of Rod A (mm²): 918
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 333

Energy Ratio E_r (%): **70**

Signed: M.GARDNER
Title: FITTER

The recommended calibration interval is 12 months

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref: AR779
Test Date: 06/06/2016
Report Date: 6/6/2016
File Name: AR779.spt
Test Operator: SH

Instrumented Rod Data

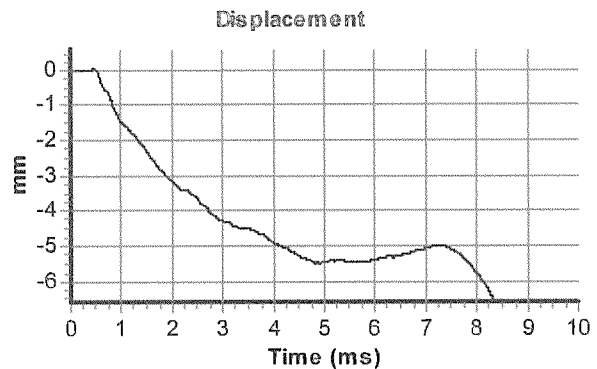
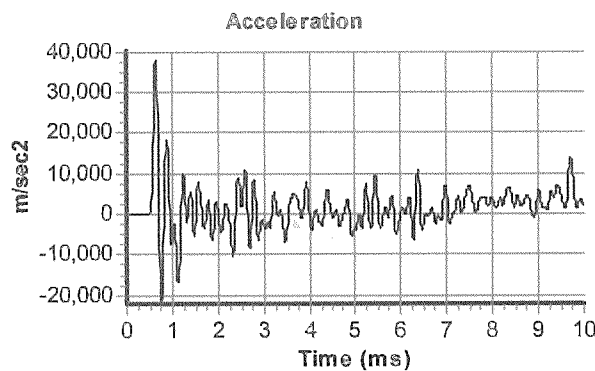
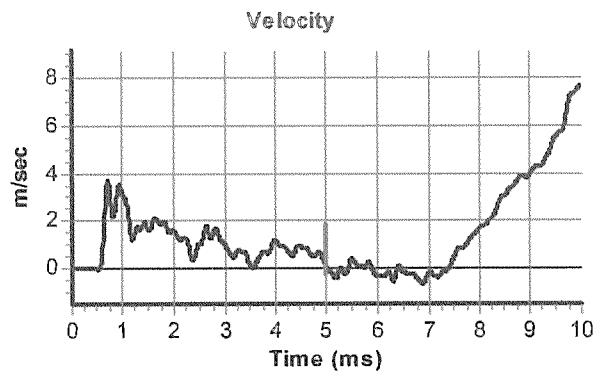
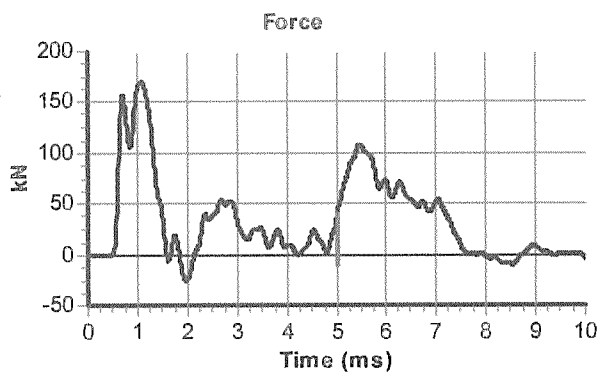
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.1
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 7079

SPT Hammer Information

Hammer Mass m (kg): 63.5
Falling Height h (mm): 760
SPT String Length L (m): 10.0

Comments / Location

CALIBRATION



Calculations

Area of Rod A (mm²): 918
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 312

Energy Ratio E_r (%):

66

Signed: M.GARDNER

Title: FITTER

The recommended calibration interval is 12 months