

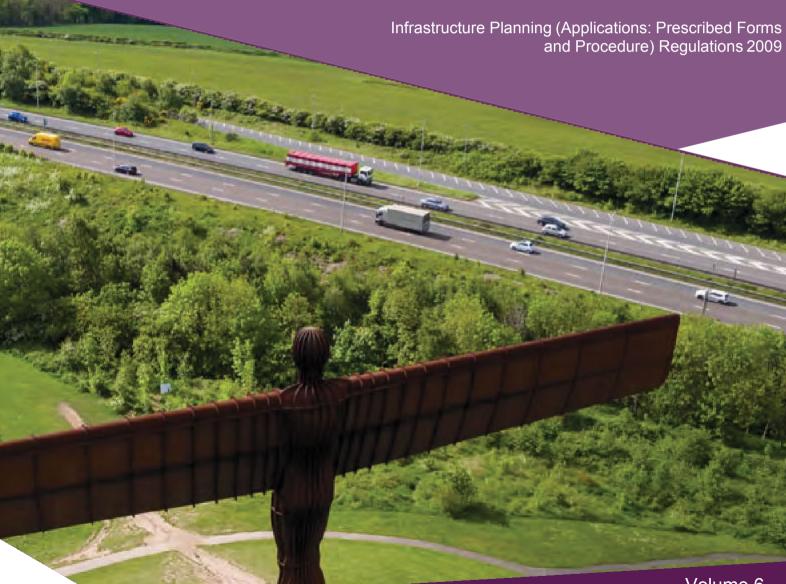
# A1 Birtley to Coal House

**Scheme Number: TR010031** 

6.3 Environmental Statement – Appendix 9.2b Ground Investigation Factual Report

APFP Regulation 5(2)(a)

Planning Act 2008



Volume 6



# Infrastructure Planning

Planning Act 2008

# The Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009

# **A1** Birtley to Coal House

Development Consent Order 20[xx]

# Environmental Statement - Appendix

Regulation Reference:	APFP Regulation 5(2)(a)
Planning Inspectorate Scheme Reference	TR010031
Application Document Reference	TR010031/APP/6.3
Author:	A1 Birtley to Coal House Project Team, Highways England

Version	Date	Status of Version
Rev 0	14 August 2019	Application Issue

# APPENDIX A EXPLORATORY HOLE LOGS

Central Alliance Pre Construction Services Unit 3A, South Park Way, Wakefield 41 Business Park

Wakefield, WF2 0XJ.

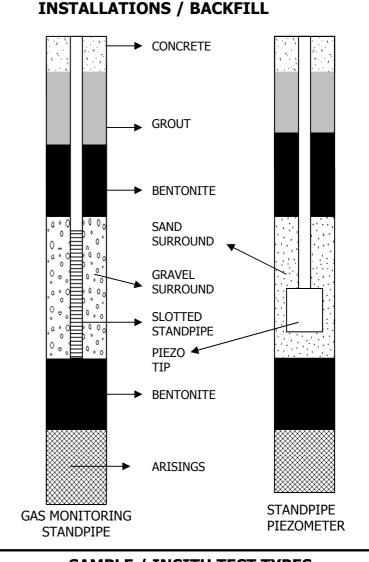
Telephone: 01924 229 889

Internet <a href="www.central-alliance.co.uk">www.central-alliance.co.uk</a>



# **EXPLORATORY HOLE LEGEND SHEET**

# STRATA LEGENDS **TOPSOIL** MADE GROUND **CLAY** SANDY GRAVELLY **CLAY** ORGANIC CLAY **SILT SAND GRAVEL** SAND & GRAVEL عاد عاد عاد **PEAT** অভি অভি **COBBLES BOULDERS** MUDSTONE $\times \times \times \times \times \times \times$ **SILTSTONE** $\times \times \times \times \times \times \times$ **SANDSTONE** LIMESTONE **CHALK**



# **SAMPLE / INSITU TEST TYPES**

В	Bulk Disturbed Sample
D	Disturbed Sample

W Water Sample ES Environmental S

ES Environmental Soil Sanple EW Environmental Water Sample

U Undisturbed Sample

P Piston Sample

S SPT (Split Spoon) C CPT / Core Sample

HV Hand Vane

PID Photo Ionisation Detector

# Standing Water Level N=20 (2,2,3,4,6,7) Water Strike N"Value (sum (150mm) (300mm)

of main drive)

Level



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Sheet

Exploratory Hole Number

BH17-01
FINAL

CENTRAL ALLIANCE

Project No:	3043		Location Details			Methodology & Plant		Scale:	1:50	
		Easting:	424481.15	Northing:	558625.34	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	121102125	reorening.	330023.31	0.00 - 1.20	Inspection Pit	Hand Tools	- Circoncui	
		Elevation:	18.81mAOD	Final Depth:	8.00m	1.20 - 8.00	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	14/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	14/05/2018

Hole Di	Hole Diameter					
Depth (m) Diam (mm)						

Casing Diameter						
	Diam (mm)					
2.00	116					

	Groundwater Strikes						
Strike Casing Sealed Time Rose To Remarks							
(m)	(m)	(m)	(min)	(m)	Remarks		
ł							

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill				
Depth (m)	Legend Code			
0.00 - 8.00	Bentonite			

In-Situ Tests	
PID	0
Hand Vane*	5
Standard Penetration Tests	7

	_
* One count indicates an av	erage
reported result of 3 tests carrie	ed out at
one depth where availab	le.

Samuela Samuela					
Sample Summary					
Enviro	nmer	ntal Samples			
Soil	5	Water	0		
Geote	chnic	cal Samples			
Bulk	7	Large Bulk	0		
Disturbed	16	Disturbed (NR)	0		
Piston	Piston 0 Piston (NR)				
Undisturbed	0	Undisturbed (NR)	0		
Undisturbed Thin Wall					
Undisturbed Thin Wall (NR)					
Cor	re San	nple	0		

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary												
Test Type	Depth	Casing	Water	Seating	Main	Penetration	N	Reported Result	Hammer Ref				
iest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	nammer ker				
Split Spoon	1.20	-	-	2	12	450	12	N=12 (1,1/1,3,4,4)	MOD 02				
Split Spoon	2.00	-	-	3	16	450	16	N=16 (1,2/3,3,4,6)	MOD 02				
Split Spoon	3.00	-	-	6	17	450	17	N=17 (3,3/4,4,5,4)	MOD 02				
Split Spoon	4.00	-	-	4	10	450	10	N=10 (2,2/3,2,2,3)	MOD 02				
Split Spoon	5.00	-	-	4	11	450	11	N=11 (2,2/2,3,3,3)	MOD 02				
Split Spoon	6.00	-	-	4	11	450	11	N=11 (2,2/2,2,3,4)	MOD 02				
Split Spoon	7.00	-	-	6	12	450	12	N=12 (3,3/3,3,3,3)	MOD 02				

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

# **Applicable to Cable Percussion Only**

Chiselling									
Depth (m)	Duration (mins)								
2.50 - 2.70	30								
1	l								

Water Added									
Depth (m)	Litres								

## **Applicable to Rotary Only**

Drilling Flush									
Depth (m)	Flush Type	Flush Colour	Return %						

# **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs										
Depth (m) Diam (mm) Recovery % Remarks										
1.20 - 2.00	101	100								
2.00 - 3.00	101	100								
3.00 - 4.00	86	75								
4.00 - 5.00	86	85								
5.00 - 6.00	76	95								
6.00 - 7.00	76	90								
7.00 - 8.00	66	10								



Project No:

3043

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Location Details:

Cable Percussion

Log Type

Exploratory Hole Number **BH17-01** 

FINAL



Sheet 1 of 1 Methodology & Plant Scale: 1:50 Method Plant Used Depth (m) Checked By: RPH 558625.34

FIOJ	ect No.	3043				on Details.			Doort	h />		tilodology	OX FIBIL	Diametria		Scale.	1.30
Nam	ne:	A1 Birtley to Coalhouse	Easting:	4244	181.15	Northi	ng: <b>5</b>	58625.34	0.00	h (m) - 1.20	Inspec	thod tion Pit		Plant Used Hand Tools		Checked By:	RPH
			Elevation:	18.8	1mAOD	Final D	epth: 8	.00m	1.20	- 8.00 Dy	namic Sampli	ng (Windowle	ss) Mod	ular Window Sa	mpler	Approved By:	BH
Loca	ation:	Tyne and Wear	Logged By:	GS		Grid Sy	stem: O	SGB								Start Date: 14	1/05/2018
Clier	nt:	SLIV	Orientation:	N/A		Inclina	tion: 9	0°								Finish Date: 14	1/05/2018
						Depth (m)	Reduced	Chiselling	Water	Hole Ø	Casing Ø	Water	Installation /			Samples & Testing	
		Strata Description			Legend	(Stratum Thickness)	Level (mAOD)	(mins)	Added (Litres)	(mm) Depth (m)	(mm) Depth (m)	Water Level (m)	Backfill	Depth (m)	Ref	Test Results	
$\vdash$	MADE G	ROUND: Soft brown gravelly CLAY. Gravel i	is suhangu	lar	******	-					1						
-		oarse sandstone, mudstone, brick and rare				(0.55)								0.20	1 D		
1						(0.55)								0.30	2 ES		•
	MADEG	ROUND: Yellow sandy subangular fine to o	narse			0.55	18.26							0.55	3 D 7 B		-
		ne GRAVEL. Sand is fine to coarse.	course	/		(0.10) 0.65	18.16							0.65 - 1.20 0.70	4 ES		
١. ١		ROUND: Yellowish brown gravelly sandy C	LAY. Grave	lis										1.00	5 D		
1 -	subangu	llar fine to coarse sandstone, mudstone an	nd brick. Sa	and		(0.75)								1.00	6 ES		1 -
1	is fine to	coarse.												1.20 - 1.65	8 D	SPT(S) 1.20m, N=12 (1,1/1,3,4	1,4)
	MADE G	ROUND: Firm dark brown slightly gravelly	slightly sa	ndy		1.40	17.41							1.40 - 2.00 1.50	10 B 9 D		
		ravel is subangular fine to coarse sandston															
-	brick and	d coal. Sand is fine to coarse.															
2 -						(1.10)					116 2.00			2.00	11 ES	SPT(S) 2.00m, N=16 (1,2/3,3,4	4,6) 2 -
											2.00						
	Firm to	stiff thinly laminated orangish grey silty CL	AY with rai	re	××××××××××××××××××××××××××××××××××××××	2.50	16.31	30	1					2.50 2.50 - 3.00	12 D 14 B	HV 2.50m, (p)=60 kPa (r)=6 kl	Pa -
	peat and			-	<u>×_×</u> _			- 50	1					2.20 3.00	1-1		
					$\frac{\times}{\times}$												
3 -					× ×	(1.00)								3.00 3.00 - 3.45	13 ES 15 D	SPT(S) 3.00m, N=17 (3,3/4,4,5	5,4) 3 -
					<u>×_</u>									3.00 - 4.00	17 B		
1					×_^_	3.50	15.31							3.50	16 D	HV 3.50m, (p)=60 kPa (r)=9 kl	Pa ·
	Firm to s	stiff grey laminated CLAY.				3.30	13.31							3.30	100	11v 3.3011, (p)=00 kFa (1)=3 ki	- 4
																	•
4 -					<u> </u>									4.00 - 4.45	18 D	SPT(S) 4.00m, N=10 (2,2/3,2,2	2,3) 4 -
														4.00 - 5.00	20 B		
-																	
ΙĪ														4.50	19 D	HV 4.50m, (p)=55 kPa (r)=8 ki	Pa -
5 —														5.00 - 5.45 5.00 - 6.00	21 D	SPT(S) 5.00m, N=11 (2,2/2,3,	3,3) 5 -
														5.00 - 6.00	23 B		•
1																	
						(3.95)								5.50	22 D	HV 5.50m, (p)=35 kPa (r)=5 kl	Pa -
-																	
6 -														6.00 - 6.45 6.00 - 7.00	24 D 26 B	SPT(S) 6.00m, N=11 (2,2/2,2,:	3,4) 6 -
														6.50	25 D	HV 6.50m, (p)=41 kPa (r)=6 kl	Pa .
-														0.50	230	114 0.50m, (p) -42 ki u (i ) -0 ki	
-																	
7 -														7.00 - 7.10	28 D	SPT(S) 7.00m, N=12 (3,3/3,3,	3,3) 7 -
														7.00 - 7.45	27 D		
1																	
-	NO RECO	OVERY due to inner core barrel failure duri	ing drilling			7.45	11.36										-
			_ 0			(0.55)											
8 -		EOH at 8.00m - End of Shift				8.00	10.81										8 -
																	•
																	-
																	0 -
9 -																	9 -
																	•
=																	
]																	
-																	
10										-							10 -
Ш																	
Obs	ervations /	Remarks	N	∕lisc.			Shift Info					Backfill				Installations	
			pa	% %	Date	Time	Depth	n (m) Ca	sing (m)	Water (m)	From (m) 0.00	To (m) 8.00	Material Bentonite	Instrum	nent Det	ails Resp. Zone Dept	h (m) Diam.
			unter	Monitoring Point Installed Imer Ref & Energy Ratio (%) MOD 02 (65(%)													
			' Enco Used	Point I rergy I (65(%,													
			water sing L	ring F F& En D 02 (												roundwater Strikes	
			round	Monito nmer Re, MO										Strike (m) Ri	ses To (m)	Time (min) Rema	irks
				No M Hamn													
1			1		i	1	1	1			I	j				i I	



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Sheet

Log Type Exploratory Hole Number

Header

BH17-02

FINAL



Project No:	3043		Location	Details			Methodology & P	lant	Scale:	1:50
	44 81 11 14 16 11	Easting:	424628.65	Northing:	558602.73	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalnouse					0.00 - 1.20 1.20 - 2.44	Inspection Pit Dynamic Sampling (Windowless)	Hand Tools Modular Window Sampler		
		Elevation:	18.22mAOD	Final Depth:	2.44m	1.20 - 2.44	Dynamic Sampling (Windowless)	woddiai willdow salliplei	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	15/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	15/05/2018

Hole Diameter									
Diam (mm)									

Casing Diameter									
Diam (mm)									
116									

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)	Remarks					
ł										

	Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							
1											

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill									
Depth (m)	Legend Code								
0.00 - 2.44	Bentonite								

In-Situ Tests	
PID	0
Hand Vane*	1
Standard Penetration Tests	2

\* One count indicates an average reported result of 3 tests carried out at

Hand Vane*	1	0% Recovery
	_	

Sample Summary							
Environmental Samples							
Soil	4	Water	0				
Geotechnical Samples							
Bulk	2	Large Bulk	0				
Disturbed	5	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undistu	rbed	Thin Wall	1				
Undisturb	ed Thi	n Wall (NR)	0				
Core Sample 0							

	Standard Felletration lest Summary								
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	1.20	-	-	2	7	450	7	N=7 (1,1/1,2,2,2)	MOD 02
Split Spoon	2.00	-	-	25	50	40		50 (25 for 25mm/50 for 15mm)	MOD 02

**Standard Penetration Test Summary** 

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

# one depth where available.

Chise	elling		Water Added					
Depth (m)	Duration (mins)		Depth (m)	Litres				
		]						

**Applicable to Cable Percussion Only** 

Depth (m)	Flush Type	Flush Colour	Return %	
				ı
				ı
				ı
				ı
				ı
				ı
				ı
				ı
				ı
				ı
				ı
				ı
				ı
				ı
				ı
				ı

Applicable to Rotary Only

Drilling Flush

Applicable to Dynamic Sampling Only								
	Dynamic	Sampling	Runs					
Depth (m)	Diam (mm)	Recovery %	Remarks					
1.20 - 2.00	101	100	169 Blows					



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**Dynamic** Sampling

Log Type

Exploratory Hole Number

BH17-02 FINAL

CENTRAL ALLIANCE GEO

Sheet 1 of 1

Methodology & Plant Project No: 3043 Location Details Scale: 1:50 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used Hand Tools Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 2.44 Easting: 424628.65 558602.73 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Elevation: 18.22mAOD Final Depth: 2.44m Approved By: ВН Location: Tyne and Wear Start Date: 15/05/2018 Logged By: Grid System: OSGB GS

Clier	nt: <b>SLJV</b> Orienta	ion: N	I/A Inclination	n: <b>90°</b>								Finish Date: 15/05/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Leve	Casing Ø (mm)	Water	Installation /			Samples & Testing
_		1 : c # ·	to coom - Cor - 111	*******	Thickness)	(mAOD)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results
=	MADE GROUND: Brown slightly sandy gravelly CLAY. Sand subangular fine to coarse sandstone, mudstone and rare		to coarse. Gravei is		(0.30) 0.30	17.92				0.20 0.30	1 D 2 ES	-
-	MADE GROUND: Brownish yellow sandy clayey subangul	ar fine	to coarse sandstone		(0.20)	17.72				0.50	3 D	-
=	GRAVEL. Sand is fine to coarse.  MADE GROUND: Firm laminated dark yellowish brown sl	ightly g	ravelly CLAY. Gravel		0.50	1,,,2				0.50 - 1.20 0.70	7 B 4 ES	-
=	is subangular fine to coarse sandstone, mudstone and ra	re coal.										-
1 -										1.00 1.00	5 D 6 ES	1 -
]										1.20 - 1.65 1.20 - 1.90	8 D 11 B	SPT(S) 1.20m, N=7 (1,1/1,2,2,2)
-					(1.94)					1.50	9 D	-
=												HV 1.80m, (p)=46 kPa (r)=9 kPa
2 -							116 2.00			1.90 2.00 - 2.40	10 ES 12 UT	SPT(S) 2.00m, 50 (25 for 25mm/50 2 — for 15mm)
]												-
‡	EOH at 2.44m - Refusal			********	2.44	15.78						_
1												- -
3 -												3 -
' <u> </u>												3 -
=												-
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Obse	ervations / Remarks	Misc.	Backfill		L Dynan	nic Sampling	Runs				Inst	allations
			Depth (m) Material 0.00 - 2.44 Bentonite	From (m)	To (m) Dia	m (mm) Recove	ry (%) F	emarks 69 Blows	Inst	rument Detai		Resp. Zone Depth (m) Diam
		rcountered rd /s Installea										
		vater En sing Use ng Point,						ŀ		(	Ground	water Strikes
		roundw Casi onitorin						5	Strike (m) Ca	sing (m) Seale	ed (m) Ris	es To (m) Time (min) Remarks
		No G	Hammer Ref & Energy Ratio (%) MOD 02 (65%)									



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Sheet

Log Type

Header

Exploratory Hole Number

**BH17-02A** 

**FINAL** 



Project No:	3043		Location Details				Methodology & P	Scale:	1:50	
		Easting:	424693.43	Northing: 558604.12 From (m) Method Plant Used Checked: RPI		RPH				
Name:	A1 Birtley to Coalhouse	Lusting.	121055115	rror crimig.	330002	0.00 - 0.90	Inspection Pit	Hand Tools	orredited:	
		Elevation:	18.10mAOD	Final Depth:	0.90m				Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	15/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	15/05/2018

Hole Diameter								
Depth (m)	Diam (mm)							

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes						
Strike	Casing	Sealed	Time	Rose To	Damanda.		
(m)	(m)	(m)	(min)	(m)	Remarks		

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

0 Water

Geotechnical Samples

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)

Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Legend Code						
Bentonite						

In-Situ Tests					
PID	0				
Hand Vane*	0				
Standard Penetration Tests	0				

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

PID	0	(NR) Indicates sample undertaken but with
Hand Vane*	0	0% Recovery

Disturbed

Piston

Undisturbed

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chis	elling		Water	Added
Depth (m)	Duration (mins)		Depth (m)	Litres
		ļ		

	Drilling	Flush		1
Depth (m)	Flush Type	Flush Colour	Return %	ı
				ı
				ı
				ı
				ı
				ı
				1
				ı
				ı
				ı
				ı
				1
				ı
				ı
				ı
				ı
				ı
				ı
				ı

**Applicable to Rotary Only** 

Applicab	Applicable to Dynamic Sampling Only						
	Dynamic Sampling Runs						
Depth (m)	Diam (mm)	Recovery %	Remarks				
	l	L					



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Dynamic Sampling

Log Type

Exploratory Hole Number

BH17-02A FINAL



Sheet 1 of 1 Project No: Location Details Methodology & Plant Scale: 1:50 3043 Depth (m) 0.00 - 0.90 Method Inspection Pit Plant Used Hand Tools Easting: 424693.43 558604.12 RPH Northing: Checked By: A1 Birtley to Coalhouse Name: ВН Elevation: 18.10mAOD Final Depth: 0.90m Approved By: Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 15/05/2018 SLJV Orientation: N/A Inclination: 90° Finish Date:

15/05/2018 Client: Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Samples & Testing educed Lev (mAOD) Installation , Backfill Strata Description Legend Depth (m) MADE GROUND: TOPSOIL. (0.20) 17.90 0.20 0.20 0.30 - 0.90 MADE GROUND: Brownish yellow sandy subangular fine to coarse sandstone GRAVEL. Sand is fine to coarse. 0.50 2 D (0.70) 0.90 17.20 EOH at 0.90m - Refusal 10 Observations / Remarks Misc. Dynamic Sampling Runs Installations | Depth (m) | Material | From (m) | To (m) | Diam (mm) | Recovery (%) | | Remarks Instrument Details Resp. Zone Depth (m) Diam Groundwater Strikes Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks



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Log Type Header Sheet

Exploratory Hole Number

BH17-02B

**FINAL** 



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50	
		Easting:	424643.40	Northing:	558602.05	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	121013110	reorening.	330002.03	0.00 - 1.20	Inspection Pit	Hand Tools	onconcu.	
		Elevation:	17.94mAOD	Final Depth:	10.45m	1.20 - 10.45	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	16/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	16/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)
10.45	66

Casing D	iameter
Depth (m)	Diam (mm)
2.00	116

Sample Summary Environmental Samples 5 Geotechnical Samples 10

19

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed

Piston

Undisturbed

Large Bulk

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Dl			
(m)	(m)	(m)	(min)	(m)	Remarks			
ł								

	Installation / Instrume	ent Deta	ils	
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)
16/05/2018	Standpipe with Water Level Datalogger	4.50	3.00 - 6.00	

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

В	Backfill					
Depth (m) Legend Code						
0.00 - 3.00	Bentonite					
3.00 - 6.00	Gravel					
6.00 - 10.00	Bentonite					
10.00 - 10.45	Arisings					

In-Situ Tests	
PID	0
Hand Vane*	7
Standard Penetration Tests	7

<sup>(</sup>NR) Indicates sample undertaken but with

				Sta	ndard	Penetrati	on T	est Summary	
Tost Tuno	Depth	Casing	Water	Seating	Main	Penetration	N	Departed Decult	Hammer Ref
Test Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	панше ке
Split Spoon	1.20	2.00	-	3	15	450	15	N=15 (2,1/2,3,4,6)	MOD 02
Split Spoon	3.00	2.00	-	7	21	450	21	N=21 (3,4/4,5,6,6)	MOD 02
Split Spoon	5.00	2.00	-	6	19	450	19	N=19 (3,3/4,4,5,6)	MOD 02
Split Spoon	7.00	2.00	-	5	9	450	9	N=9 (3,2/2,2,2,3)	MOD 02
Split Spoon	8.00	2.00	-	6	20	450	20	N=20 (3,3/5,5,5,5)	MOD 02
Split Spoon	9.00	2.00	-	6	15	450	15	N=15 (3,3/3,4,4,4)	MOD 02
Split Spoon	10.00	2.00	-	4	12	450	12	N=12 (2,2/3,3,3,3)	MOD 02
1									
									l

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

# \* One count indicates an average reported result of 3 tests carried out at one depth where available.

# **Applicable to Cable Percussion Only**

Chise	elling	Water	Adde
Depth (m)	Duration (mins)	Depth (m)	Lit

# **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %
1	1		1

## **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs					
Depth (m)	Diam (mm)	Recovery %	Remarks		
1.20 - 2.00	101	100	90 blows		
2.00 - 3.00	101	70	88 blows		
3.00 - 4.00	86	90	88 blows		
4.00 - 5.00	86	100	79 blows		
5.00 - 6.00	86	100	107 blow		
6.00 - 7.00	76	100	77 blow		
7.00 - 8.00	76	100	68 blows		
8.00 - 9.00	66	100	37 blows		
9.00 - 10.00	66	100	30 blows		



Web: www.central-alliance.co.uk

Log Type

Sampling

## **Dynamic** BH17-02B

**FINAL** 

Exploratory Hole Number



Groundwater Strikes

Remarks

Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min)

37 blows 30 blows

Sheet 1 of 2 GEO Methodology & Plant Location Details Project No: 3043 Scale: 1:50 Depth (m) 0.00 - 1.20 1.20 - 10.45 Method Plant Used Easting: 424643.40 Northing: 558602.05 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 17.94mAOD Final Depth: 10.45m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 16/05/2018 Client SLIV Orientation N/A Inclination: 90° Finish Date: 16/05/2018 Depth (m) (Stratum Thickness) Casing Ø Samples & Testing Reduced Lev Water Level (m) Strata Description Legend (mm) Depth (m (mAOD) Depth (m) MADE GROUND: Firm greyish brown slightly gravelly CLAY. Gravel is subangular fine 0.20 0.20 - 1.20 to coarse sandstone, mudstone, coal and brick. 7 B 2 ES 0.50 (1.30)0.70 4 ES 1.20 - 1.65 1.20 - 2.00 SPT(S) 1.20m, N=15 (2,1/2,3,4,6) 8 D 11 B 1.30 16.64 MADE GROUND: Firm laminated orangish brown slightly gravelly slightly silty CLAY. HV 1.50m, (p)=56 kPa (r)=10 kPa 1.50 9 D Gravel is subangular to subrounded fine to coarse mudstone. (Reworked Clay) (1.20) 1.90 10 ES 116 2.00 2 2.50 15.44 2.50 13 D HV 2.50m, (p)=54 kPa (r)=6 kPa Firm laminated orangish brown slightly silty CLAY. SPT(S) 3.00m, N=21 (3,4/4,5,6,6) 16 D 18 B (1.50) 3.50 17 D HV 3.50m, (p)=60 kPa (r)=9 kPa 4.00 13.94 4.00 - 4.45 4.00 - 5.00 19 UT 21 B Soft to firm thinly laminated grey silty CLAY. >< <u>@</u> 4.50 20 D HV 4.50m. (p)=60 kPa (r)=8 kPa 5.00 - 5.45 5.00 - 6.00 SPT(S) 5.00m, N=19 (3,3/4,4,5,6) 5.50 23 D HV 5.50m, (p)=35 kPa (r)=3 kPa 25 UT NR 27 B 6.00 - 7.00 6.50 26 D HV 6.50m, (p)=26 kPa (r)=2 kPa SPT(S) 7.00m, N=9 (3,2/2,2,2,3) (6.45)7.50 29 D HV 7.50m, (p)=13 kPa (r)=1 kPa SPT(S) 8.00m, N=20 (3,3/5,5,5,5) 8.50 32 D SPT(S) 9.00m, N=15 (3,3/3,4,4,4) 9.00 - 10.00 34 D 9.50 35 D 10.00 - 10.45 37 D SPT(S) 10.00m, N=12 (2,2/3,3,3,3) Continued on Next Page Observations / Remarks Misc Backfill Dynamic Sampling Runs covery (%)
100
70
90
100
100
100
100
100
100
100
100 Depth (m) 0.00 - 3.00 3.00 - 6.00 6.00 - 10.00 10.00 - 10.45 Remarks 90 blows 88 blows 88 blows 79 blows 107 blow 77 blow 68 blows 1.20 2.00 3.00 4.00 5.00 6.00 7.00 Resp. Zone | Depth (m) | Diam | 3.00 - 6.00 | 4.50 | To (m) Diam (mm) Re 2.00 3.00 4.00 5.00 6.00 7.00 8.00

8.00 9.00

MOD 02 (65%)

9.00 10.00



Project No:

3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Location Details

**Dynamic** Sampling Sheet 2 of 2

Log Type

Exploratory Hole Number

BH17-02B

**FINAL** 

Methodology & Plant



1:50

Scale:

Depth (m) Method Plant Used Easting: 424643.40 558602.05 Checked Bv: RPH Northing: Name: A1 Birtley to Coalhouse Elevation: 17.94mAOD Final Depth: 10.45m Approved By: ВН Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 16/05/2018 Client: 16/05/2018 SLJV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Samples & Testing Reduced Lev (mAOD) Installation , Backfill Strata Description Depth (m) Soft to firm thinly laminated grey silty CLAY. 10.45 7.49 EOH at 10.45m - Scheduled depth 11 12 14 17 18 19 20 Observations / Remarks Misc. Dynamic Sampling Runs Installations Resp. Zone | Depth (m) | Diam | 3.00 - 6.00 | 4.50 | Depth (m) Material From (m) To (m) Diam (mm) Recovery (%) Groundwater Strikes Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks MOD 02 (65%)



Tel: +44 (0)1924 229889 Web: www.central-alliance.co.uk Log Type **Header** 

Sheet

Exploratory Hole Number

BH17-04

FINAL



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50	
		Easting:	424763.94	Northing:	558552.67	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	16.99mAOD	Final Depth:	3.21m	1.20 - 3.21	Dynamic Sampling (Windowle	ss) Modular Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	01/06/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	01/06/2018

Hole Di	ameter
Depth (m)	Diam (mm)
3.21	101

Diam (mm)
116

	Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To							
(m)	(m)	(m)	(min)	(m)	Remarks						

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 3.21	Bentonite						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	3

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Hand Vane*	0
Standard Penetration Tes	sts 3

Sample Summary						
Environmental Samples						
Soil 4 Water						
Geotechnical Samples						
Bulk <b>3</b> Large Bulk						
Disturbed	8	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Core Sample						
•		•				

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary									
Test Type	Depth (m)	Casing (m)	Water (m)	Seating		Penetration Total (mm)	_	Reported Result	Hammer Ref	
Split Spoon	1.20	-	Dry	15	35	450	35	N=35 (8,7/7,6,10,12)	MOD 02	
Split Spoon	2.00	2.00	Dry	16	18	450	18	N=18 (6,10/7,5,3,3)	MOD 02	
Split Spoon	3.00	2.00	Dry	7	50	210		N=50 (3,4/50 for 60mm)	MOD 02	

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

# **Applicable to Cable Percussion Only**

Chis		
Depth (m)	Duration (mins)	

Water Added							
Depth (m)	Litres						

# **Applicable to Rotary Only**

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			
Dept. (III)	riusii iype	riasii coloai	netarii 70			

# **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs										
Depth (m)										
1.20 - 2.00	101	100	632 blows							
2.00 - 3.00	101	90	107 blows							



Project No:

Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Northing:

Final Depth: 3.21m

558552.67

Location Details

424763.94

16.99mAOD

Easting:

Elevation:

**Dynamic** Sampling

Log Type

Exploratory Hole Number

BH17-04 FINAL



Sheet 1 of 1

GEO Methodology & Plant Scale: 1:50 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used
Hand Tools
Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 3.21 Checked By: RPH Approved By: ВН

Loca	ition: Tyne and wear	Logged By:	GS	Grid Syste	m: OSG	В								Start Date:	01/06/2	018
Clier	nt: SLJV	Orientation:	N/A	Inclinatio	n: <b>90°</b>									Finish Date:	01/06/2	.018
						Depth	(m) _		Casing Ø					Samples & Testing		
	Strata Description				Legend	(Strat Thickn	um n	Reduced Level (mAOD)	(mm) Depth (m)	Water Level (m)	Installation / Backfill	Depth (m)	Ref	Test Result	lte.	Т
	MADE CROUND, Soft growish brown slightly sandy	arayally Cl	AV Candis	finato	******	×			Deptii (iii)					lest result		
1	MADE GROUND: Soft greyish brown slightly sandy medium. Gravel is subangular fine to medium sand					(0.2		16.74				0.10 - 1.20 0.20	7 B 1 D			-
1	MADE GROUND: Brownish red very gravelly clayey					(0.1	0)	16.64				0.30	2 ES			-
-	subangular fine to coarse brick, sandstone and mu			/		0.3						0.50	3 D			-
1	MADE GROUND: Soft to firm brown gravelly sandy		el is suban	gular fine to		0.6		16.34				0.70	4 ES			-
	coarse sandstone, brick, mudstone and rare coal. S	Sand is fine	to coarse.	/												_
1 -	MADE GROUND: Brownish red sandy slightly clayer			ounded fine	<b>******</b>	<b>×</b>						1.00 1.00	5 D 6 ES			1 -
1	to coarse brick and sandstone GRAVEL. Sand is fine	e to coarse.			<b>******</b>							1.20 - 1.65	8 D	SPT(S) 1.20m, N=35 (8,	,7/7,6,10,12)	-
1						$\otimes$						1.20 - 2.00	10 B			-
-						(1.7	5)					1.50	9 D			-
-																]
									116							-
2 -					<b>******</b>	$\otimes$			116 2.00	1		2.00 2.00 - 2.45	12 ES 11 D	SPT(S) 2.00m, N=18 (6,	.10/7,5,3,3)	2 -
-					<b>******</b>							2.00 2.43	110			-
1					<b></b>	2.4	0	14.59								-
	MADE GROUND: Firm to stiff grey gravelly sandy C					$\otimes$						2.50 2.60 - 3.00	13 D 14 B			_
-	subrounded fine to coarse sandstone, mudstone a	na brick. Sa	and is fine	to coarse.		×										-
1						(0.8	رار									-
3 -					<b>******</b>							3.00 - 3.20	15 D	SPT(S) 3.00m, N=50 (3, 60mm)	4/50 for	3 -
1	EOH at 3.21m - Ref	ineal			·	3.2	ס	13.79								-
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Ohse	ervations / Remarks	M	isc.	Backfill		Dvr	amir s	Sampling R	Runs				Inst	Lallations		
- 250	,	141	_ Depth (r		From (m)			nm) Recover		emarks	Inst	rument Detail		Resp. Zone Dep	oth (m) D	iam
		ered	0.00 - 3.2		1.20 2.00	2.00 3.00	101 101	100	6	32 blows 07 blows						
		ncount	sus/sus		2.00	5.00	101	30	1							
		ter En	Point							ŀ			Ground	water Strikes		
		Idwat	oring							ŀ	Strike (m) Ca			ses To (m) Time (min)	Remarks	
		Groun	Hammar	Ref & Energy Ratio (%)	-					ľ	(, Co	- 6 ()	. ,			
		No C	0	OD 02 (65%)	1											



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# Header Sheet

Log Type

Exploratory Hole Number

# BH17-04A





Project No:	3043	Location Details				Methodology & P	Scale:	1:50			
		Easting:	<b>424763.44</b> N	Northing:	558552.72	From (m)	Method	Plant Used	Checked:	RPH	
Name:	A1 Birtley to Coalhouse	Lusting.	424700111	rior crimig.	330332.72	0.00 - 1.20	Inspection Pit	Hand Tools	onconcu.	11111	
		Elevation:	16.99mAOD	Final Depth:	3.33m	1.20 - 3.33	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	BH	
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	01/06/2018	
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	01/06/2018	

Hole Di	ameter
Depth (m)	Diam (mm)
3.33	101

Carina B	·									
	Casing Diameter									
Depth (m)	Diam (mm)									
2.00	116									

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Dl					
(m)	(m)	(m)	(min)	(m)	Remarks					

	Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)								

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 3.33	Bentonite						

In-Situ Tests	
PID	3
Hand Vane*	0
Standard Penetration Tests	3

115		
Hand Vane*	0	
Standard Penetration Tests	3	
* One count indicates an avo	_	

one depth where available.

Sample Summary							
Enviro	Environmental Samples						
Soil	Soil <b>4</b> Water						
Geote	chnic	cal Samples					
Bulk	3	Large Bulk	0				
Disturbed	10	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undistu	rbed 1	Thin Wall	0				
Undisturbed Thin Wall (NR)							
Cor	re San	nple	0				

(NR) Indicates sample undertaken but with

Standard Penetration Test Summary											
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref		
Split Spoon	1.20	-	Dry	9	34	450	34	N=34 (4,5/7,9,9,9)	MOD 02		
Split Spoon	2.00	2.00	Dry	12	15	450	15	N=15 (5,7/4,4,3,4)	MOD 02		
Split Spoon	3.00	2.00	Dry	18	50	330		50 (6,12/50 for 180mm)	MOD 02		

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

Chise	elling		Water	Added
Depth (m)	Duration (mins)		Depth (m)	Litres
		]		

**Applicable to Cable Percussion Only** 

	Depth (m)	Flush Type	Flush Colour	Return %	
					ı
					ı
					ı
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**Applicable to Rotary Only** Drilling Flush

Applicable to Dynamic Sampling Only							
	Dynamic Sampling Runs						
Depth (m)	Diam (mm)	Diam (mm) Recovery % Remarks					
1.20 - 2.00	101	90	455 blows				
2.00 - 3.00	101	80	194 blows				



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Dynamic Sampling

Log Type

Exploratory Hole Number

BH17-04A FINAL



Sheet 1 of 1

Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Plant Used Hand Tools Modular Window Sampler Method Inspection Pit Dynamic Sampling (Windowless) Depth (m) 0.00 - 1.20 1.20 - 3.33 Easting: 424763.44 558552.72 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Elevation: 16.99mAOD Final Depth: 3.33m Approved By: ВН Location: Tyne and Wear Start Date: Grid System: OSGB 01/06/2018 Logged By: GS

осап	on: Tyne and Wear	Logged By:	GS	Grid Syst	em: OSG	В								Start Date:	01/06/20	18
lient:	SLIV	Orientation:	N/A	Inclinatio	n: <b>90°</b>									Finish Date:	01/06/20	18
						Depth		duced Level	Casing Ø	Water	Installation /			Samples & Testing		
	Strata Descripti	ion			Legend	(Strat Thickn	um	(mAOD)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results		
1	MADE GROUND: Soft brown gravelly sandy CLA	Y with mediu	m cobble con	itent	××××	×						0.10 - 1.20	7 B			Щ.
	Gravel is subangular to subrounded fine to coar					(0.3						0.20	1 D			-
	Sand is fine to coarse. Cobbles are subangular t					0.3		16.69 16.59				0.30	2 ES	PID 0.30m = 14.2ppm		-
	mudstone.					0.4	)	16.39				0.50	3 D			-
	MADE GROUND: Brownish red slightly gravelly	fine to coarse	SAND. Grave	el is		(0.2	"	10.55				0.70	4 ES	PID 0.70m = 290.0ppm		
	subangular fine to coarse brick and sandstone.	1 0 0 0		1 6												
	MADE GROUND: Soft to firm brown gravelly sar			ular fine to		$\otimes$						1.00 1.00	5 D 6 ES	PID 1.00m = 197.0ppm		1 -
	coarse sandstone, mudstone and brick. Sand is MADE GROUND: Brownish red slightly gravelly to the common state of the common st			al ic		(1.2	0)					1.20 - 1.65 1.20 - 1.80	8 D 11 B	SPT(S) 1.20m, N=34 (4,5/7	7,9,9,9)	
	subangular to subrounded fine to coarse brick,															
1												1.50	9 D			-
1						1.8	,	15.19				1.80	10 D			
	MADE GROUND: Soft to firm reddish grey sand					×			116			2.00	13 ES	SPT(S) 2.00m, N=15 (5,7/4	4 4 2 4)	٦.
-1	subangular to subrounded fine to coarse mudst	tone, sandsto	ne and brick.	Sand is					2.00			2.00 - 2.45	12 D	3F1(3) 2.00111, N=13 (3,7/4	*,**,3,4)	2 -
1'	fine to coarse.					$\otimes$						2.20 - 2.80	16 B			
1												2.50	14 D			
-						(1.5	3)									
7	From 2.80m to 3.30m 1 no. mudstone boulder.											2.80	15 D			
1	Trom 2.80m to 3.30m 1 no. maustone bounder.					$\otimes$						3.00 - 3.30	17 D	SPT(S) 3.00m, 50 (6,12/50	) for	3 -
1														180mm)		,
╄	FOU -+ 0.00 1	Deficed			<b>******</b>	3.3	3	13.66								
1	EOH at 3.33m - I	Refusal														-
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7																
1																
1																9 -
+																9
1																
1																
+																
1																
1						4										10 -
ser	vations / Remarks	N	1isc. B	ackfill		Dyn	amic Sa	ampling Ru	uns				Inst	tallations		
	ng undertaken in confined environment potentially near exhaust	t fumes. CA	Depth (m)		From (m)	To (m)	Diam (mm	n) Recovery	y (%) Re	emarks	Inst	rument Deta	ils	Resp. Zone Depth	n (m) Dia	am
	dvised the Engineer that these results can not be relied upon.	iterea	0.00 - 3.33	Bentonite	1.20 2.00	2.00 3.00	101 101	90 80	45 19	55 blows 94 blows						
		uncom	tt/s In													
		rter E	Casing Used toring Point/s I							ļ		(	Ground	lwater Strikes		
		ndwa	Casi							ŀ	Strike (m) Ca			ses To (m) Time (min)	Remarks	_
		Grou	ē	& Energy Ratio (%)	1					ļ						
		No	0	02 (65%)												
					1											



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Dynamic Probe

Sheet 1 of 1

Log Type

Exploratory Hole Number

BH17-04B

**FINAL** 



Methodology & Plant Location Details Scale: 1:50 Project No: Plant Used Hand Tools Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 4.30 Method Inspection Pit Dynamic Probing 558552.78 RPH 424762.94 Northing: Checked By: Easting: A1 Birtley to Coalhouse Name: Elevation: 16.99mAOD Final Depth: 4.30m Approved By: ВН Location: Tyne and Wear Logged By: OSGB Start Date: 01/06/2018 Grid System: 01/06/2018 Client: SLJV Finish Date: Orientation: N/A Inclination: N/A Depth (m) (Stratum Thickness) Reduced Level (mAOD) Blows / 100mm Strata Description 19 42 Observations / Remarks Equipment Information Dynamic Probe Type: DPSH-B Fall Height: Hammer Weight: 750mm 64.0kg Cone Base Diam: Rod Diam: 50mm 35mm



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Log Type Exploratory Hole Number

Header

**BH17-05** 

**FINAL** 



Project No:	3043		Location I	Details			Met	hodology & P	lant	Scale:	1:50		
			424778.97	Northing:	Northing: <b>558528.12</b>	Northing:	558528.12	From (m)	Meti	hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Easting:	121770137	330320122		0.00 - 1.20	Inspecti		Hand Tools	erreeneu.			
		Elevation:	14.03mAOD	Final Depth:	1.30m	1.20 - 1.30	Cable Per	rcussion	Dando 2000	Approved:	BH		
Location:	Tyne and Wear	Logger:	RJ	Grid System:	OSGB					Start Date:	27/03/2018		
Client:	SLIV	Orientation:	N/A	Inclination:	90°					End Date:	27/03/2018		

Hole Diameter							
Depth (m)	Diam (mm)						
1.30	200						

**Casing Diameter** Depth (m) Diam (mm

	Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Remarks			
(m)	(m)	(m)	(min)	(m)	Remarks			

Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)			

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Sample Summary Environmental Samples 2 Geotechnical Samples

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 1.30	Bentonite					

In-Situ Tests	
PID	0
Hand Vane*	2
Standard Penetration Tests	1

PID	0	(NR) Indicates sample undertaken but with
Hand Vane*	2	0% Recovery

Disturbed

Piston

Undisturbed

Standard Penetration Test Summary									
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	1.20	-	-	25	100	30		100 (25 for 10mm/100 for 20mm)	AR1134

SPT Hammer Ref.	Energy Ratio (%)		
AR1134	56		

# \* One count indicates an average reported result of 3 tests carried out at one depth where available.

## **Applicable to Cable Percussion Only**

Chiselling					
Depth (m)	Duration (mins)				
1.20 - 1.30	45				

Water Added					
Depth (m) Litres					

## **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					

# **Applicable to Dynamic Sampling Only**

_									
	Dynamic Sampling Runs								
	Depth (m)	Diam (mm)	Recovery %	Remarks					



Observations / Remarks

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Cable Percussion

Log Type

Exploratory Hole Number **BH17-05** 

FINAL



10

Installations

Groundwater Strikes

Resp. Zone Depth (m) Diam.

Instrument Details

Strike (m) Rises To (m) Time (min)

Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Location Details: Methodology & Plant Project No: Scale: 1:50 3043 Depth (m) 0.00 - 1.20 1.20 - 1.30 Method Inspection Pit Cable Percussio Plant Used Hand Tools Dando 2000 558528.12 RPH Easting: 424778.97 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 14.03mAOD Final Depth: 1.30m Approved By: BH Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 27/03/2018 SLJV Client: Orientation: N/A Inclination: 90° Finish Date: 27/03/2018 Depth (m) (Stratum Thickness) Water Added (Litres) Casing Ø (mm) Depth (m) Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) (mins) Depth (m) MADE GROUND: Firm medium strength dark brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse of 0.20 2 ES HV 0.30m, (p)=52 kPa (r)=18 kPa various lithologies. HV 0.50m, (p)=56 kPa (r)=16 kPa (1.30) 1.20 1.20 - 1.65 45 1.30 12.73 EOH at 1.30m - Refusal

Shift Information

Misc.

Hole Not Cased No Monitoring Point Installed Hammer Ref & Energy Ratio (%) AR1134 (56/%)



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Sheet

Exploratory Hole Number

# BH17-05A

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 From (m) 0.00 - 1.20 1.20 - 10.00 Method Inspection Pit Cable Percussion Plant Used Hand Tools Dando 2000 Easting: 424778.13 558528.00 Checked: RPH Northing: Name: A1 Birtley to Coalhouse BH Elevation: 13.89mAOD Final Depth: 10.00m Approved: Location: Tyne and Wear Logger: RJ Grid System: OSGB Start Date: 27/03/2018 Client: End Date: 28/03/2018 SLJV Orientation: N/A Inclination: 90°

<b>Hole Diameter</b>							
Diam (mm)							
200							

Casing Diameter					
Depth (m)	Diam (mm)				
6.00	200				

	Groundwater Strikes							
Strike Casing Sealed Time Rose To Remarks								
(m)	(m)	(m)	(min)	(m)	Remarks			
4.80	-	4.50	20	4.60				

	Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						
28/03/2018	Standpipe with Water Level Datalogger	3.50	1.00 - 4.00							

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill						
Depth (m) Legend Code						
0.00 - 0.30	Concrete					
0.30 - 1.00	Bentonite					
1.00 - 4.00	Gravel					
4.00 - 10.00	Bentonite					

In-Situ Tests			
PID	0		
Hand Vane*	0		
Standard Penetration Tests	6		

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary							
Environmental Samples							
Soil	6	Water	0				
Geote	chnic	cal Samples					
Bulk 7 Large Bulk							
Disturbed 13		Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	Undisturbed 0 Undisturbed (NR)						
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Cor	e San	nple	0				

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth	Casing		Seating		Penetration	N	Reported Result	Hammer Ref
rest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	1	Neported Nesdit	Hammer Ner
Cone	1.20	-	-	3	8	450	8	N=8 (1,2/2,2,2,2)	AR1134
Split Spoon	2.50	-	-	3	9	450	9	N=9 (1,2/2,2,2,3)	AR1134
Cone	3.50	-	-	4	10	450	10	N=10 (2,2/3,3,2,2)	AR1134
Cone	4.50	-	-	4	13	450	13	N=13 (2,2/3,3,3,4)	AR1134
Split Spoon	6.50	-	-	5	14	450	14	N=14 (2,3/3,3,4,4)	AR1134
Split Spoon	8.50	-	-	4	12	450	12	N=12 (2,2/3,3,3,3)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

## **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	De

Water Added					
Depth (m)	Litres				

# **Applicable to Rotary Only**

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				

# Applicable to Dynamic Sampling Only

Dynamic Sampling Runs									
Depth (m)	Diam (mm)	Recovery %	Remarks						
				П					
				П					
	Depth (m)								



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# Cable Percussion

Log Type

Sheet 1 of 1

Exploratory Hole Number

BH17-05A FINAL CENTRAL ALLIANCE

Methodology & Plant Location Details: Scale: Project No: 3043 1:50 Depth (m) 0.00 - 1.20 1.20 - 10.00 Plant Used Hand Tools Dando 2000 Method Easting: 424778.13 Northing: 558528.00 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 13.89mAOD Final Depth: 10.00m Approved By: BH Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 27/03/2018 Client SLIV Orientation N/A Inclination: Finish Date: 28/03/2018 Depth (m) Reduced Casing Ø Samples & Testing Water Level (m) Installation , Backfill Added (Litres) Strata Description Legend (Stratum Thickness) Level (mAOD) (mm) Depth (m (mins) Depth (m) MADE GROUND: Firm dark brown gravelly CLAY. Gravel is subangular to subrounded fine to coarse of various lithologies. 0.70 5 ES (2.30) 10 B SPT(C) 1.20m, N=8 (1,2/2,2,2,2) 1.70 11 ES From 2.00m becomes mottled grey, brown and light brown MADE GROUND: Light brown sandy slightly clayey subrounded 2.50 - 2.95 2.50 - 2.95 2.70 SPT(S) 2.50m, N=9 (1,2/2,2,2,3) fine to coarse limestone GRAVEL. Sand is fine to coarse. 17 D 3.00 8 SPT(C) 3.50m, N=10 (2,2/3,3,2,2) 19 B (2.50)3.70 19A ES 4.00 20 D 4.50 - 4.95 22 B SPT(C) 4.50m, N=13 (2.2/3.3.3.4) 4.70 22A ES 4.80 9.09 Firm to stiff occasionally weakly laminated dark grey gravelly 5.00 23 D CLAY. Gravel is subrounded to rounded fine to coarse of various (0.70) lithologies. 5.50 8.39 5.50 - 5.95 10 blows, 0% Recovery Firm to stiff thinly laminated grey CLAY. 5.50 - 5.95 5.70 25 B 25A ES 26 D 6.50 - 6.95 6.50 - 6.95 SPT(S) 6.50m, N=14 (2,3/3,3,4,4) 20 blows, 100% Recovery 8.00 31 D SPT(S) 8.50m, N=12 (2,2/3,3,3,3) 8.50 - 8.95 8.50 - 8.95 32 D 33 B From 8.50m becomes stiff. 34 D 9.00 From 9.30m becomes very stiff. 9.50 - 9.95 35 UT 22 blows, 75% Recovery 10.00 3.89 10.00 36 D 10 EOH at 10.00m - Scheduled depth 10.00 Observations / Remarks Shift Information Backfill Instrument Details tandpipe with Water Level Datalogger Date Time Depth (m) Casing (m) Water (m) To (m) Resp. Zone | Depth (m) | Diam. | 1.00 - 4.00 | 3.50 | Groundwater Strikes Strike (m) Rises To (m) Time (min)
4.80 4.60 20



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Sheet

Log Type Exploratory Hole Number

Header

BH17-07

FINAL



Project No:	3043	Location Details				Methodology & Plant			Scale:	1:50	
	Easting:	424889.57	Northing:	558531.58	From (m)	Met	:hod	Plant Used	Checked:	RPH	
Name:	A1 Birtley to Coalhouse	Lusting.	121005157	reor criming.	330331.30	0.00 - 1.20		tion Pit	Hand Tools	i criccica.	
		Elevation:	11.80mAOD	Final Depth:	80.00m	1.20 - 47.00		rcussion	Dando 2000	Approved:	BH
Location:	Tyne and Wear					47.00 - 55.60	Rotary	Coring	Fraste PLG		
LUCATION.	Tylle allu Weal	Logger:	ALB+GS	Grid System:	OSGB					Start Date:	29/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	01/06/2018

Hole Di	ameter
Depth (m)	Diam (mm)
44.70 80.00	250 92

Casing D	iameter
Depth (m)	Diam (mm)
15.00	250

Groundwater Strikes								
Strike	Casing	Sealed	Time	Rose To	Remarks			
(m)	(m)	(m)	(min)	(m)	Remarks			
2.20	-	-	20	2.00				
5.80	-	-	20	4.10				

	Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					
19/06/2018	Standpipe Piezometer	5.00	3.50 - 5.50						

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill							
Depth (m)	Legend Code						
0.30 - 3.50	Bentonite						
3.50 - 5.50	Gravel						
5.50 - 80.00	Bentonite						

In-Situ Tests				
PID	4			
Hand Vane*	0			
Standard Penetration Tests	23			

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

			_			
Sample Summary						
Enviror	nmer	ntal Samples				
Soil	7	Water	0			
Geotechnical Samples						
Bulk	Bulk 19 Large Bulk					
Disturbed	85	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed <b>0</b> Undisturbed (NR)						
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Cor	e San	nple	5			

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	1.20	1.20	-	14	50	330		N=50 (5,9/50 for 180mm)	AR1134
Split Spoon	2.50	2.50	-	20	50	400		N=50 (9,11/50 for 250mm)	AR1134
Split Spoon	3.50	3.50	-	1	4	450	4	N=4 (0,1/1,1,1,1)	AR1134
Split Spoon	4.50	4.50	-	1	2	450	2	N=2 (0,1/0,1,0,1)	AR1134
Split Spoon	6.50	6.50	4.9	0	3	450	3	N=3 (0,0/0,1,1,1)	AR1134
Split Spoon	7.50	7.50	4.5	1	4	450	4	N=4 (1,0/1,1,1,1)	AR1134
Split Spoon	8.50	8.50	4.9	3	9	450	9	N=9 (1,2/3,2,2,2)	AR1134
Split Spoon	9.50	9.50	7.5	4	8	450	8	N=8 (2,2/2,2,2,2)	AR1134
Split Spoon	12.00	11.00	-	2	7	450	7	N=7 (1,1/1,2,2,2)	AR1134
Split Spoon	13.50	13.00	-	4	9	450	9	N=9 (2,2/3,3,1,2)	AR1134
Split Spoon	16.50	15.00	-	7	19	450	19	N=19 (3,4/4,5,5,5)	AR1134
Split Spoon	19.50	15.00	-	8	22	450	22	N=22 (4,4/5,5,6,6)	AR1134
Split Spoon	22.50	15.00	-	11	28	450	28	N=28 (4,7/6,7,7,8)	AR1134
Split Spoon	25.50	15.00	-	10	31	450	31	N=31 (3,7/8,8,8,7)	AR1134
Split Spoon	28.50	20.00	-	9	32	450	32	N=32 (4,5/6,8,8,10)	AR1134
Split Spoon	31.50	20.00	-	8	40	450	40	N=40 (3,5/10,10,10,10)	AR1134
Split Spoon	34.50	20.00	-	9	32	450	32	N=32 (4,5/8,8,8,8)	AR1134
Split Spoon	37.50	20.00	-	9	36	450	36	N=36 (3,6/9,8,9,10)	AR1134
Split Spoon	40.50	20.00	-	14	41	450	41	N=41 (5,9/8,10,11,12)	AR1134
Split Spoon	43.50	20.00	-	13	37	450	37	N=37 (8,5/11,10,8,8)	AR1134
Split Spoon	46.50	30.00	-	12	41	450	41	N=41 (6,6/9,11,10,11)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

# **Applicable to Cable Percussion Only**

Chiselling									
Depth (m)	Duration (mins)								
1.20 - 1.50	120								
2.50 - 2.90	180								
47.70 - 47.90	60								

Water Added						
Depth (m)	Litres					

# **Applicable to Rotary Only**

	Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %				

# Applicable to Dynamic Sampling Only

		Dynamic	Sampling	Runs	
Ш	Depth (m)	Diam (mm)	Recovery %	Remarks	
					П
					П
					П
					П
					П
					П
					П
					П
					П
					П
					П



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Log Type Exploratory Hole Number

Header

# BH17-07

FINAL



Project No:	3043		Location [	Details			Methodology & P	lant	Scale:	1:50
Name:	A1 Birtley to Coalhouse	Easting:	424889.57	Northing:	558531.58	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	RPH
		Elevation:	11.80mAOD	Final Depth:	80.00m	1.20 - 47.00 47.00 - 55.60	Cable Percussion Rotary Coring	Dando 2000 Fraste PLG	Approved:	ВН
Location:	Tyne and Wear	Logger:	ALB+GS	Grid System:	OSGB				Start Date:	29/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	01/06/2018

Hole Diameter						
Diam (mm)						

Casing Diameter							
Depth (m)	Diam (mm)						

	Groundwater Strikes									
Strike	Strike Casing Sealed Time Rose To Remarks									
(m)	(m)	(m)	(min)	(m)	Remarks					

	Installation / Instrume	ent Deta	ils	
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam
Date	mstrument betails	10 (111)	Kesp. Zone (iii)	(mm)

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill								
Depth (m) Legend Code								
0.30 - 3.50	Bentonite							
3.50 - 5.50	Gravel							
5.50 - 80.00	Bentonite							

In-Situ Tests	
PID	4
Hand Vane*	0
Standard Penetration Tests	23

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Standard Penetration Tests 23

Sample Summary								
Environmental Samples								
Soil	Soil <b>7</b> Water							
Geotechnical Samples								
Bulk	19	Large Bulk	0					
Disturbed	85	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undisturbed Thin Wall								
Undisturbed Thin Wall (NR)								
Cor	e San	nple	5					

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	47.70	47.70	-	25	50	60		50 (25 for 20mm/50 for 40mm)	AR1134
Split Spoon	47.90	47.70	-	25	50	50		50 (25 for 20mm/50 for 30mm)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

# **Applicable to Cable Percussion Only**

Chise	elling
Depth (m)	Duration (mins)
1	

Water Added							
Depth (m)	Litres						

## **Applicable to Rotary Only**

Drilling Flush											
Depth (m)	Flush Type	Flush Colour Return									
Deptil (III)	Trush Type	i iusii coloui	NCturri 70								

# **Applicable to Dynamic Sampling Only**

ı				Sampling		
ı	Ш	Depth (m)	Diam (mm)	Recovery %	Remarks	
ı						
ı						
ı						



Project No:

3043

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Location Details

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Log Type

# Combined E Borehole

Methodology & Plant

Sheet 1 of 8

Exploratory Hole Number

**BH17-07** FINAL

CENTRA

Scale:



1:50

From (m) 0.00 - 1.20 1.20 - 47.00 Plant Used Easting: 424889.57 Northing: 558531.58 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 11.80mAOD Final Depth: 80.00m Approved By: BH 47.00 - 55.60 Rotary Coring Fraste PLG Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 29/05/2018 Client SLIV Orientation N/A Inclination: 90 Finish Date: 01/06/2018 Depth (m Reduced Hole Ø Casing Ø Samples & Testing Coring Installation , Backfill Strata Description Legend Level (mAOD) (Stratum Thickness Level (m Depth (m) Ref 11.70 MADE GROUND: TOPSOIL. 0.10 1 D 2 ES 0.10 MADE GROUND: Dark brown slightly sandy gravelly CLAY, Gravel is subangular fine to coarse brick, sandstone and siltstone. Sand 0.50 0.50 3 D 4 ES PID 0.50m = 306.0ppm is fine to coarse. (1.10)PID 1.00m = 367.0ppm SPT(S) 1.20m, N=50 (5,9/50 for 180mm) 1.20 10.60 MADE GROUND: Greyish brown sandy clayey angular to subrounded fine to coarse brick, sandstone and siltstone GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular sandstone and brick. 2.00 2.00 2.00 - 2.65 2.00 - 2.65 PID 2.00m = 735.0ppm SPT(S) 2.50m, N=50 (9,11/50 for 250mm) 9.00 2.80 MADE GROUND: Dark grey slightly sandy gravelly organic CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse 3.00 3.00 PID 3.00m = 459.0ppm sandstone, brick and siltstone. 16 D 3.30 - 3.95 17 B 3.50 - 3.95 SPT(S) 3.50m, N=4 (0,1/1,1,1,1) 4.00 4.00 18 D 19 ES (2.70)4.10 4.50 - 4.95 4.50 - 4.95 20 D 21 B SPT(S) 4.50m, N=2 (0,1/0,1,0,1) 5.00 5.00 22 D 23 ES 5 50 6.30 5.50 - 5.95 24 UT 4 blows, 100% Recovery Soft greenish grey sandy clayey SILT. Sand is fine to coarse. 5.80 6.00 25 D SPT(S) 6.50m, N=3 (0,0/0,1,1,1) 6.50 - 6.95 27 B 7.00 7.00 26 D 28 D SPT(S) 7.50m, N=4 (1,0/1,1,1,1) 8.00 31 D 8.30 3.50 Dark grey slightly gravelly silty fine to coarse SAND. Gravel is subangular to rounded fine to coarse sandstone, siltstone and 8.50 - 8.95 8.50 - 8.95 32 D 33 B SPT(S) 8.50m, N=9 (1,2/3,2,2,2) mudstone. 34 D 9.00 (1.45) 9.50 - 9.95 9.50 - 9.95 35 D 36 B SPT(S) 9.50m, N=8 (2,2/2,2,2,2) 9.75 2.05 Firm thinly laminated brownish grey CLAY. 10:00 37 D 10 Continued on Next Page Shift Information Backfill Depth (m) Casing (m) To (m) Instrument Details Resp. Zone | Depth (m) | Diam | 3.50 - 5.50 | 5.00 | \* Testing undertaken in confined environment potentially near exhaust fumes. CA have 06:00 18:00 06:00 18:00 06:00 18:00 advised the Engineer that these results can not be relied upon Running sands causing slow progress 1.50 andwater Encol. Casing Used 06.06.18: 1.75 Hours 07.06.18: 10 Hours 11.06.18: 10 Hours Water Strikes Strike (m) 2.20 5.80 2.00 4.10



Combined Borehole

Log Type

Exploratory Hole Number **BH17-07** 

FINAL

Strike (m) 2.20 5.80

2.00 4.10



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Combined Borehole

Log Type

Exploratory Hole Number **BH17-07** 

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2.00 4.10



Sheet 3 of 8 Methodology & Plant Location Details Scale: 1:50 Project No: 3043 From (m) Method Plant Used 558531.58 RPH Easting: 424889.57 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 11.80mAOD Final Depth: 80.00m Approved By: BH Tyne and Wear Location: Logged By: ALB+GS Grid System: OSGB Start Date: 29/05/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: 01/06/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref 21.00 21.00 - 21.45 62 D 12 blows, 0% Reco 21.50 64 D 22 From 22.00m with rare subrounded fine to medium mudstone gravel. 22.50 - 22.95 22.50 - 22.95 SPT(S) 22.50m, N=28 (4,7/6,7,7,8) 23.00 68 D 23 24.00 24.00 - 24.45 69 D 70 UT 15 blows, 100% Recovery 24 24.50 71 D 25.00 72 D 25 25.50 - 25.95 25.50 - 25.95 73 D 74 D SPT(S) 25.50m, N=31 (3,7/8,8,8,7) 26.00 75 D 27 27.00 27.00 - 27.45 27.50 78 D (36.45) 28.00 79 D 28 SPT(S) 28.50m, N=32 (4,5/6,8,8,10) 28.50 - 28.95 28.50 - 28.95 80 D 81 B 82 D 29.00 29 30.00 - 83 D 30.00 - 30.45 ; 84 UT 30 Continued on Next Page Shift Information Backfill Resp. Zone | Depth (m) | Diam | 3.50 - 5.50 | 5.00 | Date Depth (m) Casing (m) Water (m) To (m) Material Instrument Details From (m) \* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon Running sands causing slow progress 06.06.18: 1.75 Hours 07.06.18: 10 Hours 11.06.18: 10 Hours Water Strikes Strike (m)



Project No:

3043

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Location Details

# Combined Borehole

Log Type

Sheet 4 of 8

Exploratory Hole Number

BH17-07

**FINAL** 

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used 558531.58 RPH Easting: 424889.57 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 11.80mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 29/05/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: 01/06/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref Firm thinly laminated brownish grey CLAY. 85 D 31.00 86 D 31 SPT(S) 31.50m, N=40 (3,5/10,10,10,10) 89 D 32 33.00 33.00 - 33.45 20 blows, 100% Recovery 33 92 D 33.50 34.00 93 D 34 34.50 - 34.95 34.50 - 34.95 94 D 95 B SPT(S) 34.50m, N=32 (4,5/8,8,8,8) 35.00 96 D 35 20 blows, 67% Reco 36.00 36.00 - 36.45 36.50 99 D SPT(S) 37.50m, N=36 (3,6/9,8,9,10) 103 D 38.00 38 39.00 104 D 20 blows, 100% Recovery 39 39.00 - 39.45 105 UT 39.50 106 D 40:00 107 D 40 Continued on Next Page Shift Information Backfill Resp. Zone | Depth (m) | Diam | 3.50 - 5.50 | 5.00 | Date Depth (m) Casing (m) Water (m) To (m) Material Instrument Details From (m) \* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon Running sands causing slow progress 06.06.18: 1.75 Hours 07.06.18: 10 Hours 11.06.18: 10 Hours Water Strikes Strike (m) 2.00 4.10



Project No:

3043

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Location Details

# Combined **Borehole**

Log Type

Sheet 5 of 8

Exploratory Hole Number

**BH17-07** 

**FINAL** 

Plant Used

Methodology & Plant

Method



1:50

Scale:

From (m) Easting: 424889.57 Northing: 558531.58 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 11.80mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 29/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 01/06/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m Depth (m) Ref Firm thinly laminated brownish grey CLAY. 40.50 - 40.95 40.50 - 40.95 108 D 109 B SPT(S) 40.50m, N=41 (5,9/8,10,11,12) 41.00 110 D 41 30 blows, 100% Recovery 42 42.50 113 D 43.00 114 D 43 SPT(S) 43.50m, N=37 43.50 - 43.95 43.50 - 43.95 116 B (8,5/11,10,8,8) 44.00 117 D 44 45.00 118 D 119 UT 25 blows, 100% Recovery 45 45.00 - 45.45 45.50 120 D 46.00 121 D 46.20 -34.40 Dense grey slightly silty slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone. 46.50 - 46.95 46.50 - 46.95 SPT(S) 46.50m, N=41 (6,6/9,11,10,11) (1.50) SPT(S) 47.70m, 50 (25 for 20mm/50 for 40mm) SPT(S) 47.90m, 50 (25 for 20mm/50 for 30mm) -35.90 NO RECOVERY. 48 (0.70) 48.40 -36.60 21 53 27 Strong brownish grey slightly gravelly slightly silty fine to coarse 5 C NI (0.20)48.50 - 48.65 -36.80 SAND. Gravel is subangular to subrounded fine to coarse 8 \sandstone. Very strong thinly laminated grey fine grained SANDSTONE. (0.60)NI 48.99 - 49.20 3 C From 48.85m to 48.99m, recovered as subangular to subrounded fine to coarse sandstone and siltstone gravel. 49.20 -37.40 From 48.99m to 49.20m, weak Dark to light grey subangular to subrounded fine to coarse sandstone mudstone and siltstone GRAVEL. 49.20 50.20 0 40 0 NI (1.00)50 Continued on Next Page Shift Information Backfill Depth (m) Casing (m) Water (m) Instrument Details Resp. Zone | Depth (m) | Diam | 3.50 - 5.50 | 5.00 | From (m) To (m) \* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon Running sands causing slow progress 06.06.18: 1.75 Hours 07.06.18: 10 Hours 11.06.18: 10 Hours Water Strikes Strike (m) 2.20 5.80 2.00 4.10



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Sheet 6 of 8

Log Type

Combined

Borehole

Exploratory Hole Number **BH17-07** 

BH17-07

2.20 5.80 2.00 4.10



Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) Method Plant Used Easting: 424889.57 Northing: 558531.58 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 11.80mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 29/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 01/06/2018 Depth (m Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend Level (mAOD) (Stratum Thickness Level (m Depth (m) Dark to light grey subangular to subrounded fine to coarse 50.20 -38.40 sandstone mudstone and siltstone GRAVEL NO RECOVERY. 51 (1.70) 47 51.90 Dark to light grey subangular to subrounded fine to coarse 52 sandstone mudstone and siltstone GRAVEL. (1.00) -41.10 NO RECOVERY. 53 (0.40)53.30 -41.50 73 13 7 Destructured to residual dark to light grey MUDSTONE recovered as gravelly clay. Gravel is angular to subangular fine to (0.50)53.80 -42.00 Medium strong to strong thinly laminated dark to light grey 53.90 - 54.00 4 C 2 SILTSTONE. Discontinuities are subhorizontal (0-10 degrees) very 54 closely to closely spaced undulating rough. 54.20 - 54.27 2 C NR From 54.10m to 54.50m, no recovery. (1.40)From 54.50m to 54.63m, recovered as subangular coarse gravel. NI >25 73 47 23 NI From 54.88m to 54.93m, recovered as angular to subangular fine to coarse gravel.

From 55.07m to 55.13m, recovered as subangular to subrounded fine to 55.20 -43.40 coarse gravel. Strong to very strong thinly laminated dark to light grey fine to (0.40) 55.40 - 55.60 1 C medium grained SANDSTONE with medium spaced planar open 55.60 -43.80 clean discontinuities. ROTARY OPEN HOLE DRILLING. 57 58 59 60 Continued on Next Page Shift Information Backfill Depth (m) Casing (m) Water (m) Date From (m) To (m) Instrument Details Resp. Zone | Depth (m) | Diam | 3.50 - 5.50 | 5.00 | \* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon Running sands causing slow progress 06.06.18: 1.75 Hours 07.06.18: 10 Hours 11.06.18: 10 Hours Water Strikes Strike (m)



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Combined **Borehole** 

Log Type

Exploratory Hole Number **BH17-07** 

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Sheet 7 of 8 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) Method Plant Used Easting: 558531.58 424889.57 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Final Depth: 80.00m 11.80mAOD Approved By: ВН Location: Tyne and Wear

State   Stat												Star	rt Dat	te:	2	9/05/	2018
STARY OPEN HOLE DRILLING.   1												Fini	ish Da	ate:	0	1/06/	2018
ROTARY OPEN HOLE DRILLING.  RO	stall:	Water	ng Ø	ø,	Water	nter Ins	Installation /	,	Samp	ples & Testing		poi			Coring		
77	Back	Level (m)		9 1	Level (m	el (m)	Backfill		Ref	f Test Re	Results	Met	Core Run	TCR S	CR RQE	If	
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oservations / Remarks Misc. Shift Information Backfill  Setting undertaken in confined environment potentially near exhaust furnes. CA have Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Deta	Froi	Nater (m)	(m)   w	m) I w	Water	ter (m)	From (m)			rial Instr	rument Dets		stallat Re		ne Dep	th (m)	Diam
Testing undertaken in confined environment potentially near exhaust fumes. CA have vised the Engineer that these results can not be relied upon.  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Deta vised the Engineer that these results can not be relied upon.  3.50 S.50 Gravel	0.	(111)	,	, , ,	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,,	0.30	3.50	Bentor	nite Stand			3.	.50 - 5.50	0 5	.00	2.311
dvised the Engineer that these results can not be relied upon.  10 3 3.50 10 8entonite Standpipe Piezomet 10 5.50 10 80.00 10 81.00 10 81.00 10 91.																	

Observations / Remarks	٨	Λi
* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon. Running sands causing slow progress 06.06.18: 1.75 Hours 07.06.18: 10 Hours 11.06.18: 10 Hours	dwater Encountered	Casina Used

		Still Illiottilacion									
	Date	Time	Depth (m)	Casing (m)	Water (m)	From (m)	T				
pa						0.30					
alle						3.50					
ust						5.50					
Used nt/s II											
S É											
sing g Poi			1								

te te	Stand	pipe Piezome	ter	3.50 - 5.50	5.00	
			Water	Strikes		
	Strike (m)	Rises To (m)	Time (min		Remarks	
	2.20	2.00	20			
- 1	5.80	4 10	20			



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Combined Borehole

Log Type

Exploratory Hole Number **BH17-07** 

FINAL

2.20 5.80 2.00 4.10



Sheet 8 of 8 GEO Methodology & Plant Project No: Location Details Scale: 1:50 3043 From (m) Method Plant Used 558531.58 RPH Easting: 424889.57 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 11.80mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 29/05/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: 01/06/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref ROTARY OPEN HOLE DRILLING. 72 73 74 75 78 79 <u>92</u> 80.00 80.00 -68.20 80 EOH at 80.00m - Scheduled depth Shift Information Backfill To (m) 3.50 5.50 80.00 Resp. Zone | Depth (m) | Diam | 3.50 - 5.50 | 5.00 | Date Time Depth (m) Casing (m) Water (m) Material Instrument Details From (m) \* Testing undertaken in confined environment potentially near exhaust fumes. CA have advised the Engineer that these results can not be relied upon.
Running sands causing slow progress
06.06.18: 1.75 Hours 07.06.18: 10 Hours 11.06.18: 10 Hours Water Strikes Strike (m)



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Header

Sheet

Exploratory Hole Number

BH17-08

**FINAL** 



Location Details Methodology & Plant Scale: 1:50 Project No: 3043 From (m) 0.00 - 1.20 1.20 - 1.30 1.30 - 80.00 Method Inspection Pit Cable Percussion Rotary Open Holing Plant Used Hand Tools Easting: 424909.83 558539.71 Checked: RPH Northing: Name: A1 Birtley to Coalhouse ВН Elevation: 11.43mAOD Final Depth: 80.00m Approved: Fraste PLG Location: Tyne and Wear Logger: GS+DS Grid System: OSGB Start Date: 30/03/2018 04/05/2018 Client: SLJV Orientation: N/A Inclination: 90° End Date:

Hole Di	ameter
Depth (m)	Diam (mm)
1.30 80.00	120

Casing D	iameter
Depth (m)	Diam (mm)
10.00	120
l	

	Groundwater Strikes								
Strike	Casing	Sealed	Time	Rose To	Dl				
(m)	(m)	(m)	(min)	(m)	Remarks				

	Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						
04/05/2018	Standpipe Piezometer	47.60	46.60 - 48.40							

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill								
Depth (m)	Legend Code							
0.00 - 0.50	Concrete							
0.50 - 46.60	Bentonite							
46.60 - 48.40	Gravel							
48.40 - 80.00	Bentonite							

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary						
Enviro	nmer	ntal Samples				
Soil	2	Water	0			
Geote	chnic	cal Samples				
Bulk	2	Large Bulk	0			
Disturbed	3	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Co	re San	nple	0			

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
Test Type						Penetration	N	Reported Result	Hammer Ref
	(m)	(m)	(m)	Blows	Blows	Total (mm)			

ĺ	SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chise	elling	Water Added				
Depth (m)	Duration (mins)	Depth (m)	Litres			

## **Applicable to Rotary Only**

Drilling Flush  Denth (m) Flush Type Flush Colour Return %								
Depth (m)	Flush Type	Flush Colour Return 9						
0.00 - 10.00	Water	Grey	100					
10.00 - 18.00	Water	Grey	100					
18.00 - 45.00	Water	Grey	100					
45.00 - 80.00	Water	Grey	100					

Applicable to Dynamic Sampling Only									
Dynamic Sampling Runs									
Depth (m)	Diam (mm)	Recovery %	Remarks						



**Rotary Borehole** 

Log Type

**BH17-08** 

Exploratory Hole Number



**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 8 GEO Location Details Methodology & Plant Scale: 1:50 Project No: 3043 From (m) 0.00 - 1.20 1.20 - 1.30 1.30 - 80.00 Method Inspection Pit Cable Percussion Rotary Open Holing Plant Used Hand Tools RPH Easting: 424909.83 558539.71 Checked Bv: Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 11.43mAOD Final Depth: 80.00m ВН Fraste PLG Location: Tyne and Wear Logged By: GS+DS Grid System: OSGB Start Date: 30/03/2018 Client: 04/05/2018 SLJV Orientation: N/A Inclination: 90° Finish Date: Hole Ø (mm) Depth (m Casing Ø (mm) Depth (m) Depth (m) Reduced Samples & Testing Water Level (m) Strata Description Legend (Stratum Thickness) Level (mAOD) Depth (m) Ref Test Results (0.10) 0.10 MADE GROUND: CONCRETE. 11.33 MADE GROUND: Dark yellow very gravelly coarse SAND. Gravel (0.30) 0.40 0.30 0.30 0.50 0.60 1 ES 5 D 2 D 3 B is subangular to subrounded fine to coarse sandstone. 11.03 At 0.10m plastic membrane.

_	MADE GROUND: Brownish yellow slightly sandy subangular to	′‱							0.50	3 B		
-	subrounded fine to coarse sandstone, siltstone and limestone								0.70	4 ES		
-	GRAVEL with low cobble content. Sand is fine to coarse. Cobbles	<b>******</b>	(0.90)									-
1 -	are subangular sandstone, siltstone and limestone.								1.00	6 D		1 7
-	At 0.40m geotextile.		1.30	10.13	1.30				1.20 - 1.30	8 B		=
-	∖ At 1.20m wood sleeper.	<b>/</b> ───	1.30	10.13	_							]
-	MADE GROUND: Rubble. (Driller's Description).											-
-												-
-		<b>*******</b>										=
2 -												2 -
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-												-
_		<b>*******</b>	(2.20)									
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3 -												3 –
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-	Soft CLAY (Driller's Description).		3.50	7.93								=
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7			9 70	2 77								-
8 -	Firm CLAY (Driller's Description).		8.70	2.73								-
- - - - - -	Firm CLAY (Driller's Description).		8.70	2.73								8 -
7	Firm CLAY (Driller's Description).		8.70	2.73								-
- - - - - -	Firm CLAY (Driller's Description).		8.70	2.73								8 -
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- - - - - -	Firm CLAY (Driller's Description).		8.70	2.73								8 -
- - - - - -	Firm CLAY (Driller's Description).		8.70	2.73								8 -
- - - - - -	Firm CLAY (Driller's Description).		8.70	2.73								8 -
- - - - - -			8.70	2.73		120 10.00						8 -
9 —	Continued on Next Page		8.70			120 10.00						9-
9 —			8.70	Shift In	formatio	n			Backfill			9 —
9 —	Continued on Next Page ervations / Remarks Misc.		Tim	Shift In	th (m)	n Casing (m)	Water (m)	From (m)	To (m)	Material	Instrument Details	8
9 —	Continued on Next Page ervations / Remarks Misc.	01/05 01/05	Tim 04:00 20:00	Shift In  e Dep  0 10	th (m) 0 8.00 8.00	n Casing (m) 10.00 10.00	5.30 5.73	0.00 0.50	To (m) 0.50 46.60	Concrete Bentonite		9 —
9 —	Continued on Next Page ervations / Remarks Misc.	01/05 01/05 02/05	Tim 04:0:0 20:0 04:3:3	Shift In e Dep 0 1 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 0 1 0 0 0 0 1 0	th (m) 0 8.00 8.00 5.00	Casing (m) 10.00 10.00 10.00	Water (m) 5.30 5.73 5.40	0.00 0.50 46.60	To (m) 0.50 46.60 48.40	Concrete Bentonite Gravel	Instrument Details	8
9 —	Continued on Next Page ervations / Remarks Misc.	01/05 01/05	Tim 04:00 20:00	Shift In 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 0 1 0 0 1 0 0 1 0	th (m) 0 8.00 8.00	n Casing (m) 10.00 10.00	5.30 5.73	0.00 0.50	To (m) 0.50 46.60	Concrete Bentonite	Instrument Details Standpipe Piezometer	9 - 10 - 11 - 10 - 11 - 10 - 11 - 10 - 11 - 10
9 —	Continued on Next Page ervations / Remarks Misc.	01/05 01/05 02/05 02/05	Tim 04:0: 20:0: 04:3: 20:0:	Shift In 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 0 1 0 0 1 0 0 1 0	8.00 8.00 5.00 5.00	Casing (m) 10.00 10.00 10.00 10.00 10.00	5.30 5.73 5.40	0.00 0.50 46.60	To (m) 0.50 46.60 48.40	Concrete Bentonite Gravel	Instrument Details Standpipe Piezometer Drillii	10 -  sillations  Resp. Zone   Depth (m)   Diam
9 —	Continued on Next Page ervations / Remarks Misc.	01/05 01/05 02/05 02/05	Tim 04:0: 20:0: 04:3: 20:0:	Shift In 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 0 1 0 0 1 0 0 1 0	8.00 8.00 5.00 5.00	Casing (m) 10.00 10.00 10.00 10.00 10.00	5.30 5.73 5.40	0.00 0.50 46.60	To (m) 0.50 46.60 48.40	Concrete Bentonite Gravel	Instrument Details Standpipe Piezometer  Drillii  Depth (m) Type 0.00 - 10.00 Water	9 —  Illations  Resp. Zone   Depth (m)   Diam   46.60 - 48.40   47.60    Ing Fluid  Colour   Return %   Grey   100
9 —	Continued on Next Page	01/05 01/05 02/05 02/05	Tim 04:0: 20:0: 04:3: 20:0:	Shift In 0 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0 0 1 0 1 0 0 1 0 0 1 0	8.00 8.00 5.00 5.00	Casing (m) 10.00 10.00 10.00 10.00 10.00	5.30 5.73 5.40	0.00 0.50 46.60	To (m) 0.50 46.60 48.40	Concrete Bentonite Gravel	Instrument Details Standpipe Piezometer  Drillii  Depth (m) Type	8 -



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Rotary Borehole

Log Type

Exploratory Hole Number BH17-08

FINAL



Sheet 2 of 8 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) Method Plant Used RPH Easting: 424909.83 558539.71 Checked Bv: Northing: A1 Birtley to Coalhouse Name: Approved By: Elevation: 11.43mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Logged By: GS+DS Grid System: OSGB Start Date: 30/03/2018 Client: 04/05/2018 SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Strata Description Legend Level (mAOD) Depth (m) Ref Firm CLAY (Driller's Description). 11 12 14 17 18 19 20 Continued on Next Page Backfill Observations / Remarks Misc. Shift Information Installations To (m)
0.50
46.60
48.40
80.00 Resp. Zone | Depth (m) | Diam | 46.60 - 48.40 | 47.60 | Depth (m) Casing (m) Water (m) Instrument Details Casing Used Monitoring Point/s Installed Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) 45.00 - 80.00 Type Water Return %



3043

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**Rotary Borehole** 

Sheet 3 of 8

Log Type

Exploratory Hole Number **BH17-08** 

**FINAL** 



1:50

Scale:

Project No: Location Details Methodology & Plant From (m) Method Plant Used RPH Easting: 424909.83 558539.71 Checked Bv: Northing: A1 Birtley to Coalhouse Name: Approved By: Elevation: 11.43mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Logged By: GS+DS Grid System: OSGB Start Date: 30/03/2018 Client: 04/05/2018 SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Strata Description Legend Level (mAOD) Depth (m) Ref Firm CLAY (Driller's Description). 22 24 27 (37.90) 28 29 30 Continued on Next Page Backfill Observations / Remarks Misc. Shift Information Installations To (m)
0.50
46.60
48.40
80.00 Resp. Zone | Depth (m) | Diam | 46.60 - 48.40 | 47.60 | Depth (m) Casing (m) Water (m) Instrument Details Casing Used Monitoring Point/s Installed Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



3043

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**Rotary** Borehole

Sheet 4 of 8

Log Type

Exploratory Hole Number **BH17-08** 

**FINAL** 



1:50

Scale:

Project No: Location Details Methodology & Plant From (m) Method Plant Used Easting: 424909.83 558539.71 Checked Bv: RPH Northing: A1 Birtley to Coalhouse Name: Approved By: Elevation: 11.43mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Logged By: GS+DS Grid System: OSGB Start Date: 30/03/2018 Client: 04/05/2018 SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Strata Description Legend Level (mAOD) Depth (m) Ref Firm CLAY (Driller's Description). 32 33 34 37 38 39 40 Continued on Next Page Backfill Observations / Remarks Misc. Shift Information Installations To (m)
0.50
46.60
48.40
80.00 Resp. Zone | Depth (m) | Diam | 46.60 - 48.40 | 47.60 | Depth (m) Casing (m) Water (m) Instrument Details Casing Used Monitoring Point/s Installed Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



Rotary Borehole

Log Type

Exploratory Hole Number **BH17-08**FINAL

CENTRAL ALLIANCE

Sheet 5 of 8 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Method Plant Used Easting: From (m) 424909.83 558539.71 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Final Depth: 80.00m 11.43mAOD Approved By: ВН Location: Tyne and Wear

Locat	tion: Tyne and Wear	Logged By:	GS+D	os	Grid	System:	OSGB							Start Date:	30/03/2018
Clien	t: <b>SUV</b>	Orientation:	N/A		Inclin	ation:	90°							Finish Date:	04/05/2018
		<b>'</b>			Depth (m)	Reduced	Hole Ø	Casing Ø	Water	Installation /			Samples &	Testing	
	Strata E	Description		Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (m)	Level (m)		Depth (m)	Ref		Test Results	
	Firm CLAY (Driller's Description)	).													
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	SAND and GRAVEL (Driller's Des	scription).													-
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48 -															48 -
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‡	MUDSTONE (Driller's Description	un)			48.40	-36.97									=
	INIODSTOINE (Driller'S Descriptio	nij.													-
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		on Next Page								1,					
Obse	rvations / Remarks		∕lisc.	Date	Time		nformation pth (m) C		Water	m) From (m)	Backfill To (m)	Material	Instrument De	Installations	Depth (m) Diam
		ered	Monitoring Point/s Installed Hammer Ref & Energy Ratio (%)	Date	111/16	. De	pen (III)   C	wonig (III)	warei (	0.00 0.50	0.50 46.60	Concrete	Standpipe Piezom	eter 46.60 - 48.40	) 47.60
		icount id	<b>'s Insta</b> gy Rati							46.60 48.40	48.40 80.00	Bentonite Gravel Bentonite			
		iter En 19 Use	Point/. & Energ							46.40	60.00	sentonite		Drilling Fluid	1
		undwa Casir	oring.										Depth (m) T	ype Colou	r Return %
		o Grou	Monit amme												
		Ž	· 1												



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**Rotary Borehole** 

Log Type

Exploratory Hole Number **BH17-08** 

**FINAL** 



Drilling Fluid

Colour

Return %

Туре

Depth (m)

Web: www.central-alliance.co.uk Sheet 6 of 8 GEO Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used 558539.71 Checked Bv: RPH Easting: 424909.83 Northing: Name: A1 Birtley to Coalhouse Elevation: 11.43mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: GS+DS Grid System: OSGB Start Date: 30/03/2018 SLJV 04/05/2018 Client: Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Depth (m) Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Ref Depth (m) MUDSTONE (Driller's Description). 51 (6.10) 52 53 54 -43.07 54.50 SILTSTONE (Driller's Description). (3.50) 57 -46.57 58.00 58 MUDSTONE (Driller's Description). 59 60 Continued on Next Page Backfill Observations / Remarks Misc. Shift Information Installations To (m)
0.50
46.60
48.40
80.00 Resp. Zone | Depth (m) | Diam | 46.60 - 48.40 | 47.60 | Depth (m) Casing (m) Water (m) Instrument Details Casing Used Monitoring Point/s Installed Hammer Ref & Energy Ratio (%)



Rotary Borehole

Sheet 7 of 8

Log Type

Exploratory Hole Number BH17-08

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Easting: 558539.71 Checked Bv: RPH 424909.83 Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 11.43mAOD Final Depth: 80.00m BH Location: Tyne and Wear Logged By: GS+DS Grid System: OSGB Start Date: 30/03/2018 04/05/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Depth (m) Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Ref Depth (m) MUDSTONE (Driller's Description). (6.00) 61 62 64.00 -52.57 64 SILTSTONE (Driller's Description). 67 68 (9.50) 69 70 Continued on Next Page Backfill Observations / Remarks Misc. Shift Information Installations Resp. Zone | Depth (m) | Diam | 46.60 - 48.40 | 47.60 | Depth (m) Casing (m) Water (m) Instrument Details Casing Used Monitoring Point/s Installed Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



Rotary Borehole

Sheet 8 of 8

Log Type

Exploratory Hole Number BH17-08

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Easting: 558539.71 Checked Bv: RPH 424909.83 Northing: Name: A1 Birtley to Coalhouse Elevation: 11.43mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: GS+DS Grid System: OSGB Start Date: 30/03/2018 SLJV 04/05/2018 Client: Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Depth (m) Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Ref Depth (m) SILTSTONE (Driller's Description). 72 -62.07 73.50 MUDSTONE (Driller's Description). 74 78 79 80.00 -68.57 80 EOH at 80.00m - Scheduled depth Backfill Observations / Remarks Shift Information Installations Resp. Zone | Depth (m) | Diam | 46.60 - 48.40 | 47.60 | Depth (m) Casing (m) Water (m) Instrument Details Casing Used Monitoring Point/s Installed Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



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Web: www.central-alliance.co.uk

Header Sheet

Log Type

Exploratory Hole Number

**BH17-09** 

**FINAL** 



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
		Easting:	424996.18	Northing:	558534.60	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	121330120	rtor triing.	33033	0.00 - 1.20	Inspection Pit	Hand Tools	onconcu.	
		Elevation:	13.08mAOD	Final Depth:	2.62m	1.20 - 2.62	Cable Percussion	Dando 4000	Approved:	BH
Location:	Tyne and Wear	Logger:	RJ	Grid System:	OSGB				Start Date:	04/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	05/04/2018

Hole Diameter						
Depth (m)	Diam (mm)					

**Casing Diameter** Depth (m) Diam (mm 2.00

	Groundwater Strikes									
				Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)						

Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 2.62	Arisings						

In-Situ Tests						
PID	0					
Hand Vane*	0					
Standard Penetration Tests	2					

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Sam	ple S	Summary		Standard Penetration Test Summary											
Enviro	Environmental Samples				Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref		
Soil	5	Water	0	Split Spoon	1.20	1.00	Dry	6	14	450	14	N=14 (2,4/3,4,4,3)	AR1710		
Geotechnical Samples			Cone	2.60	2.00	Dry	25	50	20		N=50 (25 for 5mm/50 for 15mm)	AR1710			
Bulk	2	Large Bulk	0												
Disturbed	6	Disturbed (NR)	0												
Piston	0	Piston (NR)	0												
Jndisturbed	0	Undisturbed (NR)	0												
Undistu	rbed 1	Thin Wall	1												
Undisturb	ed Thi	n Wall (NR)	0												
Core Sample 7															
IR) Indicates sa	mple	undertaken but v													

SPT Hammer Ref.	Energy Ratio (%)
AR1710	61

#### **Applicable to Cable Percussion Only**

Chiselling								
Duration (mins)								
90								

Water Added								
Depth (m)	Litres							

## **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

## **Applicable to Dynamic Sampling Only**

		Sampling	
Depth (m)	Diam (mm)	Recovery %	Remarks



Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ

Log Type Cable

**BH17-09** 

Exploratory Hole Number



Percussion Tel +44(0)1924 229889 **FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 6 GEO Methodology & Plant Project No: Location Details: Scale: 1:50 3043 Depth (m) 0.00 - 1.20 1.20 - 2.62 Method Inspection Pit Cable Percussion Plant Used Hand Tools Dando 4000 424996.18 RPH 558534.60 Checked By: Easting: Northing: Name: A1 Birtley to Coalhouse Elevation: 13.08mAOD Final Depth: 2.62m Approved By: ВН Location: Tyne and Wear Logged By: Start Date: RJ Grid System: OSGB 04/04/2018 Client: Finish Date: 05/04/2018 SLJV Orientation: N/A Inclination: 90° Depth (m) Reduced (Stratum Level Thickness) (mAOD) Water Added (Litres) Samples & Testing Strata Description Depth (m) Ref

	NO Groundwater Encountered No Monte Net Case No Monte Net Case No Monte Ints Point Installed Hummer Ref. & Brougy Ratio (%) ARTIO (61/9)										Strike (m) Ris		Time (min) Remarks	
	r Encounterret Count installed Religious	05/04 05/04	05:00 21:00	1.00		-	Dry Dry	0.00	2.62	Arisings				
Ol	sservations / Remarks Misc.	Date	Time	hift Infor Depth	(m) Cas	ing (m) \	Vater (m)	From (m)	Backfil To (m)	Material	Instrum	ent Deta	Installations ails Resp. Zone Depth (m)	Diam.
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	angular to subangular fine to coarse limestone GRAVEL. Sand is fine to coarse.  EOH at 2.62m - Refusal		2.60	20.10							2.50	13 ES	for 15mm)	-
	MADE GROUND: Light brown slightly sandy slightly clayey		2.40 (0.20)	10.68 10.48	90						2.45 2.50	11 D 12 D	SPT(C) 2.60m, N=50 (25 for 5mm/50	, ]
2	_ -							2.00			2.00 - 2.45	10 UT	67 blows, 100% Recovery	2 -
			(1.20)					2.00			1.70	9 D		-
	Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of concrete and limestone.										1.50	8 ES		
1	MADE GROUND: Firm dark grey slightly sandy gravelly CLAY.		1.20	11.88							1.00 1.20 - 1.65 1.20 - 1.70	5 D 6 D 7 B	SPT(S) 1.20m, N=14 (2,4/3,4,4,3)	1 -
	1		(1.05)								0.80	4 ES		-
	- subrounded fine to coarse concrete limestone and slate GRAVEL										0.40 0.40 0.50 - 1.00	2 ES 4 ES 3 B		-
	- MADE GROUND: GRASSCRETE with rebar.  MADE GROUND: Dark brown slightly sandy clayey angular to		(0.15) 0.15	12.93							0.10	1 D		
			I nickness)	(MAUD)		(Littles)	Depth (m)	Deptii (iii)			Depth (m)	Ref	Test Results	

oonanada on noki rago														
Observations / Remarks	Misc.		SI	hift Informa	tion			Backfil			Inst	allations		
	_	Date	Time	Depth (m)	Casing (m)	Water (m)	From (m)	To (m)	Material	Instrume	nt Details	Resp. Zone	Depth (m)	Diam.
	pa (%)	05/04	05:00	1.00	-	Dry	0.00	2.62	Arisings					
	to the	05/04	21:00	1.00	-	Dry								
	incour ased int Ins rgy Ra													
	rater E Not C ing Po. & Ene. 710 (6:										Ground	water Strikes	;	
	indw Hole itori 'Ref									Strike (m) Rise	s To (m) Time (r	nin)	Remarks	



3043

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Northing:

Location Details:

424996.18

Easting:

Cable Percussion

Log Type

Exploratory Hole Number **BH17-09** 

Plant Used

CENTRAL ALLIANCE

RPH

Sheet 2 of 6

Method

Depth (m)

558534.60

FINAL GEO 1:50 Methodology & Plant Scale:

Checked By:

Name:	A1 Birtley to Coalhouse	Easting:	424996.18		Northin	g: <b>5</b>	58534.60	Deptr	i (m)	iviei	tnoa		Plant Used		Checked E	y:	RPH	
		Elevation:	13.08mAC	D	Final De	pth: 2	.62m								Approved	Ву:	ВН	
Location:	Tyne and Wear	Logged By:	RJ		Grid Sys	tem: O	SGB								Start Date	:	04/04/20	)18
Client:	SUV	Orientation:	N/A		Inclinati	ion: <b>9</b>	0°								Finish Dat	≘:	05/04/20	)18
		•			Depth (m)	Reduced	Chiselling	Water	Hole Ø		Water	Installation /			Samples & Te	sting		
	Strata Description		Lege	end	(Stratum Thickness)	Level (mAOD)	(mins)	Added (Litres)	(mm) Depth (m	(mm) ) Depth (m)	Level (m)	Backfill	Depth (m)	Ref		est Results		П
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Observations /	/ Remarks	Miso				Shift Info	rmation				Backfill				Installatio	ins		
1,			_	ate	Time			ing (m)	Water (m)	From (m)		Material	Instrum	ent Det			epth (m) D	iam.
		No Groundwater Encountered Hole Not Cased No Monitoring Point Installed								1						T		
		rcoun sed rt Inst	8															
		Groundwater Encounterec Hole Not Cased Monitoring Point Installec	10 (61							1				G	roundwater	Strikes		
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3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Location Details:

# Cable Percussion

Log Type

Sheet 3 of 6

Exploratory Hole Number

Methodology & Plant

BH17-09 FINAL



1:50

Scale:

Depth (m) Method Plant Used Easting: 424996.18 558534.60 Checked By: RPH Northing: Name: A1 Birtley to Coalhouse Elevation: 13.08mAOD Final Depth: 2.62m Approved By: ВН Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 04/04/2018 Client: 05/04/2018 SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Water Added (Litres) Casing Ø (mm) Depth (m) Samples & Testing Reduced Chiselling (mins) Water Level (m) Installation , Backfill Strata Description Legend Level (mAOD) Depth (m) 22 24 27 28 29 30 Continued on Next Page Observations / Remarks Shift Information Installations Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam. Hole Not Cased
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%)
AR1710 (61(%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



Cable Percussion

Log Type

Exploratory Hole Number **BH17-09**FINAL

CENTRAL ALLIANCE

Sheet 4 of 6

Location Details: Methodology & Plant Project No: 3043 Scale: 1:50 Depth (m) Method Plant Used Easting: 424996.18 558534.60 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Elevation: 13.08mAOD Final Depth: 2.62m Approved By: ВН

Location:	Tyne and Wear		J		irid Svst	em: <b>O</b>	SGB								Start Da		04/04/2	
Client:	SUV	1	I/A		nclinatio										Finish D		05/04/2	
Cilcric.	357	Onentation.	-,, 	Dept		Reduced		Water	Hole Ø	Casing Ø					Samples 8		03/04/2	-010
	Strata Description		Lege	d (Stra	tum	Level	Chiselling (mins)	Added	(mm)	(mm)	Water Level (m)	Installation / Backfill	0 1111		Jampies o			$\overline{}$
				Thick	ness)	(mAOD)		(Litres)	Depth (m)	Depth (m)			Depth (m)	Ref		Test Results		
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		red led	Da	ie .	Time	Depth	(m) Cas	ing (m)	Water (m)	From (m)	To (m)	Material	Instrun	nent Det	ails R	esp. Zone D	epth (m)	Diam.
		No Groundwater Encountered Hole Not Cased No Monitoring Point Installed Hommas Raf & Fannin Ann All	6															
		er Enc t Case Point	(61(%												roundur-+	or Strikes		-
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		No																
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3043

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Location Details:

# Cable Percussion

Log Type

Sheet 5 of 6

Exploratory Hole Number

Methodology & Plant

BH17-09 FINAL



1:50

Scale:

Depth (m) Method Plant Used Easting: 424996.18 558534.60 Checked By: RPH Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 13.08mAOD Final Depth: 2.62m ВН Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 04/04/2018 Client: 05/04/2018 SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Water Added (Litres) Casing Ø (mm) Depth (m) Samples & Testing Reduced Chiselling (mins) Water Level (m) Installation , Backfill Strata Description Legend Level (mAOD) Depth (m) 42 44 48 49 50 Continued on Next Page Observations / Remarks Shift Information Installations Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam. Hole Not Cased
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%)
AR1710 (61(%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ

# Cable Percussion

Log Type

Exploratory Hole Number

**BH17-09** 



Tel +44(0)1924 229889 **FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 6 of 6 GEO Location Details: Methodology & Plant Project No: 3043 Scale: 1:50 Depth (m) Plant Used Method Easting: 424996.18 558534.60 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: 13.08mAOD Final Depth: 2.62m Approved By: ВН Location: Tyne and Wear Grid System: OSGB Start Date: 04/04/2018 Logged By: RJ Client: 05/04/2018 SLJV Inclination: 90° Finish Date: Orientation: N/A

	Strata Description	Legend	Depth (m) (Stratum	Reduced	Chiselling	Water Added	Hole Ø (mm)	Casing Ø (mm)	Water	Installation /			Samples 8	& Testing	
	Su ata Description	Legend	Thickness)	Level (mAOD)	(mins)	(Litres)	Depth (m)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref		Test Results	
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Ob	servations / Remarks Misc.	Date	Time	Shift Info		ing (m) I v	Vater (m)	From (m)	Backfil To (m)	Material	Inctro	ment Det	Install:	ations Resp. Zone Depth	(m) Diam
	No Groundwater Encountered Hole Not Cosed No Monitoring Point installed Harmer Ref. & Grergy Ratio (%)	Date	Time	Бери	() CdS	6 (!!!)	-acci (III)	. 10111 (111)	10 (111)	iviacciiai	mstru	ciil Del	una   I	.cop. zone  Depti	. (AII) DIGITI.
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Tel: +44 (0)1924 229889 Web: www.central-alliance.co.uk Log Type

Header

Sheet

Exploratory Hole Number

# BH17-09A

FINAL



F	Project No:	3043		Location	Details			Methodology & F	lant	Scale:	1:50
١.			Easting:	424996.16	Northing:	558533.60	From (m)	Method	Plant Used	Checked:	RPH
ľ	lame:	A1 Birtley to Coalhouse					0.00 - 3.00	Rotary Open Holing	Fraste PLG		
			Elevation:	13.08mAOD	Final Depth:	80.00m	3.00 - 51.00 51.00 - 63.50	Cable Percussion Rotary Coring	Dando 4000 Fraste PLG	Approved:	BH
L	ocation:	Tyne and Wear	Logger:	RJ+GS	Grid System:	OSGB	63.50 - 80.00	Rotary Open Holing	Fraste PLG	Start Date:	11/04/2018
(	Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	10/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)
80.00	93

Casing D	iameter
Depth (m)	Diam (mm)
52.00	121
I	

	Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Dl			
(m)	(m)	(m)	(min)	(m)	Remarks			

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
11/05/2018	Standpipe Piezometer	50.60	50.00 - 51.00					

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill								
Depth (m)	Legend Code							
0.00 - 50.00	Bentonite							
50.00 - 51.00	Gravel							
51.00 - 80.00	Bentonite							

In-Situ Tests	
PID	1
Hand Vane*	0
Standard Penetration Tests	16

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary										
Environmental Samples										
0	Water	1	Soil							
	Geotechnical Samples									
0	Large Bulk	15	Bulk							
0	Disturbed (NR)	53	Disturbed							
0	Piston (NR)	0	Piston							
0	Undisturbed (NR)	0	Undisturbed							
16	Thin Wall	rbed 1	Undistu							
0	Undisturbed Thin Wall (NR)									
7	nple	re San	Cor							
7	nple	e San	Cor							

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary										
Test Type	Depth		l .	Seating		Penetration	N	Reported Result	Hammer Ref		
	(m)	(m)	(m)	Blows	Blows	Total (mm)					
Split Spoon	3.00	3.00	-	11	21	450	21	N=21 (6,5/7,4,6,4)	AR1710		
Split Spoon	5.00	4.00	-	7	17	450	17	N=17 (3,4/5,4,3,5)	AR1710		
Split Spoon	7.00	4.00	-	8	13	450	13	N=13 (3,5/3,3,4,3)	AR1710		
Split Spoon	9.00	4.00	-	8	15	450	15	N=15 (5,3/4,3,3,5)	AR1710		
Split Spoon	11.50	4.00	-	10	17	450	17	N=17 (6,4/3,5,4,5)	AR1710		
Split Spoon	14.50	4.00	-	10	22	450	22	N=22 (6,4/5,6,6,5)	AR1710		
Split Spoon	17.50	15.00	-	11	22	450	22	N=22 (6,5/6,4,7,5)	AR1710		
Split Spoon	20.50	15.00	-	13	22	450	22	N=22 (6,7/5,6,6,5)	AR1710		
Split Spoon	23.50	15.00	-	15	31	450	31	N=31 (7,8/8,6,9,8)	AR1710		
Split Spoon	26.50	15.00	-	17	32	450	32	N=32 (8,9/8,8,9,7)	AR1710		
Split Spoon	29.50	15.00	-	19	35	450	35	N=35 (9,10/8,10,8,9)	AR1710		
Split Spoon	32.50	15.00	-	15	33	450	33	N=33 (8,7/8,9,7,9)	AR1710		
Split Spoon	35.50	15.00	-	19	38	450	38	N=38 (10,9/10,11,8,9)	AR1710		
Split Spoon	38.50	15.00	-	19	37	450	37	N=37 (9,10/8,9,9,11)	AR1710		
Split Spoon	41.50	15.00	-	24	39	450	39	N=39 (11,13/10,8,9,12)	AR1710		
Split Spoon	44.50	15.00	-	22	40	450	40	N=40 (12,10/9,11,11,9)	AR1710		

SPT Hammer Ref.	Energy Ratio (%)
AR1710	61

### **Applicable to Cable Percussion Only**

Chise	Chiselling										
Depth (m)	Duration (mins)										
2.60 - 3.00	30										

Water Added									
Depth (m)	Litres								

## **Applicable to Rotary Only**

Drilling Flush										
Depth (m)	Flush Type	Flush Colour	Return %							
51.00 - 52.00	Water	Grey	50							
52.00 - 63.50	Water	Grey	70							
63.50 - 80.00	Water	,	0							

### **Applicable to Dynamic Sampling Only**

	Dynamic Sampling Runs									
Ш	Depth (m)	Diam (mm)	Recovery %	Remarks						
					П					
					П					
					П					
					П					
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Combined **Borehole** Sheet 1 of 8

Log Type

Exploratory Hole Number

# BH17-09A

**FINAL** 



Methodology & Plant Project No: Location Details Scale: 3043 1:50 From (m) 0.00 - 3.00 3.00 - 51.00 51.00 - 63.50 63.50 - 80.00 Plant Used Fraste PLG Dando 4000 Fraste PLG Method 424996.16 558533.60 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 13.08mAOD Final Depth: 80.00m Approved By: BH Rotary Coring Rotary Open Holing Location: Tyne and Wear Fraste PLG Logged By: RJ+GS Grid System: OSGB Start Date: 11/04/2018 Client SLIV Orientation N/A Inclination: 90° Finish Date: 10/05/2018 Samples & Testing Depth (m Reduced Hole Ø Casing Ø Coring Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) ROTARY OPEN HOLE DRILLING. (3.00) 10.08 3.00 3.00 - 3.45 3.00 - 3.50 SPT(S) 3.00m, N=21 (6,5/7,4,6,4) MADE GROUND: Light brown very sandy angular to subrounded fine to coarse limestone GRAVEL. Sand is fine to coarse. (0.45) 3.45 9.63 3.50 3.50 PID 3.50m = 13.1ppm Stiff thinly laminated brown slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse of various lithologies. 4.00 - 4.45 5 UT 56 blows, 100% Recovery 4.50 6 D 5.00 - 5.45 5.00 - 5.50 SPT(S) 5.00m, N=17 (3,4/5,4,3,5) 5.50 9 D 6.00 - 6.50 10 UT 11 D 12 D 6.45 6.50 SPT(S) 7.00m, N=13 (3,5/3,3,4,3) 6.08 Stiff thinly laminated brown CLAY. 7.50 15 D 8.00 - 8.45 16 UT 60 blows, 100% Recovery 8.50 15 D SPT(S) 9.00m, N=15 (5,3/4,3,3,5) 9.00 - 9.45 18 D 9.00 - 9.50 19 B 9.50 20 D From 9.50m becoming very stiff. 10.00 - 10.45 21 UT 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 50.00 - 51.00 | 50.60 | To (m) Material Instrument Details Date 11/04 12/04 13/04 13/04 14/04 01/05 02/05 04/05 05/05 09/05 Driller reports loss of flush from 63,50m to 80,00m. Redrilling in 10" and 8" to 47m bgl due to Sandstone obstruction preventing reductio from 8" to 6": 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.18: 10hrs & 06:00 20:00 06:00 20:00 06:00 20:00 06:00 20:00 20:00 20.04.18: 10hrs Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs Water Strikes Strike (m) Rises To (m) Time (min)



Combined Borehole

Sheet 2 of 8

Log Type

Exploratory Hole Number

# BH17-09A

FINAL



Methodology & Plant Project No: Location Details Scale: 1:50 3043 From (m) Method Plant Used 424996.16 558533.60 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 13.08mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: RJ+GS Grid System: OSGB Start Date: 11/04/2018 10/05/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: Depth (m) Reduced Hole Ø Samples & Testing Coring Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref Stiff thinly laminated brown CLAY. 10.45 22 D 11.00 23 D 24 D 25 B 12 12.50 26 D 13.00 - 13.45 27 UT 64 blows, 100% Recovery 13 14.00 28 D 14 14.50 - 14.95 14.50 - 15.00 29 D 30 B SPT(S) 14.50m, N=22 (6,4/5,6,6,5) 15 15.50 31 D 16.00 - 16.45 32 UT 61 blows, 100% Recovery SPT(S) 17.50m, N=22 (6,5/6,4,7,5) 17.50 - 17.95 17.50 - 18.00 18 18.50 36 D 19.00 - 19.45 37 UT 73 blows, 100% Recovery 19 20:00 38 D 20 Continued on Next Page Misc Observations / Remarks Shift Information Backfill Resp. Zone | Depth (m) | Diam | 50.00 - 51.00 | 50.60 | Depth (m) Casing (m) Water (m) To (m) Material Instrument Details Driller reports loss of flush from 63,50m to 80,00m. Bollier reports 1883 in 10" and 8" to 47m bgl due to Sandstone obstruction preventing reduction from 8" to 6": 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.18: 10hrs & 20.04.18: 10hrs Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs Water Strikes Strike (m) Rises To (m) Time (min)



Combined Borehole

Sheet 3 of 8

Log Type

Exploratory Hole Number

# BH17-09A

FINAL



Methodology & Plant Location Details Project No: Scale: 1:50 3043 From (m) Method Plant Used 424996.16 558533.60 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 13.08mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: RJ+GS Grid System: OSGB Start Date: 11/04/2018 10/05/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: Casing Ø (mm) Depth (m) Depth (m) Reduced Hole Ø Samples & Testing Coring Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref Stiff thinly laminated brown CLAY. 20.50 - 20.95 20.50 - 21.00 SPT(S) 20.50m, N=22 (6,7/5,6,6,5) 21.50 41 D 42 UT 22 23.00 43 D 23 SPT(S) 23.50m, N=31 (7,8/8,6,9,8) 23.50 - 23.95 23.50 - 24.00 44 D 45 D 24 24.50 46 D 25.00 - 25.45 47 UT 79 blows, 100% Recovery 25 26.00 48 D 26.50 - 26.95 26.50 - 27.00 SPT(S) 26.50m, N=32 (8,9/8,8,9,7) 50 D 28.00 - 28.45 52 UT 83 blows, 100% Recovery 28 53 D (44.00) 29.00 29 29.50 - 29.95 29.50 - 30.00 SPT(S) 29.50m, N=35 (9,10/8,10,8,9) 30 Continued on Next Page Misc Observations / Remarks Shift Information Backfill Resp. Zone | Depth (m) | Diam | 50.00 - 51.00 | 50.60 | Depth (m) Casing (m) Water (m) To (m) Material Instrument Details Driller reports loss of flush from 63,50m to 80,00m. Bollier reports 1633 in 108 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 18 months 2001 (1822) and 1822 (182 Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs Water Strikes Strike (m) Rises To (m) Time (min)



Combined Borehole

Sheet 4 of 8

Log Type

Exploratory Hole Number

# BH17-09A

FINAL



Location Details Methodology & Plant Project No: Scale: 1:50 3043 From (m) Method Plant Used 424996.16 558533.60 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 13.08mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: RJ+GS Grid System: OSGB Start Date: 11/04/2018 10/05/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: Depth (m) Reduced Hole Ø Samples & Testing Coring Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref Stiff thinly laminated brown CLAY. 30.50 56 D 31.00 - 31.45 57 UT 89 blows, 100% Re 31.45 58 D 32 SPT(S) 32.50m, N=33 (8,7/8,9,7,9) 33 33.50 62 D 34.00 - 34.45 63 UT 88 blows, 100% Recovery 34 35.00 64 D 35.50 - 35.95 35.50 - 36.00 SPT(S) 35.50m, N=38 (10,9/10,11,8,9) 36.50 67 D 69 D 38.00 70 D SPT(S) 38.50m, N=37 (9,10/8,9,9,11) 38.50 - 38.95 38.50 - 39.00 71 D 72 B 39 39.50 73 D 40.00 - 40.45 74 UT 40 Continued on Next Page Misc Observations / Remarks Shift Information Backfill Resp. Zone | Depth (m) | Diam | 50.00 - 51.00 | 50.60 | Depth (m) Casing (m) Water (m) To (m) Material Instrument Details Driller reports loss of flush from 63.50m to 80.00m. Bollier reports 1883 in 10" and 8" to 47m bgl due to Sandstone obstruction preventing reduction from 8" to 6": 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.18: 10hrs & 20.04.18: 10hrs Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs Water Strikes Strike (m) Rises To (m) Time (min)



3043

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Location Details

Combined Borehole

Sheet 5 of 8

Log Type

Exploratory Hole Number

BH17-09A

FINAL

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used 424996.16 558533.60 RPH Easting: Northing: Checked By: Name: A1 Birtley to Coalhouse Elevation: 13.08mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: RJ+GS Grid System: OSGB Start Date: 11/04/2018 10/05/2018 Client: SLIV Orientation: N/A Inclination: 90° Finish Date: Samples & Testing Depth (m) Reduced Hole Ø Coring Water Level (m) Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref Stiff thinly laminated brown CLAY. 41.00 75 D SPT(S) 41.50m, N=39 (11,13/10,8,9,12) 42 42.50 78 D 43.00 - 43.45 79 UT 99 blows, 100% Recovery 43 44.00 80 D 44 44.50 - 44.95 44.50 - 45.00 SPT(S) 44.50m, N=40 (12,10/9,11,11,9) 45.50 83 D 46.00 - 46.45 84 UT 101 blows, 100% Reco 49 50 Continued on Next Page Misc Observations / Remarks Shift Information Backfill Resp. Zone | Depth (m) | Diam | 50.00 - 51.00 | 50.60 | Depth (m) Casing (m) Water (m) To (m) Material Instrument Details Driller reports loss of flush from 63.50m to 80.00m. Bollier reports 1883 in 10" and 8" to 47m bgl due to Sandstone obstruction preventing reduction from 8" to 6": 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.18: 10hrs & 20.04.18: 10hrs Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs Water Strikes Strike (m) Rises To (m) Time (min)



3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Location Details

Combined **Borehole** 

Sheet 6 of 8

Log Type

Exploratory Hole Number

**BH17-09A FINAL** 

Scale:



1:50

Methodology & Plant From (m) Method Plant Used Easting: 424996.16 Northing: 558533.60 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 13.08mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: RJ+GS Grid System: OSGB Start Date: 11/04/2018 Client SLIV Orientation N/A Inclination: Finish Date: 10/05/2018 Depth (m Reduced Hole Ø Samples & Testing Coring Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Stiff thinly laminated brown CLAY. 51.00 -37.92 51 Assumed Zone of Core Loss. (0.40) -38.32 Firm to stiff dark brown gravelly CLAY. Gravel is subangular to 60 0 subrounded fine to coarse of sandstone, mudstone and siltstone (0.60) 51.92 - 52.00 4 C 52.00 -38.92 52 Assumed Zone of Core Loss. NR (0.30) Weak to strong grey MUDSTONE. From 52.30m to 52.75m recovered as gravelly clay. Gravel is subangular NI fine to coarse. 80 9 52.82 - 52.93 1 C 8 From 52.88m to 53.50m recovered as gravelly silty clay. Gravel is 53.00 - 53.06 6 C 53 subangular fine to coarse. From 53.50m to 53.65m recovered as subangular fine to coarse gravel. 53.62 - 53.72 2 C (2.70) From 53.80m to 53.97m recovered as clayey subangular fine to coarse NI 53.92 - 53.98 7 C >25 From 54.13m to 54.36m recovered as clayey subangular fine to coarse 53.50 55.00 NI 70 10 100 >25 From 54.60m to 54.80m recovered as subangular fine to coarse gravel. NI From 54.80m to 55.00m 1 no. discontinuity vertical (85-90 degrees) rough 25 54.90 - 55.00 5 C undulating. 55.00 -41.92 Strong to very strong light grey fine grained SANDSTONE. NI Discontinuities are set 1) very close to closely spaced subhorizontal (10-20 degrees) rough undulating. 55.39 - 55.46 3 C >25 From 55.00m to 55.20m recovered as gravelly clay. Gravel is subangular fine to coarse.
From 55.00m to 56.50m interbedded with very weak mudstone NI 100 72 35 From 55.25m to 55.45m and 56.00m to 56.20m 1 no. discontinuity subvertical (80-90 degrees) rough undulating. From 55.59m to 55.77m recovered as sandy clayey subangular fine to 12 coarse gravel. Sand is fine to coarse. From 56.00m to 56.20m, 1 No. subvertical (80-90 degrees) rough undulating discontinuity. 100 63 58 58.00 59.50 100 100 65 59 (8.50)60 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Depth (m) Casing (m) Water (m) To (m) Resp. Zone | Depth (m) | Diam | 50.00 - 51.00 | 50.60 Date Material Instrument Details Driller reports loss of flush from 63,50m to 80,00m. Redrilling in 10" and 8" to 47m bgl due to Sandstone obstruction preventing reduction from 8" to 6": 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.18: 10hrs & 20.04.18: 10hrs Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs Water Strikes Strike (m) Rises To (m) Time (min)



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Combined Borehole

Log Type

Exploratory Hole Number **BH17-09A** 

FINAL



	EXPLORE > IDENTIFY > 1	DELIVER			(0)1924 /ww.cen		ince.co.u	ık	Sheet			FI	NAL		(	CEN.	TRA	L A	LLI	ANC	Ξ
Proje	ct No: <b>3043</b>			Locat	tion Detai	ls			Silecti		thodology	& Plant			Si	cale:		GEG		1:50	_
Name		Easting:	4249	996.16		thing:	558533.6	o Fro	om (m)		thod		Plant	Used	$\Box$ c	hecked	d By:			RPH	
Ivanic	Al billiey to coulingate	Elevation:	13.0	8mAOD	Fina	l Depth:	80.00m								А	pprove	ed By	·:		ВН	
Locat	ion: Tyne and Wear	Logged By:	RJ+0	SS	Grid	System:	OSGB								S	tart Da	ite:		11/	04/201	.8
Client	: SLJV	Orientation:	N/A		Incli	nation:	90°								F	inish D	ate:		10/	05/201	.8
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Hole Ø (mm)	Casing Ø (mm)	Water	Installation /		Sample	s & Testir	ng	thod			Cori	ing		
					Thickness)	(mAOD)	Depth (m)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Te	est Results	Me	Core Run	TCR	SCR	RQD	If	_
																59.50					
																61.00	100	100	66	7	
1	From 60.80m to 60.90m 1 no. discontinuity subvertical (70	)-80 dearees)																			
61 -	rough undulating.	,																		— е	1 -
-					:																
-				:::::												61.00	100	100	60	9	
					:											62.00					
62 -				:::::																- 6	2 -
1					:															NR	-
-																62.00 63.50	27	27	27		
[ ]																05.50				.	. c
63 -				::::															-	┥ 6	3 -
																				3	
+	ROTARY OPEN HOLE DRILLING.				63.50	-50.42									H					$\dashv$	-
64 -																				6	4 -
1																					
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65																				€	5 -
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70	Continued on Next Page				1							ļ	ļ		H			$\vdash$	$\dashv$	<del> </del> 7	0 -
Ohee	rvations / Remarks		Misc.		1	Shift 1	nformatio	l	1	<u> </u>	Backfill	:	: T		Щ	Installa	tions				_
	reports loss of flush from 63.50m to 80.00m.		WIISC.	Date	Tim		pth (m)		Water (m	n) From (m)	To (m)	Materia		nstrument D	etails	R	esp. Z	one [		(m) Dia	am
Redrill	ing in 10" and 8" to 47m bgl due to Sandstone obstruction prevei " to 6": 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.	nting reduction .18: 10hrs &	ountered I Installed							0.00 50.00	50.00 51.00	Bentonite	9 5	tandpipe Piezo			0.00 - 5		50.6		
20.04.	18: 10hrs		r Encou Used nt/s Ins							51.00	80.00	Bentonite	·							$\bot$	
Aunfill	ng sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs		dwater asing t ng Poin										C4. 11	(m) ln: =		Water S			or-	les	
			umc C Orin						1	1			Strike	(m) Rises To	m) Tin	ne (min)		R	emar	KS	_



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Combined Borehole

Log Type

Exploratory Hole Number BH17-09A

FINAL



Web: www.central-alliance.co.uk Sheet 8 of 8 GEO Location Details Methodology & Plant Project No: Scale: 1:50 3043 From (m) Method Plant Used 424996.16 558533.60 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 13.08mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: RJ+GS Grid System: OSGB Start Date: 11/04/2018 10/05/2018 Client: SLIV Orientation: N/A Inclination: Finish Date: Samples & Testing Depth (m) Reduced Hole Ø Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref ROTARY OPEN HOLE DRILLING. (16.50) 72 <u>93</u> 80.00 80.00 -66.92 80 EOH at 80.00m - Scheduled depth Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 50.00 - 51.00 | 50.60 | Depth (m) Casing (m) Water (m) To (m) Material Instrument Details Driller reports loss of flush from 63.50m to 80.00m. Redrilling in 10" and 8" to 47m bgl due to Sandstone obstruction preventing reduction from 8" to 6": 16.04.18: 10hrs, 17.04.18: 10hrs, 18.04.18: 10hrs, 19.04.18: 10hrs & 20.04.18: 10hrs Running sands causing slow progress: 24.04.18: 8hrs & 25.04.18: 4hrs Water Strikes Strike (m) Rises To (m) Time (min)



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Tel: +44 (0)1924 229889 Web: www.central-alliance.co.uk Log Type **Header** 

Sheet

Exploratory Hole Number

BH17-11

FINAL



Project No:	3043		Location	Details			Methodology & F	lant	Scale:	1:50
		Easting:	425016.51	Northing:	558526.43	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	125020152	reor criming.	330320113	0.00 - 1.20	Inspection Pit	Hand Tools	Circonca.	
		Elevation:	13.67mAOD	Final Depth:	80.00m	1.20 - 47.00	Cable Percussion	Dando 2000	Approved:	BH
		Licvation.	13.07IIIAOD	i iliai beptii.	00.00111	47.00 - 55.00	Rotary Open Holing	Fraste PLG	Approved.	DIT
Location:	Tyne and Wear	Logger:	ALB	Grid System:	OSGB	55.00 - 56.50	Rotary Coring	Fraste PLG	Start Date:	15/05/2018
		Logger.	ALD	Oriu System.	OJGB	56.50 - 57.00	Rotary Open Holing	Fraste PLG	Start Date.	13/03/2016
Client:	SUV	Orientation:	N/A	Inclination:	90°	57.00 - 58.50	Rotary Coring	Fraste PLG	End Date:	14/06/2018

Hole Di	ameter
Depth (m)	Diam (mm)
58.50	93

If Methodology includes

Dynamic Sampling refer to Runs table for info.

Casing D	iameter
Depth (m)	Diam (mm)
9.00	250
37.00	150
57.00	140
l	
l	
l	

	Groundwater Strikes											
Strike	Casing	Casing Sealed Time Rose To Remarks										
(m)	(m)	(m)	(min)	(m)	Remarks							
4.50	-	4.50	20	4.10								
46.70	-	37.00	20	37.20								

Installation / Instrument Details												
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)								

No Monitoring Point/s Installed

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	19

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
Soil	6	Water	0					
Geotechnical Samples								
Bulk	24	Large Bulk	0					
Disturbed	67	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undisturbed Thin Wall								
Undisturbe	ed Thi	n Wall (NR)	0					
Cor	e San	nple	6					
		·						

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary												
T T	Depth	Casing	Water	Seating	Main	Penetration	N	December of December	Usana an Daf				
Test Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	Hammer Ref				
Cone	1.20	1.20	-	19	40	450	40	N=40 (9,10/10,10,10,10)	AR1134				
Cone	2.50	2.00	-	20	48	380		N=48 (9,11/48 for 230mm)	AR1134				
Cone	3.50	3.50	-	4	11	450	11	N=11 (2,2/2,3,3,3)	AR1134				
Split Spoon	5.50	5.50	4.10	3	13	450	13	N=13 (1,2/3,3,3,4)	AR1134				
Split Spoon	7.50	7.50	-	4	11	450	11	N=11 (2,2/3,3,3,2)	AR1134				
Split Spoon	9.50	9.00	-	3	13	450	13	N=13 (1,2/3,3,4,3)	AR1134				
Split Spoon	12.00	9.00	-	4	15	450	15	N=15 (2,2/4,4,3,4)	AR1134				
Split Spoon	15.00	9.00	-	7	19	450	19	N=19 (3,4/5,5,5,4)	AR1134				
Split Spoon	18.00	9.00	-	6	19	450	19	N=19 (3,3/4,4,5,6)	AR1134				
Split Spoon	21.00	9.00	-	6	21	450	21	N=21 (2,4/4,5,6,6)	AR1134				
Split Spoon	24.00	9.00	-	10	28	450	28	N=28 (5,5/7,7,7,7)	AR1134				
Split Spoon	27.00	9.00	-	10	28	450	28	N=28 (4,6/6,7,7,8)	AR1134				
Split Spoon	30.00	9.00	-	10	32	450	32	N=32 (5,5/7,8,8,9)	AR1134				
Split Spoon	33.00	9.00	-	8	33	450	33	N=33 (3,5/7,8,9,9)	AR1134				
Split Spoon	36.00	9.00	-	12	36	450	36	N=36 (4,8/9,8,10,9)	AR1134				
Split Spoon	39.00	9.00	-	10	39	450	39	N=39 (3,7/8,10,10,11)	AR1134				
Split Spoon	42.00	37.00	-	13	40	450	40	N=40 (5,8/9,11,10,10)	AR1134				
Split Spoon	43.50	37.00	-	15	38	450	38	N=38 (7,8/11,9,9,9)	AR1134				
Split Spoon	45.00	37.00	-	14	41	450	41	N=41 (5,9/10,10,10,11)	AR1134				

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

### **Applicable to Cable Percussion Only**

Chise	Chiselling										
Depth (m)	Duration (mins)										
2.50 - 2.70	30										
1	1										

Water Added									
Depth (m)	Litres								

## **Applicable to Rotary Only**

Drilling Flush												
Depth (m)	Flush Type	Flush Colour	Return %									
55.00 - 58.50	Water	Grey	100									

## **Applicable to Dynamic Sampling Only**

			<u> </u>										
	Dynamic Sampling Runs												
Depth (m)	Diam (mm)	Recovery %	Remarks										



3043

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Location Details

Web: www.central-alliance.co.uk Sheet 1 of 8

Log Type

Combined

Borehole

Exploratory Hole Number **BH17-11** 

FINAL

Methodology & Plant



1:50

Scale:

From (m) 0.00 - 1.20 1.20 - 47.00 47.00 - 55.00 55.00 - 56.50 56.50 - 57.00 57.00 - 58.50 Method Plant Used Easting: 425016.51 Northing: 558526.43 Method
Inspection Pit
Cable Percussion
Rotary Open Holing
Rotary Coring
Rotary Open Holing
Rotary Coring Checked By: RPH Hand Tools Dando 2000 Fraste PLG A1 Birtley to Coalhouse Name: Elevation: 13.67mAOD Final Depth: 80.00m Approved By BH Fraste PLG Fraste PLG Fraste PLG Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 15/05/2018 Client SLIV Orientation N/A Inclination: 90 Finish Date: 14/06/2018 Depth (m Reduced Hole Ø Casing Ø Samples & Testing Coring Installation , Backfill Strata Description Legend Level (mAOD) Thicknes Depth (m) Ref MADE GROUND: TOPSOIL. 0.10 0.20 1 D 2 ES MADE GROUND: Grevish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to 3 D 4 ES 5 B coarse brick, sandstone, siltstone and coal. 0.60 1.00 1.00 1.20 1.20 - 1.65 1.20 - 1.65 (2.00) 2.00 2.00 2.10 11.57 MADE GROUND: Yellowish brown gravelly silty fine to coarse SAND. Gravel is subangular fine to coarse limestone. 2.50 - 2.95 SPT(C) 2.50m, N=48 (9,11/48 for 230mm) 14 B (1.60) 3.00 3.00 15 D 16 ES 17 D 3.50 - 3.95 SPT(C) 3.50m, N=11 (2,2/2,3,3,3) 3.70 - 3.95 18 B 3.70 9.97 MADE GROUND: Orange mottled brown slightly organic sandy silty CLAY with rare gravel. Sand is fine to coarse. Gravel is 4.00 4.00 19 D 20 ES subangular fine to coarse sandstone and mudstone. (0.80)4.50 9.17 4.50 - 4.95 21 UT 10 blows, 100% Recovery Soft light brown sandy clayey SILT. Sand is fine to coarse. 5.00 22 D (1.50)5.50 - 5.95 5.50 - 5.95 23 D 24 B SPT(S) 5.50m, N=13 (1,2/3,3,3,4) 6.00 7.67 6.00 25 D Soft to firm thinly laminated greyish brown slightly sandy CLAY. Sand is fine to coarse. 6.50 - 6.95 26 UT 10 blows, 100% Recovery SPT(S) 7.50m, N=11 (2,2/3,3,3,2) 8.00 30 D 8.50 - 8.95 31 UT 12 blows, 100% Recovery 250 9.00 32 D 9.00 9.50 - 9.95 9.50 - 9.95 33 D 34 B SPT(S) 9.50m, N=13 (1,2/3,3,4,3) 10:00 35·D 10 Continued on Next Page Misc Shift Information Depth (m) Casing (m)

15.45 9.00
15.45 9.00
40.00 37.00
40.00 37.00
47.00 37.00
51.00 51.00
55.00 51.00
57.00 57.00 From (m) To (m) Material 0.00 80.00 Grout Resp. Zone Depth (m) Diam Water (m) Instrument Details 50m drilling casing abandoned in borehole. Borehole backfilled with grout in and around abandoned casing.

Running sands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 10hrs, 01.06.18: 10hrs, 05.06.18: 10hrs, 41.06.18: 10hrs 16/05 16/05 17/05 17/05 18/05 01/06 02/06 06:00 18:00 06:00 18:00 06:00 18:00 06:00 18:00 18:00 Dry 37.2 37.2 Water Strikes Strike (m) 05/06 06/06 06/06 4.50 46.70 4.10 37.20



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Location Details

Combined **Borehole** 

Log Type

Exploratory Hole Number

BH17-11



Sheet 2 of 8

FINAL CENTRAL ALLIANCE GEO Methodology & Plant Scale: 1:50

Name: A1 Birtley to Coalhouse		Easting:	425016.51			558526.43	³  -	TOTTI (III)	iviei	illou		Platit Osed		necked				RPH	
Location:	Tyne and Wear	Elevation:	13.67mAOD		Depth:	80.00m								pprove		':		ВН	
		Logged By:	ALB		System:	OSGB								art Da				/05/2 	
Client:	SUV	Orientation:	N/A		nation:	90°			T				Fir	nish D	ate:			/06/2	018
	Strata Description		Legend	Depth (m) (Stratum	Level	(mm)	Casing (mm)	vvaler	Installation / Backfill			es & Testing	ethod	Core		Cor			
				Thickness)	(mAOD)	Depth (m)	Depth (r	n)		Depth (m)	Ref	Test Results	1	Run	TCR	SCR	RQD	If	
				-															-
																			-
										10.50 - 10.95	36 UT	12 blows, 100% Recovery							-
1																			-
11 -										11.00	37 D								11 -
																			-
1																			-
1																			-
_																			-
12 —										12.00	38 D	SPT(S) 12.00m, N=15							12 -
1										12.00 - 12.45 12.00 - 12.45	39 D 40 B	(2,2/4,4,3,4)							-
-																			
-																			-
																			-
12 -										13.00	41 D								13 -
13 —										15.00									-
1																			-
_										13.50 - 13.95	42 UT	15 blows, 100% Recovery							-
-																			-
14 —										14.00	43 D								14 —
14										14.00	450								-
																			-
-																			-
-																			-
-										15.00	44 D	SPT(S) 15.00m, N=19							15 -
15 —										15.00 - 15.45 15.00 - 15.45	45 D 46 B	(3,4/5,5,5,4)							-
_																			-
																			-
_																			-
-										16.00	47 D								-
16 -										16.00	470								16
]																			-
-										16.50 - 16.95	48 UT	23 blows, 100% Recovery							-
																			-
- 17 —										17.00	49 D								17 —
1' -										17.00	430								-
_																			-
_																			-
																			-
18 —										18.00	50 D	SPT(S) 18.00m, N=19							18 -
										18.00 - 18.45 18.00 - 18.45	51 D 52 B	(3,3/4,4,5,6)							-
																			-
																			-
				•															
19 —										19.00	53 D								19 -
																			-
																			-
										19.50 - 19.95	54 UT	21 blows, 100% Recovery							-
																			-
20	Continued on New Dear			1						20.00	55·D	ļ	$\downarrow \downarrow$				_	_	20 -
	Continued on Next Page	Г										:	Ц		L				
Observations			Misc. Date	Tim		nformation pth (m) C	asing (m	) Water (r	n) From (m)	Backfill To (m)	Materia	l Instrument Det		nstalla Re			Denth	(m)	Diam
around abandor		ın and	alled		1 100	, p. (1/1) C	July (II	, vvalci (I	0.00	80.00	Grout	macrument bet	J113	-	.c.p. 2	JIIC	σεριπ	(111)	Jiulii
Running sands of 01.06.18: 10hrs	ausing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05 , 05.06.18: 10hrs & 11.06.18: 10hrs	.18: 10hrs,	Ocasing Used  No Monitoring Point Installed																
		er Fno	ing Poi										V	/ater S	Strike	s			
		i men	Cas									Strike (m) Rises To (m 4.50 4.10		ne (min) 20		F	Remar	ks	
		ide	No M									46.70 37.20		20					
1			- 1	1	- 1	1		1	1	1 1		1 1	1	,	1				



3043

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Location Details

# Combined Borehole

Log Type

Sheet 3 of 8

Exploratory Hole Number

Methodology & Plant

BH17-11

FINAL



1:50

Scale:

From (m) Method Plant Used 558526.43 RPH Easting: 425016.51 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 13.67mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 15/05/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: 14/06/2018 Depth (m) Reduced Hole Ø Casing Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) (mm) Depth (m Level (m) Depth (m) Ref SCR RQD SPT(S) 21.00m, N=21 21 21.00 - 21.45 21.00 - 21.45 (2,4/4,5,6,6) 22 22.50 - 22.95 60 UT 18 blows, 100% Recovery 23.00 61 D 23 24.00 24.00 - 24.45 24.00 - 24.45 SPT(S) 24.00m, N=28 (5,5/7,7,7,7) 24 25.00 65 D 25 25.50 - 25.95 66 UT 23 blows, 100% Recovery 26.00 67 D (40.70) 27.00 27.00 - 27.45 27.00 - 27.45 27 From 27.00m becomes occasionally silty. 28.00 71 D 28 28.50 - 28.95 72 UT 22 blows, 100% Recovery 29.00 73 D 29 ··· 30.00 ··· 74·D · SPT(S) 30.00m, N=32 30.00 - 30.45 : 75 D : (5,5/7,8,8,9) 30 Continued on Next Page Observations / Remarks Misc Shift Information Backfill 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 80.00
 Grout
 Instrument Details Resp. Zone Depth (m) Diam 50m drilling casing abandoned in borehole. Borehole backfilled with grout in and around abandoned casing.

Running sands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 10hrs, 01.06.18: 10hrs, 05.06.18: 10hrs, 11.06.18: 10hrs dwater Encoun Casing Used itoring Point In Water Strikes Strike (m) Rises To (m) Remarks 4.50 46.70 4.10 37.20



Combined **Borehole** 

Log Type

Exploratory Hole Number **BH17-11** 

FINAL



Sheet 4 of 8 Methodology & Plant Project No: 3043 Location Details Scale: 1:50 Plant Used From (m) Method Easting: 425016.51 558526.43 Checked By: RPH Northing: Name: A1 Birtley to Coalhouse Elevation: Final Depth: 80.00m 13.67mAOD Approved By: ВН Location: Tyne and Wear Start Date: Grid System: OSGB 15/05/2018 Logged By: ALB

Such tan from thinky luminoused greywish between stiglietly savely CLIX.   Such tan from thinky luminoused greywish between stiglietly savely CLIX.   Such tan from thinky luminoused greywish between stiglietly savely CLIX.   Such tan from the course.   Such tan from the course.   Such tan from the course.   Such tan from the course.   Such tan from the course.   Such tan from tan from the course.   Such tan from tan from tan from the course.   Such tan from tan fro		Logged By:	ALB		Grid	System:	OSGB							Start D					2018
Such to first their lamined greyth brown slightly sandy CLAX  Sand is first to exame.  **Property of the property lient: SLJV	Orientation:	N/A		Inclir	nation:	90°			1	1			Finish	Date:			/06/2	2018	
Soft to firm thirdy laminated greyth brown sightly asmy CLXC.  Soft at the to copie.  Soft	Strata Description			Legend	Depth (m) (Stratum			Casing Ø (mm)	Water	Installation /		Sample	s & Testing	thod		_			
Sand is fine to coarse.								Depth (m)	Level (m	) васкпіі		1	Test Results	≥ Core Run	TCR	SCR	RQD	If	
3.39 734 757 114mm, ESSAbasery 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		sandy CLA	Y.								30.00 - 30.45	76 B							
3355-315 900 256ex 1205 No.cepy 32 256ex 120	Sand is fille to coarse.			<u> </u>										.					
3355-315 900 256ex 1205 No.cepy 32 256ex 120	-			<u></u>															
3355-315 900 256ex 1205 No.cepy 32 256ex 120	_													.					
3355-315 900 256ex 1205 No.cepy 32 256ex 120	. 🖯										21.00	77 D							24
130 350 770 310 310 310 310 310 310 310 310 310 31	1 7										31.00	""		.					31
130 350 770 310 310 310 310 310 310 310 310 310 31														.					
200 at C 200	-			-							31.50 - 31.95	78 UT	35 blows, 100% Recovery						
200 at C 200	1													.					
200 at C 200	1																		
33.00-33.01	<sup>2</sup>										32.00	79 D							32
33.00-33.01	1																		
33.00-33.01	1																		
33.00-33.01	1			<u></u>															
33.00-33.01	1																		
33.00-33.01	3 -										33.00 33.00 - 33.45	80 D 81 D	SPT(S) 33.00m, N=33 (3,5/7,8,9,9)	.					33
31.50 31.50 50 0 31.50	1										33.00 - 33.45	82 B		.					
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31.50 31.50 50 0 31.50	1																		
31.50 31.50 50 0 31.50	1													.					
35.00 85 0 85 0 3753 360m, N-30 80 3753 360m, N-30 80 80 3753 360m, N-30 80 80 80 80 80 80 80 80 80 80 80 80 80	4 🚽										34.00	83 D							34
35.00 85 0 85 0 3753 360m, N-30 80 3753 360m, N-30 80 80 3753 360m, N-30 80 80 80 80 80 80 80 80 80 80 80 80 80	1													.					
35.00 85 0 85 0 3753 360m, N-30 80 3753 360m, N-30 80 80 3753 360m, N-30 80 80 80 80 80 80 80 80 80 80 80 80 80	<u> </u>										34 50 - 34 95	84 I I T	39 blows 100% Recovery						
35.00   37.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.0	1										34.30	0401	33 blows, 100% necestery						
35.00   37.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.0	}			<u></u>															
150   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00	5 –										35.00	85 D							35
150   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00	-													.					
150   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00	1													.					
150   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00	1													.					
150   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00   37.00   39.00	1																		
150   37,00   37,00   39,00   37,00   39,00   37,00   39,00   31,00	6 -										36.00	86 D	SPT(S) 36.00m, N=36						36
37.20   37.50 - 37.95   90 UT   92 blows, 100% Recovery   38.00   91 D   38.00   91 D   39.00   39.0	1										36.00 - 36.45 36.00 - 36.45		(4,8/9,8,10,9)	.					
37.20   37.50 - 37.95   90 UT   92 blows, 100% Recovery   38.00   91 D   38.00   91 D   39.00   39.0														.					
37.20   37.50 - 37.95   90 UT   92 blows, 100% Recovery   38.00   91 D   38.00   91 D   39.00   39.0														.					
37.20   37.50 - 37.95   90 UT   92 blows, 100% Recovery   38.00   91 D   38.00   91 D   39.00   39.0				-										.					
37.20   37.50 - 37.95   90 UT   92 blows, 100% Recovery   38.00   91 D   38.00   91 D   39.00   39.0	7 <del>-</del>							<u>150</u>			37.00	89 D		.					27
37.50 - 37.55   90 UT   92 blows, 100% Recovery   38.00   91 D   38.00   92 D   37.50 - 37.55   90 UT   92 blows, 100% Recovery   38.00   92 D   37.50 - 37.55   90 UT   92 blows, 100% Recovery   38.00   92 D   37.50 - 37.55   90 UT   92 blows, 100% Recovery   38.00   91 D   38.00   92 D   37.50 - 37.55   90 UT   92 blows, 100% Recovery   38.00   91 D   38.00   92 D   37.50 - 37.55   90 UT   92 blows, 100% Recovery   40.00   95.00   37.61	´ -							37.00			37.00	03.5		.					37
37.50 - 37.55   90 UT   92 blows, 100% Recovery   38.00   91 D   38.00   92 D   37.50 - 37.55   90 UT   92 blows, 100% Recovery   38.00   92 D   37.50 - 37.55   90 UT   92 blows, 100% Recovery   38.00   92 D   37.50 - 37.55   90 UT   92 blows, 100% Recovery   38.00   91 D   38.00   92 D   37.50 - 37.55   90 UT   92 blows, 100% Recovery   38.00   91 D   38.00   92 D   37.50 - 37.55   90 UT   92 blows, 100% Recovery   40.00   95.00   37.61	}								37.20										
Continued on Next Page   Servations / Remarks   Misc.   Shift Information   Backfill   Installations   Shift Information   Backfill   Installations   Date   Time   Depth (m)   Casing (m)   Water (m)   From (m)   To (m)   Material   Instrument Details   Resp. Zone   Depth (m)   Dia ming sands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 1bfrs, 38.05.18: 1nr, 18.05.18: 8hrs, 21.05.18: 1nr, 18.05.18: 8hrs, 21.05.18: 1nr, 18.05.18: 8hrs, 21.05.18: 1nr, 18.05.18: 1n	-										37.50 - 37.95	90 UT	92 blows, 100% Recovery						
Continued on Next Page  Continued on Next Page  Servations / Remarks  Misc.  Shift Information  Backfill  Installations  One of the page o	1			<u> </u>															
Continued on Next Page  Continued on Next Page  Servations / Remarks  Misc.  Shift Information  Backfill  Installations  One of the page o	<u>_</u>										38.00	01.5							20
Continued on Next Page  Continued on Next Page  Servations / Remarks  Misc.  Shift Information  Backfill  Installations  One of the page o	3 <del>-</del>										36.00	910							38
Continued on Next Page  Continued on Next Page  Servations / Remarks  Misc.  Shift Information  Backfill  Installations  One of the page o	7			E-I															
Continued on Next Page  Continued on Next Page  Servations / Remarks  Misc.  Shift Information  Backfill  Installations  One of the page o	-																		
Continued on Next Page    Misc.   Shift Information   Backfill   Installations	1			===															
Continued on Next Page    Misc.   Shift Information   Backfill   Installations	1												enwer en						
Continued on Next Page    Misc.   Shift Information   Backfill   Installations	9 <del> </del> 										39.00 - 39.45	93 D							39
Continued on Next Page    Continued on Next Page	1										39.00 - 39.45	94 B							
Continued on Next Page  Servations / Remarks  ordilling casing abandoned in borehole. Borehole backfilled with grout in and und abandoned casing.  ning sands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 10hrs,  1																			
Continued on Next Page  Misc.  Shift Information  Backfill  Installations  Indilling casing abandoned in borehole. Borehole backfilled with grout in and abandoned casing.  In grands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 10hrs, 21.05.18	1																		
Continued on Next Page  Misc.  Shift Information  Backfill  Installations  Indilling casing abandoned in borehole. Borehole backfilled with grout in and abandoned casing.  In grands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 10hrs, 21.05.18	1			<u> </u>															
Servations / Remarks  Misc.  Shift Information  Backfill  Installations  Installations  Installations  Installations  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Dia Material Instrum	Continued on Next Page			<u>130.57</u>					['		40:00	l . <sub>95</sub> . <sub>D</sub>		+	+		$\vdash$	$\dashv$	40
nd drilling casing abandoned in borehole. Borehole backfilled with grout in and und abandoned casing.  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Dia 0.00 80.00 Grout	Dbservations / Remarks		Misc.			Shift I	nformatio	n .		<del>'</del>	Backfill			Instal	lation	ıs			
ning sands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 10hrs,	iOm drilling casing abandoned in borehole. Borehole backfilled with grout i			Date	Tim				Water (		To (m)		I Instrument Deta				Depth	(m)	Diam
	rround abandoned casing. kunning sands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.1 1.06.19: 10hrs, 05.06.19: 10hrs, 8.11.06.19: 10hrs	18: 10hrs,	nstalle							0.00	55.00	Jiout							

01.06.18: 10hrs, 05.06.18: 10hrs & 11.06.18: 10hrs

Water Strikes Strike (m) Rises To (m) 4.50 4.10 46.70 37.20 Γime (min)



Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-11** FINAL



Sheet 5 of 8 GEO Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) Method Plant Used Easting: 425016.51 558526.43 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Elevation: Final Depth: 80.00m Approved By: 13.67mAOD ВН

Location:	Tyne and Wear	Logged By:	ALB	MIAOD		System:	OSGB								Start Da				5/2018
Client:	SLIV	Orientation:	N/A			nation:	90°								Finish D				5/2018
		1	,		Depth (m)	Reduced	Hole Ø	Casing Ø				Sample	s & Testing	, o	T		Cori		,, 2010
	Strata Description			Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm)	Water Level (m)	Installation / Backfill	Depth (m)	Ref	Test Results	Metho	Core Run	TCR			
- Soft to	firm thinly laminated greyish brown slightly	v sandv CLA	Y.		,	(					Depar (m)	nc.	rest results	Ŧ	Run	Tex	Jen .		
Sand is	s fine to coarse.	,,																	-
]											40.50 - 40.95	96 UT	39 blows, 0% Recovery						_
-											40.50 - 40.95	97 B	33 blows, 0% necovery						-
]																			
41											41.00	98 D							41 -
-																			-
																			-
1 7																			-
-																			-
42											42.00 42.00 - 42.45	99 D	SPT(S) 42.00m, N=40 (5,8/9,11,10,10)						42 -
											42.00 - 42.45 42.00 - 42.45	100 D 101 B	(5,8/9,11,10,10)						_
																			1
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43 —											43.00	102 D		1					43 -
				H.Ā.															1
				프트															:
=											43.50 - 43.95 43.50 - 43.95	103 D 104 B	SPT(S) 43.50m, N=38 (7,8/11,9,9,9)						=
																			_
44 -											44.00	105 D							44 -
																			-
																			-
																			-
																			-
- 45 —											45.00	106 D	SPT(S) 45.00m, N=41						45 -
ļ*3 <u>-</u>											45.00 - 45.45 45.00 - 45.45	107 D 108 B	(5,9/10,10,10,11)						45
																			-
]																			-
]																			-
<u></u>											46.00	109 D							46 -
46 -											46.00	109 D							46 -
]																			-
]											46.50 - 46.70 46.50 - 46.70	110 UT 111 B	100 blows, 0% Recovery						
Loose	light grey silty fine to coarse SAND.			× ×	46.70	-33.03			46.70		46.30 - 46.70	11111							-
Blo	owing sands.			x × ×	(0.30)	22.22					47.00	112 D							
- SANDS	STONE (Driller's Description).				47.00	-33.33					47.00	1120							47 -
]																			-
-																			-
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1 - 1				: : : :															-
48 —														1					48 -
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49 -				: : : :										1					49 -
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Observations	; / Remarks		Misc.			Shift Ir	nformatio	n	1	<u>'</u>	Backfill			لــــــــــــــــــــــــــــــــــــــ	Installa	ations	 5		
50m drilling cas	sing abandoned in borehole. Borehole backfilled with grout			Date	Tim				Water (ı	m) From (m)	To (m)	Materia	I Instrument De					Depth (r	n) Diam
around abando Running sands	causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05	i.18: 10hrs,	Installed							0.00	80.00	Grout							
01.06.18: 10hrs	s, 05.06.18: 10hrs & 11.06.18: 10hrs		Used												$\bot$		$\perp$		
		a to	Casing L toring P										Strike () let = 1		Water S			om '	
		a de la companya de l	α Cα Monito										Strike (m) Rises To (n 4.50 4.10	of tir	20	_	Re	emarks	
		ē	No										46.70 37.20		20				
														—					



Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-11** FINAL

CENTRAL ALLIANCE

Sheet 6 of 8

GEO Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) Method Plant Used Easting: 425016.51 558526.43 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Final Depth: 80.00m 13.67mAOD Approved By: ВН

Locati	ion:	Tyne and Wear	Elevation:		/MAOD		Depth:	80.00m								Approv		у.		E /2040
			Logged By:	ALB			System:	OSGB								Start D				5/2018
Client	:	SUV	Orientation:	N/A	I I		nation:	90°	1		I			0 T .:		Finish [	Jate:			6/2018
		Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Hole Ø (mm)	Casing Ø (mm)	Water Level (m)	Installation / Backfill		Samples 8		Tethod	Core	T	Cor		. 1
Н.	CANDCT	ONE (Driller's Description).				Thickness)	(mAOD)	Depth (m)	Depth (m)			Depth (m)	Ref	Test Results	2	Run	TCR	SCR	RQD I	f
1 7	SANDST	ONE (Driller's Description).			:::::															
																				-
					:::::															
- 51 -						(8.00)														51 -
<u> </u>					:::::	(4.5.5)														51
-																				
1 -																				-
1 -					:::::															
1 7																				
52 -					:::::															52 -
					: : : :															:
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53 -					: : : :															53 -
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1 -					:::::															
_						FF 00	44.22													:
		wn slightly sandy CLAY with 1 no. subround	ded siltsto	ne		55.00	-41.33													55 -
1	cobble. S	Sand is fine to coarse.																		
																				-
																55.00				
1 1						(1.50)									¥	55.00 56.50	13	0	0	
56 -																				56 -
-																				
1							42.00													
	SANDST	ONE (Driller's Description).			:::::	56.50	-42.83													-
					:::::	(0.50)									2					:
57					: : : :	57.00	-43.33		<u>140</u>						L					57 -
		strong to strong thinly laminated fine to r SANDSTONE. Discontinuities are set 1) ver		_	:::::				57.00											
		paced subhorizontal (0-10 degrees) undul																		
	and 2) m	nedium spaced (30-45 degrees) undulating																	N	R -
	From	57.00m to 58.12m Assumed Zone of Core Loss.			:::::										2	57.00 58.50	20	0	0	
																30.50				:
58 -	Feore	EQ 12m to EQ 22m recovered as slightly sandy	o subanaula-		:::::														N	58 -
	From fine to	58.12m to 58.22m recovered as slightly sandy angular to coarse gravel. Sand is fine to coarse.	o suvangular		:::::														>2	
								<u>93</u> 58.50				58.38 - 58.43	6 C		-		1	$\sqcup$	——"	-
								36.30									1			:
					:::::												1			
59 -					: : : : :							59.00 - 59.24	1 C							59 -
					:::::											58.50 60.00	100	84	73 1	0 :
-					: : : :											55.00	1			-
7																				-
					:::::							59.86 - 60.00	2 C							
60		Continued on Next Dags			:::::							25.00 - 00.00					1	$\sqcup$	4	60
		Continued on Next Page	ı								1		<u>:</u>							
_	vations /			Misc.		I		nformation		T 147		Backfill	4-4	1		Install			S	N:
	rilling casing d abandone	g abandoned in borehole. Borehole backfilled with grout ed casing.	in and	pa <sub>lled</sub>	Date	Tim	ie Dej	pth (m)	asing (m)	Water (r	m) From (m) 0.00	To (m) 80.00	Material Grout	Instrument D	etail	s   F	kesp.	zone l	pepth (	m) Diam
Runnin	ng sands cau	using slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05. 05.06.18: 10hrs & 11.06.18: 10hrs	.18: 10hrs,	nuntered d t Installed																
01.06.	10. 1011f5, U	25.00.10. 101113 & 11.00.10. 101115		Water Encou Casing Used toring Point												Water	Strika	25		
				fwate. Casin; toring										Strike (m) Rises To					temarks	
				FrounK Moni.										4.50 4.10 46.70 37.20		20				
				~ %										-						
																	-			



Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Location Details

## Combined Borehole

Log Type

Sheet 7 of 8

Exploratory Hole Number

**BH17-11** FINAL

Methodology & Plant

CENTRAL ALLIANCE

1:50

Scale:

From (m) Method Plant Used 558526.43 RPH Easting: 425016.51 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 13.67mAOD Final Depth: 80.00m Approved By: BH Tyne and Wear Location: Logged By: ALB Grid System: OSGB Start Date: 15/05/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: 14/06/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref From 60.29m to 60.39m very weak weathered thinly interlaminated 95 73 25 61 61.10 - 61.50 3 C 62 From 62.65m to 62.70m recovered as subangular fine to coarse gravel. From 63.60m to 63.80m 1 no. vertical discontinuity (80-90 degrees) rough 63.00 64.50 57 35 100 64 From 64.40m to 64.50m recovered as subangular fine to coarse gravel. 64.88 - 64.98 5 C 64.50 66.00 75 55 From 65.65m to 65.77m 1 no. vertical discontinuity (80-90 degrees) lating rough. From 65.95m to 66.00m and 66.10m to 66.17m recovered as angular to subangular fine to coarse gravel. 66.30 - 66.59 4 C 100 85 74 67 From 67.06m to 67.13m very weak weathered thinly interlaminated SANDSTONE. (Driller's Description) 68 69 70 Continued on Next Page Misc Shift Information | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | 0.00 | 80.00 | Grout Instrument Details Resp. Zone Depth (m) Diam 50m drilling casing abandoned in borehole. Borehole backfilled with grout in and around abandoned casing.

Running sands causing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05.18: 10hrs, 01.06.18: 10hrs, 05.06.18: 10hrs, 11.06.18: 10hrs idwater Encoun Casing Used nitoring Point Ir Water Strikes Strike (m) 4.10 37.20



3043

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Location Details

# Combined Borehole

Log Type

Sheet 8 of 8

Exploratory Hole Number

BH17-11

FINAL

Methodology & Plant



1:50

Scale:

Name:	A1 Birtley to Coalhouse	Easting:	4250	16.51	Nort	hing:	558526.4	3 Fro	m (m)	Met	hod		Plant Used		Checked By:			RPH		
rvanie.	AT Direct to countries	Elevation:	13.6	7mAOD	Final	Depth:	80.00m								Approv	ed By	<b>/</b> :		ВН	
Location:	Tyne and Wear	Logged By:	ALB		Grid	System:	OSGB								Start D	ate:		15/0	05/20	118
Client:	SLIV	Orientation:	N/A		Inclir	nation:	90°								Finish I	Date:		14/	06/20	18
					Depth (m)	Reduce		Casing Ø	Water	Installation /		Samples	& Testing	po			Cori	ng		
	Strata Description			Legend	(Stratum Thickness)	Level (mAOD	(mm) ) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	Met	Core Run	TCR	SCR	RQD	If	
- SANDS	TONE. (Driller's Description)			: : : : :																_
																				-
																				1
				: : : : :																1
																				1
71 -																				71 -
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					(12.50)															-
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80	FOUL 402.22			: : : : :	80.00	-66.33						ļ				1		4	_	80 -
	EOH at 80.00m - Scheduled Depth												Ţ							
Observations			Misc.	F :	1 =		Informatio		144	.\ E	Backfill	14-7 11		D. · · ·	Install			Na. 11	/ sl -	\
around abandor		3	pall	Date	Tim	e D	epth (m)	Lasing (m)	Water (m	n) From (m) 0.00	To (m) 80.00	Material Grout	Instrument	∪etail	is	кеsp. I	Zone [	epth	(m) D	iam
Running sands c	ausing slow progress: 17.05.18: 1hr, 18.05.18: 8hrs, 21.05; , 05.06.18: 10hrs & 11.06.18: 10hrs	1	unawater Encountered Casing Used onitoring Point Installed																	
	,	7 50	water Encot Casing Usea oring Point												Water	Strike	es			
		t the state of the	Casir Itorin										Strike (m) Rises To	(m) T	ime (min			emark	cs	
			Mon										4.50 4.10 46.70 37.2	)	20 20					



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Header

Sheet

# Exploratory Hole Number **BH17-12**

FINAL



Proj	ect No:	3043		Location Details				Methodology & F	Plant	Scale:	1:50
			Easting:	425051.38	Northing:	558562.65	From (m)	Method	Plant Used	Checked:	RPH
Nan	ne:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools		
			Elevation:	20.23mAOD	Final Depth:	10.00m	1.20 - 6.00 6.00 - 10.00	Dynamic Sampling (Windowless)  Dynamic Probing	Modular Window Sampler Modular Window Sampler	Approved:	BH
Loca	ation:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	06/06/2018
Clie	nt:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	06/06/2018

Hole Diameter										
Depth (m)	Diam (mm)									
6.00	66									

Casing D	iameter
Depth (m)	Diam (mm)
1.50	116
l	
l	

	Groundwater Strikes												
Strike	Casing	Sealed	Time	Rose To	Remarks								
(m)	(m)	(m)	(min)	(m)	Remarks								

	Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)								

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill											
Depth (m)	Legend Code										
0.00 - 10.00	Bentonite										

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	5

Standard Penetration Tests	5	
* One count indicates an avo	_	

Sample Summany						
Sample Summary						
Enviror	nmer	ntal Samples				
Soil <b>7</b> Water						
Geote	chnic	cal Samples				
Bulk 6 Large Bulk						
Disturbed	13	13 Disturbed (NR)				
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Cor	re San	nple	0			

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth	Casing	Water	Seating		Penetration	N	Reported Result	Hammer Ref
lest type	(m)	(m)	(m)	Blows	Blows	Total (mm)	1	Reported Result	Hammer Ker
Split Spoon	1.20	-	-	15	49	450	49	N=49 (7,8/10,17,12,10)	MOD 01
Split Spoon	2.00	1.50	-	22	50	425		N=50 (10,12/50 for 275mm)	MOD 01
Split Spoon	3.00	1.50	-	10	16	450	16	N=16 (4,6/3,5,4,4)	MOD 01
Split Spoon	4.00	1.50	-	4	8	450	8	N=8 (2,2/2,2,2,2)	MOD 01
Split Spoon	5.00	1.50	-	4	11	450	11	N=11 (2,2/2,3,3,3)	MOD 01

SPT Hammer Ref.	Energy Ratio (%)
MOD 01	67

### **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	

Water Added						
Depth (m)	Litres					

## **Applicable to Rotary Only**

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					

### **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs							
Depth (m)	Diam (mm)						
1.20 - 2.00	101	100					
2.00 - 3.00	76	100					
3.00 - 4.00	76	90					
4.00 - 5.00	66	90					
5.00 - 6.00	66	80					



Log Type
Dynamic
Sampling
& Probe

Exploratory Hole Number

**BH17-12** FINAL



GEO Sheet 1 of 1 Location Details Methodology & Plant Scale: Project No: 3043 1:50 Depth (m) 0.00 - 1.20 1.20 - 6.00 Plant Used
Hand Tools
Modular Window Sampler
Modular Window Sampler Method Easting: 425051.38 Northing: 558562.65 Checked By: RPH Inspection Pit
Dynamic Sampling (Wind
Dynamic Probing A1 Birtley to Coalhouse Name: Elevation: 20.23mAOD Final Depth: 10.00m Approved By: BH 6.00 - 10.00 Location: Tyne and Wear Logger GS Grid System: OSGB Start Date: 06/06/2018 Client SLIV Orientation N/A Inclination: 90° Finish Date: 06/06/2018 Blows / 100mm Depth (m) Casing Ø Samples & Testing Reduced Lev Installation , Backfill Strata Description Legend (Stratum Thickness (mm) Depth (m (mAOD) Level (m Depth (m) MADE GROUND: Soft brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel (0.40)is angular to subangular fine to coarse of 0.40 - 1.20 0.50 0.40 19.83 sandstone mudstone and brick. MADE GROUND: Brownish red gravelly 0.70 4 ES slightly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse brick sandstone, mudstone and rare coal. 6 ES 8 B 10 B 1.20 - 1.65 1.20 - 1.80 SPT(S) 1.20m, N=49 (7,8/10,17,12,10) 1.80 (3.15)SPT(S) 2.00m, N=50 (10,12/50 for 275mm) 2 2.50 2.60 - 3.00 SPT(S) 3.00m, N=16 (4,6/3,5,4,4) 3 -3.55 16.68 MADE GROUND: Soft to firm grey gravelly 3.60 - 4.00 18 B sandy CLAY. Gravel is angular to subangular fine to coarse of mudstone, sandstone and brick. Sand is fine to 4.00 4.00 - 4.45 20 ES 19 D SPT(S) 4.00m, N=8 (2,2/2,2,2,2) (1.05) coarse. 4.50 21 D 4.60 15.63 MADE GROUND: Dark grey slightly sandy clayey angular to subangular fine to 4.80 22 D coarse mudstone, sandstone and rare 5.00 24 ES SPT(S) 5.00m, N=11 (2,2/2,3,3,3) brick GRAVEL. Sand is fine to coarse. 5.00 - 5.45 (1.40)5.50 5.60 - 6.00 6.00 14.23 2 2 3 2 4 4 3 3 2 2 2 2 1 1 1 1 2 DYNAMIC PROBING. (4.00) 1 1 1 2 1 1 1 10.00 10.23 10 EOH at 10.00m - DP from 4.50m Observations / Remarks **Equipment Information** Dynamic Sampling Runs Installations 2.00 101 100 3.00 76 100 Resp. Zone Depth (m) Diam Instrument Type DPSH-B Fall Height: Hammer Weigh 750mm 64.0kg Groundwater Strikes Cone Base Diar Rod Diam Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks 50mm

MOD 01 (67%)



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Sheet

Log Type Exploratory Hole Number

Header

# BH17-12A

FINAL



Project No:	3043		Location Details				Methodology & Plant			1:50
		Easting:	425051.05	Northing:	558571.03	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	16.03mAOD	Final Depth:	10.00m	1.20 - 6.45 6.45 - 10.00	Dynamic Sampling (Windowless)  Dynamic Probing	Modular Window Sampler Modular Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	05/06/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	05/06/2018

Hole Di	ameter
Depth (m)	Diam (mm)
6.45	63

Casing Diameter								
Depth (m)	Diam (mm)							
3.00	115							
l								

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To						
(m)	(m)	(m)	(min)	(m)	Remarks					

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
05/06/2018	Standpipe with Water Level Datalogger	0.00	1.00 - 5.00					

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill										
Depth (m)	Legend Code									
0.00 - 1.00	Bentonite									
1.00 - 5.00	Gravel									
5.00 - 10.00	Bentonite									

In-Situ Tests							
PID	0						
Hand Vane*	0						
Standard Penetration Tests	5						

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary									
Environmental Samples									
Soil <b>6</b> Water									
Geotechnical Samples									
Bulk	6	Large Bulk	0						
Disturbed	17	Disturbed (NR)	0						
Piston	0	Piston (NR)	0						
Undisturbed	0	Undisturbed (NR)	0						
Undistu	rbed 1	Thin Wall	1						
Undisturbed Thin Wall (NR)									
Cor	e San	nple	0						

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
Test Type	Depth	Casing	Water	Seating		Penetration	N	Reported Result	Hammer Ref
lest type	(m)	(m)	(m)	Blows	Blows	Total (mm)	1	Reported Result	Hammer Ker
Split Spoon	1.20	-	-	13	34	450	34	N=34 (6,7/11,6,6,11)	MOD 01
Split Spoon	2.00	-	-	3	5	450	5	N=5 (1,2/1,2,1,1)	MOD 01
Split Spoon	3.00	3.00	3.4	7	8	450	8	N=8 (5,2/2,2,2,2)	MOD 01
Split Spoon	4.00	3.00	4.1	3	13	450	13	N=13 (1,2/3,3,3,4)	MOD 01
Split Spoon	6.00	3.00	4.1	3	4	450	4	N=4 (1,2/1,1,1,1)	MOD 01
ł									

SPT Hammer Ref.	Energy Ratio (%)
MOD 01	67

### **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	D

Litres

#### **Applicable to Rotary Only**

Drilling Flush										
Depth (m)	Flush Type	Flush Colour	Return %							

### **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs							
Depth (m)	Diam (mm)	Recovery %	Remarks				
1.20 - 2.00	87	100					
2.00 - 3.00	87	90					
3.00 - 4.00	75	100					
4.00 - 5.00	75	100					
5.00 - 6.00	63	100					



Log Type
Dynamic
Sampling
& Probe
Sheet 1 of 1

Exploratory Hole Number

BH17-12A FINAL



Location Details Methodology & Plant Scale: Project No: 3043 1:50 558571.03 Easting: 425051.05 Checked By: RPH Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: Final Depth: 10.00m 16.03mAOD ВН

Location:	Tv	no and	l M/oo						Elevation:	16.03mAOD	Final Dep			1.20 - 6.45 6.45 - 10.00	Dyn	namic Sampli Dynamic	ng (Windowle Probing	ss) Mo	odular Window Sa odular Window Sa		Approved By:	ВН
		ne and	vvea	r					Logger:	GS	Grid Syst											05/06/2018
Client:	SL								Orientation:	N/A	Inclinatio	n: <b>90°</b>							1			05/06/2018
5	10			/ 100m 25 3		35	40	45	Sti	rata Description		Legend	Depth ( (Stratu	n Reduc	ed Level AOD)	Casing Ø (mm)	Water Level (m)	Installation Backfill			Samples & Testing	
ΙÌ	Ť	Î	1	-	Ĭ	<u>,                                    </u>	<u> </u>	Ï				********	Thickne	ss) (III	AODJ	Depth (m)	Lever (III)	DdCKIIII	Depth (m)	Ref	Test Results	
-									sandy CLAY. Gra	<ol> <li>Soft brown granter</li> <li>soft brown granter</li> <li>to coarse of san</li> </ol>			(0.50	,					0.20 0.30	1 D 2 ES		
									mudstone and b	brick. Sand is fin	e to		0.50	15	.53				0.50 0.50 - 1.20	3 D 7 B		
]										D: Brownish red	sandy		8						0.30 - 1.20	4 ES		
1										ngular fine to co GRAVEL with me									1.00	5 D		1
1									cobble content.	. Sand is fine to o	coarse.		(1.20	)					1.00	6 ES 8 D	SPT(S) 1.20m, N=34 (6,7/1	
1									Cobbles are ang sandstone.	gular to subangu	ılar		}					: <b>目</b> :	1.20 - 1.80	11 B	31 1(3) 112011, 11-34 (0,7) 1	1,0,0,11
-													8						1.50	9 D		
1								1		D: Soft to firm gre			1.70	14	.33				1.80	10 D		
2										CLAY with mediu s fine to coarse.			8						2.00	13 ES	SPT(S) 2.00m, N=5 (1,2/1,	2,1,1) 2
1									subangular to su	ubrounded fine	to		8						2.00 - 2.45	12 D 15 B		
-										dstone, sandston obbles are suba			(1.50	,				:	2.50	14 D		
]									sandstone.										2.50	14 D		
]																			.]			
3								+					8			115 3.00			3.00 3.00 - 3.45	17 ES 16 D	SPT(S) 3.00m, N=8 (5,2/2,2	2,2,2) 3
1										D: Firm laminated			3.20	12	.83				3.20 - 4.00	20 B		
										slightly gravelly Gravel is suban			8						3.50	18 D		
1									subrounded fine	e to coarse sand	Istone and		8						3.70	19 D		
1									From 3.60m	Sand is fine to co to 3.80m and 4.10	m to		8						· -		COTIC) A CO.	224
· <del>]  </del>								П	4.40m orang sand.	gish grey fine to me	edium		1					: 昌:	4.00 - 4.45 4.00 - 5.00	22 ES 21 D 25 B	SPT(S) 4.00m, N=13 (1,2/3	,3,3,4) 4
]													(2.30	,						23 D		
									From 4.50m	to 4.70m becomes	s very								4.50	24 D		
1									silty.									: 目:	:			
1													8						5.00	27 UT	21 Ublows, 20% Recovery	5 -
-													8						5.00 - 5.45 5.00 - 6.00	26 D 29 B	,	,
1													8									
7									Firm laminated	grey slightly silty	y CLAY.	×—	≚ 5.50 ≤	10	).53				5.50	28 D		
1												$\times$	<									
1-1								-				×_×	(0.95	)					6.00 - 6.45	30 D	SPT(S) 6.00m, N=4 (1,2/1,:	1,1,1) 6
-												× ×										
1									DYNAMIC PROB	RING		- <del>x</del> '	6.45	9.	.58							
111111									2110,000													
1																						
1																						7
2																						
劃																						
2			_	_			_	ш														8 -
1 2 1 1 1 2 2 2 2 2 2 2 2 2													(3.55	,								
3													,									
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6	7																					
5	<u> </u>												1									
	8																					
	7 8												10.00		02							
)					_				EOH at 10.0	0m - Schedule	ed depth		10.00	6.	.03							10
bservatio	ns / Rer	narks							Misc.	Equipment Inf				mic Sam							tallations	
									pa,	Dynamic Prob DPSH-		From (m) D	2.00	87	100	)	emarks	I	nstrument Typ Standpipe	e	Resp. Zone Depth 1.00 - 5.00 0.00	
									counte d Install		Hammer Weight	3.00	3.00 4.00	87 75	90 100	)						
									ndwater Encountere Casing Used ing Point/s Installed	<b>750mm</b> Cone Base Diam.	64.0kg Rod Diam.	4.00 5.00	5.00 6.00	75 63	100 100		F			Ground	water Strikes	
									rundwc Casir oring F	50mm	35mm						1	Strike (m)			ses To (m) Time (min)	Remarks
									No Grc Monit	Hammer Reference &												

MOD 01 (67%)



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Header

Sheet

Exploratory Hole Number

BH17-13

FINAL



Project No:	3043	Location Details					Methodology &	Scale:	1:50	
		Easting:	425052.39	Northing:	558577.36	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20 1.20 - 26.30	Inspection Pit	Hand Tools		
		Elevation:	14.48mAOD	Final Depth:	36.00m	26.30 - 36.00	Dynamic Sampling (Windowless) Rotary Open Holing	Massenza MIP3 Massenza MIP3	Approved:	BH
Location:	Tyne and Wear	Logger:	ALB	Grid System:	OSGB				Start Date:	30/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	07/06/2018

Hole Di	iameter			
Depth (m)	Diam (mm)			
15.35 36.00	102 92			

15.15	168

Casing Diameter
Depth (m) Diam (mm

	Groundwater Strikes									
Strike	Casing	ising Sealed Time Rose To								
(m)	(m)									

Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)			

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill				
Depth (m)	Legend Code			
0.00 - 36.00	Bentonite			

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	8

Standard Penetration Tests	8	
* One count indicates an av reported result of 3 tests carrie one depth where availab	ed ou	

Sam	Sample Summary					
Enviro	nmer	ntal Samples				
Soil	7	Water	0			
Geote	chnic	hnical Samples				
Bulk	18	Large Bulk	0			
Disturbed	21	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undistu	rbed 1	Thin Wall	5			
Undisturbed Thin Wall (NR)						
Co	re San	nple	0			

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
Test Type	Depth	Casing	Water	Seating	Main	Penetration	N	Reported Result	Hammer Ref
rest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	панние ке
Split Spoon	1.20	-	-	8	25	450	25	N=25 (2,6/9,5,5,6)	AR61
Split Spoon	2.00	-	-	7	29	450	29	N=29 (3,4/8,8,7,6)	AR61
Split Spoon	3.00	-	-	8	17	450	17	N=17 (4,4/4,5,4,4)	AR61
Split Spoon	4.00	4.00	-	6	20	450	20	N=20 (3,3/4,5,6,5)	AR61
Split Spoon	8.85	8.25	-	6	20	450	20	N=20 (3,3/3,4,6,7)	AR61
Split Spoon	9.85	8.25	-	8	27	450	27	N=27 (4,4/6,6,7,8)	AR61
Split Spoon	12.35	10.85	-	5	17	450	17	N=17 (2,3/3,4,4,6)	AR61
Split Spoon	13.85	10.85	-	6	18	450	18	N=18 (3,3/3,5,5,5)	AR61

SPT Hammer Ref.	Energy Ratio (%)
AR61	58

### **Applicable to Cable Percussion Only**

Chiselling					
Depth (m)	Duration (mins)				

Water Added						
Depth (m)	Litres					
	l					

### **Applicable to Rotary Only**

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			
Depth (m) 5.65 - 7.25	Flush Type	Flush Colour Black/Brown	95			

### **Applicable to Dynamic Sampling Only**

l	Dynamic Sampling Runs									
I	Depth (m)	Diam (mm)	Recovery %	Remarks						
	1.20 - 2.00	117	100							
	2.00 - 3.00	117	100							
	3.00 - 4.00	117	100							
	4.00 - 5.00	117	100							
	5.00 - 5.65	117	0							
	7.25 - 8.25	117	100							
	8.25 - 8.85	117	100							
	8.85 - 9.85	117	20							
	9.85 - 10.85	117	30							
	10.85 - 12.35	117	100							
	12.35 - 13.85	117	87							
	13.85 - 15.35	102	20							
	15.35 - 16.85	117	80							
	16.85 - 18.35	117	100							
	18.35 - 19.85	117	0							
	19.85 - 21.35	102	100							
	21.35 - 22.85	102	67							
	22.85 - 24.35	102	100							
	24.35 - 25.85	102	67							
		1	1	I						



Dynamic Sampling

Log Type

Exploratory Hole Number

BH17-13
FINAL



Sheet 1 of 4 Methodology & Plant Project No: 3043 Location Details Scale: 1:50 Plant Used Hand Tools Massenza MIP3 Massenza MIP3 Depth (m) 0.00 - 1.20 1.20 - 26.30 26.30 - 36.00 Method
Inspection Pit
Dynamic Sampling (Windowless)
Rotary Open Holing 425052.39 558577.36 Checked By: RPH Easting: Northing: A1 Birtley to Coalhouse Name: Final Depth: 36.00m Elevation: 14.48mAOD Approved By: ВН Location: Tyne and Wear Grid System: OSGB Start Date: Logged By: ALB 30/05/2018

Clie	nt: SLJV	rientation: <b>N/</b>	/A Incli	nation: 90°								Finish Date: 07/06	/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level (mAOD)	Casing Ø (mm)	Water Level (m)	Installation / Backfill			Samples & Testing	
	MADE GROUND: TOPSOIL.				Thickness)	14.38	Depth (m)			Depth (m)	Ref	Test Results	
-	MADE GROUND: Tor-Soils.  MADE GROUND: Greyish brown very sandy angular sandstone and brick GRAVEL with medium cobble of Cobbles are subangular to subrounded sandstone.				0.10					0.20 0.20 - 1.20 0.30	1 D 4 B 2 ES		-
1 -					(2.65)					0.80 1.20 - 1.65 1.20 - 2.00	3 ES 5 D 7 B	SPT(S) 1.20m, N=25 (2,6/9,5,5,6)	1 -
2 — - 2 — -										1.80 2.00 - 2.45 2.00 - 2.75	6 ES 8 D 9 B	SPT(S) 2.00m, N=29 (3.4/8,8,7,6)	2 -
3 -	MADE GROUND: Dark grey slightly gravelly slightly scoarse. Gravel is subangular to subrounded fine to rand brick.  At 2.75m geotextile.				2.75	11.74				2.80 2.80 3.00 - 3.45 3.00 - 4.00	10 D 11 ES 12 D 13 B	SPT(S) 3.00m, N=17 (4,4/4,5,4,4)	3 -
4 —					(2.90)					3.80 4.00 - 4.45 4.00 - 5.00	14 ES 15 D 16 B	SPT(S) 4.00m, N=20 (3,3/4,5,6,5)	4 -
5 —										4.80 5.00 - 5.65	17 ES 18 UT	100% Recovery	5 -
6 -	MADE GROUND: TARMAC FILL (Driller's Description				5.65	8.84				5.65 - 6.10	19 D		6 -
- - - - - -					(1.60)					6.60 - 7.05	20 D		7-
	Soft brownish grey slightly gravelly slightly sandy sil Gravel is subrounded fine to coarse sandstone and in From 7.40m to 7.70m gravel becomes rare.		l is fine to coarse.	**************************************	7.25	7.24				7.30 7.40 - 8.10 7.60 - 8.05	22 D 23 B 21 D		, - - - -
8 —	Very soft slightly sandy slightly organic SILT. Sand is	ine to coarse	2.	( × × × × × × × × × × × × × × × × × × ×	5 5	6.78				8.20 8.25 - 8.85	24 ES 25 UT	100% Recovery	8 —
9 —				\ \pi \text{\pi} \times \times \\ \( \times \times \times \times \times \times \\ \( \times \times \times \times \times \times \\ \( \times \times \times \times \times \times \times \times \\ \( \times \ti	s s					8.85 - 9.30 8.85 - 9.85	26 D 27 D	SPT(S) 8.85m, N=20 (3,3/3,4,6,7)	9 —
-				× × × × × × × × × × × × × × × × × × ×	(3.60)					9.85 - 10.30 9.85 - 10.85	28 D 29 B	SPT(S) 9.85m, N=27 (4,4/6,6,7,8)	-
10 -	Continued on Next Pa	ige											10 -
Observations / Remarks Misc. Backfill					Dynamic Sampling Runs							tallations	
		No Groundwater Encountered Casing Used No Monitaring Point's installed	Depth (m) Mater 0.00 - 36.00 Benton  Hammer Ref & Energy Rat AR61 (58%)	tte 1.20 2.00 3.00 4.00 5.00 7.25 8.25 8.85	2.00 3.00 4.00 5.00 5.65 8.25 8.85 9.85 10.85 12.35	m (mm) Recover 117 100 117 100 117 100 117 100 117 100 117 100 117 100 117 20 117 20 117 30 117 100 117 30 117 87		emarks S			Ground	water Strikes ses To (m) Time (min) Remai	Diam



Dynamic Sampling

Log Type

Exploratory Hole Number

BH17-13
FINAL



Sheet 2 of 4 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Depth (m) Method Plant Used 425052.39 558577.36 Checked By: RPH Easting: A1 Birtley to Coalhouse Northing: Name: Elevation: Approved By: Final Depth: 36.00m 14.48mAOD ВН Location: Tyne and Wear Grid System: OSGB Start Date: Logged By: 30/05/2018 ALB

	Type and Wear	Logged By:	ALB	Grid Syste										05/2018
Clie	nt: SLIV	Orientation:	N/A	Inclination	n: <b>90°</b>	1	.	1					1	06/2018
	Strata Description				Legend	Depth (n (Stratun Thicknes	(mACD)	Casing Ø (mm) Depth (m)	Water Level (m)	Installation / Backfill	Depth (m)	Ref	Samples & Testing  Test Results	
-	Very soft slightly sandy slightly organic SILT. Sand i	s fine to coa	rse		$\times$ $^{\prime\prime}$ $^{\prime\prime}$ $\times$ $\times$		5)	Deptil (III)			Depth (m)	Kei	rest Results	-
-					$\times \times $	5								-
_					$\times \times \times \times$	5								-
-					$\times \times $	3								-
-					$\times \times $						10.85 - 11.30	30 UT	80% Recovery	1
11 -					(									11 -
-	Soft to firm thinly laminated dark greyish brown sl	Patrit and a		W. C	XJLX	11.30	3.18							1
_	to coarse.	lightly sandy	SIITY CLA	AY. Sand is fine	×_×_						11.40 11.50 - 12.35	31 D 32 B		-
-					×									1
12 -					_ × :									12
-					× ×									12 -
-						<u>&lt;</u>					12.35 - 12.80	33 B	SPT(S) 12.35m, N=17 (2,3/3,4,4,	6)
-					×	<								-
-					X	4								-
13 -					X—Η	\$					12.90 - 15.80	34 B		13
-					×	\$								1
					×_*_	· ·								]
1 -					×_×_						13.58 - 14.30	35 D		]
=					<u> </u>								SPT(S) 13.85m, N=18 (3,3/3,5,5,	5)
14 -					_ × :									14 –
-						<u>&lt;</u>					14.30 - 15.35	36 B		-
-					×	<u>&lt;</u>								-
-					×	<								1
-					×	<								1
15 -					×	· ·		168						15 -
-					×_×			15.15			15.35 - 16.00	37 UT		1
					×_×_									-
-					_ × :									]
16 -						4					16.00 - 16.85	38 B		16
-					×	<u>&lt;</u>					10.00 10.03	300		10
-					X									
-					X	\$								-
-					×	<					16.85 - 17.30	39 D		-
17 -	From 17.00m, rare subangular to subrounded fine to medium	n sandstone arav	ıel		×_×	· .					10.03 17.30	335		17 -
-	Trom Troom, rate sabangalar to sabrounded fine to median	r sandstone grav			×_×_									-
-					$\overline{\mathbf{x}}$						17.30 - 18.35	40 B		-
-					_ × _									]
-						4								]
18 -					×	4								18 -
-					X——	4					18.35 - 19.00	41 UT		-
-	From 18.50m, silt bands.				X	4					10.55 - 15.00	4101		=
-	solon, an banda				<del>×</del>	445.00								=
10 -					×	(15.00)	'				19.00 - 19.85	42 B		10 -
19 -					$\overline{\times}_{-}$						19.00 - 19.85	42 B		19 -
-					$\overline{\mathbb{X}}^{\times}$									-
-					<u> </u>									-
-						-					10.07			-
20 -	Assessed as N	Dogs			<u> </u>	4					19.85 - 20.20	43 D		20 -
	Continued on Next I		1											
Obs	ervations / Remarks	Mis	Depth	Backfill (m) Material	From (m)		mic Sampling iam (mm) Recov		Remarks	Inci	trument Deta		tallations  Resp. Zone   Depth (m)	Diam
		tered	stalled	() iviaterial	13.85 15.35	15.35 16.85	102 2	0 0	-CIIIdi NS	11151	ament Dela		лезр. 2011е   Deptii (M)	Diaill
		pa	nt/s In:		16.85 18.35	18.35 19.85	117 1 117	00						
		vater <u>k</u> sing Us	oring Poir		19.85 21.35	21.35 22.85	102 1 102 6	7					lwater Strikes	
		iroundw	nit		22.85 24.35	24.35 25.85	102 1 102 6	7		Strike (m) Ca	asing (m) Seal	ed (m) Ri	ses To (m) Time (min) Ren	narks
		No G	0	r Ref & Energy Ratio (%) AR61 (58%)										
				- 12221										



A1 Birtley to Coalhouse

Project No:

Name:

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Northing:

558577.36

Location Details

425052.39

Easting:

Dynamic Sampling

Log Type

Exploratory Hole Number

**BH17-13** FINAL



 Sheet 3 of 4
 GEO

 Methodology & Plant
 Scale: 1:50

 Depth (m)
 Method
 Plant Used
 Checked By: RPH

Elevation: 14.48mAOD Final Depth: 36.00m Approved By: BH Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 30/05/2018 07/06/2018 Client: SLIV Orientation N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Reduced Lev (mAOD) Installation , Backfill Strata Description (mm) Depth (m Depth (m) Soft to firm thinly laminated dark greyish brown slightly sandy silty CLAY. Sand is fine to coarse. 20.30 - 21.35 44 B 21.35 - 21.80 45 D 21.80 - 22.85 22 48 B 23.30 - 24.35 24 49 D 24.35 - 24.80 24.80 - 25.85 50 B 25.85 - 26.30 51 D -11.82 Grey CLAY. (Driller's Description) 27 28 29 30 Continued on Next Page Observations / Remarks Misc. Backfill Dynamic Sampling Runs Installations Depth (m) Material From (m) To (m) Diam (mm) Recovery (%) Instrument Details Resp. Zone Depth (m) Diam Groundwater Strikes Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks AR61 (58%)



Dynamic Sampling

Log Type

Exploratory Hole Number **BH17-13** 

FINAL



Sheet 4 of 4 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Depth (m) Method Plant Used Easting: 425052.39 558577.36 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Elevation: Final Depth: 36.00m Approved By: 14.48mAOD ВН Location: Tyne and Wear Grid System: OSGB Start Date: 30/05/2018 Logged By: ALB

Clie	nt: SUV	Orientation: <b>N</b>	/A Inclination	n: <b>90°</b>								Finish Date:	07/06/20	18
	Strata Description			Legend	Depth (m) (Stratum	neduced Lev	rel Casing Ø (mm)		Installation / Backfill			Samples & Testing		
_	Grey CLAY. (Driller's Description)				Thickness)		Depth (m)			Depth (m)	Ref	Test Results		
-	, , , , , , , , , , , , , , , , , , , ,													-
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-				===										-
31 -														- 31 -
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34 -													3	34 –
-				===										-
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- -													-	-
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-														-
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36 -	EOH at 36.00m - Schedu	iled depth			36.00	-21.52							3	36 -
-														-
-														-
-														-
- 37 —													;	- 37 –
-														
-														-
-														-
-														-
38 —													3	38 –
-														-
-														-
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- 39 —													3	- - 99
-														-
-														-
-														-
-														-
40 -								<u> </u>						40 -
Obs	ervations / Remarks	Misc.	Backfill  Donth (m) Material	From /\ -		ic Sampling		lomasi	1- *	sumont D-7		allations	h (m) I s	-
		itered	Depth (m) Material	From (m)	U(III) Dia	(IIIII) Recov	CIY (70) K	emarks	inst	rument Detai	13	Resp. Zone Dept	h (m) Dia	-111
		. Groundwater Encountered Casing Used Monitoring Point/s Installed												
		ndwater Casing L oring Po						Ī	trike (m) Ca			water Strikes es To (m) Time (min)	Remarks	
		Groun ( Monito	Hammer Ref & Energy Ratio (%)						(111) Cd	<sub>6</sub> (111) Scale	11151		nemarks	
l		No o	AR61 (58%)							1				



Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel: +44 (0)1924 229889

Tel: +44 (0)1924 229889 Web: www.central-alliance.co.uk Log Type

Header

Sheet

Exploratory Hole Number

BH17-14

FINAL



Project No:	3043	Location Details					Methodology	Scale:	1:50	
		Fasting:	<b>425199.25</b> No		Northing: 558485.11 F		58485 11 From (m) Method Plant Used		Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	423133.23	reor criming.		0.00 - 1.20	Inspection Pit	Hand Tools	- Circonca.	
		Elevation:	16.43mAOD	Final Denth	70.00m	1.20 - 45.00	Cable Percussion	Dando 2000	Annroyed:	BH
		Licvation.	10.43IIIAOD	rinai beptii.	70.00111	45.00 - 46.50	Rotary Coring	Fraste PLG	Approved.	DIT
Location:	Tyne and Wear	Logger:	AI R+GS	Grid System:	OSGR	46.50 - 50.00	Rotary Open Holing	Fraste PLG	Start Date:	11/12/2017
		LOGECI.	ALDTO3		OJGD				Start Date.	11/12/2017
Client:	SUV	Orientation:	N/A	Inclination:	90°	59.00 - 70.00	Rotary Open Holing	Fraste PLG	End Date:	11/12/2017
	Name: Location:	Name: A1 Birtley to Coalhouse  Location: Tyne and Wear	Name: A1 Birtley to Coalhouse Easting: Location: Tyne and Wear Logger:	Name: A1 Birtley to Coalhouse Easting: 425199.25  Location: Tyne and Wear Logger: ALB+GS	Name: A1 Birtley to Coalhouse Easting: 425199.25 Northing: Location: Tyne and Wear Elevation: 16.43mAOD Final Depth: Logger: ALB+GS Grid System:	Name: A1 Birtley to Coalhouse Easting: 425199.25 Northing: 558485.11  Elevation: 16.43mAOD Final Depth: 70.00m  Location: Tyne and Wear Logger: ALB+GS Grid System: OSGB	Name: A1 Birtley to Coalhouse Easting: 425199.25 Northing: 558485.11 From (m) 0.00 - 1.20 1.20 - 45.00 - 46.50 46.50 - 46.50 1.20 - 46.50 1.20 - 46.50 1.20 - 46.50 1.20 - 46.50 1.20 - 46.50 1.20 - 46.50 1.20 - 46.50 1.20 - 46.50 1.20 - 46.50 1.20 - 46.50 1.20 - 46.50 1.20 - 46.50 1.20 1.20 - 46.50 1.20 1.20 1.20 1.20 1.20 1.20 1.20 1.2	Name: A1 Birtley to Coalhouse Easting: 425199.25 Northing: 558485.11 From (m) Method 0.00 - 1.20 Inspection Pit 16.43mAOD Final Depth: 70.00m 45.00 - 46.50 Gable Percussion Pit 1.20 - 46.50 Gable Percussion Rotary Coring Rotary Coring 45.00 - 46.50 South Rotary Coring	Name: A1 Birtley to Coalhouse Easting: 425199.25 Northing: 558485.11 From (m) Method Plant Used  Name: A1 Birtley to Coalhouse  Elevation: 16.43mAOD Final Depth: 70.00m 1.20 Inspection PIt Hand Tools  1.20 - 45.00 - 45.00 Cable Percussion Dando 2000 4.50 - 45.00 - 45.00 Rotary Coring Fraste PLG  4.50 - 46.50 Rotary Coring Fraste PLG  5.00 - 50.00 Rotary Coring Fraste PLG  5.00 - 50.00 Rotary Coring Fraste PLG  5.00 - 50.00 Rotary Coring Fraste PLG  5.00 - 50.00 Rotary Coring Fraste PLG  5.00 - 50.00 Rotary Coring Fraste PLG  5.00 - 50.00 Rotary Coring Fraste PLG	Name: A1 Birtley to Coalhouse  Easting: 425199.25 Northing: 558485.11 From (m) Method Plant Used Checked: 0.00 - 1.20 Inspection Pit Hand Tools Dando 2000

Hole Di	ameter
Depth (m)	Diam (mm)
70.00	140

Casing D	iameter
Depth (m)	Diam (mm)
50.00	140

	Groundwater Strikes							
				Rose To	Remarks			
(m)	(m)	(m)	(min)	(m)				
43.50	-	43.00	20	37.00				

Installation / Instrument Details						
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)		
16/01/2018	Standpipe Piezometer	15.00	14.00 - 16.00			

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill						
Depth (m)	Legend Code					
0.00 - 0.50	Concrete					
0.50 - 14.00	Bentonite					
14.00 - 16.00	Sand					
16.00 - 70.00	Bentonite					

In-Situ Tests	
PID	2
Hand Vane*	2
Standard Penetration Tests	17

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
0	Water	2	Soil					
Geotechnical Samples								
< 0	Large Bulk	19	Bulk					
NR) 0	Disturbed (NR)	56	Disturbed					
t) <b>0</b>	Piston (NR)	0	Piston					
(NR) <b>0</b>	Undisturbed (NR)	0	Undisturbed					
14	Undisturbed Thin Wall							
2	Undisturbed Thin Wall (NR)							
1	nple	e San	Cor					

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
T4 T	Depth	Casing	Water	Seating	Main	Penetration	N	Danasta d Danasta	
Test Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	Hammer Ref
Split Spoon	2.00	2.00	-	3	8	450	8	N=8 (1,2/3,2,2,1)	AR1710
Split Spoon	3.00	4.00	-	1	2	450	2	N=2 (1,0/0,1,0,1)	AR1710
Split Spoon	6.50	6.50	-	1	5	450	5	N=5 (0,1/1,1,1,2)	AR1710
Split Spoon	9.50	6.50	-	3	9	450	9	N=9 (1,2/3,2,2,2)	AR1710
Split Spoon	12.50	7.00	-	5	8	450	8	N=8 (3,2/2,3,1,2)	AR1710
Split Spoon	15.50	15.00	-	6	10	450	10	N=10 (2,4/2,3,3,2)	AR1710
Split Spoon	18.50	15.00	-	7	12	450	12	N=12 (3,4/3,3,2,4)	AR1710
Split Spoon	21.50	15.00	-	5	16	450	16	N=16 (3,2/5,4,4,3)	AR1710
Split Spoon	24.50	15.00	-	7	13	450	13	N=13 (4,3/3,4,3,3)	AR1710
Split Spoon	27.50	15.00	-	11	19	450	19	N=19 (5,6/4,5,6,4)	AR1710
Split Spoon	30.50	15.00	-	11	21	450	21	N=21 (6,5/6,6,4,5)	AR1710
Split Spoon	33.50	15.00	-	13	26	450	26	N=26 (6,7/8,7,5,6)	AR1710
Split Spoon	36.50	15.00	-	15	28	450	28	N=28 (8,7/9,5,7,7)	AR1710
Split Spoon	39.50	15.00	-	13	24	450	24	N=24 (7,6/5,6,6,7)	AR1710
Split Spoon	42.50	42.20	-	19	33	450	33	N=33 (9,10/8,7,9,9)	AR1710
Split Spoon	44.00	44.00	-	25	100	265		100 (25 for 75mm/100 for 190mm)	AR1710
Split Spoon	44.20	44.00	-	25	100	185		100 (25 for 70mm/100 for 115mm)	AR1710

SPT Hammer Ref.	Energy Ratio (%)
AR1710	61

## **Applicable to Cable Percussion Only**

Chise	Chiselling										
Depth (m)	Duration (mins)										
44.00 - 44.20	60										

Litres

## **Applicable to Rotary Only**

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					
45.00 - 46.50	Air/Mist	Grey	90					
50.00 - 51.50	Air/Mist	Grey	90					
51.50 - 53.00	Air/Mist	Grey	95					
53.00 - 54.50	Air/Mist	Grey	95					
54.50 - 56.00	Air/Mist	Grey	95					
56.00 - 57.50	Air/Mist	Grey	95					
56.50 - 50.00	Air/Mist	Grey	90					
57.50 - 59.00	Air/Mist	Grey	95					
59.00 - 64.10	Air/Mist	Dark Grey	95					
64.10 - 66.40	Air/Mist	Grey	95					
66.40 - 67.80	Air/Mist	Grey	95					
67.80 - 70.00	Air/Mist	Grey	95					
		ĺ						

## **Applicable to Dynamic Sampling Only**

			<u> </u>							
	Dynamic Sampling Runs									
Depth (m)	Diam (mm)	Recovery %	Remarks							



Name:

3043

A1 Birtley to Coalhouse

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Northing:

558485.11

Location Details

425199.25

Easting:

Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-14 FINAL** 

CENTRAL ALLIANCE GEO

1:50

Sheet 1 of 7 Methodology & Plant Scale:

RPH Checked By: Approved By: BH Start Date:

Method
Inspection Pit
Cable Percussion
Rotary Coring
Rotary Open Holing
Rotary Coring
Rotary Open Holing From (m) 0.00 - 1.20 1.20 - 45.00 45.00 - 46.50 Plant Used Hand Tools Dando 2000 Fraste PLG Elevation: 16.43mAOD Final Depth: 70.00m Tyne and Wear 46.50 - 50.00 50.00 - 59.00 59.00 - 70.00 Fraste PLG Fraste PLG Fraste PLG Location: 11/12/2017 Logged By: ALB+GS Grid System: OSGB Client SLIV Orientation N/A Inclination: 90° Finish Date: 11/12/2017 Depth (m) Reduced Hole Ø Casing Ø Samples & Testing Coring Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref Test Results MADE GROUND: Dark brown and grey slightly gravelly sandy 0.20 1 ES PID 0.20m = 0.2ppm silty CLAY with roots. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone and mudstone. (1.00) 0.50 0.50 - 1.00 HV 0.50m, (p)=52 kPa (r) =4 kPa PID 0.70m = 0.2ppm 1.00 15.43 1 00 4 D HV 1.00m, (p)=52 kPa (r) Soft fissured brown and grey slightly sandy CLAY. Sand is fine to =2 kPa 10 blows, 100% Recovery 1.20 - 1.65 6 UT coarse. From 2.00m becomes very silty. 3.00 - 3.45 3 blows, 100% Recovery SPT(S) 3.00m, N=2 (1,0/0,1,0,1) 10 UT 4.00 - 4.45 4.00 - 4.50 11 D 12 B 5.00 - 5.45 13 UT 14 blows, 100% Recovery 5.45 14 D From 5.50m becomes silty. 6.00 15 D From 6.00m becomes grey and thinly laminated with no fissures. 6.50 - 6.95 6.50 - 7.00 SPT(S) 6.50m, N=5 (0,1/1,1,1,2) 7.50 18 D 8.00 - 8.45 19 UT 21 blows, 100% Recovery 8.45 20 D 9.50 - 10.00 9.50 - 9.95 22 B 21 D SPT(S) 9.50m, N=9 (1,2/3,2,2,2) 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 14.00 - 16.00 | 15.00 | Depth (m) Casing (m) Water (m) To (m) Instrument Details Date 11/12 12/12 12/12 13/12 13/12 14/12 14/12 15/12 15/12 11/01 Time 17:00 08:00 17:00 08:00 17:00 08:00 17:00 1.65 1.65 23.45 23.45 35.50 35.50 41.00 15.00 15.00 15.00 41.00 41.00 44.00 44.90 50.00 Water Strikes Strike (m) Rises To (m) 43.50 37.00 Time (min)

08:00 17:00 07:30

18:30

41.00 41.00 44.20 45.00 50.00

23.40



3043

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Location Details

## Combined Borehole

Log Type

Sheet 2 of 7

Exploratory Hole Number

BH17-14

**FINAL** 

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used 558485.11 Checked By: RPH Easting: 425199.25 Northing: A1 Birtley to Coalhouse Name: Elevation: 16.43mAOD Final Depth: 70.00m Approved By: BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 11/12/2017 Client: SLJV Orientation: N/A Inclination: Finish Date: 11/12/2017 Depth (m) Reduced Hole Ø Samples & Testing Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref 10.50 23 D 11.00 - 11.45 24 UT 31 blows, 100% Rec 11 11.45 25 D 12 SPT(S) 12.50m, N=8 (3,2/2,3,1,2) 13 13.50 29 D 14.00 - 14.45 30 UT 39 blows, 100% Recovery 14 14.45 31 D 15.00 32 D 15 15.50 - 15.95 15.50 - 16.00 33 D 34 B SPT(S) 15.50m, N=10 (2,4/2,3,3,2) 16.50 35 D 37 D 18.00 38 D 18 SPT(S) 18.50m, N=12 (3,4/3,3,2,4) 18.50 - 18.95 18.50 - 19.00 39 D 40 B 19 19.50 41 D 20.00 - 20.45 42 UT 20 Continued on Next Page Observations / Remarks Misc Shift Information Backfill 
 Depth (m)
 Casing (m)
 Water (m)

 50.00
 50.00
 24.40

 51.50
 50.00

 51.50
 50.00

 59.00
 50.00
 17.80

 59.00
 50.00
 18.50
 Resp. Zone | Depth (m) | Diam | 14.00 - 16.00 | 15.00 | To (m) Instrument Details dwater Encour Casing Used ring Point/s In Water Strikes Strike (m) Rises To (m) Time (min) 43.50 37.00 20



3043

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Location Details

## Combined Borehole

Log Type

Sheet 3 of 7

Exploratory Hole Number

BH17-14

**FINAL** 

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used 558485.11 Checked By: RPH Easting: 425199.25 Northing: A1 Birtley to Coalhouse Name: Elevation: 16.43mAOD Final Depth: 70.00m Approved By: BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 11/12/2017 SLJV Client: Orientation: N/A Inclination: 90° Finish Date: 11/12/2017 Samples & Testing Depth (m) Reduced Hole Ø Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref 20.45 43 D 21.00 21.00 - 22.00 44 D 46 B SPT(S) 21.50m, N=16 (3,2/5,4,4,3) 21.50 - 21.95 45 D 22 23.00 - 23.45 48 UT 50 blows, 100% Recovery 23 23.45 49 D 24.00 50 D 24 24.50 - 24.95 24.50 - 25.00 SPT(S) 24.50m, N=13 (4,3/3,4,3,3) 25 25.50 53 D 26.00 - 26.45 54 UT 63 blows, 100% Recov 55 D 27 SPT(S) 27.50m, N=19 (5,6/4,5,6,4) 27.50 - 27.95 27.50 - 28.00 28 28.50 59 D 29.00 - 29.45 60 UT 67 blows, 100% Recovery 29 61 D 29.45 30:00 62·D 30 Continued on Next Page Misc Observations / Remarks Shift Information Backfill Resp. Zone | Depth (m) | Diam | 14.00 - 16.00 | 15.00 | Depth (m) Casing (m) Water (m) To (m) Instrument Details Water Strikes Strike (m) Rises To (m) Time (min) 43.50 37.00 20



3043

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Location Details

## Combined Borehole

Log Type

Sheet 4 of 7

Exploratory Hole Number

BH17-14

**FINAL** 

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used 425199.25 558485.11 Checked By: RPH Easting: Northing: A1 Birtley to Coalhouse Name: Elevation: 16.43mAOD Final Depth: 70.00m Approved By: BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 11/12/2017 SLJV Client: Orientation: N/A Inclination: 90° Finish Date: 11/12/2017 Casing Ø (mm) Depth (m) Depth (m) Reduced Hole Ø Samples & Testing Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) SCR RQD Depth (m) Ref 30.50 - 30.95 30.50 - 31.00 63 D 64 B SPT(S) 30.50m, N=21 (6,5/6,6,4,5) 31 31.50 65 D 66 UT 32 67 D 33.00 68 D 33 SPT(S) 33.50m, N=26 (6,7/8,7,5,6) 33.50 - 33.95 33.50 - 34.00 34 34.50 71 D 35.00 - 35.45 72 UT 84 blows, 100% Recovery 35 35.45 73 D 36.00 74 D 36.50 - 36.95 36.50 - 37.00 SPT(S) 36.50m, N=28 (8,7/9,5,7,7) 77 D 38.00 - 38.45 78 UT 100 blows, 100% Recover 38 38.45 79 D 39.00 80 D 39 39.50 - 39.95 39.50 - 40.00 SPT(S) 39.50m, N=24 (7,6/5,6,6,7) 40 Continued on Next Page Misc Observations / Remarks Shift Information Backfill Resp. Zone | Depth (m) | Diam | 14.00 - 16.00 | 15.00 | Time Depth (m) Casing (m) Water (m) To (m) Instrument Details Water Strikes Strike (m) Rises To (m) Time (min) 43.50 37.00 20



Combined Borehole

Sheet 5 of 7

Log Type

Exploratory Hole Number **BH17-14** 

FINAL



Methodology & Plant Location Details Scale: Project No: 3043 1:50 From (m) Method Plant Used 558485.11 RPH Easting: 425199.25 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 16.43mAOD Final Depth: 70.00m Approved By: BH Tyne and Wear Location: Logged By: ALB+GS Grid System: OSGB Start Date: 11/12/2017 Client SLIV Orientation N/A Inclination: Finish Date: 11/12/2017 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m Depth (m) Ref 83 D 84 UT-NR 85 B 41.00 41.00 - 41.45 IOO blows 0% Re 41 41.00 - 41.50 41.40 - 41.80 41.50 - 41.95 88 D 42 From 42.00m becomes very silty. 43 43.50 -27.07 43.50 91 D 92 B Loose dark brown and grey slightly gravelly silty fine to coarse 43.50 - 44.00 SAND. Gravel is subangular to subrounded fine sandstone and (0.60)SPT(S) 44.00m, 100 (25 for 75mm/100 for 190mm) SPT(S) 44.20m, 100 (25 for 70mm/100 for 115mm) 44.00 - 44.20 93 D 44 -27.67 44.10 Dark grey and brownish black slightly gravelly very sandy CLAY. 44.20 94 D Sand is fine to coarse. Gravel is subangular fine to medium sandstone and mudstone. (0.90)45.00 -28.57 Dark grey gravelly fine SAND with low cobble content. Gravel is subangular to subrounded fine to coarse sandstone. Cobbles are subangular sandstone. 45.40 45.00 46.50 (1.50) 33 0 0 -30.07 Grey GLACIAL TILL (Driller's Description). 48 (3.50) 49 49.80 50.00 -33.57 50 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 14.00 - 16.00 | 15.00 | Depth (m) Casing (m) Water (m) To (m) Instrument Details Water Strikes Strike (m) Rises To (m) 43.50 37.00 Time (min)



3043

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Location Details

## Combined Borehole

Log Type

Sheet 6 of 7

Exploratory Hole Number

BH17-14

FINAL

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used Easting 425199.25 Northing: 558485.11 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 16.43mAOD Final Depth: 70.00m Approved By: BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 11/12/2017 Client SLIV Orientation N/A Inclination: Finish Date: 11/12/2017 Depth (m Reduced Hole Ø Samples & Testing Coring Installation Backfill Strata Description Legend Level (mAOD) (Stratum Thickness Level (m Depth (m) Destructured to residual very weak to weak dark grey MUDSTONE and fine grained SANDSTONE. From 50.00m to 52.10m recovered as slightly sandy clayey subangular to subrounded fine to coarse gravel with low cobble content. Sand is medium 50.40 to coarse. Cobbles are subangular to subrounded. 100 0 0 51 From 51.00m to 52.40m Assumed Zone of Core Loss. 51.30 52 0 40 From 52.40m to 53.00m, non-intact. 53 From 53.00m to 53.35m, Assumed Zone of Core Loss From 53.00m to 53.70m recovered as slightly sandy clayey subangular to subrounded fine to coarse gravel with low cobble content. Sand is medium -37.27 53.70 53.00 54.50 77 20 From 53.35m to 54.50m, non-intact. 53.85 Medium strong to strong thinly laminated light and dark grey 54 fine to medium grained SANDSTONE. Discontinuities are set 1) extremely closely spaced subvertical (80-90 degrees) undulating rough and set 2) extremely to very close subhorizontal (15-20 54.40 degrees) undulating smooth. From 54.15m to 54.50m Assumed Zone of Core Loss.
From 54.50m to 54.63m recovered as subangular to subrounded fine to >25 NI 54.83 - 55.20 coarse gravel and cobbles. From 54.78m to 54.83m recovered as slightly sandy clayey subangular to 12 55 subrounded fine to coarse gravel. Sand is fine to coarse From 55.20m to 55.50m recovered as subangular to subrounded fine to coarse gravel and cobbles. 41 41 56.00 NI (3.55)55.60 >25 From 55.87m to 56.00m recovered as slightly gravelly slightly sandy silty NI clay. Gravel is subangular to subrounded fine to medium with rare calcite Sand is fine to coarse >25 From 56.45m to 56.50m recovered as subangular to subrounded fine to coarse gravel and cobbles. 90 73 50 Residual to partially weathered light to dark grey interbedded weak MUDSTONE and strong SILTSTONE. From 57.25m to 57.32m recovered as slightly silty gravelly clay. Gravel is subangular to subrounded fine to medium. From 57.50m to 57.77m recovered as subangular fine to coarse gravel and cobbles 58 From 57.97m to 58.17m recovered as subangular fine to coarse gravel and (1.75) 29 From 58.50m to 58.56m Assumed Zone of Core Loss. 58.60 From 58.56m to 58.62m recovered as slightly sandy slightly clayey subangular to subrounded fine to medium gravel. Sand is fine to coarse. 58.80 59.00 -42.57 59.00 59 Interbedded dark grey MUDSTONE and SILTSTONE (Driller's Description). 60 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Depth (m) Casing (m) Water (m) Resp. Zone | Depth (m) | Diam | 14.00 - 16.00 | 15.00 | To (m) Instrument Details Water Strikes Strike (m) Rises 43.50 37 Time (min) 37.00



Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-14** FINAL



Sheet 7 of 7

GEO Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) Method Plant Used Easting: 425199.25 558485.11 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Final Depth: 70.00m Approved By: 16.43mAOD ВН

Loca	ation: Tyne and Wear		B+GS		System:	OSGB								Start Da			ان /1/12	'2017
Clier		Orientation: <b>N</b>	'A		nation:	90°								Finish D			11/12/	
	Charles Description		Lanced	Depth (m)	Reduced	Hole Ø	Casing Ø	Water	Installation /		Samples	& Testing	pou			Coring		
	Strata Description		Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (m)	Laurel (sec)	Backfill	Depth (m)	Ref	Test Res	ults 2	Core Run	TCR	SCR RO	D If	
	Interbedded dark grey MUDSTONE and SILTSTONE	(Driller's																
	Description).																	
																		-
61 -																		61 -
																		":
				(5.10)														-
																		:
62 -																		62 -
-																		
																		]
]																		
63 –																		63 -
																		:
																		:
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64 -	Grey SANDSTONE (Driller's Description).			64.10	-47.67													64 -
-	Grey SANDSTONE (Driller's Description).																	-
l -																		-
]			:::::															-
65 —													0					65 -
-													ľ					" :
			:::::	(2.30)														:
-																		-
			::::::															:
66 -			:::::															66 -
]	Interbedded dark grey MUDSTONE and SILTSTONE	(Driller's		66.40	-49.97													
	Description).	(21																
67 -				(1.40)														67 -
				` '														:
																		-
L. Ŧ	Grey SANDSTONE (Driller's Description).		: : : : :	67.80	-51.37													
68 –			:::::															68 -
]																		
-			:::::															-
			:::::															:
- 69 –				(2.20)														69 -
																		:
																		:
-																		-
]			::::::															
70	EOH at 70.00m - Scheduled depth		1	70.00	-53.57	140 70.00				1	ļļ.				$\forall$	+	+	70 -
Obse	ervations / Remarks	Mis	c.	I	Shift Ir	formatio	n	1	<u> </u>	Backfill	·			Installa	ations			
			Date	Tim	e De	pth (m)	Casing (m)	Water (m	0.00	0.50	Material Concrete		ment Detail		Resp. Zo	one De	pth (m)	Diam
		Groundwater Encountered Casing Used	Install						0.50 14.00	14.00 16.00	Bentonite Sand							
		r Enco	oont/s						16.00	70.00	Bentonite			Water S	Strike:	 S		
		ndwate Casin	oring										Rises To (m) T	ime (min)			narks	
		Groun	Moni									43.50	37.00	20				



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Log Type Header Sheet

Exploratory Hole Number

BH17-15

FINAL



Project No:	3043		Location	Details			Methodology & F	lant	Scale:	1:50
	44 D' 11	Easting:	425272.04	Northing:	558473.26	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20 1.20 - 40.00	Inspection Pit Cable Percussion	Hand Tools Dando 2000		
		Elevation:	17.22mAOD	Final Depth:	43.95m	1.20 - 40.00	Cable Percussion	Dando 2000	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	29/11/2017
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	04/12/2017

Hole Di	ameter
Depth (m)	Diam (mm)
40.00	150

Casing Diameter								
Depth (m)	Diam (mm)							
3.00	250							
16.50	200							
43.50	150							

	Groundwater Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks						
40.30	-	16.50	20	20.10							

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					
04/12/2017	Standpipe	10.00	0.00 - 10.00	50mm					

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill							
Depth (m)	Legend Code						
0.00 - 0.20	Concrete						
0.20 - 1.20	Bentonite						
1.20 - 10.00	Gravel						
10.00 - 43.95	Bentonite						

In-Situ Tests			
PID	3		
Hand Vane*	0		
Standard Penetration Tests	16		

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Const. Const.								
Sample Summary								
Enviro	Environmental Samples							
Soil	Soil <b>3</b> Water							
Geotechnical Samples								
Bulk	19	Large Bulk	0					
Disturbed	49	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	2	Undisturbed (NR)	0					
Undisturbed Thin Wall								
Undisturbed Thin Wall (NR)								
Core Sample								

(NR) Indicates sample undertaken but with

	Standard Penetration Test Summary										
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref		
Split Spoon	2.50	2.50	DRY	3	8	450	8	N=8 (1,2/2,2,2,2)	AR1134		
Split Spoon	4.50	3.00	DRY	5	10	450	10	N=10 (3,2/2,2,3,3)	AR1134		
Split Spoon	6.50	3.00	DRY	4	9	450	9	N=9 (2,2/2,3,2,2)	AR1134		
Split Spoon	8.50	3.00	DRY	5	14	450	14	N=14 (2,3/3,3,4,4)	AR1134		
Split Spoon	10.50	3.00	DRY	4	15	450	15	N=15 (2,2/3,4,4,4)	AR1134		
Split Spoon	13.50	3.00	DRY	4	14	450	14	N=14 (2,2/3,3,4,4)	AR1134		
Split Spoon	16.50	15.00	DRY	5	16	450	16	N=16 (2,3/3,4,4,5)	AR1134		
Split Spoon	19.50	16.50	DRY	4	14	450	14	N=14 (2,2/3,3,4,4)	AR1134		
Split Spoon	22.50	16.50	DRY	5	16	450	16	N=16 (2,3/4,4,4,4)	AR1134		
Split Spoon	25.50	16.50	DRY	5	17	450	17	N=17 (2,3/4,4,4,5)	AR1134		
Split Spoon	28.50	16.50	DRY	4	18	450	18	N=18 (2,2/4,4,4,6)	AR1134		
Split Spoon	31.50	16.50	DRY	6	13	450	18	N=18 (2,4/4,5,4,5)	AR1134		
Split Spoon	34.50	16.50	DRY	6	11	450	16	N=16 (2,4/4,3,4,5)	AR1134		
Split Spoon	37.50	16.50	DRY	8	12	450	17	N=17 (4,4/4,4,4,5)	AR1134		
Split Spoon	40.50	40.50	20.70	10	34	450	34	N=34 (5,5/9,10,8,7)	AR1134		
Split Spoon	43.50	43.50	21.30	25	100	230		100 (25 for 75mm/100 for 155mm)	AR1134		

SPT Hammer Ref.	Energy Ratio (%)			
AR1134	56			

## **Applicable to Cable Percussion Only**

	Chiselling								
Depth	(m)	Duration (mins)							
43.30 -	43.50	60							

Water Added						
Depth (m) Litres						

#### **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					

## **Applicable to Dynamic Sampling Only**

			<u> </u>					
	Dynamic Sampling Runs							
Depth (m)	Diam (mm)	Recovery %	Remarks					



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Sheet 1 of 5

Log Type

Cable

Cable Percussion

**BH17-15** FINAL

Exploratory Hole Number



Methodology & Plant Location Details: Scale: Project No: 3043 1:50 Depth (m) 0.00 - 1.20 1.20 - 40.00 Plant Used Hand Tools Dando 2000 Method RPH Easting: 425272.04 Northing: 558473.26 Checked By: A1 Birtley to Coalhouse Name: Elevation: 17.22mAOD Final Depth: 43.95m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 29/11/2017 Client SLIV Orientation: N/A Inclination: 90 Finish Date: 04/12/2017 Depth (m) Reduced Water Added (Litres) Casing Ø Samples & Testing Water Level (m) Installation , Backfill Strata Description Legend (Stratum Thickness) Level (mAOD) (mm) Depth (m (mins) Depth (m) Test Results (0.15) 0.15 MADE GROUND: TOPSOIL. 17.07 PID 0.20m = 0.1ppm MADE GROUND: Stiff brownish grey gravelly CLAY. Gravel is 0.20 (0.35) subangular to subrounded fine to medium limestone and 0.50 16.72 mudstone. (0.30)MADE GROUND: Brownish grey clayey subangular to 0.70 0.70 0.70 - 1.20 3 ES 4 D 5 B PID 0.70m = 0.0ppm 0.80 16.42 subrounded fine to coarse mudstone and limestone GRAVEL Firm to stiff laminated grey CLAY. 1.50 1.50 - 1.95 15 blows, 100% Reco PID 1.50m = 0.2ppm 2.00 8 D 2 SPT(S) 2.50m, N=8 (1,2/2,2,2,2) 3.00 11 D 3.50 - 3.95 12 UT 30 blows, 100% Reco 4.00 13 D 4.50 - 4.95 4.50 - 4.95 14 D 15 B SPT(S) 4.50m, N=10 (3.2/2.2.3.3) 5.00 16 D 5.50 - 5.95 17 UT 30 blows, 100% Recovery 6.00 18 D 6.50 - 6.95 6.50 - 6.95 SPT(S) 6.50m, N=9 (2,2/2,3,2,2) 7.50 7.50 - 7.95 32 blows, 100% Recovery 22 UT 8.00 23 D 8 SPT(S) 8.50m, N=14 (2,3/3,3,4,4) 8.50 - 8.95 8.50 - 8.95 24 D 25 B 26 B 9.00 9 9.50 9.50 - 9.95 30 blows, 100% Recovery 27 UT 10.00 28 D 10 Continued on Next Page Observations / Remarks Misc. Shift Information Backfill Installations Depth (m) Casing (m) To (m) Instrument Details Resp. Zone | Depth (m) | Diam. | 0.00 - 10.00 | 10.00 | 50mm Groundwater Enco...
Casha Used
Monitoring brinds installed
Hammer fel & Encryp anto (%)
AR1134 (56(%) 1. 01/12/17 Sand blew from 40.30m up to 32.00m. Groundwater Strikes Strike (m) Rises 40.30 20 o (m) Time (min) 20.10



Cable **Percussion** 

Sheet 2 of 5

Log Type

Exploratory Hole Number **BH17-15 FINAL** 

CENTRAL ALLIANCE GEO

Location Details: Methodology & Plant Project No: Scale: 1:50 3043 Depth (m) Method Plant Used 425272.04 558473.26 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 17.22mAOD Final Depth: 43.95m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 29/11/2017 Client: SLIV Orientation: N/A Inclination: Finish Date: 04/12/2017 Depth (m) (Stratum Thickness) Reduced Water Added (Litres) Casing Ø Samples & Testing Water Level (m) Installation , Backfill Strata Description Legend Level (mAOD) (mm) Depth (m (mins) Depth (m) Firm to stiff laminated grey CLAY. 10.50 - 10.95 10.50 - 10.95 SPT(S) 10.50m, N=15 (2,2/3,4,4,4) 11.00 31 D 11 32 UT 12 33 D 13 13.50 - 13.95 13.50 - 13.95 SPT(S) 13.50m, N=14 (2,2/3,3,4,4) 14 14.50 36 D 15.00 - 15.45 37 UT 30 blows, 100% Recovery 15.50 38 D 16 200 16.50 16.50 - 16.95 16.50 - 16.95 SPT(S) 16.50m, N=16 (2,3/3,4,4,5) 17 42 UT 18.00 - 18.45 32 blows, 100% Recovery 18 43 D 18.50 19 19.50 - 19.95 19.50 - 19.95 44 D 45 B SPT(S) 19.50m, N=14 (2.2/3.3.4.4) 20.00 46 D 20 Continued on Next Page Observations / Remarks Misc. Shift Information Installations Resp. Zone | Depth (m) | Diam. | 0.00 - 10.00 | 10.00 | 50mm Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details 1. 01/12/17 Sand blew from 40.30m up to 32.00m. Casing Used
Monitoring Point/s Installed
Hammer Ref & Energy Ratio (%)
AR1134 (56/%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



3043

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Location Details:

## Cable **Percussion**

Log Type

Sheet 3 of 5

Exploratory Hole Number

**BH17-15 FINAL** 

Plant Used

Methodology & Plant



1:50

Scale:

Depth (m) Method 425272.04 558473.26 Checked Bv: RPH Easting: Northing: A1 Birtley to Coalhouse Name: Elevation: 17.22mAOD Final Depth: 43.95m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 29/11/2017 Client: SLIV Orientation: N/A Inclination: Finish Date: 04/12/2017 Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Reduced Water Added (Litres) Samples & Testing Strata Description Legend Level (mAOD) (mins) Depth (m) Firm to stiff laminated grey CLAY. 20.10 (39.50) 21.00 - 21.45 47 UT 20 blows, 100% Recovery 48 D 22 SPT(S) 22.50m, N=16 (2,3/4,4,4,4) 23 51 D 23.50 24.00 - 24.45 52 UT 25 blows, 100% Recovery 24 24.50 53 D 25 25.50 - 25.95 25.50 - 25.95 SPT(S) 25.50m, N=17 (2,3/4,4,4,5) 26.50 56 D 27 28 SPT(S) 28.50m, N=18 (2,2/4,4,4,6) 28.50 - 28.95 28.50 - 28.95 59 D 60 B 29 29.50 61 D 30.00 - 30.45 62 UT 30 Continued on Next Page Observations / Remarks Misc. Shift Information Resp. Zone | Depth (m) | Diam. | 0.00 - 10.00 | 10.00 | 50mm Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details 1. 01/12/17 Sand blew from 40.30m up to 32.00m. Casing Used
Monitoring Point/s Installed
Hammer Ref & Energy Ratio (%)
AR1134 (56/%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



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Cable Percussion

Log Type

Exploratory Hole Number **BH17-15** FINAL

CENTRAL ALLIANCE GEO

Sheet 4 of 5

		*							Sheet 4 c	of 5					GEO	
Pro	ject No:	3043		Locat	ion Details:					Met	thodology	& Plant			Scale:	1:50
Nar	no:	A1 Birtley to Coalhouse	Easting:	425272.04	Northir	ig: 5	58473.26	Depth	(m)	Met	hod		Plant Used		Checked By:	RPH
INdi	ne.	AT Bittley to Coalilouse	Elevation:	17.22mAOD	Final De	enth 4	3.95m								Approved By:	ВН
Loc	ation:	Tyne and Wear					SGB									9/11/2017
			Logged By:	GS	Grid Sy:											
Clie	nt:	SUV	Orientation:	N/A	Inclinat	ion: <b>9</b>	0°								Finish Date: 04	4/12/2017
		Strata Description		Legend	Depth (m) (Stratum	Reduced Level	Chiselling	Water Added	Hole Ø (mm)	Casing Ø (mm)	Water	Installation /			Samples & Testing	
		Strata Description		Legend	Thickness)	(mAOD)	(mins)	(Litres)	Depth (m)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	
	Firm to	stiff laminated grey CLAY.														•
	1															
-	1												30.50	63 D		
-	-			E-I-									30.30	03.0		
				<u> </u>												
31 -	1															31 -
٠.	-			<u> </u>												31
	-			<u> </u>												
-	1			<u> </u>									31.50 - 31.95	64 D	SPT(S) 31.50m, N=18 (2,4/4,5	5,4,5)
	1												31.50 - 31.95	65 B		
-				L												
32 -	1			<u> </u>												32 -
	1															
	1			- <sup>-</sup> -												
-	1			[ <del>-</del>									32.50	66 D		
	1			<u> </u>												
	1															
33 -													33.00 - 33.45	67 UT	21 blows, 100% Recovery	33 -
	1			<u> </u>												
	1			<u> </u>												
-	1												33.50	68 D		
	-			<u> </u>												24
34 -				F_=_												34 -
	1			<del>  -</del>												
-	1			<u> </u>									24 50 24 05	69 D	SPT(S) 34.50m, N=16 (2,4/4,3	2.4.5)
	-			<u> </u>									34.50 - 34.95 34.50 - 34.95	70 B	3F1(3) 34.30III, N-10 (2,4/4,5	3,4,3)
35 -	1															35 -
٠.																33
	1			<u> </u>												
-	1												35.50	71 D		
	1															
-	-															
36 -													36.00 - 36.45	72 UT	15 blows, 100% Recovery	36
	1			<u> </u>												
-	1			<u> </u>												
-				<u> </u>									36.50	73 D		
	1															
37 -	}															37 -
	1			<u> </u>												
	1															
-	1												37.50 - 37.95 37.50 - 37.95	74 D 75 B	SPT(S) 37.50m, N=17 (4,4/4,4	4,4,5)
	1			<u> </u>												
	1			<u> </u>												
38 -	1															38 -
	1															
	1			<u> </u>									38.50	76 D		
	1			F <sub>2</sub> =									30.30			
	1			F												
- 39	1			F- <u>-</u> -									39.00 - 39.45	77 UT	20 blows, 100% Recovery	39 -
	1			<u> </u>											<u> </u>	33
	1															
-	1			- <sup>-</sup> -									39.50	78 D		
	1			<u> </u>												
	1			<u> </u>												
40 -	1	Continued on Next Page							150 40.00				•			40 -
				.					50							
	ervations /			isc.		Shift Info		( ) 1 -	Makan ( )	Form ( )	Backfill	M-4- 11	1. 1		Installations	
1. 0	1/12/17 Sand	d blew from 40.30m up to 32.00m.	9 3	Date	Time	Depth	(m) Casir	ng (m) N	Water (m)	rom (m)	To (m)	Material	Instrum Star	ent Deta ndpipe	Resp. Zone Dept 0.00 - 10.00 10	th (m) Diam. 0.00 50mm
			ntere	Momon reg noncy instance Hamme Ref & Energy facto (%) AR1134 [56(%)												
			Sncou	nergy (56(%									<u> </u>			
			ater i ising	1134 1134									0. 7. 4. 1		roundwater Strikes	
			undw	ner Re									Strike (m) Ris	es fo (m)	Time (min) Rema	arKS
			es :	Hami												
					1											



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Cable **Percussion** 

Sheet 5 of 5

Log Type

Exploratory Hole Number **BH17-15** 

**FINAL** 



Methodology & Plant Location Details: Scale: 1:50 Project No: 3043 Depth (m) Method Plant Used 558473.26 RPH Easting: 425272.04 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 17.22mAOD Final Depth: 43.95m Approved By: BH Tyne and Wear Location: Logged By: GS Grid System: OSGB Start Date: 29/11/2017 Client SLIV Orientation: N/A Inclination: Finish Date: 04/12/2017 Depth (m) Reduced Water Added (Litres) Casing Ø Samples & Testing Water Level (m) Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) (mm) Depth (m (mins) Depth (m) Firm to stiff laminated grey CLAY. 40.30 40.30 -23.08 Dense yellowish grey fine to coarse SAND. 40.50 40.50 - 40.95 40.50 - 40.95 SPT(S) 40.50m, N=34 (5,5/9,10,8,7) (0.70)41.00 -23.78 41 Stiff grey weakly laminated CLAY. 41.50 82 D (1.70) 42.00 - 42.45 42 42.00 - 42.45 42.70 Stiff to very stiff grey slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone. 85 D 43.00 43 (1.00) 60 150 43.50 SPT(S) 43.50m, 100 (25 for 75mm/100 for 155mm) 43.50 - 43.95 43.50 - 43.95 43.70 -26.48 Weak grey MUDSTONE. (0.25) 43.95 -26.73 EOH at 43.95m - Scheduled Depth 44 47 48 49 50 Shift Information Installations Resp. Zone | Depth (m) | Diam. | 0.00 - 10.00 | 10.00 | 50mm Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details 1. 01/12/17 Sand blew from 40.30m up to 32.00m Groundwater Strikes Strike (m) Rises To (m) Time (min)



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## Header Sheet

Log Type

Exploratory Hole Number

## BH17-16

FINAL



Project No:	3043	Location Details					Methodology & P	Scale:	1:50	
		Easting:	425273.88	Northing:	558524.60	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	425275100	1401 1111116.	33032 1100	0.00 - 1.20	Inspection Pit Hand Tools		erreeneu.	
		Elevation:	22.63mAOD	Final Depth:	8.45m	1.20 - 3.20 3.20 - 8.45	Dynamic Sampling (Windowless) Rotary Coring	Massenza MIP3 Massenza MIP3	Approved:	BH
ocation:	Tyne and Wear	Logger:	GS	Grid System:	OSGB	3.20 0.43	notary coming		Start Date:	18/01/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	22/01/2018

Hole Diameter								
Depth (m)	Diam (mm)							
8.45	87							

Casing Diameter									
Depth (m)	Diam (mm)								
4.00	87								

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Dl					
(m)	(m)	(m)	(min)	(m)	Remarks					

	Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill								
Depth (m)	Legend Code							
0.00 - 8.45	Bentonite							

In-Situ Tests	
PID	4
Hand Vane*	0
Standard Penetration Tests	7

* One count indicates an average
reported result of 3 tests carried out at
one depth where available.

			_				
Sample Summary							
Environmental Samples							
Soil	Soil 4 Water						
Geote	chnic	cal Samples					
Bulk	8	Large Bulk	0				
Disturbed	Disturbed 13 Disturbed (NR)						
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Cor	re San	nple	0				

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth	Casing	Water	Seating	Main	Penetration	N	Reported Result	Hammer Ref
iest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	11	Reported Result	nammer ker
Split Spoon	1.20	-	-	3	17	450	17	N=17 (1,2/3,5,4,5)	DG01
Split Spoon	1.80	1.80	-	15	28	450	28	N=28 (4,11/10,9,5,4)	DG01
Split Spoon	2.80	2.00	-	10	31	450	31	N=31 (3,7/5,5,6,15)	DG01
Split Spoon	4.00	2.00	-	15	50	340		50 (8,7/50 for 190mm)	DG01
Cone	5.00	4.00	-	25	0	115		0 (25 for 115mm/0 for 0mm)	DG01
Split Spoon	6.50	4.00	-	8	19	450	19	N=19 (4,4/5,5,4,5)	DG01
Split Spoon	8.00	4.00	-	8	18	450	18	N=18 (4,4/4,5,5,4)	DG01

SPT Hammer Ref.	Energy Ratio (%)
DG01	61

## **Applicable to Cable Percussion Only**

Chise	w	
Depth (m)	Duration (mins)	Depth

	•								
Water Added									
Depth (m)	Litres								

#### **Applicable to Rotary Only**

Drilling Flush											
Depth (m)	Flush Type	Flush Colour	Return %								

## Applicable to Dynamic Sampling Only

ı	Dynamic Sampling Runs										
	Depth (m)	Diam (mm)	Recovery %	Remarks							
	1.20 - 1.80	128	100								
	1.80 - 2.80	113	100								



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Log Type

# Combined BH17-16 Borehole

FINAL

Exploratory Hole Number



**GEO** 

Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) 0.00 - 1.20 1.20 - 3.20 3.20 - 8.45 Method Plant Used Easting 425273.88 Northing: 558524.60 Checked By: RPH A1 Birtley to Coalhouse Name: Sampling (Win Rotary Coring Elevation: 22.63mAOD Final Depth: 8.45m Approved By BH Massenza MIP3 Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 18/01/2018 Client SLIV Orientation N/A Inclination: 90 Finish Date: 22/01/2018 Depth (m Reduced Hole Ø Casing Ø Samples & Testing Coring Installation , Backfill Strata Description Legend Level (mAOD) (Stratum Thicknes Depth (m) Ref Test Results MADE GROUND: Dark brown slightly silty CLAY with rootlets. 0.10 2 ES (0.40)PID 0.20m = 0.4ppm 0.40 22 23 0.40 - 1.20 7 R MADE GROUND: Dark brown and grey subangular to (0.20) 22.03 subrounded fine to medium limestone, sandstone, clinker and 0.60 PID 0.70m = 0.4ppm siltstone GRAVEL (0.60) MADE GROUND: Dark to light brown greyish gravelly CLAY with PID 1.00m = 0.3ppm 1 00 low cobble content. Gravel is subangular to subrounded fine to SPT(S) 1.20m, N=17 (1,2/3,5,4,5) 21.43 1.20 1.20 - 1.65 1.20 - 1.80 medium sandstone limestone and siltstone. Cobbles are subangular to subrounded sandstone. MADE GROUND: Brown and grey subangular to subrounded fine (0.80)to coarse limestone sandstone and siltstone GRAVEL. SPT(S) 1.80m, N=28 (4,11/10,9,5,4) PID 2.00m = 0.4ppm 20.63 MADE GROUND: Dark to light brownish grey slightly sandy very gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse limestone, sandstone and siltstone. 2.50 12 D (1.20)SPT(S) 2.80m, N=31 (3,7/5,5,6,15) 19.43 3.20 MADE GROUND: Dark grey gravelly sandy CLAY. Gravel is (0.15)19.28 14 B subangular to subrounded fine to coarse sandstone, siltstone 3.35 3.40 - 4.00 (0.30)and coal. Sand is fine to coarse. 0 60 0 18.98 3.65 No Recovery. (0.35) MADE GROUND: Sandstone BOULDER. 87 4.00 From 3.85m to 4.00m recovered as clayey subangular to subrounded medium to coarse gravel and cobbles. 4.00 18.63 4.00 - 4.33 4.00 - 5.00 15 D 16 B SPT(S) 4.00m, 50 (8,7/50 for 190mm) Brown subangular to subrounded fine to coarse sandstone, limestone and siltstone GRAVEL with low cobble content. (1.00)15 0 0 Cobbles are subangular to subrounded sandstone and 5.00 limestone. 5.00 17.63 5.00 SPT(C) 5.00m, 0 (25 for 115mm/0 for 0mm) Soft grey gravelly sandy CLAY. Gravel is subangular to 5.00 - 6.50 subrounded fine to coarse sandstone siltstone and coal. Sand is (0.50)medium to coarse. 5.50 17.13 Firm to stiff thinly laminated grey orangish CLAY. 5.60 18 D 89 0 0 (1.00) SPT(S) 6.50m, N=19 (4,4/5,5,4,5) 16.13 Soft to firm grey gravelly sandy CLAY. Gravel is subangular to 6.50 - 6.95 6.50 - 7.50 20 D 22 B subrounded fine to coarse sandstone siltstone and coal. Sand is fine to coarse. (1.95)7.50 7.50 - 8.00 = 8.00 - 8.45 25 D SPT(S) 8.00m, N=18 (4,4/4,5,5,4) 87 8.45 8.45 14.18 EOH at 8.45m - Scheduled depth 10 Misc Shift Information Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam Drilling continued by Rotary Coring through base of embankment fill. Water Strikes Strike (m) Rises To (m) Time (min)



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Sheet

Exploratory Hole Number

## BH17-16a

FINAL



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50		
		Easting:	sting: 425273.31 Northing:	Northing:	Northing: <b>558509.04</b>	From (m)	Met	:hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Edsting.	123273132	rtortimig.	330303101	0.00 - 1.20		tion Pit	Hand Tools	Toniconcu.	RPH BH
		Elevation:	17.02mAOD	Final Depth:	65.00m	1.20 - 41.90	Cable Pe		Dando 2000	Approved:	BH
	T 114/					41.90 - 51.50	Rotary		Fraste PLG	''	
Location:	Tyne and Wear	Logger:	GS+NE	Grid System:	OSGB	51.50 - 65.00	Rotary Op	en Holing	Fraste PLG	Start Date:	RPH
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	21/12/2017

Hole Di	Hole Diameter				
Depth (m)	Diam (mm)				
3.00	250				
15.00	200				
41.90	150				
51.50	140				
65.00	120				
4					

If Methodology includes

Dynamic Sampling refer to Runs table for info.

<b>Casing Diameter</b>					
Depth (m)	Diam (mm)				
3.00	250				
15.00	200				
41.70	150				
49.50	140				
I					
l					

Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)	Remarks					
39.80	-	37.50	20	24.20						

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 65.00	Bentonite					

In-Situ Tests	
PID	3
Hand Vane*	0
Standard Penetration Tests	16

one depth where available.

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at

Sam	Sample Summary					
Enviro	nmer	ntal Samples				
Soil	3	Water	0			
Geote	chnic	cal Samples				
Bulk	17	Large Bulk	0			
Disturbed	50	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Cor	re San	nple	0			

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary									
Test Type	Depth	Casing	Water	Seating		Penetration	N	Reported Result	Hammer Ref	
lest type	(m)	(m)	(m)	Blows	Blows	Total (mm)	'N	Reported Result	Hammer Ker	
Split Spoon	2.50	2.50	Dry	5	15	450	15	N=15 (2,3/3,4,4,4)	AR1134	
Split Spoon	4.50	3.00	Dry	5	16	450	16	N=16 (2,3/4,4,4,4)	AR1134	
Split Spoon	7.50	3.00	Dry	3	14	450	14	N=14 (1,2/3,3,4,4)	AR1134	
Split Spoon	10.50	3.00	Dry	3	13	450	13	N=13 (1,2/3,3,4,3)	AR1134	
Split Spoon	13.50	3.00	Dry	4	15	450	15	N=15 (2,2/3,4,4,4)	AR1134	
Split Spoon	16.50	15.00	Dry	3	15	450	15	N=15 (1,2/3,4,5,3)	AR1134	
Split Spoon		15.00	Dry	5	16	450	16	N=16 (2,3/4,4,4,4)	AR1134	
Split Spoon	22.50	15.00	Dry	5	16	450	16	N=16 (2,3/3,4,4,5)	AR1134	
Split Spoon	25.50	15.00	Dry	7	17	450	17	N=17 (3,4/4,5,4,4)	AR1134	
Split Spoon	28.50	15.00	Dry	6	18	450	18	N=18 (3,3/4,4,5,5)	AR1134	
Split Spoon	31.50	15.00	Dry	5	18	450	18	N=18 (2,3/4,4,5,5)	AR1134	
Split Spoon	34.50	15.00	Dry	5	17	450	17	N=17 (2,3/4,4,5,4)	AR1134	
Split Spoon	37.50	37.50	Dry	5	19	450	19	N=19 (2,3/4,4,4,7)	AR1134	
Split Spoon	40.50	40.50	23.70	6	26	450	26	N=26 (3,3/5,6,7,8)	AR1134	
Split Spoon	41.70	41.70	27.00	20	100	285		100 (10,10/100 for 135mm)	AR1134	
Split Spoon	41.90	41.70	26.50	25	100	135		100 (25 for 30mm/100 for 105mm)	AR1134	

SPT Hammer Ref.	Energy Ratio (%)	
AR1134	56	

## **Applicable to Cable Percussion Only**

Chiselling							
Depth (m)	Duration (mins)						
41.50 - 41.70	60						
41.70 - 41.90	60						
	ı						

Depth (m) Litres					

## **Applicable to Rotary Only**

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			
42.00 - 43.50	Air/Mist	Grey	90			
43.50 - 45.00	Air/Mist	Grey	90			
45.00 - 45.50	Air/Mist	Grey	50			
45.50 - 46.50	Air/Mist	Grey	50			
46.50 - 48.00	Air/Mist	Grey	95			
48.00 - 49.50	Air/Mist	Grey	95			
49.50 - 50.00	Air/Mist	Grey	95			
50.00 - 51.50	Air/Mist	Grey	95			
51.50 - 53.70	Air/Mist	Grey	95			
53.70 - 54.10	Air/Mist	Grey	95			
54.10 - 65.00	Air/Mist	Black/Grey	95			
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## **Applicable to Dynamic Sampling Only**

		Sampling		
Depth (m)	Diam (mm)	Recovery %	Remarks	



3043

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Location Details

Combined **Borehole** 

Log Type

Exploratory Hole Number

BH17-16a FINAL

CENTRAL ALLIANCE GEO

1:50

Scale:

Sheet 1 of 7 Methodology & Plant

110	ect No. 3043			ion Detai			Ero	m (m)		:hod	1	Plant Used	300					1.50	
Nar	ne: A1 Birtley to Coalhouse	Easting:	425273.31	Nort	hing:	558509.04	0.00	- 1.20	Inspec	tion Pit		Hand Tools	Ch	ecked	I By:			RPH	
		Elevation:	17.02mAOD	Final	Depth:	65.00m	1.20	- 41.90 - 51.50	Cable Pe Rotary	rcussion Coring		Dando 2000 Fraste PLG	Ар	prove	ed By	:		ВН	
Loc	ation: Tyne and Wear	Logged By:	GS+NE	Grid	System:	OSGB		- 65.00		en Holing		Fraste PLG	Sta	art Dat	ite:		05/1	12/201	17
CI:																			
Clie	nt: SUV	Orientation:	N/A	Inclii	nation:	90°							Fin	nish Da	ate:		21/1	12/201	1/
	Charles December		Legend	Depth (m) (Stratum	Reduced Level	Hole Ø	Casing Ø (mm)	Water	Installation /		Samples	& Testing	poq			Cori	ng		
	Strata Description		Legend	Thickness)	(mAOD)	(mm) Depth (m)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	Met	Core Run	TCR	SCR	RQD	If	
	MADE GROUND: Dark grey gravelly sandy CLAY. Sa	nd is fine to	, 😾										Ħ	Null	П	_	$\dashv$	+	=
-	coarse. Gravel is subangular to subrounded fine to			(0.30)						0.20		PID 0.20m = 0.6ppm							-
-	\sandstone.		/833333	0.30	16.72					0.30 0.40 - 0.70	2 D 4 B								1
-	MADE GROUND: Yellowish brown clayey subangul	ar to	<b>-</b> /‱	(0.50)						0.40 0.70	45								-
	subrounded fine to coarse sandstone GRAVEL with		· XXXX	(0.50)									-						1
-	content. Cobbles are subangular to subrounded sa		· ********	0.80	16.22					0.80	3 ES	PID 0.80m = 0.6ppm							-
1 -	MADE GROUND: Greyish brown slightly gravelly sl		,																1 -
-	CLAY. Sand is fine to coarse. Gravel is subangular to																		-
-	fine to coarse sandstone.			(1.00)						1.30 - 1.50	5 B								1
-				,,															-
-			- XXXX							1.50 1.50 - 1.95	6 ES 7 UT	20 blows, 75% Recovery PID 1.50m = 0.4ppm							_
-																			-
-	Firm to stiff laminated dark grey CLAY.			1.80	15.22														1
2 -	From 1.80m to 5.00m becomes interlaminated with brown si	lt.	<u> </u>							2.00	8 D								2 -
															Н				1
-			<u> </u>	1															-
			<u> </u>							2.50 - 2.95	10 B	SPT(S) 2.50m, N=15							
-										2.50 - 2.95	9 D	(2,3/3,4,4,4)			Н				-
-				1											Н				1
-			<u> </u>			250	250								Н				
3 -						250 3.00	250 3.00			3.00	11 D								3 -
-			<u> </u>												Н				-
]															Н				1
-			H							3.50 - 3.95	12 UT	30 blows, 100% Recovery			Н				-
-															Н				1
-																			-
4 -			<u> </u>							4.00	13 D								4 -
-			<u> </u>																-
-																			-
-			L							4.50 - 4.95	14 D	SPT(S) 4.50m, N=16							Ī
-			<u> </u>							4.50 - 4.95 4.50 - 4.95		(2,3/4,4,4,4)							7
:			<b>⊢</b> −																1
-																			-
5 -	From 5.00m becomes interlaminated with grey silt.		⊢ –							5.00	16 D								5 —
-			H																4
-			<u> </u>																1
-																			-
			<u> </u>																1
-			<u> </u>																-
6 -										6.00 - 6.45	17 LIT	21 blows, 100% Recovery							6 -
6 -										0.00 - 0.43	17 01	21 blows, 100% Necovery							٠ -
			<u> </u>																1
-			<b>⊢</b> −																-
-										6.50	18 D								1
-			<u> </u>																-
-			H																1
7 -			<u> </u>												Н				7 -
-			<u> </u>												Н				1
-			H												Н				-
-										7.50 - 7.95		SPT(S) 7.50m, N=14			Н				Ę
-										7.50 - 7.95		(1,2/3,3,4,4)			Н				j
-			<u> </u>	1											Н				1
8 -			<u> </u>							8.00	21 D				Н				8 -
										0.00	-10				Н			-   '	-
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			<u> </u>												Н				1
9 -										9.00		27 blows, 100% Recovery			Н				9 —
-			<u> </u>							9.00 - 9.45	22 UT				Н				1
-			<u> </u>												П				+
-			H							9.50	23 D				П				4
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10 -	Continued on Next Page													٦	ıΤ	Т		1	10 -
Ohe	ervations / Remarks		Misc.		Shift In	formation	)		Ή	Backfill	·····		LL In	nstallat	tions				
205	erraciono / nemanto	- '	Date	Tim			asing (m)	Water (m	n) From (m)		Material	Instrument Det					enth i	(m) Dia	iam
		9	05/12	17:0	0 9	9.50	3.00	Dry	0.00		Bentonite	s.rument Det	۵.,,۵	+"	p. 2		-pui	, 510	2
		ntere	06/12 06/12	08:0 17:0		9.50 3.50	3.00 15.00	Dry Dry											
		noon	07/12	08:0	0 3	3.50	15.00	Dry						$\perp$				$\perp$	
		ter E	08/12	17:0 08:0	0 4	0.00	40.00 40.00	25.30 25.30						ater S	trike				
		ıdwa	08/12 19/12	17:0 07:3	0 4	1.90 1.90	41.70 41.70	26.50				Strike (m) Rises To (m)			$\equiv$	R	emark	.s	
		Srour	19/12	18:0	0 4	6.50	42.00	21.40				39.80 24.20	'	20	l				
		0	20/12 20/12	07:3 18:0		6.50 9.50	42.00 46.50								l				
		1	1										-						



3043

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Location Details

Combined Borehole

Sheet 2 of 7

Log Type

Exploratory Hole Number

BH17-16a

FINAL

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used 558509.04 RPH Easting: 425273.31 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 17.02mAOD Final Depth: 65.00m Approved By: BH Location: Tyne and Wear Logged By: GS+NE Grid System: OSGB Start Date: 05/12/2017 Client: SLJV Orientation: N/A Inclination: Finish Date: 21/12/2017 Depth (m) Reduced Hole Ø Samples & Testing Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref 10.50 - 10.95 10.50 - 10.95 24 D 25 B SPT(S) 10.50m, N=13 (1,2/3,3,4,3) 11.00 26 D 11 27 UT 12 12.50 28 D 13 SPT(S) 13.50m, N=15 (2,2/3,4,4,4) 13.50 - 13.95 13.50 - 13.95 31 D 14.00 14 200 15.00 200 15.00 15.00 - 15.45 32 UT 25 blows, 100% Recovery 15 15.50 33 D 16.50 - 16.95 16.50 - 16.95 SPT(S) 16.50m, N=15 (1,2/3,4,5,3) 17 37 UT 18.00 - 18.45 24 blows, 100% Recovery 18 38 D 18.50 19 19.50 - 19.95 19.50 - 19.95 39 D 40 B SPT(S) 19.50m, N=16 (2,3/4,4,4,4) 20:00 41 D 20 Continued on Next Page Misc Observations / Remarks Shift Information | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | 49.50 | 46.50 | 16.10 | 0.00 | 65.00 | Bentonite | Instrument Details Resp. Zone Depth (m) Diam dwater Encoun Casing Used itoring Point In Water Strikes Strike (m) Rises To (m) Time (min) 39.80 24.20 20 Remarks



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Location Details

Combined **Borehole** 

Sheet 3 of 7

Log Type

Exploratory Hole Number

BH17-16a





1:50

Scale:

Methodology & Plant From (m) Method Plant Used 558509.04 Checked Bv: RPH Easting: 425273.31 Northing: Name: A1 Birtley to Coalhouse Elevation: 17.02mAOD Final Depth: 65.00m Approved By: BH Location: Tyne and Wear Logged By: GS+NE Grid System: OSGB Start Date: 05/12/2017 Client: SLJV Orientation: N/A Inclination: Finish Date: 21/12/2017 Samples & Testing Depth (m) Reduced Hole Ø Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref (36.70) 21.00 42 UT 25 blows, 100% Reco 21.50 43 D 22 SPT(S) 22.50m, N=16 (2,3/3,4,4,5) 22.50 - 22.95 22.50 - 22.95 23.00 46 D 23 24.00 - 24.45 47 UT 23 blows, 75% Recovery 24 24.50 48 D 25 25.50 - 25.95 25.50 - 25.95 49 D 50 B SPT(S) 25.50m, N=17 (3,4/4,5,4,4) 26.00 51 D 53 D 28 SPT(S) 28.50m, N=18 (3,3/4,4,5,5) 28.50 - 28.95 28.50 - 28.95 54 D 55 B 56 D 29.00 29 30.00 UT 30.00 - 30.45 57 UT 30 Continued on Next Page Misc Observations / Remarks Shift Information 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 65.00
 Bentonite
 Instrument Details Resp. Zone Depth (m) Diam Water Strikes Strike (m) Rises To (m) Time (min) 39.80 24.20 20 Remarks



3043

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Northing:

Location Details

425273.31

Easting:

Combined **Borehole** 

From (m)

558509.04

Log Type

Exploratory Hole Number

BH17-16a **FINAL** 

Plant Used

CENTRAL ALLIANCE GEO

1:50

RPH

Scale:

Checked By:

Sheet 4 of 7

Method

Methodology & Plant

A1 Birtley to Coalhouse Name: Elevation: 17.02mAOD Final Depth: 65.00m Approved By: BH Location: Tyne and Wear Logged By: GS+NE Grid System: OSGB Start Date: 05/12/2017 Client SLIV Orientation: N/A Inclination: Finish Date: 21/12/2017 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref 30.50 58 D SPT(S) 31.50m, N=18 (2,3/4,4,5,5) 61 D 32 33.00 - 33.45 62 UT 30 blows, 100% Recovery 33 33.50 63 D 34 34.50 - 34.95 34.50 - 34.95 64 D 65 B SPT(S) 34.50m, N=17 (2,3/4,4,5,4) 35.00 66 D 35 67 UT 36.50 68 D 71 D 38.00 38 From 38.00m becomes slightly gravelly. Gravel is subangular to subrounded fine to medium sandstone 72 B 38.20 -21.48 38.50 73 D 38.50 Firm brownish grey slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to medium sandstone. (0.80)39.00 - 39.45 74 UT 39 -22.28 39.30 Firm to stiff laminated dark grey CLAY. 39.50 75 D (0.70)40.00 -22.98 40:00 76 D 40 Continued on Next Page Misc Observations / Remarks Shift Information Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam Water Strikes Strike (m) Rises To (m) Time (min) 39.80 24.20 20 Remarks



Combined **Borehole** 

Log Type

Exploratory Hole Number

BH17-16a FINAL



Sheet 5 of 7

Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) Method Plant Used Easting: 425273.31 558509.04 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Elevation: Final Depth: 65.00m Approved By: 17.02mAOD ВН

Location:	Tyne and Wear	Logged By:	GS+N	IE		System:	OSGB							1	tart Da			05/	12/20	017
Client:	SLIV	Orientation:	N/A			nation:	90°								inish D				12/20	
					Depth (m)	Reduced	Hole Ø	Casing Ø		Installation /		Sample	s & Testing	R			Cor			
	Strata Description			Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (m)	Water Level (m)		Depth (m)	Ref	Test Results	Metho	Core Run	TCR	SCR		If	
- Grey v	very sandy SILT. Sand is fine.			×××										Ħ	Kun					
			ķ	$\times \times \times$							40.30	77 D								
				$\times \times \times$							40.50 - 40.95	78 D	SPT(S) 40.50m, N=26							_
			Į	$\times \times \times \times$	(1.30)						40.50 - 40.95	79 B	(3,3/5,6,7,8)							
]				$\times \times \times$																
41 -				$\times \times \times$							41.00	80 D								41 -
-			k	$\times \times \times$																
- Dark b	prown subangular to subrounded fine to coar	rse sandstor	ne		41.30	-24.28					41.30	81 D								
and co	oal GRAVEL.		ľ		(0.70)			<u>150</u>												-
					(0.70)		150	41.70			41.70 - 41.99	82 D	SPT(S) 41.70m, 100 (10,10/100 for 135mm)							
42					42.00	-24.98	<u>150</u> 41.90				41.90 41.90 - 42.00	83 D 84 D	SPT(S) 41.90m, 100 (25 for 30mm/100 for 105mm)	H						42 -
- Strong	g light grey fine grained SANDSTONE. Discont																			-
rough.	closely spaced subhorizontal (10-20 degrees	s) unuulating	8	: : : : :															NR	
Fro	om 42.00m to 42.55m Assumed Zone of Core Loss.																	L		-
	om 42.56m to 42.85m 1 no. discontinuity subvertical (80-90 Indulating rough.	O degrees)			(1.50)										42.00	63	49	49		
]				:::::	,,										43.50					
43 -																				43 -
				: : : : :																
1					43.50	-26.48														-
	and dark grey MUDSTONE, SILTSTONE and fir STONE recovered as slightly sandy very grave		nd																	
I -I	to coarse. Gravel is subangular to subrounde	•	'iu																NI	
44 coarse	_																			44 -
]					(1.50)										43.50	87	0	0		
]					. ,										45.00					
																				-
	44 00m to 45 00m Assumed 7-1-2 of Complete																			
45	om 44.80m to 45.00m Assumed Zone of Core Loss.				45.00	-27.98														45 -
-  Light a	and dark SILTSTONE and fine grained SANDST			$\times \times $											45.00				NR	
	ered as slightly sandy slightly clayey subangu unded fine to coarse GRAVEL and COBBLES. S		to	× × × × ×											45.50	60	0	0	NI	
coarse		54.14 IS 11.1C		$\times \times $										-	$\dashv$					-
	om 45.00m to 45.20m Assumed Zone of Core Loss. om 45.50m to 46.20m Assumed Zone of Core Loss.			× × × × × × × × × ×																
-	om 43.30m to 40.20m Assumed 20ne by Core 2033.			××××× ×××××										္က	45.50				NR	
46 -				××××× ×××××											46.50	20	0	0		46 -
				× × × × × × × × × × × × × × × × × × ×														f	NI	
				××××× ×××××															IVI	_
Fro	om 46.50m to 49.30m Assumed Zone of Core Loss.			× × × × × ×																
				×××××																
47 -				×××××																47 -
-				× × × × × × × × × ×											46.50 48.00	0	0	0	NR	
-				$\times \times $	(4.80)										48.00					
]				$\times \times $																-
				××××× ×××××																
48 -				$\times \times $							48.00							_	NI	48 -
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1				× × × × × × × × × ×											48.00 49.50	7	0	0	NR	
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- Fre	om 49.30m to 49.50m, non-intact.			$\times \times $																
_	om 49.50m to 49.80m, non-intact.			$\begin{array}{c} \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times$				140 49.50			49.50			-			$\vdash$	$\dashv$	NI	-
""				$\begin{array}{c} \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times \times$				15.50			49.70				49.50	100	52	52	NI	
Strong	g light grey fine grained SANDSTONE. Discont	tinuities are			49.80	-32.78					49.75 49.80				50.00	200	32		$\neg$	
50	Continued on Next Page										50.00			Ħ				$\neg$	$\neg$	50 -
Observations		N	Misc.			Shift Ir	nformatio	n .	l	<del>'</del>	Backfill		· T	4	nstalla	tions	 ;			_
				Date	Tim			Casing (m)	Water (		To (m)	Materia						Depth	(m) [	Diam
		pau	talled							0.00		Bentonite								
		counte	Used Point Insi																	
		ter En	ing Us											V	Vater S	trike	s			
		ndwat	Casing unitoring										Strike (m) Rises To (m)				F	Remar	ks	_
		Groun	Vo Mo										39.80 24.20		20					
			•																	



3043

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Location Details

**Borehole** Web: www.central-alliance.co.uk

Combined

Exploratory Hole Number

Sheet 6 of 7

Log Type

BH17-16a FINAL CENTRAL ALLIANCE GEO Methodology & Plant Scale: 1:50

Nan	ne: A1 Birtley to Coalhouse	Easting:	4252	73.31	Nort	thing:	558509.0	4 F	rom (m)	Met	hod		Plant Used	_ (	Checked	d By:			RPH	
- Van	At bittley to coulinouse	Elevation:	17.0	2mAOD	Final	l Depth:	65.00m							A	Approve	ed By	<i>/</i> :		ВН	
Loca	ation: Tyne and Wear	Logged By:	GS+N	NE	Grid	System:	OSGB							S	Start Da	ate:		05/	12/2	017
Clie	nt: SUV	Orientation:	N/A		Inclin	nation:	90°							F	inish D	ate:		21/	12/2	017
	Strata Description	•		l d	Depth (m) (Stratum		Hole Ø (mm)	Casing Ø	Water	Installation /		Samples	& Testing	pou			Cor	ing		
	Strata Description			Legend	Thickness)	Level (mAOD)	Depth (m)	(mm) Depth (m	Level (m)	Backfill	Depth (m)	Ref	Test Results	Met	Core Run	TCR	SCR	RQD	If	
51 —	set 1) closely spaced subhorizontal (10-20 degrees rough and set 2) widely spaced subvertical (60-70 undulating rough.	degrees)			(1.70)	-34.48	140 51.50				50.10 50.30 50.40 50.50 50.77 51.10				50.00 51.50	100	82	82	2	51 —
_	Interbedded SANDSTONE, MUDSTONE and SILSTO	NE (Driller's	s		31.30	34.40	51.50													-
52 —	Description).				(2.20)															52
53 —																				53 -
	COAL - Broken Ground (Driller's Description).				53.70	-36.68														
- 54 —					(0.40)															54 —
_	Interbedded SANDSTONE, MUDSTONE and SILSTO	NE (Driller's	s		54.10	-37.08														-
-	Description).																			-
_																				-
_																				
- 55 —																				55 —
-																				-
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- 56 -																				56 -
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- 57 —																				57 —
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58 <del>-</del>															1					58 -
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-					(10.90)										1					-
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60 -	Continued on Next Page											ļļ		+			Н	$\dashv$	$\dashv$	60 -
Ohe	ervations / Remarks	L	Misc.			Shift In	formation	L			Backfill	: :			I Installa	ations	$\square$			
003	errottorio / ricinario		_	Date	Tim		oth (m) C		) Water (n	n) From (m)	To (m)	Material	Instrument D					Depth	(m)	Diam
		aria	Installed				T			0.00	65.00	Bentonite					1	_	Ī	
		roon	Jsed oint In:												$\bot$					
		ater E	Casing Used Vo Monitoring Point										0. 1. 4. 1		Water S					
		Mpuni	Ω. Aonito										Strike (m) Rises To ( 39.80 24.20		me (min) 20		F	Remar	KS	
		Ğ	No A																	



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Location Details

Combined Borehole

Sheet 7 of 7

Log Type

Exploratory Hole Number

BH17-16a

**FINAL** 

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used Easting: 558509.04 Checked Bv: RPH 425273.31 Northing: Name: A1 Birtley to Coalhouse Elevation: 17.02mAOD Final Depth: 65.00m Approved By: ВН Location: Tyne and Wear Logged By: GS+NE Grid System: OSGB Start Date: 05/12/2017 Client: SLJV Orientation: N/A Inclination: Finish Date: 21/12/2017 Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness) Level (mAOD) Depth (m) Ref Interbedded SANDSTONE, MUDSTONE and SILSTONE (Driller's Description). <u>120</u> 65.00 65.00 -47.98 EOH at 65.00m - Scheduled depth 69 70 Misc Observations / Remarks Shift Information 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 65.00
 Bentonite
 Instrument Details Resp. Zone Depth (m) Diam Water Strikes Strike (m) Rises To (m) Time (min) 39.80 24.20 20



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Sheet

Log Type **Header** 

Exploratory Hole Number

**BH17-17** FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) 0.00 - 1.20 1.20 - 2.95 Method Inspection Pit Cable Percussio Plant Used Hand Tools Dando 2000 Easting: 425403.08 558435.14 Checked: RPH Northing: Name: A1 Birtley to Coalhouse BH Elevation: 16.39mAOD Final Depth: 2.95m Approved: Location: Tyne and Wear Logger: ALB Grid System: OSGB Start Date: 11/12/2017 Client: 11/12/2017 SLJV Orientation: N/A Inclination: 90° End Date:

Hole Di	ameter
Depth (m)	Diam (mm)
2.95	250

Casing D	iameter
Depth (m)	Diam (mm)
2.50	250
I	

	Groundwater Strikes											
Strike	Casing	Sealed	Time	Rose To	Remarks							
(m)	(m)	(m)	(min)	(m)	Remarks							

	Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam							
				(mm)							

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Ва	ackfill
Depth (m)	Legend Code
0.00 - 2.95	Bentonite
1	

In-Situ Tests	
PID	4
Hand Vane*	0
Standard Penetration Tests	1

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

-		-
	Standard Penetration Tests	1

C	-1- 6	Sample Summary										
· · · · · · · · · · · · · · · · · · ·												
Environmental Samples												
Soil	4	Water	0									
Geote	chnic	cal Samples										
Bulk	2	Large Bulk	0									
Disturbed 4 Disturbed (NR)												
Piston	0	Piston (NR)	0									
Undisturbed	0	Undisturbed (NR)	0									
Undistu	rbed 1	Thin Wall	1									
Undisturbe	ed Thi	n Wall (NR)	0									
Cor	e San	nple	0									

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
								est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	2.50	2.50	Dry	6	40	450	40	N=40 (2,4/10,10,10,10)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

	Chise	elling	Water Added			
	Depth (m)	Duration (mins)	Depth (m)	Litres		
_						

## Applicable to Rotary Only

	Drilling	Flush				
Depth (m)	Flush Type	Flush Colour Return %				
			1			

## **Applicable to Dynamic Sampling Only**

	Dynamic Sampling Runs						
Depth (m)	Diam (mm)	Recovery %	Remarks				



3043

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Location Details:

Cable Percussion

Log Type

Exploratory Hole Number **BH17-17** 

FINAL

Methodology & Plant



1:50

Scale:

Sheet 1 of 1

Project No:	3043			Locatio	on Details:						thodology	/ & Plant			Scale:	1:50
Name:	A1 Birtley to Coalhouse	Easting:	42540	3.08	Northir	ng: !	558435.14	Dept 0.00	h (m)		thod tion Pit		Plant Used Hand Tools		Checked By:	RPH
	·	Elevation:	16.39	mAOD	Final De	epth:	2.95m	1.20		Cable P	ercussion		Dando 2000		Approved By:	ВН
Location:	Tyne and Wear	Logged By:	ALB		Grid Sy	stem: (	OSGB								Start Date:	11/12/2017
Client:	SLIV	Orientation:	N/A		Inclinat		90°								Finish Date:	11/12/2017
Cilcita	35.	One itation.						1 ,,,,,,,,	11-1-0	Cooley M					l	11/12/2017
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Chisellin	Added	Hole Ø (mm)	Casing Ø (mm)	Water Level (m)	Installation / Backfill		_	Samples & Testing	
				///8///	Thickness)	(mAOD)	(,	(Litres)	Depth (m)	Depth (m)	()		Depth (m)	Ref	Test Resu	ts
	E GROUND: TOPSOIL.		<u> </u>		(0.10) 0.10	16.29										
	E GROUND: Soft dark brown silty CLAY with o		×	*****	(0.40)								0.30	1 ES	PID 0.30m = 0.2ppm	
	I. Gravel is subangular fine to medium of var	ious	Ě	******	0.50	15.89							0.30	2 D		
litholo	ogies. E GROUND: Firm grey slightly sandy slightly s	ilty CLAV S	and A										0.70	3 ES	ND 0 70 0 2	
	e to coarse.	siity CLAI. 30	ailu	******									0.70	4 D	PID 0.70m = 0.2ppm	
1 - 15 1	10000.50				(0.80)								0.70 - 1.50	5 B		1
1 -			Ě	******												1
NAA DE	COOLING. Firm to stiff be reigned a security by			******	1.30	15.09										
	E GROUND: Firm to stiff laminated orangish a with occasional sand partings. Sand is fine.	giey iewoik	keu k										1.50	6 ES	20 blows, 75% Recove	ry
]	with occasional sand partings. Sand is fine.		8	******									1.50 - 1.95	7 UT	PID 1.50m = 0.2ppm	
-			8													
2 -				******									2.00	8 D		2 -
1 1					(1.65)											
-			Š													
] _	2.50		8							250			2.50	9 ES	SPT(S) 2.50m, N=40	
"	rom 2.50m with rare subangular fine to coarse brick fragme	LIILO	8	******						2.50			2.50 - 2.95 2.50 - 2.95	10 D 11 B	(2,4/10,10,10,10) PID 2.50m = 0.2ppm	
			8	<b>*****</b>					250				1			
3 -	EOH at 2.95m - Abandoned due to obstr	ruction	— ř	XXXXXXX	2.95	13.44		1	2.95	1						3 -
1																
-																
-													1			
													1			
]																
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Observation	s / Remarks	М	1isc.			Shift Info	ormation				Backfill				Installations	
				Date	Time	Dept	h (m) Ca	sing (m)		From (m)		Material	Instru	ment Det	ails Resp. Zone	Depth (m) Diam.
		iterec	talle.	11/12	17:00	2.	95	2.50	Dry	0.00	2.95	Bentonite				
		pa unoou	nt Ins gy Ra (%)													
		ter Er	No Monitoring Point Installed Hammer Ref & Energy Ratio (%) AR1134 (56(%)											G	iroundwater Strike	5
		ndwa Casin	Ref &										Strike (m)			Remarks
		Groun	Mon. nmer													
		No	No Hari													



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Sheet

Log Type Exploratory Hole Number

Header

BH17-17a

FINAL



Proj	ect No:	3043	Location Details				Methodology & F	Scale:	1:50		
			Easting:	425404.24	Northing: 558436.69		From (m)	Method	Plant Used	Checked:	RPH
Nan	ie:	A1 Birtley to Coalhouse	Lusting.	125101121	rioraning.		0.00 - 1.20	Inspection Pit	Hand Tools	circoncu.	
			Elevation:	16.74mAOD	Final Depth:	36.65m	1.20 - 36.65	Cable Percussion	Dando 2000	Approved:	BH
Loca	ition:	Tyne and Wear	Logger:	ALB	Grid System:	OSGB				Start Date:	12-12-2017
Clie	nt:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	13-12-2017

Hole Di	ameter
Depth (m)	Diam (mm)
36.65	150

Casing D	iameter
Depth (m)	Diam (mm)
6.00 36.20	200 150

	Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To	Remarks						
(m)	(m)	(m)	(min)	(m)	Remarks						
35.20	36.20	6.00	20	22.20							
l											

	Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						
13-12-2017	Standpipe Piezometer	19.00	18.00 - 20.00	19mm						

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill							
Legend Code							
Concrete							
Bentonite							
Sand							
Bentonite							

In-Situ Tests	
PID	8
Hand Vane*	0
Standard Penetration Tests	14

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary									
	ntal Samples	nmer	Enviror						
0	Soil 8 Water (								
•	Geotechnical Samples								
< 0	Large Bulk	12	Bulk						
NR) 0	Disturbed (NR)	61	Disturbed						
t) <b>0</b>	Piston (NR)	0	Piston						
(NR) <b>0</b>	Undisturbed (NR)	0	Undisturbed						
12	Undisturbed Thin Wall								
0	Undisturbed Thin Wall (NR)								
0	Core Sample								

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary										
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref		
Split Spoon	2.50	2.50	Dry	5	13	450	13	N=13 (2,3/3,3,3,4)	AR1134		
Split Spoon	4.50	2.50	Dry	4	12	450	12	N=12 (2,2/3,3,3,3)	AR1134		
Split Spoon	7.50	6.00	Dry	4	14	450	14	N=14 (2,2/3,3,4,4)	AR1134		
Split Spoon	10.50	6.00	Dry	5	18	450	18	N=18 (2,3/4,5,5,4)	AR1134		
Split Spoon	13.50	6.00	Dry	6	18	450	18	N=18 (3,3/4,4,5,5)	AR1134		
Split Spoon	16.50	6.00	Dry	7	25	450	25	N=25 (3,4/5,6,6,8)	AR1134		
Split Spoon	19.50	6.00	Dry	7	28	450	28	N=28 (3,4/7,7,7,7)	AR1134		
Split Spoon	22.50	6.00	Dry	8	24	450	24	N=24 (4,4/6,6,6,6)	AR1134		
Split Spoon	25.50	6.00	Dry	7	29	450	29	N=29 (4,3/7,7,7,8)	AR1134		
Split Spoon	28.50	6.00	Dry	7	25	450	25	N=25 (3,4/5,6,6,8)	AR1134		
Split Spoon	31.50	6.00	Dry	7	23	450	23	N=23 (3,4/5,6,6,6)	AR1134		
Split Spoon	34.50	6.00	Dry	16	56	450	56	N=56 (6,10/16,12,13,15)	AR1134		
Split Spoon	36.00	36.00	22.80	25	100	325		100 (10,15/100 for 175mm)	AR1134		
Split Spoon	36.20	36.20	23	25	100	295		100 (25 for 115mm/100 for 180mm)	AR1134		

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

## **Applicable to Cable Percussion Only**

Chis		
Depth (m)	Duration (mins)	
		ı
		ı
		ı
		ı
		ı
		ı
		ı
		ı

Water Added							
Depth (m)	Litres						

## **Applicable to Rotary Only**

	Drilling Flush							
Depth (n	n)	Flush Type	Flush Colour	Return %				

## Applicable to Dynamic Sampling Only

	Dynamic Sampling Runs									
Ш	Depth (m)	Diam (mm)	Recovery %	Remarks						



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Cable Percussion

Log Type

Exploratory Hole Number **BH17-17a** 

FINAL



Web: www.central-alliance.co.uk Sheet 1 of 4 GEO Location Details: Methodology & Plant Scale: 1:50 Project No: 3043 Depth (m) 0.00 - 1.20 1.20 - 36.65 Method Inspection Pit Cable Percussion Plant Used Hand Tools Dando 2000 RPH Easting: 425404.24 Northing: 558436.69 Checked Bv: Name: A1 Birtley to Coalhouse Approved By: Elevation: 16.74mAOD Final Depth: 36.65m BH Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 12-12-2017 Client: SLJV Orientation: N/A Inclination: 90° Finish Date: 13-12-2017

				Depth (m)	Reduced	Chiselling	Water	Hole Ø	Casing Ø	Water	Installation /			Samples & Testing	
		Strata Description	Legend	(Stratum Thickness)	Level (mAOD)	(mins)	Added (Litres)	(mm) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	
	1	MADE GROUND: TOPSOIL.		(0.10)	16.64										—
		MADE GROUND: Soft to firm dark brown slightly gravelly slightly		0.10								0.30	1 ES	PID 0.30m = 0.6ppm	1
		silty CLAY. Gravel is subangular fine to coarse of various		(0.60)								0.30	2 D	Tib d.Som = d.oppm	+
	7	lithologies.													7
	+	MADE GROUND: Firm laminated orangish grey slightly gravelly		0.70	16.04							0.70 0.70	3 ES 5 B	PID 0.70m = 0.5ppm	1
	+	CLAY with some roots. Gravel is subangular to subrounded fine										0.70 - 1.50	4 D		-
1	+	to coarse sandstone.		(0.80)											1 -
	1														1
	1			1.50	15.24							1.50	6 ES	20 blows, 100% Recovery	
		MADE GROUND: Firm laminated grey reworked slightly sandy		1.50	15.21							1.50 - 1.95	7 UT	PID 1.50m = 0.5ppm	-
		CLAY with occasional gravel. Sand is fine to coarse. Gravel is													
2		subangular to subrounded fine to medium sandstone.										2.00	8 D		2 -
	1														
	+														-
	7											2.50	9 ES	SPT(S) 2.50m, N=13 (2,3/3,3,3,4)	
	1			(2.50)								2.50 - 2.95 2.50 - 2.95	10 D 11 B	PID 2.50m = 3.6ppm	1
	1			(2.50)											1
3	+											3.00	12 D		3 -
	7														
	1														1
	1	At 3.50m hydrocarbon odour.										3.50 3.50 - 3.95	13 ES 14 UT	25 blows, 100% Recovery PID 3.50m = 1.0ppm	-
	+											3.30 3.33	1401	110 3.36m = 1.5ppm	+
	7														1
4	+	Firm to stiff laminated grey CLAY.		4.00	12.74							4.00	15 D		4 –
	1	<u> </u>													1
	+														-
	7	At 4.50m hydrocarbon odour.										4.50 4.50 - 4.95	18 ES 16 D	SPT(S) 4.50m, N=12 (2,2/3,3,3,3) PID 4.50m = 0.7ppm	7
	1											4.50 - 4.95	17 B		1
	_											5.00	19 D		
5	+											3.00	150		5 -
	1														1
	1											5.50	20 D	PID 5.50m = 0.6ppm	1
	1											5.50	21 ES		1
	+														-
6	1								200 6.00			6.00 - 6.45	22 UT	30 blows, 100% Recovery	6 -
	1								6.00						1
	1														1
	+											6.50 6.50	23 D 24 ES	PID 6.50m = 0.4ppm	-
	7											0.30	24 E3		
	1														1
7	1											7.00	25 D		7 –
	1		<del> </del>												}
	+		$\square \square$												-
	1		H									7.50 - 7.95 7.50 - 7.95	26 D 27 B	SPT(S) 7.50m, N=14 (2,2/3,3,4,4)	1
	1		<u> </u>												1
	1											8.00	28 D		٤
8	+											0.00	200		8 -
	7		H												1
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	1		<u></u>												}
	-		ᆮᆿ									1			7
9	7		<u> </u>									9.00 - 9.45	30 UT	30 blows, 100% Recovery	9 -
	1		<u> </u>												1
	1		<u> </u> _												}
	+											9.50	31 D		4
	1		L- <u>-</u> -												1
	1														1
10	+	Continued on Next Page										10.00	32 D		10 -
L		Continuou on Nont I ago													

Continued on Next Page

| Misc. | Shift Information | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | Standard | S



Cable Percussion

Sheet 2 of 4

Log Type

Exploratory Hole Number **BH17-17a** 

FINAL



Methodology & Plant Location Details: Project No: Scale: 1:50 3043 Depth (m) Method Plant Used 425404.24 558436.69 Checked Bv: RPH Easting: Northing: A1 Birtley to Coalhouse Name: Elevation: 16.74mAOD Final Depth: 36.65m Approved By: BH Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 12-12-2017 Client: SLJV Orientation: N/A Inclination: Finish Date: 13-12-2017 Depth (m) (Stratum Thickness) Reduced Water Added (Litres) Samples & Testing Water Level (m) Strata Description Legend Level (mAOD) (mm) Depth (m) (mins) Depth (m) 10.50 - 10.95 10.50 - 10.95 SPT(S) 10.50m, N=18 (2,3/4,5,5,4) 11.00 35 D 11 11.50 36 D 37 UT 12 38 D 13 SPT(S) 13.50m, N=18 (3,3/4,4,5,5) 13.50 - 13.95 13.50 - 13.95 14.00 41 D 14 14.50 42 D 15.00 - 15.45 43 UT 27 blows, 100% Recovery 15.50 44 D 45 D 16 16.50 - 16.95 46 D SPT(S) 16.50m, N=25 (3,4/5,6,6,8) 17 49 UT 18.00 - 18.45 23 blows, 100% Recovery 18 50 D 18.50 (30.00) 51 D 19.00 19 19.50 - 19.95 19.50 - 19.95 SPT(S) 19.50m, N=28 (3,4/7,7,7,7) 20.00 54 D 20 Continued on Next Page Observations / Remarks Misc. Shift Information Installations Resp. Zone | Depth (m) | Diam. | 18.00 - 20.00 | 19.00 | 19mm Groundwater Enc...
Casing Used
Montroring Used
Harmer Ref & Energy Ratio (%)
AR1134 (56(%) Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Groundwater Strikes Strike (m) Rises To (m) Time (min)



3043

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Location Details:

## Cable Percussion

Log Type

Sheet 3 of 4

Exploratory Hole Number

BH17-17a

FINAL

Methodology & Plant



1:50

Scale:

Depth (m) Method Plant Used 425404.24 558436.69 Checked Bv: RPH Easting: Northing: A1 Birtley to Coalhouse Name: Elevation: 16.74mAOD Final Depth: 36.65m Approved By: BH Location: Tyne and Wear 12-12-2017 Logged By: ALB Grid System: OSGB Start Date: Client: SLJV Orientation: N/A Inclination: Finish Date: 13-12-2017 Depth (m) (Stratum Thickness) Reduced Water Added (Litres) Samples & Testing Water Level (m) Installation , Backfill Strata Description Legend Level (mAOD) (mm) Depth (m (mins) Depth (m) 20.50 55 D 21.00 - 21.45 56 UT 27 blows, 100% Recovery 57 D 58 D 22 SPT(S) 22.50m, N=24 (4,4/6,6,6,6) 61 D 23.00 23 62 D 23.50 24.00 - 24.45 63 UT 27 blows, 100% Recovery 24 24.50 64 D 25.00 65 D 25 25.50 - 25.95 25.50 - 25.95 SPT(S) 25.50m, N=29 (4,3/7,7,7,8) 68 D 26.50 69 D 27 71 D 28.00 72 D 28 SPT(S) 28.50m, N=25 (3,4/5,6,6,8) 28.50 - 28.95 28.50 - 28.95 73 D 74 B 75 D 29.00 29 -29.50 76 D 30.00 - 30.45 78 UT 29 blows, 100% Reco 30 Continued on Next Page Observations / Remarks Misc. Shift Information Resp. Zone | Depth (m) | Diam. | 18.00 - 20.00 | 19.00 | 19mm Groundwater En...
Cashy Used
Monitoring Denity Installed
Hammer Ref & Energy Ratio (%)
AR1134 [56]% Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Groundwater Strikes Strike (m) Rises To (m) Time (min)



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Cable Percussion

Log Type

Exploratory Hole Number **BH17-17a** 

FINAL



Groundwater Strikes

Strike (m) Rises To (m) Time (min)

Web: www.central-alliance.co.uk Sheet 4 of 4 GEO Methodology & Plant Location Details: Scale: Project No: 3043 1:50 Depth (m) Method Plant Used Easting: 425404.24 Northing: 558436.69 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 16.74mAOD Final Depth: 36.65m Approved By: BH Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 12-12-2017 Client SLIV Orientation N/A Inclination: Finish Date: 13-12-2017 Depth (m) Reduced Samples & Testing Installation , Backfill Added (Litres) Strata Description Legend (Stratum Thickness) Level (mAOD) (mm) Depth (m (mins) Depth (m) 30.50 79 D 31.00 80 D 31 SPT(S) 31.50m, N=23 (3,4/5,6,6,6) 83 D 32 84 D From 32.50m to 34.00m with rare gravel. Gravel is subangular to subrounded fine to coarse sandstone 33.00 - 33.45 85 UT 28 blows, 100% Recovery 33 86 D 33.50 34.00 -17.26 34.00 87 D 34 Grey slightly gravelly clayey fine to coarse SAND. Gravel is subrounded fine to coarse sandstone. (0.50)34.50 -17.76 34.50 - 34.95 34.50 - 34.95 88 D 89 B SPT(S) 34.50m, N=56 (6,10/16,12,13,15) Firm thinly laminated grey gravelly silty CLAY. Gravel is subrounded fine sandstone. 35 (1.20)35.20 35.40 90 D 35.70 -18.96 91 D Grey slightly gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone. SPT(S) 36.00m, 100 (10,15/100 for 175mm) (0.60) SPT(S) 36.20m, 100 (25 for 115mm/100 for 180mm) 36.30 Dark grey slightly gravelly slightly silty CLAY. Gravel is subangular (0.35)to subrounded fine to medium sandstone. 36.65 -19.91 EOH at 36.65m - Scheduled Depth 37 38 39 40 Observations / Remarks Shift Information Installations Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone | Depth (m) | Diam. | 18.00 - 20.00 | 19.00 | 19mm



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## Log Type Header Sheet

Exploratory Hole Number

BH17-18





Project No:	3043		Location	Details			Met	hodology & P	lant	Scale:	1:50
		Easting:	425461.04	Northing:	558471.34	From (m)	Meth	nod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	125102101	1401 1111116.	330 17 213 1	0.00 - 1.20	Inspecti		Hand Tools	erreenea.	
		Elevation:	20.13mAOD	Final Depth:	27.70m	1.20 - 28.50	Cable Per	cussion	Dando 2000	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	21/11/2017
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	22/11/2017

Hole Di	ameter
Depth (m)	Diam (mm)
27.70	150

Casing D	liameter
	Diam (mm)
3.00	250

	Groundwater Strikes						
Strike	Casing	Sealed	Time	Rose To	Remarks		
(m)	(m)	(m)	(min)	(m)	Remarks		

Installation / Instrument Details						
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)		
				, ,		

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill				
Depth (m)	Legend Code			
0.00 - 27.70	Bentonite			

In-Situ Tests	
PID	4
Hand Vane*	0
Standard Penetration Tests	9

(NR) Indicates sample unde
Core Sample
Undisturbed Thin Wall (
Undisturbed Thin Wa

Disturbed

Piston

Undisturbed

Undisturbed Thin Wall	10			
Undisturbed Thin Wall (NR)	0			
Core Sample	0			
(NR) Indicates sample undertaken but with				

32

0

2

Sample Summary Environmental Samples 4 Geotechnical Samples

Large Bulk

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

	Standard Penetration Test Summary								
Test Type	Depth	Casing	Water	Seating	Main	Penetration	Ν	Reported Result	Hammer Ref
rest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	панние ке
Split Spoon	2.50	1.50	DRY	4	10	450	10	N=10 (2,2/2,2,3,3)	AR1134
Split Spoon	4.50	2.50	DRY	4	9	450	9	N=9 (2,2/2,2,2,3)	AR1134
Split Spoon	7.50	2.50	DRY	4	12	450	12	N=12 (2,2/3,3,3,3)	AR1134
Split Spoon	10.50	2.50	DRY	4	16	450	16	N=16 (2,2/4,4,4,4)	AR1134
Split Spoon	13.50	2.50	DRY	7	20	450	20	N=20 (3,4/4,4,6,6)	AR1134
Split Spoon	16.50	2.50	DRY	5	22	450	22	N=22 (2,3/4,6,6,6)	AR1134
Split Spoon	19.50	3.00	DRY	6	22	450	22	N=22 (3,3/5,6,6,5)	AR1134
Split Spoon	22.50	3.00	DRY	7	24	450	24	N=24 (3,4/6,6,6,6)	AR1134
Split Spoon	25.50	3.00	DRY	8	53	450	53	N=53 (5,3/12,12,14,15)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

* One count indicates an average
reported result of 3 tests carried out at
one depth where available.

## **Applicable to Cable Percussion Only**

Chise	elling	Water Added		
Depth (m)	Duration (mins)	Depth (m)	Litres	

#### **Applicable to Rotary Only**

	Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %				

## **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs						
Depth (m)	Diam (mm)	Recovery %	Remarks			



Cable Percussion

Log Type

Exploratory Hole Number **BH17-18** FINAL

CENTRAL ALLIANCE GEO

Sheet 1 of 3

Project No:	3043		Locatio	n Details:			Methodology & I	Scale:	1:50	
Name:	A1 Birtley to Coalhouse	Easting:	425461.04	Northing:	558471.34 27.70m	Depth (m)	Method	Plant Used	Checked By:	RPH
				rror crimig.		0.00 - 1.20	Inspection Pit	Hand Tools	l circoncu by:	
		Elevation:	20.13mAOD	Final Depth:		1.20 - 28.50	Cable Percussion	Dando 2000	Approved By:	BH
Location:	Tyne and Wear	Logged By:	GS	Grid System:	OSGB				Start Date:	21/11/2017
Client:	SUV	Orientation:	N/A	Inclination:	90°			Į ,	Finish Date:	22/11/2017

١.			Elevation:	20.1	3mAOD	Final De	Final Depth: 27.70m		1.20 -	1.20 - 28.50		Cable Percussion		Dando 2000		Approved By: BI	1
Loca	ation:	Tyne and Wear	Logged By:	GS		Grid Sy	d System: <b>OSGB</b>								Start Date: 21/11/2017		
Clie	nt:	SLIV	Orientation:	N/A		Inclination: 90°								Finish Date: 22/11/	2017		
		1				Depth (m)	Reduced	Chiselling	Water	Hole Ø	Casing Ø	Water	Installation /	,		Samples & Testing	
	Strata Description		Legend	(Stratum Thickness)	Level (mAOD)	(mins)	Added (Litres)	(mm) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	$\Box$		
	MADE G	GROUND: Yellowish brown very sandy suba	ngular fine	to	<b>******</b>												
_		limestone GRAVEL. Sand is fine to coarse.				(0.35)								0.20 0.30	1 ES 3 D	PID 0.20m = 10.6ppm	
_	MADE G	GROUND: Stiff dark grey CLAY with occasion	nal gravel.			0.35	19.78							0.40	4 D		-
-	Gravel is	s subangular to subrounded fine coal.	-											0.50 - 0.70	5 B		7
1														0.70	2 ES	PID 0.70m = 0.0ppm	1
1 -						(1.15)											1 -
1 -														1.20	6 D		1
-														1.30 - 1.50	8 B		-
] ]	F: +-	stiff thinly laminated dark grey CLAY.				1.50	18.63							1.50	7 ES	30 blows, 100% Recovery	-
_	Fiffil to :	Still thinly laminated dark grey CLAY.												1.50 - 1.95	9 UT	PID 1.50m = 1.4ppm	1
-																	1
2 -														2.00 2.00 - 2.50	10 D 11 B		2 -
-					<del></del>									2.00 2.50	110		-
1																	1
-														2.50 2.50 - 2.95	12 ES 13 D	SPT(S) 2.50m, N=10 (2,2/2,2,3,3) PID 2.50m = 0.0ppm	1
-																	1
3 -					<del> </del>						250			3.00 - 3.50	14 B		, -
3 -											3.00			3.00-3.30	14 B		3 –
					<u> </u>												1
_														3.50	U	28 blows, 100% Recovery	- 1
_					<del></del>									3.50 3.50 - 3.95	15 D 16 UT		1
_																	1
4 —														4.00 4.00 - 4.50	17 D 19 B		4 -
_					<u> </u>									4.00 - 4.50	196		-
-																	1
-														4.50 - 4.95	18 D	SPT(S) 4.50m, N=9 (2,2/2,2,2,3)	1
_																	1
5 -														5.00 - 5.50	20 B		
j -														3.00 3.30	200		5 -
_					<del></del>												-
_																	- 1
1																	1
-														5.90	21 D		1
6 -					<del></del> -									6.00 - 6.45	22 UT	20 blows, 89% Recovery	6 -
-																	-
-																	-
-														6.50 6.50 - 7.00	23 D 24 B		7
																	1
7 -														7.00 - 7.50	25 B		7 -
-																	1
-																	-
-														7.50 - 7.95	26 D	SPT(S) 7.50m, N=12 (2,2/3,3,3,3)	-
					 												- 1
																	1
8 -					<u> </u>									8.00 - 8.50	27 B		8 -
-					L <del>-</del>												1
-					<u> </u>												
-					<u>                                     </u>												+
-					ㄷㄱ												7
9 -					<u> </u>									8.90 9.00 - 9.45	28 D 29 UT	20 blows, 100% Recovery	9 -
-					<u> </u>												1
-																	1
-														9.50 9.50	30 D 31 B		
-					L												}
10	L				<u> </u>									10.00 10.50	22.0		10
10 -		Continued on Next Page												10.00 - 10.50	32 B		10 -
Obs	ervations /	Remarks	M	isc.			Shift Info	rmation				Backfill				Installations	
			<b>p</b> . 5	· %	Date 21/11	Time 17:00	Depth 18.	n (m) Ca	sing (m)	(m) Water (m) From (m) To (m) Ma			Material Bentonite	Instrum	ent Deta	ails Resp. Zone Depth (m)	Diam.
nter Encountered g Doed g Point Installed f Energy Ratio (%)					22/11	08:00	18.		3.00	DRY	0.00	27.70	sentonite				
	hed by the second secon			ergy h 56(%)													
	water oring P		f& En												roundwater Strikes		
			irouna Co Monito	mer Re AR										Strike (m) Ris	es Io (m)	Time (min) Remarks	



# Cable Percussion

Log Type

Sheet 2 of 3

Exploratory Hole Number

BH17-18
FINAL

CENTRAL ALLIANCE

Methodology & Plant Location Details: Project No: Scale: 1:50 3043 Depth (m) Method Plant Used 425461.04 558471.34 Checked Bv: RPH Easting: Northing: A1 Birtley to Coalhouse Name: Elevation: 20.13mAOD Final Depth: 27.70m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 21/11/2017 Client: SLIV Orientation: N/A Inclination: Finish Date: 22/11/2017 Depth (m) (Stratum Thickness) Reduced Water Added (Litres) Samples & Testing Water Level (m) Installation , Backfill Strata Description Legend Level (mAOD) (mm) Depth (m (mins) Depth (m) Firm to stiff thinly laminated dark grey CLAY. 10.50 - 10.95 33 D SPT(S) 10.50m, N=16 (2,2/4,4,4,4) 11.00 - 11.50 34 B 11 12 12.50 12.50 - 13.00 13.00 - 13.50 39 B 13 SPT(S) 13.50m, N=20 (3,4/4,4,6,6) 40 D 13.50 - 13.95 14.00 - 14.50 41 B 14 (26.20) 14.90 15.00 15.00 - 15.45 22 blows, 100% Recovery 43 UT 15.50 15.50 - 16.00 44 D 45 B 16.00 - 16.50 16 16.50 - 16.95 46 D-NR SPT(S) 16.50m, N=22 (2,3/4,6,6,6) 17 17.90 18.00 - 18.45 49 D 50 UT 24 blows, 100% Recovery 18 18.50 18.50 - 19.00 51 D 52 B 19.00 - 19.50 53 B 19 19.50 - 19.95 54 D SPT(S) 19.50m, N=22 (3.3/5.6.6.5) 20.00 20.00 - 20.50 20 Continued on Next Page Observations / Remarks Misc. Shift Information Installations Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam. Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%)
AR1134 (56(%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



3043

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Location Details:

# Cable Percussion

Log Type

Sheet 3 of 3

Exploratory Hole Number

BH17-18

FINAL

Methodology & Plant



1:50

Scale:

Name:	ne: A1 Birtley to Coalhouse		4254	161.04	Northin	g: <b>5</b>	58471.34	Depth	(m)	Met	hod		Plant Used		Checked By:	RPH
		Elevation:	20.1	3mAOD	Final De	epth: 2	7.70m								Approved By:	ВН
Location	Tyne and Wear	Logged By:	GS		Grid Sy	stem: O	SGB								Start Date: 23	1/11/2017
Client:	SUV	Orientation:	N/A		Inclinat	ion: <b>9</b>	o°								Finish Date: 22	2/11/2017
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Chiselling	Water Added	Hole Ø (mm)	Casing Ø (mm)	Water	Installation /			Samples & Testing	
					Thickness)	(mAOD)	(mins)	(Litres)	Depth (m)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	
- Fir	m to stiff thinly laminated dark grey CLAY.			<u> </u>												-
-																-
-																-
1																-
- 21 -													21.00 - 21.45	57 UT	40 blows, 100% Recovery	21 <sup>-</sup>
[ ]															,	21
-																-
-													21.50 21.50 - 22.00	58 D 59 B		-
_																_
22 —																- 22 -
<u> </u>																
-																-
-													22.50 - 22.95	60 D	SPT(S) 22.50m, N=24 (3,4/6,6	5,6,6)
1 1																-
23 —													23.00	61 D		23 -
23													23.00 - 23.50	62 B		23
-																-
-																-
]																-
													24.00 - 24.45	63 UT	40 blour 1009/ Passuani	24
24 —													24.00 - 24.45	63 01	40 blows, 100% Recovery	24 -
]																-
]													24.50	64 D		-
1													24.50 - 25.00	65 B		-
1																-
25 -																25 -
-				F_=_												1
1													25.50	66 D	SPT(S) 25.50m, N=53 (5,3/12,12,14,15)	-
1													25.50 - 25.95	67 D	(5,3/12,12,14,15)	1
																-
26 -													26.00	68 D		26 -
1																-
_																_
=																-
-																-
27 -													27.00 27.00 - 27.45	69 D 70 UT	50 blows, 100% Recovery	27 -
1																
_																_
‡	TOLL at 27 70mg. About down district	4h al!			27.70	-7.57			150							=
-	EOH at 27.70m - Abandoned due to issues wit verticality.	uı alignmen	IV						27.70							‡
28 —	,															28 -
																‡
																‡
																-
29 -																29 –
‡																‡
																1
30																30 -
Observat	ions / Remarks	М	lisc.			Shift Info	rmation		1		Backfill			I	Installations	
				Date	Time		(m) Casi	ng (m) V	Vater (m)	From (m)		Material	Instrum	ent Deta		th (m) Diam.
		untere	No Monitoring Point Installed Hammer Ref & Energy Ratio (%) AR1134 (56(%)													
		. Encor	ount II rergy fr 56(%)													
		ndwater Enc Casing Usec	:f& En 1134 (										Carrillo ( ) (I)		roundwater Strikes	a de a
		3rounc G	Mont mer R AR										Strike (m) Ris	es 10 (m)	Time (min) Rema	ai KS
		No C	Ham													



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Sheet

Log Type

Header

Exploratory Hole Number

BH17-18a

FINAL



Proje	ect No:	3043	Location Details					Methodology & F	Scale:	1:50	
			Easting:	425462.16	Northing:	558470.26	From (m)	Method	Plant Used	Checked:	RPH
Nam	e:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools		
	Location: Tyne and Wear	Elevation:	20.07mAOD	Final Depth:	70.00m	1.20 - 35.00 35.00 - 48.90	Cable Percussion Rotary Coring	Dando 2000 Fraste PLG	Approved:	BH	
Loca		Logger:	GS+ALB+NE	Grid System:	OSGB	48.90 - 70.00	Rotary Open Holing	Fraste PLG	Start Date:	23/11/2017	
Clier	it:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	05/12/2017

Hole Di	ameter
Depth (m)	Diam (mm)
35.50	150
48.90	140
70.00	121

Casing Diameter										
Depth (m)	Diam (mm)									
3.00	250									
7.50	200									
39.90	140									

	Groundwater Strikes											
Strike	Casing	Sealed	Time	Rose To								
(m)	(m)	(m)	(min)	(m)	Remarks							
27.00	-	-	20	25.50								
34.00	-	-	20	31.20								

Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						
05/12/2017	Standpipe Piezometer	28.00	0.00 - 28.00	19mm						

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill									
Depth (m)	Legend Code								
0.00 - 0.50	Concrete								
0.50 - 27.00	Bentonite								
27.00 - 29.00	Sand								
29.00 - 70.00	Bentonite								

In-Situ Tests						
PID	0					
Hand Vane*	0					
Standard Penetration Tests	7					

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary							
Environmental Samples							
Soil <b>0</b> Water							
Geotechnical Samples							
Bulk	1	Large Bulk	0				
Disturbed	13	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Core Sample							

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary									
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref	
Split Spoon	27.50	28.50	25.00	13	42	450	42	N=42 (5,8/10,10,10,12)	AR1134	
Split Spoon	28.00	28.00	22.00	25	50	220		50 (25 for 50mm/50 for 170mm)	AR1134	
Split Spoon	30.00	30.00	25.00	12	50	325		50 (6,6/50 for 175mm)	AR1134	
Split Spoon	31.50	31.00	DRY	20	50	310		50 (9,11/50 for 160mm)	AR1134	
Cone	34.50	31.00	DRY	25	50	265		50 (25 for 105mm/50 for 160mm)	AR1134	
Split Spoon	34.80	34.50	21.20	25	35	175		35 (25 for 85mm/35 for 90mm)	AR1134	
Split Spoon	35.00	34.50	23.00	25	50	285		50 (10,15/50 for 135mm)	AR1134	

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chise	elling
Depth (m)	Duration (mins)
28.00 - 28.25	120
31.00 - 31.30	60
33.00 - 33.30	60
34.60 - 35.00	165
	1

Litres

## **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %
34.50 - 35.40	Air/Mist	Brown	99
35.40 - 36.90	Air/Mist	Brownish Grey	99
36.90 - 37.90	Air/Mist	Brownish Grey	99
36.90 - 38.40	Air/Mist	Dark Grey	90
38.40 - 39.90	Air/Mist		0
39.90 - 41.40	Air/Mist	Dark Grey	95
41.40 - 42.90	Air/Mist	Grey	95
42.90 - 44.40	Air/Mist	Grey	95
44.40 - 45.90	Air/Mist	Grey	95
45.90 - 47.40	Air/Mist	Grey	95
47.40 - 48.90	Air/Mist	Grey	95
48.90 - 51.20	Air/Mist	Light Grey	95
51.20 - 52.00	Air/Mist	Light Grey	95
52.00 - 57.10	Air/Mist	Grey	95
57.10 - 57.40	Air/Mist	Grey	95
57.40 - 60.00	Air/Mist	Grey	95
60.00 - 70.00	Air/Mist	Grey	95
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	ı		l I

### **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs											
Depth (m)	Diam (mm)	Recovery %	Remarks								



Combined **Borehole** 

Log Type

Exploratory Hole Number BH17-18a

**FINAL** 



Sheet 1 of 7 GEO Methodology & Plant Project No: Location Details Scale: 1:50 3043 From (m) 0.00 - 1.20 1.20 - 35.00 35.00 - 48.90 48.90 - 70.00 Method Inspection Pit Cable Percussion Rotary Coring Rotary Open Holing Plant Used Hand Tools Dando 2000 Fraste PLG RPH Easting: 425462.16 Northing: 558470.26 Checked By: A1 Birtley to Coalhouse Name: Elevation: 20.07mAOD Final Depth: 70.00m Approved By: BH Location: Tyne and Wear Fraste PLG Logged By: GS+ALB+NE Grid System: OSGB Start Date: 23/11/2017 Client: SLJV Orientation: N/A Inclination: Finish Date: 05/12/2017 Hole Ø (mm) Depth (m Casing Ø (mm) Depth (m) Samples & Testing Depth (m) Reduced Coring Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref OPEN HOLE DRILLING BY CABLE PERCUSSION TECHNIQUES. 200 7.50 10 Continued on Next Page Misc Shift Information Backfill | Depth (m) | Casing (m) | 27.50 | 28.50 | 26.00 | 28.50 | 34.50 | 31.00 | 34.50 | 34.50 | 34.50 | 34.50 | 34.50 | 34.50 | 34.50 | 34.50 | 37.90 | 34.50 | 37.90 | 34.50 | 37.90 | 34.50 | 41.40 | 39.90 | 47.40 | 39.90 | Instrument Details Resp. Zone Depth (m) Diam Standpipe Plezometer 0.00 - 28.00 28.00 19mm To (m) Date 23/11 24/11 24/11 27/11 27/11 29/11 29/11 30/11 30/11 01/12 Time 17:00 08:00 17:00 08:00 17:00 07:30 16:30 07:30 17:00 07:30 At 37.90m, gas alarm triggered. Drilling temporarily suspended. Water Strikes Strike (m) Rises To (m)
27.00 25.50
34.00 31.20 ime (min)

27.80 34.20 31.10

15:00



Combined Borehole

Log Type

Exploratory Hole Number BH17-18a

BH17-18a



Sheet 2 of 7 Location Details Methodology & Plant Project No: Scale: 1:50 From (m) Method Plant Used Easting: 425462.16 558470.26 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Final Depth: 70.00m Approved By: Elevation: 20.07mAOD ВН Tyne and Wear Location:

Location:	Tyne and Wear	Logged By:	GS+A	LB+NE	Grid	System:	OSGB							:	Start Da	ate:	23	/11/2017
Client:	SLIV	Orientation:	N/A			nation:	90°				I				Finish D			/12/2017
	Strata Description			Legend	Depth (m) (Stratum Thickness)	Reduced Level (mAOD)	Hole Ø (mm) Depth (m)	Casing Ø (mm) Depth (m)	Water Level (m)	Installation / Backfill	Depth (m)	Samples	& Testing  Test Results	Method	Core		Coring	If
- OPEN H	HOLE DRILLING BY CABLE PERCUSSION TECH	HNIQUES.			THICKHESS	(IIIAOD)	Deput (III)	Deptii (iii)			Deptil (III)	Kei	rest results		Run	ICK 30	.n ngo	"
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20	Continued on Next Page											1			-			20 -
Observations /	/ Remarks	1	Misc.				formatio				Backfill				Installa			
At 37.90m, gas a	alarm triggered. Drilling temporarily suspended.	pa	pal,	Date 04/12	07:30	0 4	17.40	39.90	Water (n	0.00	0.50	Material Concrete	Instrument Standpipe Pie			Resp. Zon 0.00 - 28.0		n (m) Diam 00 19mm
		ounten	Casing Used Monitoring Point/s Installed	04/12	16:3		70.00	39.90	15.40	0.50 27.00 29.00	27.00 29.00 70.00	Sand Bentonite						
		rter Enc	sing Us 3 Point/												Water 9		•	
		мрипа	Cc nitorin										Strike (m) Rises To 27.00 25.5	50	20		Rema	rks
		<u>6</u>	W										34.00 31.2	.0	20			



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Combined **Borehole** 

Sheet 3 of 7

Log Type

Exploratory Hole Number

BH17-18a

**FINAL** 



Methodology & Plant Location Details Project No: 3043 Scale: 1:50 From (m) Method Plant Used Easting: 425462.16 Northing: 558470.26 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 20.07mAOD Final Depth: 70.00m Approved By: BH Location: Tyne and Wear Logged By: GS+ALB+NE Grid System: OSGB Start Date: 23/11/2017 Client SLIV Orientation N/A Inclination: Finish Date: 05/12/2017 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation / Backfill Strata Description Legend Level (mAOD) Level (m) Depth (m) OPEN HOLE DRILLING BY CABLE PERCUSSION TECHNIQUES. 22 23 24 25 SPT(S) 27.50m, N=42 (5,8/10,10,10,12) Greyish brown slightly silty fine SAND. (0.30) SPT(S) 28.00m, 50 (25 for 50mm/50 for 170mm) -7.93 28.00 28.00 - 28.45 28.20 28.00 28 Firm to stiff dark brown silty very gravelly CLAY. Gravel is subangular to subrounded fine to coarse sandstone, mudstone (0.50) <u> ২</u>৫ 28.50 -8.43 6 D 28.50 Residual to destructured light grey MUDSTONE recovered as silty angular to subangular fine to coarse gravel. (1.00) 29.00 7 D 29 29.50 -9.43 Dark brown gravelly silty fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone, mudstone (0.50) and siltstone. 30.00 -9.93 30.00 - 30.45 8 D 9 D SPT(S) 30.00m, 50 (6,6/50 for 175mm) 30 Continued on Next Page Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 0.00 - 28.00 | 28.00 | 19mm Depth (m) Casing (m) Water (m) Instrument Details At 37.90m, gas alarm triggered. Drilling temporarily suspended. Water Strikes Strike (m) 27.00 34.00 25.50 31.20



3043

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Location Details

Combined **Borehole** 

Sheet 4 of 7

Log Type

Exploratory Hole Number

BH17-18a

**FINAL** 

Methodology & Plant



1:50

Scale

From (m) Method Plant Used Easting 425462.16 Northing: 558470.26 Checked By: RPH Name: A1 Birtley to Coalhouse Elevation: 20.07mAOD Final Depth: 70.00m Approved By BH Location: Tyne and Wear Logged By: GS+ALB+NE Grid System: OSGB Start Date: 23/11/2017 Client SLIV Orientation N/A Inclination: Finish Date: 05/12/2017 Depth (m Reduced Hole Ø Samples & Testing Coring Installation Backfill Strata Description Legend Level (mAOD) (Stratum Thickness Level (m Depth (m) Destructed light to dark grey MUDSTONE. (1.00) 31.00 -10.93 31 00 10 D 31 Dark greyish brown gravelly silty CLAY. Gravel is subangular to ২৫ subrounded fine to coarse sandstone, mudstone and rare coal. <u>১</u>৫ (1.00) 11 D SPT(S) 31.50m, 50 (9.11/50 for 160mm) <u>><</u> 32.00 -11.93 32 Destructed interbedded light grey MUDSTONE and medium to  $coarse\ grained\ SANDSTONE\ recovered\ as\ subangular\ cobbles.$ From 32.00m to 33.00m 1 no sandstone boulder 33.00 33.00 - 33.20 100 blows, 0% Recovery 33 From 33.00m becomes very gravelly 33.00 - 33.45 (3.00)34.00 16 D 34 SPT(C) 34.50m, 50 (25 for 105mm/50 for 160mm) From 34.50m to 35.05m recovered as sandy subangular fine to coarse SPT(S) 34.80m, 35 (25 for 85mm/35 for 90mm) 100 14 12 35.00 -14.93 SPT(S) 35.00m, 50 (10,15/50 for 135mm) 35 Extremely weak to weak thinly bedded laminated dark grey, grey and light brown MUDSTONE and fine to medium grained (0.60)SANDSTONE. Discontinuities are set 1) very closely spaced 150 35.50 subhorizontal (0-20 degrees) planar smooth and set 2) closely to 35.60 -15.53 medium spaced inclined (50-70 degrees) planar rough. Dark brown and black gravelly sandy clay. Sand is fine to coarse. Gravel is subangular fine to coarse. (Possible Mine Workings) 6 (0.96)100 12 10 From 36.16m to 36.56m very fractured with an irregular structure. -16.49 Extremely weak to weak thinly bedded laminated dark grey, 24 grey and light brown MUDSTONE and fine to medium grained SANDSTONE. Discontinuities are set 1) very closely spaced (0.91)subhorizontal (0-20 degrees) planar smooth and set 2) closely to medium spaced inclined (50-70 degrees) planar rough. From 36.76m to 36.90m 1 no. discontinuity subvertical (80-90 degrees) undulating rough with light brown fine sand infill.
From 37.35m to 37.47m recovered as gravelly sandy clay. Sand is fine to 37.47 -17.40 -17.53 47 coarse. Gravel is subangular coarse. COAL seam and mine workings recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse. (0.80)38 Extremely weak to weak thinly bedded laminated dark grey, grey and light brown MUDSTONE and fine to medium grained -18.33 38.40 SANDSTONE. Discontinuities are set 1) very closely spaced subhorizontal (0-20 degrees) planar smooth and set 2) closely to medium spaced inclined (50-70 degrees) planar rough. At 37.90m, gas alarm triggered. Drilling temporarily suspende 39 COAL seam and mine workings recovered as sandy subangular 38.40 39.90 fine to coarse gravel. Sand is fine to coarse. 39.15 -19.08 50 0 0 Extremely weak to weak thinly bedded laminated dark grey, grey and light brown MUDSTONE and fine to medium grained SANDSTONE, Discontinuities are set 1) very closely spaced subhorizontal (0-20 degrees) planar smooth and set 2) closely to From 39.15m to 40.80m No Recovery. 40 Continued on Next Page Misc Shift Information Backfill Depth (m) Casing (m) Water (m) Resp. Zone | Depth (m) | Diam | 0.00 - 28.00 | 28.00 | 19mm Date Time To (m) Instrument Details At 37,90m, gas alarm triggered, Drilling temporarily suspended. Water Strikes Strike (m) 27.00 34.00 25.50 31.20



3043

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Location Details

Combined Borehole

Sheet 5 of 7

Log Type

Exploratory Hole Number

BH17-18a

Methodology & Plant

FINAL



1:50

Scale:

From (m) Method Plant Used Easting: 425462.16 Northing: 558470.26 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 20.07mAOD Final Depth: 70.00m Approved By: BH Location: Tyne and Wear Logged By: GS+ALB+NE Grid System: OSGB Start Date: 23/11/2017 Client SLIV Orientation N/A Inclination: Finish Date: 05/12/2017 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend Level (mAOD) (Stratum Thickness Level (m Depth (m) Ref medium spaced inclined (50-70 degrees) planar rough. 39.90 41.40 40 13 From 40.80m to 40.92m recovered as slightly sandy subangular fine to (3.56)>25 NI 25 coarse gravel. Sand is fine to coarse. From 41.02m to 41.10m recovered as subangular fine to coarse gravel. From 41.18m to 41.29m recovered as slightly gravelly sandy clay. Sand is fine to coarse. Gravel is subangular fine to medium. 41.50 From 41.70m to 41.75m, 41.95m to 42.00m and 42.23m to 42.29m 15 recovered as subangular fine to medium gravel. >25 51 15 42.71 -22.64 COAL seam. (0.19) 42.90 From 42.71m to 42.77m recovered as angular to subangular fine to NR 43 medium grave NI Extremely weak to weak thinly bedded laminated dark grey, grey and light brown MUDSTONE and fine to medium grained 43.40 SANDSTONE. Discontinuities are set 1) very closely spaced subhorizontal (0-20 degrees) planar smooth and set 2) closely to 15 10 91 medium spaced inclined (50-70 degrees) planar rough. 43.80 NI From 42.90m to 43.03m No Recovery. From 43.03m to 43.17m recovered as subangular fine to coarse gravel. From 43.17m to 43.48m 1 no. discontinuity subvertical (75-85 degrees) planar rough with sandy clay infill. Sand is fine. 19 44.10 >25 44.25 From 43.72m to 43.93m recovered as clayey subangular fine to coarse 44.40 From 44.09m to 44.14m recovered as sandy silty subangular fine to 44.65 medium gravel. Sand is fine to coarse. From 44.14m to 44.32m 1 no. discontinuity vertical (80-90 degrees) undulating rough. From 44.32m to 44.40m and 44.59m to 44.68m recovered as subangular 71 20 7 NI (6.00) From 45.90m to 47.00m, no recovery. 13 17 NI From 47.40m to 48.05m, no recovery. 48.05 47.40 48.90 43 0 140 48.90 -28.83 Grey MUDSTONE/SILTSTONE/SANDSTONE (Driller's Description). 49 50 Continued on Next Page Misc Shift Information Backfill Depth (m) Casing (m) Water (m) Resp. Zone | Depth (m) | Diam | 0.00 - 28.00 | 28.00 | 19mm To (m) Instrument Details At 37,90m, gas alarm triggered, Drilling temporarily suspended. Water Strikes Strike (m) 27.00 34.00 25.50 31.20



Combined **Borehole** 

Log Type

Exploratory Hole Number

BH17-18a



Sheet 6 of 7

FINAL

	▼							Sheet 6	of 7							GEO		
Proje	ect No: <b>3043</b>		Locat	ion Detai	ls					thodology &	Plant		_	Scale:			1:5	50
Nam	e: A1 Birtley to Coalhouse	Easting: 4	25462.16	Nort	hing:	558470.2	6 F	rom (m)	Met	hod		Plant Used	_ (	Checked	d By:		RP	РΗ
		Elevation: 2	0.07mAOD	Final	Depth:	70.00m							1	Approve	ed By:	:	В	Н
Loca	tion: Tyne and Wear	Logged By: <b>G</b>	S+ALB+NE	Grid	System:	OSGB							5	Start Da	ate:		23/11	/2017
Clien	t: SUV	Orientation: N	I/A	Incli	nation:	90°							F	Finish D	)ate:		05/12	/2017
	Strata Description		Legend	Depth (m) (Stratum	Reduced Level	Hole Ø (mm)	Casing ( (mm)	vvaler	Installation /		Samples	& Testing	pou			Coring		
				Thickness)	(mAOD)	Depth (m)	Depth (n	n) Level (m)	Backfill	Depth (m)	Ref	Test Results	Mel	Core Run	TCR	SCR RO	QD If	
	Grey MUDSTONE/SILTSTONE/SANDSTONE (Driller's	s Description)		(2.30)														
-																		
-																		
-																		
51 -				51.20	-31.13													51
3	Possible VOID.			31.20	-51.15													
-				(0.90)														
]				(0.80)														
[, ]				52.00	-31.93													
52	Grey MUDSTONE/SILTSTONE/SANDSTONE (Driller's	s Description)		J2.UU	31.33													52
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57 -	Possible VOID.		+==	57.10	-37.03													57 -
1				(0.30)														
‡	Grey MUDSTONE/SILTSTONE/SANDSTONE (Driller's	s Description)		57.40	-37.33													
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60	Continued on Next Page														П	$\top$	T	60 -
Obse	rvations / Remarks	Mis	sc.		Shift In	formatio	n			Backfill				Installa	ations			
At 37	90m, gas alarm triggered. Drilling temporarily suspended.		Date	Tim	e De	pth (m)	Casing (m	) Water (m	) From (m) 0.00		Material Concrete	Instrument Standpipe Piez		; R	Resp. Zo 0.00 - 28	one De	pth (m 28.00	Diam 19mm
		Groundwater Encountered Casing Used	nstalk						0.50 27.00	27.00 29.00	Bentonite Sand	pipe i les						
		Encou	oint/s l.						29.00		Bentonite			\M/atori	Strile		—	
		water Casing	ing Po									Strike (m) Rises To		Water S			marks	
		vound	lonitor									27.00 25.5 34.00 31.2	0	20		- ACI		
		9	4											-				



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Combined Borehole

Log Type

Exploratory Hole Number

BH17-18a



Water Strikes

Strike (m) Rises To (m)
27.00 25.50
34.00 31.20

**FINAL** Web: www.central-alliance.co.uk Sheet 7 of 7 GEO Location Details Methodology & Plant Project No: Scale: 1:50 3043 From (m) Method Plant Used Easting: 558470.26 RPH 425462.16 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 20.07mAOD Final Depth: 70.00m Approved By: BH Location: Tyne and Wear Logged By: GS+ALB+NE Grid System: OSGB Start Date: 23/11/2017 Client: SLJV Orientation: N/A Inclination: Finish Date: 05/12/2017 Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Grey MUDSTONE/SILTSTONE/SANDSTONE (Driller's Description). (12.60) 69 <u>121</u> 70.00 70.00 -49.93 70 EOH at 70.00m - Scheduled Depth Misc Shift Information Backfill To (m)
0.50
27.00
29.00
70.00 Resp. Zone | Depth (m) | Diam | 0.00 - 28.00 | 28.00 | 19mm Time Depth (m) Casing (m) Water (m) Instrument Details At 37.90m, gas alarm triggered. Drilling temporarily suspended.



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Sheet Web: www.central-alliance.co.uk

Log Type Exploratory Hole Number

Header

**BH17-19** 

**FINAL** 



Project No:	3043		Location	Details			Methodolog	y & Plant	Scale:	1:50
		Easting:	425457.61	Northing:	558442.56	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse			Ü		0.00 - 1.20 1.20 - 30.50	Inspection Pit Cable Percussion	Hand Tools Dando 2000	onconcu.	
		Elevation:	19.75mAOD	Final Depth:	65.00m	30.50 - 42.70		Fraste PLG	Approved:	BH
Location:	Tyne and Wear	Logger:	GS+ALB+NE	Grid System:	OSGB	42.70 - 65.00	Rotary Open Holing	Fraste PLG	Start Date:	06/12/2017
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	14/12/2017

Hole Di	<b>Hole Diameter</b>								
Depth (m)	Diam (mm)								
4.00	250								
15.00	200								
30.90	150								
42.70	140								
65.00	120								

If Methodology includes

Dynamic Sampling refer to Runs table for info.

Casing D	iameter
Depth (m)	Diam (mm)
4.00	250
15.00	200
30.00	150
35.00	140
l	
l	

	Groundwater Strikes									
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks					
28.00	-	15.00	20	15.00						
1										

	Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

No Monitoring Point/s Installed

Backfill								
Depth (m)	Legend Code							
0.00 - 65.00	Bentonite							

In-Situ Tests	
PID	4
Hand Vane*	0
Standard Penetration Tests	12

<sup>(</sup>NR) Indicates sample undertaken but with

Sample Summary Environmental Samples 4 Geotechnical Samples 13

41

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed

Piston

Undisturbed

Large Bulk

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Standard Penetration Test Summary												
Test Type	Depth	Casing	Water	Seating	Main	Penetration	N	Reported Result	Hammer Ref				
lest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	панние ке				
Split Spoon	2.00	2.00	-	2	7	450	7	N=7 (1,1/2,1,3,1)	AR1710				
Split Spoon	4.00	4.00	-	1	4	450	4	N=4 (1,0/0,1,2,1)	AR1710				
Split Spoon	6.50	4.00	-	1	4	450	4	N=4 (1,0/2,0,1,1)	AR1710				
Split Spoon	9.50	4.00	-	3	9	450	9	N=9 (2,1/3,2,2,2)	AR1710				
Split Spoon		4.00	-	5	7	450	7	N=7 (3,2/3,2,1,1)	AR1710				
Split Spoon	15.50	15.00	-	5	9	450	9	N=9 (2,3/1,2,3,3)	AR1710				
Split Spoon	18.50	15.00	-	7	15	450	15	N=15 (3,4/5,4,3,3)	AR1710				
Split Spoon		15.00	-	6	17	450	17	N=17 (3,3/3,4,5,5)	AR1710				
Split Spoon		15.00	-	9	22	450	22	N=22 (5,4/5,7,6,4)	AR1710				
Split Spoon	27.50	15.00	-	11	27	450	27	N=27 (5,6/5,6,7,9)	AR1710				
Split Spoon	30.00	30.00	24.00	25	100	430		N=100 (10,15/100 for 280mm)	AR1710				
Split Spoon	30.45	30.00	24.00	25	100	370		N=100 (25 for 105mm/100 for 265mm)	AR1710				

SPT Hammer Ref.	Energy Ratio (%)
AR1710	61

# **Applicable to Cable Percussion Only**

Chise	elling
Depth (m)	Duration (mins)
30.00 - 30.45	60

Water	Added
Depth (m)	Litres

## **Applicable to Rotary Only**

Drilling Flush									
Depth (m)	Flush Type	Flush Colour	Return %						
30.50 - 32.00									
32.00 - 33.50	Air/Mist	Grey	95						
33.50 - 35.00	Air/Mist	Grey	95						
35.00 - 36.50	Air/Mist	Grey	95						
36.50 - 38.00	Air/Mist	Grey/Black	95						
38.00 - 39.50	Air/Mist	Grey/Black	95						
39.50 - 40.20	Air/Mist	Grey	95						
40.20 - 41.70	Air/Mist	Grey	95						
41.70 - 42.70	Air/Mist	Grey	95						
42.70 - 51.20	Air/Mist	Grey	95						
51.20 - 51.50	Air/Mist	Grey	95						
51.50 - 51.70	Air/Mist	Grey	95						
51.70 - 52.20	Air/Mist	Grey/Black	95						
52.20 - 56.70	Air/Mist	Grey	95						
56.70 - 57.50	Air/Mist	Black	80						
57.50 - 65.00	Air/Mist	Grey	95						
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## **Applicable to Dynamic Sampling Only**

	Dynamic	Sampling	Runs	
Depth (m)	Diam (mm)	Recovery %	Remarks	
	I	1	1	



Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-19** FINAL

CENTRAL ALLIANCE
GEO

Sheet 1 of 7

L							Since	2017			95	
	Project No:	3043		Location	Details			Me	thodology & F	lant	Scale:	1:50
			Easting:	425457.61	Northing:	558442.56	From (m)	Met	thod	Plant Used	Checked Bv:	RPH
	Name:	A1 Birtley to Coalhouse	Lusting.	123137102	rvor crimig.	330112.30	0.00 - 1.20		tion Pit	Hand Tools	l circoncu by.	
			Elevation:	19.75mAOD	Final Depth:	65.00m	1.20 - 30.50 30.50 - 42.70		ercussion Coring	Dando 2000 Fraste PLG	Approved By:	BH
	Location:	Tyne and Wear					42.70 - 65.00		oen Holing	Fraste PLG	1	
	Location.	Tyric and Wear	Logged By:	GS+ALB+NE	Grid System:	OSGB	42.70 - 03.00	Rotal y Op	Jen Honnig	Traste FEG	Start Date:	06/12/2017
	Client:	SLIV	Orientation:	N/A	Inclination:	90°					Finish Date:	14/12/2017

Loca	ation: Tyne and Wear	Elevation:	19.75MAUD		Deptn:	65.00m	30.50 42.70	) - 42.70 ) - 65.00	Rotary Rotary Op	Coring en Holing		Fraste PLG Fraste PLG			rovea i		0.0	BH	017
	•	Logged By:	GS+ALB+NE		System:	OSGB			,.,						t Date:			5/12/2	
Clie	nt: SLIV	Orientation:	N/A		nation:	90°	Н.				<u> </u>		$\dashv$	Finis	sh Date			/12/2	017
	Strata Description		Legend	Depth (m) (Stratum	Reduced Level	Hole Ø (mm)	Casing Ø (mm)	Water Level (m)	Installation / Backfill			& Testing		-	ore		Coring		
	MADE GROUND: TOPSOIL.			(0.05)	(mAOD) 19.70	Depth (m)	Depth (m)	. ,		Depth (m)	Ref	Test Results			tun TC	CR SCI	R RQD	If	
-	MADE GROUND: Yellowish brown very sandy claye	v subangula	ar /	0.05	19.55					0.20	1 ES	PID 0.20m = 0.6ppn	n						1
-	fine to coarse limestone GRAVEL (ROADSTONE). Sa			(0.15) 0.20															-
-	coarse.		<b>IJ</b>	(0.30) 0.50	19.25					0.50 0.50 - 1.00	2 D 5 B		٩	_					-
-	MADE GROUND: Soft dark grey slightly gravelly sar		_	0.50						0.70	3 ES	PID 0.70m = 0.8ppn	١						1
1 -	Gravel is subangular to subrounded fine to mediur and mudstone. Sand is fine to coarse.	n sandstone	·							1.00	4 D								1 -
-	MADE GROUND: Light brown mottled light grey gra	avelly sandy	┌│‱	(1.30)						1.20 - 1.65		17 blows							1
-	CLAY. Sand is fine to coarse. Gravel is subangular fi	ne to coarse	∘ ‱							1.20 - 1.03	001	17 blows							-
-	sandstone, siltstone and mudstone.																		-
-				4.00	47.05					1.70	8 D	PID 1.70m = 1.0ppn	n						-
-	Soft to firm dark grey slightly sandy CLAY. Sand is fi	ine to		1.80	17.95					1.70 1.80	9 ES 9 D								- 1
2 -	medium.  From 1.80m to 2.50m becomes weakly fissured.									2.00 - 2.45 2.00 - 2.50	10 D 11 B	SPT(S) 2.00m, N=7 (1,1/2,1,3,1)							2 -
-	Trom 1.00m to 2.50m becomes weakly Jissurea.																		1
_	From 2.50m becomes thinly laminated and slightly silty.																		4
-	rrom 2.50m becomes thinly luminated and slightly sitty.																		1
-										2.80		PID 2.80m = 0.9ppn	1						1
3 -										3.00 3.00 - 3.45	UT 13 UT	20 blows							3 —
-																			-
-										3.45	14 D								4
-																			-
-						250	350												1
4 -						<u>250</u> 4.00	<u>250</u> 4.00			4.00 - 4.45 4.00 - 4.50	15 D 16 B	SPT(S) 4.00m, N=4 (1,0/0,1,2,1)							4 -
-																			-
_																			
-																			-
-																			
5 -										5.00 - 5.45	17 UT	21 blows							5 —
-																			
-										5.45	18 D								3
-																			-
-																			-
6 -										6.00	19 D								6 -
-																			1
-										6.50 - 6.95	20 D	SPT(S) 6.50m, N=4							
-										6.50 - 7.00		(1,0/2,0,1,1)							-
																			1
7 -																			7 -
-																			7
-																			1
										7.50	22 D								7
-																			1
8 -										8.00 - 8.45	23 UT	31 blows							8 -
-																			1
-										8.45	24 D								1
-																			7
-																			1
9 -										9.00	25 D								9 —
-																			1
-																			1
-										9.50 - 10.00 9.50 - 9.95	27 B 26 D	SPT(S) 9.50m, N=9 (2,1/3,2,2,2)							-
-																			1
10 -	Continued on New Por													$\downarrow$	$\bot$	$\bot$		Щ	10 -
	Continued on Next Page													$\perp$	ᆚ	丄			
Obs	ervations / Remarks	1	Misc.	т:		formatio		Water /-	n) From (m)	Backfill To (m)	Material	Inches or -	nt Doto		tallatio		a Dont	h (m)l	Diam
		pa	Date 06/12	17:0	00	14.50	4.00 4.00	Water (r	n) From (m) 0.00		Material Bentonite	Instrume	iic Detai	5	Kesp	. zone	e Dept	11 (m)	viam
		ounter	07/12 07/12 08/12	08:0 17:0 08:0	00 :	14.50 28.00 28.00	4.00 15.00 15.00	Dry Dry 24.00											
		er Ena	5 6 ns/12	17:0	00 :	30.50 30.50	30.00 30.00							Wat	er Stril	kes	-1		$\neg$
		ndwat	Casing 12/12 13/12	18:0	00 :	35.00 35.00	30.50 30.50	29.20				Strike (m) Rise				_	Rema	ırks	$\equiv$
		Groun	13/12 13/12 14/12	17:0	00 4	11.70 11.70	35.00 33.00	17.40				28.00 1	15.00	20					
1																			



Easting:

Project No:

Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Combined Borehole

Log Type

Exploratory Hole Number **RH17-19** 

BH17-19 FINAL



 Web: www.central-alliance.co.uk
 Sheet 2 of 7
 CENTRAL ALLIANCE

 Location Details
 Methodology & Plant
 Scale: 1:50

 425457.61
 Northing: 558442.56
 From (m) Method Plant Used Checked By: RPH

Elevation: 19.75mAOD Final Depth: 65.00m Approved By: BH Location: Tyne and Wear Logged By: GS+ALB+NE Grid System: OSGB Start Date: 06/12/2017 Client: SLJV Orientation: N/A Inclination: 90° Finish Date: 14/12/2017 Samples & Testing Depth (m) Reduced Hole Ø Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref 10.50 28 D 11.00 - 11.45 29 UT 37 blows 11 12 SPT(S) 12.50m, N=7 (3,2/3,2,1,1) 13 13.50 33 D 39 blows 14.00 - 14.45 34 UT 14 14.45 35 D 200 15.00 <u>200</u> 15.00 15.00 36 D 15 15.50 - 15.95 15.50 - 16.00 37 D 38 B SPT(S) 15.50m, N=9 (2,3/1,2,3,3) (27.70) 16.50 39 D 17 41 D 18.00 42 D 18 SPT(S) 18.50m, N=15 (3,4/5,4,3,3) 18.50 - 18.95 18.50 - 19.00 43 D 44 B 19 19.50 45 D 20.00 - 20.45 46 UT 20 Continued on Next Page Misc Observations / Remarks Shift Information Date 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 65.00
 Bentonite
 Instrument Details Resp. Zone Depth (m) Diam Water Strikes 
 Strike (m)
 Rises To (m)
 Time (min)

 28.00
 15.00
 20
 Remarks



3043

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Location Details

Combined Borehole

Sheet 3 of 7

Log Type

Exploratory Hole Number

BH17-19

FINAL

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used 558442.56 RPH Easting: 425457.61 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 19.75mAOD Final Depth: 65.00m Approved By: BH Tyne and Wear Location: Logged By: GS+ALB+NE Grid System: OSGB Start Date: 06/12/2017 Client SLIV Orientation N/A Inclination: Finish Date: 14/12/2017 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref 20.45 47 D 21.00 48 D From 21.00m with rare subrounded fine to medium sandstone and siltstone gravel SPT(S) 21.50m, N=17 (3,3/3,4,5,5) 22 51 D 23.00 - 23.45 52 UT 65 blows 23 23.45 53 D 24.00 54 D 24 24.50 - 24.95 24.50 - 25.00 SPT(S) 24.50m, N=22 (5,4/5,7,6,4) 25 From 25.00m becomes slightly silty. 25.50 57 D 58 UT 72 blows 27 SPT(S) 27.50m, N=27 (5,6/5,6,7,9) 27.50 - 27.95 27.50 - 28.00 28 63 D 28.50 64 UT-100 blows 29.00 - 29.45 29 NR 65 B 29.00 - 29.45 29.45 - 29.90 66 UT 100 blows 29.50 -9.75 Firm to stiff dark grey slightly gravelly slightly sandy CLAY with NR 67 B 29.45 - 29.90 occasional cobbles. Sand is fine to coarse. Gravel is subangular to subrounded sandstone and mudstone. Cobbles are (1.00)30.00 - 30.45 68·D SPT(S) 30.00m, N=100 (10,15/100 for 280mm) 30 Continued on Next Page Misc Observations / Remarks Shift Information Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam Water Strikes Strike (m) Rises To (m) Time (min) 28.00 15.00 20 Remarks



3043

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Location Details

Combined **Borehole** 

Log Type

Exploratory Hole Number BH17-19

FINAL



1:50

Scale:

Sheet 4 of 7 Methodology & Plant

		Easting:	425457.61	Nor	thing:	558442.5	6 Fro	om (m)	Me	thod		Plant Used	Checke	d Bv:			RPH	
Nar	ne: A1 Birtley to Coalhouse	Elevation:	19.75mAOD		l Depth:	65.00m							Approv				вн	
Loc	ation: Tyne and Wear	Logged By:	GS+ALB+NE		System:	OSGB							Start Da		у.	06	/12/20	217
CI:-	The CLIV																	
Clie	int: SLIV I	Orientation:	N/A		nation:	90°			ı				Finish D	Jate:			/12/20	)1/
	Strata Description		Legend	Depth (m) (Stratum	Reduced Level	Hole Ø (mm)	Casing Ø (mm)	Water Level (m)	Installation / Backfill			es & Testing	Verthod Core	_	Cor		$\overline{}$	
	- Louis Louis III		140 (114 )	Thickness)	(mAOD)	Depth (m)	Depth (m)	(,		Depth (m)	Ref	Test Results	Run	TCR	SCR	RQD	If	
-	subangular sandstone.																	
-										30.30	69 D							-
-	Very weak to medium strong dark and light grey N	/UDSTONE		30.50	-10.75					30.45 - 30.90 30.50 - 30.67	70 D 4 C	SPT(S) 30.45m, N=100 (25 for 105mm/100 for		+			$\dashv$	-
-	and fine grained SANDSTONE. Discontinuities are											265mm)						
-	subvertical (0-10 degrees) undulating rough.					150 30.90												
31 -	From 30.50m to 31.05m recovered as slightly gravelly slightly Gravel is fine to coarse. Sand is fine to coarse.	y sandy clay.				30.30												31 -
-	From 31.05m to 32.00m recovered as very clayey subangular	r to											30.50 32.00	100	0	0	NI	
-	subrounded fine to coarse gravel.																	-
-										31.80								
32 -	From 32.00m to 32.75m Assumed Zone of Core Loss.													+			-	32 -
-	,																	
-																	NR	
-																		-
-	From 32.75m to 33.05m recovered as slightly gravelly slightly	v sandv clav.											32.00 33.50		0	0	-	
22 -		,,																22 -
33 -	From 33.05m to 33.50m recovered as subangular to subroun	ded fine to								33.20							NI	33 -
-	coarse gravel.									33.28 - 33.35	1 C							
-	From 33.50m to 34.40m Assumed Zone of Core Loss.													₩	Н		_	-
-	Troin 33.30in to 34.40in Assumed 20ile of Core Loss.			(6.30)														
-																		
34 -																	NR	34 -
-													33.50 35.00	43	0	0		
-	From 34.40mto 35.00m recovered as subangular to subround	ded fine to											33.00			ŀ	-	
-	coarse gravel.	•																-
-																	NI	
35 -	5 25 00m to 26 20m Assumed 7 of Complete						140 35.00							₩			_	35 -
-	From 35.00m to 36.30m Assumed Zone of Core Loss.						35.00						ω					
-													×					
-																		-
-													35.00	13	7	7	NR	
-													36.50					
36 -																		36 -
-	5 25 20 1 25 40															ļ		
	From 36.30m to 36.40m recovered as subangular to subroun- coarse gravel.	аеа лпе то								36.42 - 36.50	5 C			$oldsymbol{ol}}}}}}}}}}}}}}}}}$			NI 10	-
-	From 36.42m to 36.80m, strong to very strong. From 36.50m to 36.80m recovered as slightly sandy clay. San	nd is fine to																
-	coarse.	iu is jine to		36.80	-17.05													
37 -	Very weak black COAL. From 36.80m to 37.07m and 37.60m to 38.21m recovered as	: sandu																37 -
-	subangular to subrounded fine to coarse gravel. Sand is fine to												36.50		0	0	NI	
-													38.00					
-										37.53 - 37.60 37.60	6 C							-
-										"								
38 -				(2.20)									1 📖	$\perp$	Ш		$\Box$	38 -
-																	NI	
-	1									20.40						Ī		
-	-									38.40							10	-
													38.00		43	46	18	
													39.50	-		-		
39 -	From 38.97m to 39.30m recovered as subangular to subroun-	ded fine to		39.00	-19.25											Ì	$\exists$	39 -
-	coarse gravel. Strong dark and light grey MUDSTONE and fine gravel.	ained															NI	
-	SANDSTONE. Discontinuities are closely spaced su		-10										1 L	$\perp$	ot			
-	degrees) undulating rough.									39.55						7	14	-
	From 39.30m to 39.50m Assumed Zone of Core Loss. From 39.50m to 39.60m to recovered as subangular to subro	ounded								39.87 - 39.97	2 C		39.50 40.20		14	29	NI	
40 -	medium to coarse gravel.									39.07 - 39.37		ļ	<u> </u>	+	Н	_	NI	40 -
	Continued on Next Page								<u> </u>			<u> </u>	Щ_	丄			$\perp$	
Obs	servations / Remarks		Misc.	1		formation			\ F ( )	Backfill	4-1 1	1	Installa			D	. ()	21.
		7	Date	Tim	ie De	pth (m) C	asing (m)	vvater (m	n) From (m) 0.00		Materia Bentoniti		ans F	Resp. 2	zone	vepth	(m) E	Diam
		i de la companya de l	9 Used															
		88	g Use g Poin										Water:	Strik	es			
		wate	Casing Casing No Monitoring									Strike (m) Rises To (m)	Time (min)			Remar	rks	
		ounou	Mon									28.00 15.00	20					
		6	ž															



Combined Borehole

Log Type

Exploratory Hole Number

RH17\_19

**BH17-19** FINAL



Sheet 5 of 7

	<u> </u>							Sheet 5	of 7							GEO		
Pro	ject No: <b>3043</b>		Lo	ation Deta	ils				Me	thodology &	Plant			Scale:			1:5	50
N	A4 Distants Coally and	Easting:	425457.61	Nor	thing:	558442.5	6	From (m)	Met	thod		Plant Used		Checked	d By:		RP	Ή
Nar	ne: A1 Birtley to Coalhouse	Elevation:	19.75mAOE		l Depth:	65.00m								Approve			ВІ	н
Loc	ation: Tyne and Wear																	
LOC	ation. Tylie and wear	Logged By:	GS+ALB+NE	Grid	System:	OSGB								Start Da	ate:		06/12,	/2017
Clie	nt: SLIV	Orientation:	N/A	Incl	ination:	90°								Finish D	ate:		14/12,	/2017
				Depth (m)	Reduced	Hole Ø	Casing	Ø Water	Installation /	9	Samples	& Testing		DO		Corin	g	
	Strata Description		Legen	d (Stratum Thickness)		(mm) Depth (m)	(mm) Depth (	) Lovel(m)	Backfill	Depth (m)	Ref	Test Resu	ılts	Core	TCR	SCR R	QD If	
	From 39.75m to 39.82m and 40.05m to 40.10m recovered as	subanaular			<u> </u>									Run	H			
	to subrounded fine to coarse gravel.									40.15 40.20 - 40.39	3 C						NI 10	]
				(2.70)						40.20 40.33	3.0						9	
-	From 40.44m to 40.48m recovered as subangular fine to coar	rse gravel.																1 -
										40.80				40.20			1.	
41 -										41.05				41.70	93	86 5	50 11	41 -
	5 44 37 to 44 30	d- d 6 t-															<u> </u>	4 :
-	From 41.37m to 41.39m recovered as subangular to subround medium gravel.	ueu jirie to															15	-
	From 41.59m to 41.70m recovered as subangular fine to coar	rse gravel.		41.70	-21.95					41.65							NI	
	COAL Seam. From 41.70m to 41.88m recovered as subangular to subround	ded fine to															ļ	4 :
42 -	coarse gravel.	aca jiile W		(0.50)													12	42 -
:				42.20	-22.45									41.70 42.70	75	47 3	35	4
	Weak to medium strong interbedded dark and ligh	- ,		(0										72.70			NI 10	- 1
-	MUDSTONE and fine grained SANDSTONE. Discont closely spaced subvertical (0-10 degrees) undulati			(0.50)						42.60							NI	1 -
:	From 42.20m to 42.23m recovered as subangular fine to med	lium gravel.		42.70	-22.95	140 42.70				42.0U			}	1	$\vdash$		+"	-
:	From 42.30m to 42.36m and 42.47m to 42.50m recovered as	subangular	/==			42.70												
43 -	to subrounded fine to coarse gravel. Interbedded MUDSTONE and light grey SANDSTON	NE (Driller's	$\neg =$	∃														43 -
-	Description).	12 (21																-
																		:
-																		-
-																		
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-				=														-
:																		1 :
-				(8.50)														1.
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Obs	servations / Remarks	N	∕lisc.			nformation				Backfill				Installa				
			Dat	e Tin	ne De	pth (m) C	asing (n	n) Water (m	) From (m) 0.00	To (m) N	1aterial entonite	Instrur	ment Deta	ils R	Resp. Z	one De	pth (m	) Diam
		ered	stalle						0.00	65.00 B	entonite							
		count	Casing Used No Monitoring Point Installed															
		er En	ing L											Water 9	Strike	s		
		ndwat	Cas									Strike (m) R				Re	marks	
		Groun	lo Mo									28.00	15.00	20				
L			2															



Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

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Sheet 6 of 7

Combined Borehole

Log Type

Exploratory Hole Number

BH17-19 FINAL



Methodology & Plant Location Details Scale: 1:50 Project No: From (m) Method Plant Used 558442.56 RPH Easting: 425457.61 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 19.75mAOD Final Depth: 65.00m Approved By: BH Tyne and Wear Location: Logged By: GS+ALB+NE Grid System: OSGB Start Date: 06/12/2017 Client: SLIV Orientation N/A Inclination: Finish Date: 14/12/2017 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Interbedded MUDSTONE and light grey SANDSTONE (Driller's Description). 51.20 -31.45 Broken Ground - Possible VOID (Driller's Description). (0.30) Dark grey MUDSTONE. (0.20)51.70 Coal - Broken Ground (Driller's Description). (0.50) 52 52.20 -32.45 Interbedded MUDSTONE and light grey SANDSTONE (Driller's Description). 53 (4.50)-36.95 Broken Ground - Possible VOID (Driller's Description). (0.80) Interbedded MUDSTONE and light grey SANDSTONE (Driller's Description). 59 60 Continued on Next Page Observations / Remarks Misc Shift Information Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam Water Strikes 
 Strike (m)
 Rises To (m)
 Time (min)

 28.00
 15.00
 20



Combined Borehole

Log Type

Exploratory Hole Number

**BH17-19** FINAL

CENTRAL ALLIANO

Project No:         3043         Location Details         Methodology & Plant           Name:         A1 Birtley to Coalhouse         Easting:         425457.61         Northing:         558442.56         From (m)         Method Ology & Plant Used           Location:         Tyne and Wear         Logged By:         GS+ALB+NE         Grid System:         OSGB         OSGB	Scale: 1:50
Name: A1 Birtley to Coalhouse Elevation: 19.75mAOD Final Depth: 65.00m	Approved By: BH  Start Date: 06/12/2017  Finish Date: 14/12/2017
Location: Type and Wear	Start Date: 06/12/2017 Finish Date: 14/12/2017
Logged By: GS+ALB+NE Grid System: OSGB	Finish Date: 14/12/2017
Client: SLIV Orientation: N/A Inclination: 90°    Depth (m) Reduced   Hole Ø   Casing Ø     Samples & Testing	
Strata Description   Legend   Stratum   Level   (mn)   (mn	
- Interbedded MUDSTONE and light grey SANDSTONE (Driller's	Kun
Description).	
	61
(7.50)	
	62
63 –	63
	64
65.00 -45.25   120   65.00   -45.25   65.00   -45.25   120	65
66 <del> </del>	66
	67
	68
	69
70	70
Observations / Remarks         Misc.         Shift Information         Backfill           Date         Time         Depth (m)         Casing (m)         Water (m)         From (m)         To (m)         Material         Instru	Installations nent Details Resp. Zone Depth (m) Diam
	nesp. zone bepri (iii) bian
Section in the section is a section in the section in the section in the section is a section in the section in	
O.00   Bentonite	Water Strikes ises To (m) Time (min) Remarks
28.00	15.00 20



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Tel: +44 (0)1924 229889 Web: www.central-alliance.co.uk Log Type
Header
Sheet

Exploratory Hole Number

**BH17-20** 

FINAL



Project No:	3043		Location	Details			Metho	dology & P	ant	Scale:	1:50
		Easting:	425462.87	Northing:	558418.32	From (m)	Method	d	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection F		Hand Tools		
		Elevation:	19.04mAOD	Final Depth:	65.00m	1.20 - 32.50 32.50 - 44.50	Cable Percuss Rotary Cori		Dando 2000 Fraste PLG	Approved:	BH
Location:	Tyne and Wear	Logger:	ALB+GS	Grid System:	OSGB	44.50 - 65.00			Fraste PLG	Start Date:	27/11/2017
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	08/12/2017

Hole Di	ameter
Depth (m)	Diam (mm)
7.00	250
19.00	200
44.50	140
65.00	120

Casing Diameter									
Depth (m)	Diam (mm)								
4.00	250								
19.00	200								
30.50	140								
l									
l									
l									

	Groundwater Strikes										
Strike		Sealed		Rose To	Remarks						
(m)	(m)	(m)	(min)	(m)	Nemark3						
27.00	-	19.00	20	25.50							

Installation / Instrument Details									
	mistaliation / mistrum	בוונ שפנמ	1115						
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam					
Date	mstrument Details	10 (111)	ricap. Zone (III)	(mm)					
15/12/2017	Standpipe Piezometer	16.00	15.00 - 17.00						
ł									

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill								
Depth (m)	Legend Code							
0.00 - 0.50	Concrete							
0.50 - 15.00	Bentonite							
15.00 - 17.00	Sand							
17.00 - 65.00	Bentonite							

In-Situ Tests	
PID	4
Hand Vane*	2
Standard Penetration Tests	12

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Camaria Camara								
	Sample Summary							
	Environmental Samples							
0	Soil <b>5</b> Water							
	Geotechnical Samples							
0	Large Bulk	14	Bulk					
0	Disturbed (NR)	33	Disturbed					
0	Piston (NR)	0	Piston					
) 0	Undisturbed (NR)	0	Undisturbed					
10	Undisturbed Thin Wall							
3	Undisturbed Thin Wall (NR)							
0	nple	re San	Cor					

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	1.50	1.00	Dry	2	12	450	12	N=12 (1,1/2,3,4,3)	AR1710
Split Spoon	3.50	2.00	Dry	2	5	450	5	N=5 (1,1/1,2,1,1)	AR1710
Split Spoon	6.00	4.00	Dry	2	9	450	9	N=9 (1,1/2,1,3,3)	AR1710
Split Spoon	9.00	4.00	Dry	3	11	450	11	N=11 (1,2/3,3,2,3)	AR1710
Split Spoon	12.00	4.00	Dry	4	8	450	8	N=8 (2,2/3,2,1,2)	AR1710
Split Spoon	15.00	6.00	Dry	5	10	450	10	N=10 (2,3/2,2,4,2)	AR1710
Split Spoon	18.00	6.00	Dry	7	14	450	14	N=14 (3,4/3,2,5,4)	AR1710
Split Spoon	21.50	19.00	Dry	8	15	450	15	N=15 (3,5/4,3,3,5)	AR1710
Split Spoon	24.50	19.00	Dry	9	20	450	20	N=20 (4,5/6,5,5,4)	AR1710
Split Spoon	27.50	19.00	25.50	9	19	450	19	N=19 (4,5/3,4,6,6)	AR1710
Split Spoon	31.00	19.00	25.50	25	81	430	81	N=81 (25 for 130mm/16,16,14,35)	AR1710
Split Spoon	31.45	19.00	25.50	25	100	270		100 (25 for 115mm/100 for 155mm)	AR1710

SPT Hammer Ref.	Energy Ratio (%)
AR1710	61

#### **Applicable to Cable Percussion Only**

Chise	Chiselling									
Depth (m)	Duration (mins)									
31.30 - 31.45	60									

Water Added								
Litres								

# **Applicable to Rotary Only**

Drilling Flush							
Flush Type	Flush Colour	Return %					
Air/Mist	Grey	95					
Air/Mist	Grey	95					
Air/Mist	Dark grey	95					
Air/Mist	Black	95					
Air/Mist	Dark grey	95					
Air/Mist	Grey	95					
		95					
Air/Mist	Grey	95					
Air/Mist	Grey	95					
		50					
Air/Mist	Grey	95					
	Flush Type Air/Mist Air/Mist Air/Mist Air/Mist Air/Mist Air/Mist Air/Mist Air/Mist Air/Mist Air/Mist Air/Mist	Flush Type Flush Colour Air/Mist Grey Air/Mist Grey Air/Mist Dark grey Air/Mist Black Air/Mist Dark grey Air/Mist Grey Air/Mist Grey Air/Mist Grey Air/Mist Grey Air/Mist Grey Air/Mist Grey Air/Mist Grey Air/Mist Grey Air/Mist Grey Air/Mist Grey Air/Mist Grey Air/Mist Grey Air/Mist Grey					

### **Applicable to Dynamic Sampling Only**

		Dynamic	Sampling	Runs	Ш
Ш	Depth (m)	Diam (mm)	Recovery %	Remarks	
					П
					П
					П
					П
					П
					П
					П
					П
					П



Combined Borehole

Log Type

Exploratory Hole Number

BH17-20 FINAL CENTRAL ALLIANCE GEO

Sheet 1 of 7

Pro	ject No:	3043		Locat	tion Detai	ls				Me	thodology 8	Plant		Sc	cale:			:	1:50
Nar	ne:	A1 Birtley to Coalhouse	Easting:	425462.87	Nort	hing:	558418.32	-	rom (m) 0.00 - 1.20	Inspec	thod tion Pit		Plant Used Hand Tools		hecked			ı	RPH
Loc	ation:	Tyne and Wear	Elevation:	19.04mAOD		Depth:	65.00m	32	.20 - 32.50 2.50 - 44.50 3.50 - 65.00	Rotary	ercussion / Coring pen Holing		Dando 2000 Fraste PLG Fraste PLG	1	pprove		":		BH
Clie		SLIV	Logged By: Orientation:	ALB+GS N/A		System: nation:	OSGB 90°			, , ,					art Da nish D				11/2017 12/2017
-					Depth (m)	Reduced	Hole Ø	Casing (		Installation /		Sample:	s & Testing	р			Corir		
		Strata Description		Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (r	Laurel (sec)	Backfill	Depth (m)	Ref	Test Results	Meth	Core Run	TCR	SCR F	RQD	If
-	MADE G occasior sandstor subangu	IROUND: TOPSOIL. IROUND: Dark brown slightly gravelly sand hal cobbles. Gravel is subangular fine to co he and brick. Sand is fine to coarse. Cobble ilar brick.  MADE GROUND: Light brown and grey slight	arse es are		(0.05) 0.05 (0.65)	18.99 18.34					0.20 0.20 - 0.30 0.20 - 1.20 0.30 0.70 0.70	1 D 2 ES 5 B 1 ES 3 ES 4 D	PID 0.20m = 0.2ppm HV 0.50m, (p)=52 kPa (r) =8 kPa PID 0.70m = 0.1ppm	Ы					-
1 -	sandy Cl coarse s	LAY. Sand is fine to coarse. Gravel is subang andstone and siltstone.	gular fine to		(0.80)	17.54					1.50	7 ES	SPT(S) 1.50m, N=12						1 -
2 -	CLAY wit	irm weakly thinly laminated dark grey and th occasional gravel. Sand is fine to coarse. Ilar fine sandstone and siltstone.		dy							1.50 - 1.95 1.50 - 2.00	6 D 8 B	(1,1/2,3,4,3) PID 1.50m = 0.0ppm HV 1.80m, (p)=28 kPa (r) =14 kPa						2 -
3 -	From	2.50m no gravel.									2.50 2.50 - 2.95 2.95	9 ES 10 UT 11 D	50 blows, 100% Recovery PID 2.50m = 0.0ppm						3 -
-								250			3.50 - 3.95 3.50 - 4.00		SPT(S) 3.50m, N=5 (1,1/1,2,1,1)						-
4 -								<u>250</u> 4.00			4.50 - 4.95	14 UT	33 blows, 100% Recovery						4 -
5 -											4.95	15 D							5 -
6 -											6.00 - 6.45 6.00 - 6.50	16 D 17 B	SPT(S) 6.00m, N=9 (1,1/2,1,3,3)						6 =
7 -							<u>250</u> 7.00				7.50 - 7.95	18 UT	40 blows, 100% Recovery						7 -
8 -											7.95	19 D							8 -
9 -											9.00 - 9.45 9.00 - 9.50		SPT(S) 9.00m, N=11 (1,2/3,3,2,3)						g -
10 =	ervations /	Continued on Next Page	Ι,	Misc.	-	Shift In	formation				Backfill				nstalla	ation			10
009	ei valions /	nemal (S		Date	Tim	e Dep	oth (m) C	asing (m			To (m)	Material		ails	Re	Resp. Z	Zone D		
			Goundwater Encountered	Casing Used Casing Used Casing Used Casing Opint's installed 30/11 30/11 01/12 01/12 07/12	17:0 08:0 17:0 08:0 17:0 08:0 17:0 08:0 17:0 07:3	0 1 0 1 0 1 0 1 0 1 0 2 0 2 0 2	3.95 3.95 5.00 5.00 9.95 9.95 7.95 7.95 2.50	2.00 2.00 4.00 4.00 6.00 6.00 19.00 19.00 19.00 30.50	Dry Dry Dry Dry Dry 25.50 25.50 25.60	0.00 0.50 15.00 17.00	15.00 17.00	Concrete Bentonite Sand Bentonite		V\ ) Tim	Vater S ne (min) 20	Strike	es.	16.00	



3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Location Details

# Combined **Borehole**

Log Type

Sheet 2 of 7

Exploratory Hole Number

**BH17-20** 

**FINAL** 



1:50

Scale:

Methodology & Plant From (m) Method Plant Used 558418.32 Checked By: RPH Easting: 425462.87 Northing: A1 Birtley to Coalhouse Name: Elevation: 19.04mAOD Final Depth: 65.00m Approved By: BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 27/11/2017 Client: SLJV Orientation: N/A Inclination: Finish Date: 08/12/2017 Depth (m) Reduced Hole Ø Samples & Testing Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref 10.50 - 10.95 22 UT 27 blows, 100% Recovery 10.95 23 D 11 12 13 13.50 - 13.95 26 UT 50 blows, 100% Re 13.95 27 D 14 14.50 28 D (26.50) 15.00 - 15.45 15.00 - 15.50 29 D 30 B SPT(S) 15.00m, N=10 (2,3/2,2,4,2) 15 16.00 31 D 60 blows, 100% Recov 33 D 17 34 D SPT(S) 18.00m, N=14 (3,4/3,2,5,4) 18.00 - 18.45 18.00 - 18.50 18 200 19.00 200 19.00 37 D 19.00 19 19.50 - 19.95 38 UT NR 39 B 19.50 - 19.95 19.95 - 20.35 40 UT 63 blows, 100% Recovery 20 Continued on Next Page Misc Observations / Remarks Shift Information Backfill To (m) Material

0.50 Concrete
15.00 Bentonite
17.00 Sand
65.00 Bentonite 
 Time
 Depth (m)
 Casing (m)
 Water (m)

 07:30
 41.50
 30.50
 Resp. Zone | Depth (m) | Diam | 15.00 - 17.00 | 16.00 | Instrument Details Water Strikes 
 Strike (m)
 Rises To (m)
 Time (min)

 27.00
 25.50
 20



Combined **Borehole** 

Log Type

Exploratory Hole Number **BH17-20 FINAL** 



Sheet 3 of 7 Location Details Methodology & Plant Project No: Scale: 1:50 3043 From (m) Method Plant Used 425462.87 558418.32 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 19.04mAOD Final Depth: 65.00m Approved By: BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 27/11/2017 Client SLIV Orientation: N/A Inclination: 90° Finish Date: 08/12/2017 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref 21.00 41 D SPT(S) 21.50m, N=15 (3,5/4,3,3,5) 42 D 43 B 22 44 D 23.00 - 23.45 45 UT 59 blows, 100% Recovery 23 23.45 46 D 24.00 47 D 24 24.50 - 24.95 24.50 - 25.00 48 D 49 B SPT(S) 24.50m, N=20 (4,5/6,5,5,4) 25 25.50 50 D From 25.50m becomes slightly silty. 26.00 - 26.45 51 UT 52 D 27 SPT(S) 27.50m, N=19 (4,5/3,4,6,6) At 27.90m band of dark grey fine to coarse sand. 28.00 -8.96 28 Soft greyish brown sandy very silty CLAY. Sand is fine to coarse. 56 D 28.50 57 UT 29.00 - 29.45 29 NR 58 B 29.00 - 29.45 59 UT 29.45 - 29.90 (3.00)NR 60 B 29.45 - 29.90 30 Continued on Next Page Misc Observations / Remarks Shift Information Backfill Resp. Zone | Depth (m) | Diam | 15.00 - 17.00 | 16.00 | Depth (m) Casing (m) Water (m) To (m) Instrument Details Water Strikes 
 Strike (m)
 Rises To (m)
 Time (min)

 27.00
 25.50
 20



3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Location Details

Combined **Borehole** 

Sheet 4 of 7

Log Type

Exploratory Hole Number

**BH17-20** 

**FINAL** 

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used Easting: 425462.87 Northing: 558418.32 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 19.04mAOD Final Depth: 65.00m Approved By BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 27/11/2017 Client SLIV Orientation N/A Inclination: Finish Date: 08/12/2017 Depth (m Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) (mm) Depth (m Depth (m) Ref Soft greyish brown sandy very silty CLAY. Sand is fine to coarse. 30.50 61 D 31.00 -11.96 31 00 - 31 45 62 D SPT(S) 31.00m. N=81 (25 31 Weak to strong dark and light grey interbedded thinly laminated fine grained SANDSTONE and MUDSTONE. Discontinuities are set 1) very close to close (5-10 degrees) undulating rough and SPT(S) 31.45m, 100 (25 for 115mm/100 for 155mm) 31.45 - 31.90 set 2) medium to widely spaced subvertical (70-80 degrees) undulating rough. From 31.00m to 31.15m recovered as subrounded medium to coarse gravel.

From 31.70m to 32.10m recovered as slightly sandy angular to subrounded fine to coarse gravel. Sand is fine to coarse. 32 From 32.50m to 33.30m Assumed Zone of Core Loss. 33 3 0 73 From 33.30m to 33.54m recovered as arayelly sandy clay. Gravel is subangular to subrounded fine to coarse. Sand is fine to coarse 33.70 From 33.80m to 34.00m recovered as subangular to subrounded fine to coarse gravel.
From 34.00m to 34.60m Assumed Zone of Core Loss. 34 (7.00)From 34.60m to 34.85m recovered as sandy very gravelly clay. Gravel is 34.00 0 subangular to subrounded fine to coarse. Sand is fine to coarse. 30 0 35 From 34.97m to 35.15m recovered as subangular to subrounded fine to NI coarse gravel. From 35.33m to 35.50m recovered as subangular to subrounded coarse gravel.
From 35.50m to 36.40m Assumed Zone of Core Loss. 35.70 60 0 From 36.40m to 36.57m recovered as subangular to subrounded medium NI to coarse aravel. From 36.76m to 37.00m 1 no. discontinuity subvertical (70-80 degrees) 40 38.00 -18.96 38 COAL From 38.00m to 38.60m recovered as subangular to subrounded fine to coarse gravel. NI (1.25) From 38.90m to 39.25m recovered as sandy subangular to subrounded fine to coarse gravel. Sand is fine to coarse. 38.50 40.00 NI 39.25 -20.21 40 0 0 Weak to strong dark and light grey interbedded thinly laminated fine grained SANDSTONE and MUDSTONE. Discontinuities are 39.60 set 1) very close to close (5-10 degrees) undulating rough and 13 set 2) medium to widely spaced subvertical (70-80 degrees)
From 39.25m to 39.50m recovered as subangular to subrounded fine to NI Continued on Next Page Observations / Remarks Misc Shift Information Backfill Depth (m) Casing (m) Water (m) Resp. Zone | Depth (m) | Diam | 15.00 - 17.00 | 16.00 | Date To (m) Instrument Details Water Strikes Strike (m) Rises To (m) 27.00 25.50 Time (min)



Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Northing:

Location Details

425462.87

Easting:

Combined Borehole

Log Type

Exploratory Hole Number

BH17-20 FINAL



Section   Sect	1401111	AT SINCEY TO COMMODISE	Elevation:	19.04mAOD	Fina	l Depth:	65.00m							Ар	oprove	ed By	:		ВН
South Execution  Annual 25 are to \$25 are control and submitted from the control of the control	Locat	tion: Tyne and Wear	Logged By:	ALB+GS	Grid	System:	OSGB							Sta	art Da'	te:		27/	11/2017
Section   Sect	Clien	it: SUV	Orientation:	N/A	Incli	ination:	90°							Fin	nish D	ate:		08/	12/2017
Train 1972 to 1973 the recovered in contemplate to electromate for the contemplate of t									Water	Installation /		Samples	& Testing	роц			Cori	ng	
Consequence of classics.  According of the control of classics of classics of the control of the classic of the		Strata Description		Legend			(mm) Depth (m)	(mm) Depth (m	Lound (m)		Depth (m)	Ref	Test Results			TCR	SCR F	RQD	If
Consideration of Nation and National Control of National Control o	4		ded fine to											Ħ	- Null		_	T	
Description is a discontinuous above discontinuous to advantante for the processing of the processing	1		ded fine to													l			
The mail of the third of the control	1	coarse gravel.		::::	:											l			
The control of the co	-		ded fine to		(2.65)											H			
Secretarion of Color recovered in subminishing to submonited file in S	- 1		aaraas) nlanar								40.70					93	31	7	NI
To come different to the control of	41	smooth.			:											H			41
From 4.5 thm o 4.5 thm o 4.5 thm o 4.5 thm o 4.5 thm o 4.5 thm o 4.5 thm o 4.5 thm o 4.5 thm o 4.5 thm o 4.5 thm o 4.5 thm o 6	-		ded fine to	: : : :	:											H			'-
The many states of the second	+	From 40.68m to 40.84m 1 no. discontinuity inclined (60-70 de	egrees) planar	::::							41.25					H			
The state of the context provided in the context provi	-		ded fine to											$  \cdot  $	$\rightarrow$	$\vdash$	$\dashv$	+	
obscriptions for the course greed.  Internal Library and Shart Found Workshop of the Course greed.  Weak to strong dark and light presented and thinly laminated fine grained SANDSTONE internal greek.  The grained SANDSTONE and SANDSTONE problem of the Course greek.  Weak to strong to to tooke (5-10 dogs) interned date within year in the course greek.  Weak to strong the course greek and saldenged in the course greek.  Weak to strong the course greek and saldenged in the course greek.  Weak to strong the course greek and saldenged in the course greek.  Internal Library and the course greek and saldenged in the course greek.  And the course greek and saldenged in the course greek and saldenged in the course greek.  Internal Library and the course greek and saldenged in the course greek.  Internal Library and the greek and saldenged in the course greek.  Internal Library and the greek and saldenged in the course greek.  Internal Library and the greek and saldenged in the course greek.  Internal Library and the greek and saldenged in the course greek.  Internal Library and the greek and saldenged in the course greek.  Internal Library and the greek greek and saldenged in the course greek.  Internal Library and the greek	1	coarse gravel.		: : : :	:											H			
The continues of 1.50 in 10 continues on New York (1976) (	1	subrounded fine to coarse gravel.		::::	41.90	-22.86										H			
Weak to strong with refresheded thinly laminated fine grained SANDSTONE interheded thinly laminated fine grained SANDSTONE on Lose (5-10 Degree) undulating rough and set 2) medium to widely spaced subvertical (70-80 degree) and set 2) medium to wid	42 -		egrees) planar	/	(0.26)											H			NI 42
West to strong dark and light grey interbedded thinly laminated fine grained SAMDSTONA BUILDFORM Expression interest of the grained SAMDSTONA BUILDFORM SAMDSTONA BUIL	1		el.		42.16	-23.12										100	13	0	
See 2 years of the color of the				ea										11	43.00	H		F	
See 2.3) melitum to widerly spaced subvertical (70-80 degrees) undulating rough.  From 43.17m to 42.40 m accorded as absorption for the median grave.  From 43.17m to 42.40 m accorded as absorption for the median grave.  From 43.17m to 42.40 m accorded as absorption for the median grave.  From 43.17m to 42.40 m accorded as absorption for the median grave.  From 43.17m to 42.40 m accorded as absorption for the median grave.  From 43.17m to 42.40 m accorded as absorption for the median grave.  From 43.17m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded as absorption for the median grave.  From 43.27m to 44.00 m accorded		•			:											ı			
As an industrial recognition of 2.12m recovered as subangular fine to medium groved.  From 43.17m to 42.12m recovered as subangular for authentical fine to medium groved.  From 43.21m to 42.52m recovered as subangular for authentical fine to medium groved.  From 43.21m to 43.22m and 54.52m cannot fine to medium groved.  From 43.21m to 44.22m and a subangular for authentical fine to medium groved.  From 43.21m to 44.22m and a subangular for authentical fine to medium groved.  From 43.21m to 44.22m and a subangular for authentical fine to medium groved.  From 43.21m to 44.22m and a subangular for authentical fine to medium groved.  From 43.21m to 44.22m and 42.22m and 42.22m and 44.30m  From 43.21m to 44.22m and 42.22m and 44.30m  From 43.21m to 44.22m and 42.22m and 43.22m and 44.30m  From 43.21m to 44.22m and 42.22m and 43.22m and 44.30m  From 43.21m to 44.22m and 42.22m and 43.22m and 44.30m  From 43.21m to 44.22m and 42.22m and 43.22m and 44.30m  From 43.21m to 44.22m and 42.22m and 43.22m and 43.22m and 44.30m  From 43.21m to 44.22m and 42.22m and 43.22m and					]						42.70					H			7
To risk 3.15 in recovered as subcongular to subconded file to conse growt.  From 4.15 in the 4.25 in recovered as subcongular to subconded file to conse growt.  From 4.15 in the 4.25 in the decident may be recovered as subcongular to subconded file to conse growt.  From 4.15 in the 4.25 in the decident may be recovered on the subconded file to conse growt.  From 4.15 in the 4.25 in the decident may be recovered on the subconded file to conse growt.  From 4.15 in the 4.25 in the decident may be recovered on the subconded file to conse growt.  From 4.15 in the 4.25 in the decident may be recovered on the subconded file to conse growth.  From 4.15 in the 4.25 in the decident may be recovered on the subconded file to conse growth.  From 4.15 in the 4.25 in the 4.25 in the decident may be recovered as subcongular to subconded file to conse growth.  From 4.15 in the 4.25 in the 4.25 in the decident may be recovered as subcongular to subconded file to conse growth.  From 4.15 in the 4.25 in the	- 1		aegrees)											[		$\sqcup$			42
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Tom d.3.tim to 4.3.5 ms of 4.00m 3 no. discontinuity subvertical (75.80 degree)  From 4.8.9 ms 6.4.60m 3 no. discontinuity subvertical (75.80 degree)  From 4.9 ms 6.4.50m 10.4.50m recovered as submounded fine to conse greed.  Interbedded MUDSTONE, SILTSTONE and SANDSTONE (Driller's Description).  44.50  -25.40  44.50  -25.40  44.50  -25.40  45.50  -25.40	7	From 43.11m to 43.19m recovered as subangular to subround		::::	(2.34)						43.20					H			
Consequence	1	From 43.41m to 43.51m recovered as subangular to subround	ded fine to	::::												H			
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Tom 44.13m to 4.25m is continuing substangular to subrounded fine to interched and MUDSTONE, SILTSTONE and SANDSTONE (Driller's Description).  44.30  Tom 44.3m to 4.25m is continuing substangular to subrounded fine to interched MUDSTONE, SILTSTONE and SANDSTONE (Driller's Description).  To be a substantial of the substantial to subrounded fine to interched MUDSTONE, SILTSTONE and SANDSTONE (Driller's Description).  To be a substantial of the substantial to subrounded fine to interched MUDSTONE, SILTSTONE and SANDSTONE (Driller's Description).  To be a substantial to substantial to subrounded fine to substantial to	44		O degrees)		:											H			44
planter rough.  From 44.39m to 44.50m recovered as suborogular to subrounded fine to constrained.  Interhed deed MIJUSTONE, SILTSTONE and SANDSTONE (Driller's Description).  44.50  Continued on Next Page  Choservations / Remarks  Misc.  Shift Information  Backill Instrument Details Resp. Zone (be)	1		degrees)		:											H			
Continued on Next Page    Continued on Next Page   Continued on Next Pa	1	planar rough.														H			
Description):    Continued on Next Page	+		аеа ппе то		44.50	-25.46	140 44.50							+	-	$\vdash$	$\dashv$	+	
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September   15.00			p		Tim	ie De	ptn (m) C	asing (m)	Water (i	0.00	0.50	Concrete						Depth 16.0	
17.00   65.00   Bentonite			ıntere	Install						15.00	17.00								
Water Strikes  Strike (m) Rises To (m) Time (min) Rer  27.00 25.50 20			Encou	int/s I											/ot- ^			—	
			vater	asing ng Po									Strike (m) Dises To (m)			LITIKES		emark	ke
			Apunc	nitori														_mdik	
			ชื่	Mo												l			



Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Location Details

Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-20 FINAL** 



Sheet 6 of 7 GEO Methodology & Plant Scale: 1:50 From (m) Method Plant Used 558418.32 Checked By: RPH

Easting: 425462.87 Northing: Final Depth: 65.00m Approved By: Elevation: 19.04mAOD ВН

1.		Elevation:	19.0	4mAOD		l Depth:	65.00m								Aŗ	pproved	By:			ВН	
Loc	ation: Tyne and Wear	Logged By:	ALB	+GS	Grid	System:	OSGB								St	tart Date	2:		27/1	1/20	17
Clie	nt: SLJV	Orientation:	N/A		Incli	nation:	90°								Fir	inish Dat	te:		08/1	2/20	17
	Charle Description				Depth (m) (Stratum	Reduced	Hole Ø (mm)	Casing Ø	Water	Installation /		Samples	& Testing		poq			Corin	g		
	Strata Description			Legend	(Stratum Thickness)	Level (mAOD)	Depth (m)	(mm) Depth (m)	Loved (m)	Backfill	Depth (m)	Ref	Test Re	sults	Mer	Core Run 1	TCR S	SCR RO	QD	If	
	Interbedded MUDSTONE, SILTSTONE and SANDSTO	ONE (Driller	's												Ť						_
:	Description).																				1
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	VOID, Broken Ground, COAL (Driller's Description)																				1
52 -					(0.90)																52 -
:					(0.50)																1
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-	Interbedded MUDSTONE, SILTSTONE and SANDSTO	ONE (Driller	's		52.50	-33.46															1
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Obs	servations / Remarks		Misc.	Date	Tim		nformatio		Water (r	n) From (m)	Backfill To (m)	Material	Instri	ument Deta		nstallati Res		ne De	pth (	m) n	iam
		pa	pəlli				, ,,	(111)	(1	0.00	0.50	Concrete Bentonite		pipe Piezomet		15.0	00 - 17.	.00	16.00	1	
		ounte	ed 's Installea							15.00 17.00	17.00	Sand Bentonite									
		undwater Encou	Casing Used ing Point/s I							17.00	05.00	onite			W	Vater Str	rikes				$\neg$
		ıdwate	Casir Monitoring F											Rises To (m)	Tim	ne (min)			marks	S	$\exists$
		Groun	Monito										27.00	25.50		20					
			_																		



Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Northing:

Final Depth: 65.00m

558418.32

Location Details

425462.87

19.04mAOD

Easting:

Elevation:

Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-20** FINAL



Sheet 7 of 7

GEO Methodology & Plant Scale: 1:50 From (m) Method Plant Used Checked By: RPH Approved By: ВН

Loc	ation: Tyne and Wear	Elevation:		4mAOD		Depth:	65.00m								Approv				3H
		Logged By:	ALB+	+GS		System:	OSGB								Start D				1/2017
Clie	nt: SLJV	Orientation:	N/A			nation:	90°								Finish I	Date:			2/2017
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	(mm)	Casing Ø (mm) Depth (m)	Water Level (m)	Installation / Backfill			& Testing	thod	C	_	Corin		
					Thickness)	(mAOD)	Depth (m)	Depth (m)	Level (III)	bdckiiii	Depth (m)	Ref	Test Results	ž	Core Run	TCR	SCR R	QD If	
-	Interbedded MUDSTONE, SILTSTONE and SANDSTO	ONE (Drillei	r's																
-	Description).																		
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		,	pa,	Date	Tim	e De	pth (m)	asing (m)	Water (m	0.00	0.50	Material Concrete	Instrumen Standpipe P	t Detail lezomete	r	Resp. 2 15.00 - :	one D	epth (r 16.00	n) Diam
			unteri 1 Install							0.50 15.00	15.00 17.00	Bentonite Sand							
		Š	Groundwater Encountered Casing Used Monitoring Point/s Installed							17.00	65.00	Bentonite		—	Water	Striba	26		
			wate Casing ing Po										Strike (m) Rises					marks	
			rouna , onitori											5.50	20		110		
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Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel: +44 (0)1924 229889

Tel: +44 (0)1924 229889 Web: www.central-alliance.co.uk Log Type **Header** 

Sheet

Exploratory Hole Number

BH17-21

FINAL



Project No:	3043		Location	Details			Methodology & F	Plant	Scale:	1:50
	44 B' II II	Easting:	425536.32	Northing:	558420.13	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse			Ü		0.00 - 1.20 1.20 - 22.75	Inspection Pit Cable Percussion	Hand Tools Dando 2000		
		Elevation:	22.44mAOD	Final Depth:	70.00m	23.00 - 35.00	Rotary Coring	Beretta T41	Approved:	BH
Location:	Tyne and Wear	Logger:	ALB	Grid System:	OSGB				Start Date:	22/02/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	02/05/2018

ameter
Diam (mm)
250
200
150

If Methodology includes

Dynamic Sampling refer to Runs table for info.

Casing D	iameter
Depth (m)	Diam (mm)
4.50	250
15.00	200
21.00	150
l	
l	

			Grou	ındwa	ter Strikes
Strike	Casing	Sealed	Time	Rose To	Remarks
(m)	(m)	(m)	(min)	(m)	Remarks
0.90	-	-	20	0.70	
21.20	-	-	20	19.50	

	Installation / Instrument Details					
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)		
				, ,		

No Monitoring Point/s Installed

Backfill								
Depth (m)	Legend Code							
0.00 - 70.00	Grout							

In-Situ Tests	
PID	5
Hand Vane*	0
Standard Penetration Tests	10

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Hand Vane\* 0
Standard Penetration Tests 10

Sample Summary										
Environmental Samples										
Soil <b>5</b> Water										
Geote	Geotechnical Samples									
Bulk 10 Large Bulk										
Disturbed 31 Disturbed (NR)										
Piston	0	Piston (NR)	0							
Undisturbed	0	Undisturbed (NR)	0							
Undistu	rbed 1	Thin Wall	6							
Undisturbed Thin Wall (NR)										
Co	re San	nple	6							

(NR) Indicates sample undertaken but with

	Standard Penetration Test Summary													
Test Type Depth Casing Water Seating Main Penetration N Reported Result														
lest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	Hammer Ref					
Split Spoon	1.50	1.50	0.70	6	31	450	31	N=31 (2,4/4,3,4,20)	AR1134					
Split Spoon	2.50	2.50	1.00	12	13	450	13	N=13 (8,4/3,3,3,4)	AR1134					
Split Spoon	3.50	3.50	DRY	5	16	450	16	N=16 (2,3/4,4,4,4)	AR1134					
Split Spoon	6.00	4.50	DRY	4	19	450	19	N=19 (1,3/4,5,5,5)	AR1134					
Split Spoon	9.00	4.50	6.50	6	20	450	20	N=20 (2,4/4,5,6,5)	AR1134					
Split Spoon	12.00	4.50	DRY	6	18	450	18	N=18 (2,4/4,4,5,5)	AR1134					
Split Spoon	15.00	4.50	DRY	8	20	450	20	N=20 (3,5/5,5,5,5)	AR1134					
Split Spoon	18.00	4.50	DRY	8	21	450	21	N=21 (3,5/5,5,5,6)	AR1134					
Split Spoon	21.00	4.50	19.10	15	100	375		100 (5,10/100 for 225mm)	AR1134					
Split Spoon	22.50	4.50	19.30	25	100	250		100 (25 for 50mm/100 for 200mm)	AR1134					
		_												

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chise	elling
Depth (m)	Duration (mins)
1.20 - 1.70	90
21.20 - 21.50	60

Water Added											
Litres											

## **Applicable to Rotary Only**

Drilling Flush  Depth (m) Flush Type Flush Colour Return %										
Depth (m)	Flush Type	Flush Colour	Return %							
23.00 - 25.50	Air/Mist	Grey	80							
25.50 - 27.00	Air/Mist	Grey	20							
27.00 - 27.50	Air/Mist		0							
27.50 - 29.00	Air/Mist	Grey	50							
29.00 - 35.00	Air/Mist	Grey	100							
35.00 - 70.00	Air/Mist		0							

## Applicable to Dynamic Sampling Only

		Dynamic	Sampling	Runs	Ш
Ш	Depth (m)	Diam (mm)	Recovery %	Remarks	
					П
					П
					П
					П
					П
					П
					П
					П
					П



Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Northing:

558420.13

Location Details

425536.32

Easting:

Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-21 FINAL** 

CENTRAL ALLIANCE

Sheet 1 of 7 GEO Methodology & Plant Scale: 1:50 From (m) 0.00 - 1.20 Method Inspection Pit

Plant Used Hand Tools Checked By: RPH

Name:	A1 Birtley to Coalhouse	Elevation:	22.44mAOD	Final I	Depth:	70.00m	1.20	0 - 1.20 0 - 22.75	Inspect Cable Pe	ion Pit rcussion		Hand Tools Dando 2000		pprove				ВН	
Locatio	n: Tyne and Wear	Logged By:	ALB		ystem:	OSGB	23.0	0 - 35.00	Rotary	Coring		Beretta T41		art Da				02/2018	2
Client:	SUV	Orientation:	N/A	Inclina		90°								nish D				05/2018	
Client:	2DV	Orientation.	N/A	Depth (m)	Reduced	Hole Ø	Casing Ø				Cample	s & Testing	-	IIISH D	ate:	Corir		J5/2U10	,
	Strata Description		Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (m)	Water Level (m)	Installation / Backfill	Depth (m)	Ref	Test Results	7ethoc	Core	TCR	SCR F		If	_
	MADE GROUND: ROADSTONE (6FS) Yellowish brov	vn sandv	*****	THERTESSY	(110100)	Depar (m)	Deptii (iii)			Deptil (III)	IVEI	rest nesurts	H	Run	TCK	JUN	100	-	_
	ubangular fine to coarse limestone GRAVEL with			(0.50)															-
	obble content. Sand is fine to coarse. Cobbles are	subangular																	
	mestone.	ravally CLAV	<b>∕‱</b>	0.50	21.94					0.50	1 ES	PID 0.50m = 1.4ppm	₽						4
	MADE GROUND: Grey and brown slightly sandy gr with roots. Sand is fine to coarse. Gravel is subang							0.70		0.70 0.70 - 1.00	1 D 3 B								-
	oarse sandstone, siltstone, coal and brick.	,		(1.00)				0.90		0.90 1.00	2 ES 2 D	PID 0.90m = 2.2ppm						1	_
										1.20	4 D		Н						1
																			-
- N	AADE GROUND: Light brown silty very sandy angu	ular to		1.50	20.94					1.50 1.50 - 1.95	3 ES 5 B	SPT(S) 1.50m, N=31 (2,4/4,3,4,20)							1
	ubangular fine to coarse brick, sandstone and lin											PID 1.50m = 3.4ppm							-
	RAVEL with medium cobble content. Sand is fine obbles are subangular limestone and sandstone.									2.00	6 D							2	
1	obblies are subungatur innestone and surfacemen			(1.30)															-
																			1
										2.50 2.50 - 2.95	4 ES 7 B	SPT(S) 2.50m, N=13 (8,4/3,3,3,4)							1
‡	. Constitution of the cons			2.80	19.64							PID 2.50m = 1.9ppm							1
	oft to firm thinly laminated bluish grey and browl andy CLAY with occasional 1-2mm silt bands. San									3.00	8 D							3	. 4
	oarse.	a is mic to								3.10	9 B								1
																			1
										3.50 3.50 - 3.95	5 ES 10 D	SPT(S) 3.50m, N=16 (2,3/4,4,4,4)							4
												PID 3.50m = 2.1ppm							1
4 -										4.00	11 D							4	
																			1
						250	250												1
						<u>250</u> 4.50	250 4.50			4.50 - 4.95	12 UT	20 blows, 100% Recovery							-
																			1
5 -										5.00	13 D							5	1
																			1
																			1
										5.50	14 B								-
																			1
6 -										6.00	15 D	SPT(S) 6.00m, N=19						6	, _1
										6.00 - 6.45 6.00 - 6.45	16 D 17 B	(1,3/4,5,5,5)							1
																			1
																			7
																			1
7 -										7.00	18 D							7	1
																			1
																			1
										7.50 - 7.95	19 UT	20 blows, 100% Recovery							1
																			-
8 –										8.00	20 D							8	. –
																			1
																			1
																			-
1																			-
9 -										9.00 9.00 - 9.45	21 D 22 D	SPT(S) 9.00m, N=20 (2,4/4,5,6,5)						9	1
]										9.00 - 9.45 9.00 - 9.45	23 B	(5,0,0,0,0)							1
]																			-
																			1
10	Continued on Next Page									10.00 · · · ·	24·D		H	_		+	+	10	٦
Observ	ations / Remarks	N	∕lisc.	L	Shift In	formatio	n	<u> </u>	<u> </u>	Backfill		·	H T	nstalla	tions	L ;			-
			Date 20/02	Time 17:00		oth (m) 0	Casing (m) 4.50	Water (m	n) From (m) 0.00	To (m) 70.00	Materia Grout	I Instrument Det	ails	Re	esp. Z	one D	epth (	(m) Diar	n
		ntered	Doint Installed 20/02 21/02 21/02 21/02	08:00 17:00		8.00 8.00 2.75	4.50 4.50 15.00	6.50 19.30	0.00	75.00	Sivut								
		water Encountered	Point .	27.50										/ata - ^	+ell				$\dashv$
		water	Casing t									Strike (m) Rises To (m)		Vater S ne (min)	и ке		emark	is	4
		ound	Moni									0.90 0.70 21.20 19.50		20					٦
1		٥	ž																



3043

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Location Details

# Combined **Borehole**

Log Type

Sheet 2 of 7

Exploratory Hole Number

**BH17-21** 

**FINAL** 



1:50

Scale:

Methodology & Plant From (m) Method Plant Used 425536.32 558420.13 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 22.44mAOD Final Depth: 70.00m Approved By: BH Tyne and Wear Location: Logged By: ALB Grid System: OSGB Start Date: 22/02/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: 02/05/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref 10.50 - 10.95 25 UT 10 blows, 78% Recovery (16.20) 11.00 26 D 11 12.00 12.00 - 12.45 12.00 - 12.45 12 13.00 30 D 13 13.50 - 13.95 31 UT 14.00 32 D 14 200 15.00 200 15.00 15.00 SPT(S) 15.00m, N=20 (3,5/5,5,5,5) 15 15.00 - 15.45 15.00 - 15.45 34 D 35 B From 15.50m with rare subrounded fine to medium sandstone and mudstone gravel. 16.00 36 D 16.50 - 16.95 37 UT 20 blows, 100% Recovery 17 SPT(S) 18.00m, N=21 (3,5/5,5,5,6) 18 From 18.00m becomes silty. 19.00 3.44 19.00 42 D 19 Soft dark bluish grey sandy clayey SILT. Sand is fine to coarse. 19.50 19.50 - 19.95 43 UT 30 blows, 100% Recovery 20:00 44 D 20 Continued on Next Page Observations / Remarks Misc Shift Information 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 70.00
 Grout
 Resp. Zone Depth (m) Diam Instrument Details Water Strikes Strike (m) 0.90 21.20



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Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-21** FINAL

CENTRAL ALLIANCE

Sheet 3 of 7

Web: www.central-alliance.co.uk GEO Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) Method Plant Used Easting: 558420.13 425536.32 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Final Depth: 70.00m 22.44mAOD Approved By: ВН

Locatio	on: Tyne and Wear	Elevation:		4mAOD		ıl Depth:	70.00m								Approv		/:		ВН	
	•	Logged By:	ALB			System:	OSGB								Start D				02/2	
Client:	SLIV	Orientation:	N/A			ination:	90°	$\perp$		1	I				Finish	Date:			05/2	018
	Strata Description			Legend	Depth (m) (Stratum	Level	(mm)	Casing Ø (mm)	Water Level (m)	Installation / Backfill			s & Testing	100	Core	_	Cor		_	
	Soft dark bluish grey sandy clayey SILT. Sand is fine	to coarco		×××	(2.20)	(mAOD	Depth (m	) Depth (m)			Depth (m)	Ref	Test Resu	ılts 2	Run	TCR	SCR	RQD	If	
	Soft dark bluish grey sahay clayey Sili. Saha is fine	e to coarse.		$\times \times \times$	(2.20)															
				$\times \times $																
=				$\times \times \times$																-
1				(																
21				$\times \times $				<u>150</u> 21.00			21.00	45 D	SPT(S) 21.00m, 1	.00						21 -
1	Firm to stiff dark blue grey slightly sandy gravelly C	· I ΔV Sand i	c	×××	21.20	1.24		21.00	21.20		21.00 - 21.45	46 D	(5,10/100 for 225	5mm)						
	fine to coarse. Gravel is subangular fine to coarse																			
	coal.																			
1	From 21 95m to 21 00m, non-intact recovered as already subsequent	angular fina ta																		
22 -	From 21.86m to 21.99m, non-intact recovered as clayey suba coarse gravel.				(1.55)															22 -
-	From 22.06m to 22.12m, non-intact recovered as clayey suba coarse gravel.																			
	From 22.12m to 22.20m, 1No. Discontinuity subvertical (85-9 undulating rough.	00 degrees)									22.50 - 22.75	47 D	SPT(S) 22.50m, 1	.00 (25 for						
-					22.75	-0.31	150						50mm/100 for 20	00mm)						
	Extremely weak to weak non-intact core recovered		'		22.75	-0.31	<u>150</u> 22.75													
	sandy gravelly CLAY with low cobble content. Sand coarse. Gravel is subangular to subrounded fine to																			23 -
	sandstone coal mudstone and siltstone. Cobbles a		lar																NR	
	sandstone. From 23.00m to 23.50m, no recovery.																	-		-
1	From 23.50m to 23.50m, no recovery.														23.00		0	0		
_					(2.25)										24.50					
24 -																			NI	24 -
-											24.30 - 24.40	5 C								
-																				-
-																				
25 -					25.00	-2.56					24.93 - 25.03	1 C			24.50	100	0	0	NI	25 -
-   1	Extremely to very weak light grey MUDSTONE reco slightly sandy gravelly CLAY. Sand is fine to coarse.				25.00	2.50									25.50					- 23
	subangular to subrounded fine to coarse mudston		e																	
	and coal.																			-
1	From 25.50m to 26.60m, no recovery.																			
26 -																			NR	26 -
1															25.50		0	0		
-															27.00					
7	From 26.60m to 27.70m, non-intact recovered as slightly clay	vev sandv												ă				-		-
-	subangular to subrounded fine to coarse gravel with low cobb										26.80 - 26.90	6 C							NI	
27 -					(4.00)															27 -
-															27.00 27.50		0	0		
-																				
=											27.65 - 27.80	3 C								
-																				
28 –																			NI	28 -
=											28.20 - 28.35	2 C			27.50 29.00	100	0	0		
-																				-
1																				
_					20.00															
	Weak to medium strong dark grey interbedded SIL			×××× ××××× ×××××	29.00	-6.56											П			29 -
	MUDSTONE. Discontinuities are: 1) Closely spaced (0-15 degrees) planar smooth. 2) Closely to mediu		าเสโ	× × × × ×																
	inclined (40-55 degrees) planar smooth.			× × × × × × × × × × × × × × × × ×											29.00 30.50		27	0	NI	-
	From 29.00m to 29.50m, non-intact recovered as clayey suba coarse gravel.			××××× ×××××																
30 +	From 29.50m to 29.71m, 1No. Discontinuity subvertical (85-9	00 degrees)		××××× ×××××									ļ			-				30 -
	Continued on Next Page		N 4: -			CF-U	Info			<u> </u>	De-Lett	<u> </u>	<u> </u>		le - 2 . "	la#:	Ш			
upser	vations / Remarks		Misc.	Date	Tin		Information	Casing (m)	Water (m	n) From (m)		Materia	l Instrun	nent Detai	Instal Is	Resp. 2		Depth	(m)	Diam
		boso	Used Point Installed							0.00	70.00	Grout							T	
	nount is sed																			
	oder E				Strike (m) Rises To (m)				Water Strikes (m) Time (min) Remarks											
		The state of the s	Casing (										0.90 21.20	0.70 19.50	20 20			.cmal		
		•	N												-					



Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-21** FINAL

CENTRAL ALLIANCE

Sheet 4 of 7

GEO Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) Method Plant Used Easting: 558420.13 425536.32 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Final Depth: 70.00m 22.44mAOD Approved By: ВН

Locati	on: Type and Wear	Elevation:	22.44mAOD		al Depth:	70.00m								Approv		C.		BH
Locati	•	Logged By:	ALB		d System:	OSGB								Start Da				)2/2018
Client	SUV	Orientation:	N/A	Incl	ination:	90°				ı				Finish D	ate:		02/0	)5/2018
	Strata Description		Legend	Depth (m) (Stratum		Hole Ø (mm)	Casing Ø (mm)	Water	Installation /		Samples	& Testing	thod			Corir	ng	
				Thickness)		Depth (m)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Resu	ılts ≥	Core Run	TCR	SCR F	RQD	If
1 1	From 29.50m to 29.71m, 1No. Discontinuity subvertical (85-9 planar smooth.	(0 degrees	× × × × × × × × × × × × ×	×												ıl		
-	From 29.60m to 29.65m, non-intact recovered as clayey suba coarse gravel.	ingular fine to	× × × ×	×						30.30 - 30.40	4 C					ıl		
1 -	From 29.73m to 29.81m, non-intact recovered as clayey suba	ingular fine to	×××× ××××	×												$\vdash$	1	
1 1	coarse gravel. From 30.50m to 30.65m, non-intact recovered as subangular	fina to	× × × × × × × × × × × × × × × ×	×												ıl	1	3
	coarse gravel and cobbles.		× × × × × ×	×												ıl	1	NI
31 —	From 30.73m to 30.84m, non-intact recovered as subangular medium gravel.	fine to	× × × ×	×												ıl		31 -
1 =	From 30.90m to 31.00m, non-intact recovered as subangular	fine to	×××× ××××	×										30.50 32.00	100	23	15	NI
-	coarse gravel and cobbles. From 31.07m to 31.28m, non-intact recovered as slightly san	dy	× × × × × × × × × × × × × × × ×	×										32.00		ıl	1	14
1 7	subangular fine to coarse gravel. From 31.50m to 31.70m, non-intact recovered as subangular	medium to	××××	×												ıl	١	NI I
1 1	coarse gravel and cobbles.		× × × ×	×												ıl	Ι,	17
32 -	From 31.90m to 32.00m, discontinuities are subhorizontal (80	0-85 degrees)	× × × × × × × × × × × × × × × × ×	×												$\vdash$	——————————————————————————————————————	32 -
	planar smooth. From 32.00m to 32.40m, non-intact recovered as sandy suba	ngualr fine to	× × × ×	×												ıl	1	
	coarse gravel. Sand is fine to coarse.		××××	× 22.40	-9.96											ıl	L	
	Medium strong light grey fine to medium grained		I .		3.50											ıl		8 .
1 7	interbedded with weak dark grey SILTSTONE. Disco		ie  · · · ·	•										32.00	100	42	27	
1 +,	closely to medium spaced (0-15 degrees) subhoriz smooth.	ontai pianar	::::	:										33.50		П		
33 —	From 32.50m to 32.59m, discontinuities are inclined (45-55 d	egrees)		:													L	33 -
	planar rough. From 32.65m to 33.10m, non-intact recovered as clayey sligh	tly sandy	::::	:														5
	subangular fine to coarse gravel.		::::	:												Ш		
-	From 33.50m to 33.96m, slightly clayey sandy subangular fin- gravel. Sand is fine to coarse.	e to medium	::::	12 601										1		ΙÍ		
-	g			(2.60)													١	NI
34 -	From 33.96m to 34.16m, discontinuities are inclined subvertion	cal (60-75	::::	:												ıl	H	34 -
	degrees) planar smooth.			:										33.50	100	17	0 2	24
				]										35.00	100	1/	٦	
	From 34.40m to 34.55m, discontinuities are subvertical (80-9) planar smooth.	0 degrees)	::::	:												ıl	H	-
1 -	From 34.50m to 35.00m, non-intact recovered as subangular	fine gravel	::::	:												ıl	1	NI
1 -	and cobbles.			]	l											ıl		
35 -	Grey MUDSTONE with SANDSTONE band. (Driller's	Description	1)	35.00	-12.56												T	35 -
																ıl		
1 1																ıl		
																ıl		
																ıl		
36																ıl		36 -
1 1																ıl		
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1 1																ıl		'
1 1																ıl		
27 -																ıl		37 -
3′ -																ıl		3′
1 -																ıl		
1 -																ıl		.
38 —																		38 -
																		.
-																		
-																		
39 -																		39 -
																		'
40 -																$\Box$		
40	Continued on Next Page																$\top$	40 -
Obser	vations / Remarks	N	Лisc.	•	Shift I	nformatio	n	•		Backfill				Installa	ations	5		
			Date	Tin	ne De	pth (m)	Casing (m)	Water (n	n) From (m)		Material	Instrur	nent Detail	s R	Resp. Z	one D	epth (	m) Diam
		tered	Point Installed						0.00	70.00	Grout							
		uncou	Used Point II									<u> </u>				$\perp$		
		ater <u>B</u>	Casing L toring Po						1					Water 9				
		mpun	Casing No Monitoring						1			Strike (m) R 0.90	0.70	20		Re	emarks	S
		Gro	No A									21.20	19.50	20				
1			ı	1				1	ı			1 1			1			



A1 Birtley to Coalhouse

Project No:

Name:

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Northing:

558420.13

Location Details

425536.32

Easting:

Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-21 FINAL** 



1:50

RPH

Sheet 5 of 7 Methodology & Plant Scale: From (m) Method Plant Used Checked By:

> Approved By: BH Start Date: 22/02/2018

Elevation: 22.44mAOD Final Depth: 70.00m Location: Tyne and Wear Logged By: ALB Grid System: OSGB 02/05/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Grey MUDSTONE with SANDSTONE band. (Driller's Description) (11.00) 42 43 46.00 -23.56 COAL. (Driller's Description) 48.50 -26.06 Grey MUDSTONE/SILTSTONE. (Driller's Description) 49 50 Continued on Next Page Misc Observations / Remarks Shift Information 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 70.00
 Grout
 Instrument Details Resp. Zone Depth (m) Diam Water Strikes Strike (m) Rises To (m) 0.90 21.20



Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-21 FINAL** 



Sheet 6 of 7 GEO Methodology & Plant Scale:

Project No: Location Details 1:50 From (m) Method Plant Used Easting: 558420.13 Checked Bv: RPH 425536.32 Northing: Name: A1 Birtley to Coalhouse Elevation: 22.44mAOD Final Depth: 70.00m Approved By: ВН Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 22/02/2018 02/05/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness) Level (mAOD) Depth (m) Ref Grey MUDSTONE/SILTSTONE. (Driller's Description) 52 53 59 (21.50) 60 Continued on Next Page

Misc Observations / Remarks Shift Information 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 70.00
 Grout
 Instrument Details Resp. Zone Depth (m) Diam Water Strikes Strike (m) Rises To (m) ime (min) 0.90 21.20



3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Northing:

558420.13

Location Details

425536.32

Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-21 FINAL** 



Sheet 7 of 7

GEO Methodology & Plant Scale: 1:50 Method Plant Used Checked Bv: RPH

From (m) Easting: Name: A1 Birtley to Coalhouse Elevation: 22.44mAOD Final Depth: 70.00m Approved By: ВН Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 22/02/2018 02/05/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness) Level (mAOD) Depth (m) Ref Grey MUDSTONE/SILTSTONE. (Driller's Description) 69 70.00 -47.56 70 EOH at 70.00m - Scheduled Depth Misc Observations / Remarks Shift Information 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 70.00
 Grout
 Instrument Details Resp. Zone Depth (m) Diam Water Strikes Strike (m) Rises To (m) ime (min) 0.90 21.20 0.70 19.50



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## Header Sheet

Log Type

Exploratory Hole Number

# BH17-22

FINAL



	Project No:	3043		Location	Details			Me	Scale:	1:50		
			Easting:	425546.52	Northing:	558398.63	From (m)	Met	hod	Plant Used	Checked:	RPH
	Name:	A1 Birtley to Coalhouse	Lusting.	123310.32	reorening.	330330.03	0.00 - 1.20	Inspec	tion Pit	Hand Tools		*****
			Elevation:	21.94mAOD	Final Depth:	70.00m	1.20 - 20.20		rcussion	Pilcon Wayfarer 1500	Approved:	BH
							20.20 - 36.20			Beretta 141	/ Approved.	5
	Location:	Tyne and Wear	Logger:	ALB	Grid System:	OSGB	36.20 - 70.00	Rotary Op	en Holing	Beretta T41	Start Date:	23/02/2018
	Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	10/05/2018

Hole Di	Hole Diameter					
Depth (m)	Diam (mm)					
6.00	250					

Casing Diameter						
Depth (m)	Diam (mm)					
6.00	250					
l						
l						
l						

	Groundwater Strikes							
Strike				Rose To	Remarks			
(m)	(m)	(m)	(min)	(m)	Remarks			
1.20	-	- 3.00 20 0.75						
1								

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
10/05/2018	Standpipe Piezometer	18.00	17.00 - 19.00					

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill				
Depth (m)	Legend Code			
0.00 - 0.50	Concrete			
0.50 - 17.00	Bentonite			
17.00 - 19.00	Sand			
19.00 - 70.00	Bentonite			

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	5

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary				
Enviror	nmer	ntal Samples		
Soil	4	Water	0	
Geote	chnic	cal Samples		
Bulk	11	Large Bulk	0	
Disturbed	Disturbed 20 Disturbed (NR)			
Piston	0	Piston (NR)	0	
Undisturbed	0	Undisturbed (NR)	0	
Undisturbed Thin Wall				
Undisturbed Thin Wall (NR)				
Cor	e San	nple	11	

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
Test Type	Depth			Seating		Penetration	N	Reported Result	Hammer Ref
	(m)	(m)	(m)	Blows		Total (mm)		<u> </u>	
Split Spoon		1.20	0.75	3	10	450	10	N=10 (1,2/1,4,3,2)	BS07
Split Spoon	2.00	2.00	1.70	3	7	450	7	N=7 (2,1/1,2,2,2)	BS07
Split Spoon	3.00	3.00	DRY	4	10	450	10	N=10 (2,2/2,2,2,4)	BS07
Split Spoon	5.00	5.00	DRY	3	12	450	12	N=12 (2,1/2,3,4,3)	BS07
Split Spoon	8.00	6.00	DRY	3	10	450	10	N=10 (1,2/2,2,3,3)	BS07
ł									

SPT Hammer Ref.	Energy Ratio (%)
BS07	64

#### **Applicable to Cable Percussion Only**

Chise	,	
Depth (m)	Duration (mins)	Dept

Water Added				
Depth (m)	Litres			

## **Applicable to Rotary Only**

Drilling Flush					
Depth (m)	Flush Type	Flush Colour	Return %		
I	I		1		

### **Applicable to Dynamic Sampling Only**

			<u> </u>	
Dynamic Sampling Runs				
Depth (m)	Diam (mm)	Recovery %	Remarks	
		,		



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Combined Borehole

Log Type

Sheet 1 of 7

Exploratory Hole Number

BH17-22

**FINAL** 



Methodology & Plant Location Details Project No: 3043 Scale: 1:50 Method Inspection Pit Cable Percussion From (m) 0.00 - 1.20 1.20 - 20.20 20.20 - 36.20 Plant Used Easting: 425546.52 Northing: 558398.63 Checked By: RPH Hand Tools
Pilcon Wayfarer 1500
Beretta T41
Beretta T41 A1 Birtley to Coalhouse Name: Elevation: 21.94mAOD Final Depth: 70.00m Approved By: BH Rotary Coring Rotary Open Holing Location: Tyne and Wear 36.20 - 70.00 Logged By: ALB Grid System: OSGB Start Date: 23/02/2018 Client SLIV Orientation N/A Inclination: Finish Date: 10/05/2018 Samples & Testing Depth (m Reduced Hole Ø Casing Ø Coring Strata Description Legend Level (mAOD) (Stratum Thickness Level (m Depth (m) Ref MADE GROUND: Yellowish brown sandy subangular fine to (0.25) coarse limestone GRAVEL with medium cobble content. Sand is 0.25 21 69 0.30 1 ES fine to coarse. Cobbles are subangular limestone. 0.35 0.50 0.50 - 1.00 2 D 4 B MADE GROUND: Dark grey gravelly sandy slightly organic CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse 0.80 3 ES sandstone and brick MADE GROUND: Dark grey and dark brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine SPT(S) 1.20m, N=10 (1,2/1,4,3,2) 1.20 1.20 - 1.70 to coarse slate, brick, clinker, sandstone and siltstone. (2.15)1.50 7 ES 2.00 2.00 - 2.50 19.44 2.50 2.50 - 3.00 2.70 Soft brown and bluish grey fissured slightly gravelly slightly sandy slightly organic CLAY. Sand is fine to coarse. Gravel is (0.50) subrounded fine sandstone and mudstone. 3.00 18.94 3.00 13 D SPT(S) 3.00m, N=10 (2,2/2,2,2,4) Soft to firm bluish grey thinly laminated slightly sandy CLAY with silt laminations and occasional 1-2mm silt bands. 3.50 - 4.00 14 B 4.00 - 4.45 15 UT 60 blows, 100% Recovery 4.50 16 D 5.00 17 D SPT(S) 5.00m, N=12 (2,1/2,3,4,3) 5.50 - 6.00 18 B 6.00 19 D 6.50 - 6.95 20 UT 45 blows, 100% Recovery 8.00 22 D SPT(S) 8.00m, N=10 (1,2/2,2,3,3) 23 B 8.50 - 9.00 9.50 - 9.95 24 UT 30 blows, 100% Recovery 10:00 25·D 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill 
 Time
 Depth (m)
 Casing (m)
 Water (m)

 17:00
 10:00
 6:00
 DRY
 Resp. Zone | Depth (m) | Diam | 17.00 - 19.00 | 18.00 | To (m) Instrument Details Water Strikes Strike (m) Rises To (m) 1.20 0.75 Time (min)



3043

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Location Details

## Combined **Borehole**

Log Type

Sheet 2 of 7

Exploratory Hole Number

**BH17-22** 

**FINAL** 



1:50

Scale:

Methodology & Plant From (m) Method Plant Used 425546.52 558398.63 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 21.94mAOD Final Depth: 70.00m Approved By: BH Tyne and Wear Location: Logged By: ALB Grid System: OSGB Start Date: 23/02/2018 Client SLIV Orientation: N/A Inclination: Finish Date: 10/05/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) (15.00) 11.00 - 11.45 26 D 11 11.50 - 12.00 27 B 12 12.50 - 13.00 28 UT 13.00 29 D 13 30 D 14.00 - 14.45 14 14.50 - 15.00 31 B 15.00 32 D 15 15.50 - 15.95 33 UT 16.00 34 D From 16.50m slightly gravelly with occasional subangular to subrounded sandstone cobbles. 17.50 - 18.00 36 B 18.00 37 D 18.00 3.94 18 Soft bluish grey sandy SILT. Sand is fine to coarse. (1.00) 19.00 2.94 19.00 19 Stiff dark bluish grey slightly gravelly sandy CLAY. Gravel is 19.00 - 19.50 subangular fine to coarse mudstone and coal. Sand is fine to coarse. (1.20) 20 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 17.00 - 19.00 | 18.00 | Depth (m) Casing (m) Water (m) To (m) Instrument Details Water Strikes Strike (m) Rises To (m) 1.20 0.75 Time (min)



Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-22** FINAL

CENTRAL ALLIANCE

Sheet 3 of 7

GEO Location Details Methodology & Plant Scale: Project No: 3043 1:50 Method Plant Used Easting: 558398.63 From (m) 425546.52 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: 21.94mAOD Final Depth: 70.00m ВН

		Elevation:	21.9	4mAOD	Final	l Depth:	70.00m							Appro	oved B	Ву:		ВН	
Loca	ation: Tyne and Wear	Logged By:	ALB		Grid	System:	OSGB							Start	Date:		23	3/02/	2018
Clie	nt: SLIV	Orientation:	N/A		Incli	nation:	90°			1				Finish	Date			)/05/	2018
	Strata Description			Legend	Depth (m) (Stratum	Reduce Level		Casing Ø (mm)	Water Level (m)	Installation / Backfill		г т	& Testing	athod		_	ring	_	
					Thickness)	(mAOD	Depth (m)	Depth (m)	Level (III)	DdCKIIII	Depth (m)	Ref	Test Results	© Cor Rui	n TCF	R SCR	RQD	If	
-	Stiff dark bluish grey slightly gravelly sandy CLAY. O subangular fine to coarse mudstone and coal. San				20.20	1.74					20.20	40 D			+				1
-	coarse.	a is fine to																NR	1
-	Very weak to weak destructured to residual grey N	MUDSTONE									20.62 - 20.78	1 C		20.2					-
-	From 20.20m to 20.37m No Recovery. From 20.20m to 20.40m recovered as slightly sandy slightly c	clayey												21.2		0	0	NI	1
21 -	subangular to subrounded fine to coarse gravel. Sand is fine t From 20.40m to 20.90m recovered as slightly sandy gravelly																		21 -
-	fine to coarse. Gravel is subangular to subrounded fine to coc From 20.90m to 22.70m recovered as slightly sandy very grav														4				1
-	Sand is fine to coarse. Gravel is subangular to subrounded fin	ne to coarse																	1
-	gravel.																		-
-																			1
22 -														21.2 22.7	100	0	0	NI	22 -
-																			
-																			
-																			3
	From 22.70m to 23.60m No Recovery.																		}
23 -														22.7	20				23 -
-														23.6		0	0	NR	}
-																			]
	From 23.60m to 25.00m recovered as slightly sandy very grav	velly clay.												l	+	+		Н	]
-	Sand is fine to coarse. Gravel is subangular to subrounded fin	ne to coarse.												23.6	50 0	0	0	NR	}
24 -											24.00 - 24.15	6 C		24.2	0 0	ľ	ľ	IVIX	24 -
-															+	+		Н	
-																			1
-														24.2	80	0	0	NI	-
-														25.2	0		-		1
25 -														υ Σ					25 -
-	From 25.20m to 28.20m No Recovery.														+				1
-																			-
-																			1
-																			1
26 -																			26 -
-																			1
-																			1
-														25.2 28.2		0	0	NR	-
-					(13.50)														1
27 -					, ,														27 -
-																			- 1
-																			
-																			}
28 -																			28 -
-															$\perp$			Ш	-0
-	From 28.20m to 28.90m recovered as slightly sandy very grav Sand is fine to coarse. Gravel is subangular to subrounded fin																		-
-																			-
-														28.2 29.2	70	0	0	NI	1
29 -											28.95 - 29.17	2 C							29 —
[ -	From 30 30m to 30 42	olau C!									29.20 - 29.26	7 C			$\bot$	1	<u> </u>	Щ	_
-	From 29.20m to 29.42m recovered as slightly sandy gravelly fine to coarse. Gravel is subangular to subrounded fine to coc	arse.																	-
-	From 29.42m to 29.60m recovered as subangular to subroun- coarse gravel.	ded fine to												29.2 30.7	100	7	7	NI	4
-	From 29.60m to 30.40m recovered as slightly sandy gravelly fine to coarse. Gravel is subangular to subrounded fine to coa													30.7	Ĭ				‡
30 -												ļļ.		$\vdash$	+	+		Н	30 -
	Continued on Next Page	Т	•			<u> </u>						<u> </u>	<del></del>	Щ				Ш	
Obs	ervations / Remarks		Misc.	Date	Tim		Information (m)		Water (n	n) From (m)	Backfill To (m)	Material	Instrument Det		llatior Resp.		Dent	h (m)	Diam
			ered alled	5510	1			(111)		0.00	0.50	Concrete Bentonite	Standpipe Piezome		17.00	- 19.00	18		
			sed /s Inst							17.00 19.00	19.00	Sand Bentonite					L		
			ater En sing U. 1 Point,												r Strik				
			undwa Cas iitoring										Strike (m) Rises To (m) 1.20 0.75	Time (m	in)		Rema	rks	-
		Į.	g g						1	1				1					



3043

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Location Details

Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-22** FINAL



1:50

Scale:

Sheet 4 of 7

Methodology & Plant

		Easting:	4255	546.52	Nort	thing:	558398.6	i3 Fr	om (m)	Me	thod		Plant Used	- ا	Checked	d Bv:			RPH	
Nam	ne: A1 Birtley to Coalhouse	Elevation:		4mAOD		l Depth:	70.00m								Approve				ВН	
Loca	ation: Tyne and Wear	Logged By:	ALB			System:	OSGB								Start Da			23/	02/201	18
Clier	nt: SUV	Orientation:				nation:	90°								Finish D				05/201	
Circi	10. JEV	OTICINATION.	,,,		Depth (m)	Reduced	Hole Ø	Casing Ø				Samples	& Testing	ļ.	T	utc.	Cori			_
	Strata Description			Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (m	vvaler	Installation / Backfill	Depth (m)	Ref	Test Results	-letho	Core	TCR	т т	RQD	If	_
					micknessy	(IIIAOD)	Deptii (iii)	Deptii (iii	1		Depth (m)	Kei	lest Results	+	Run	ICK	SCK	KŲD		_
1 1																				
1 1																		ŀ	10	
	From 30.50m to 31.05m recovered as slightly sandy gravelly of																	ħ	10	
1 1	fine to coarse. Gravel is subangular to subrounded fine to coa	irse.														П	H		NI	
31 -																				31 -
]	From 31.12m, becomes medium strong to strong.										31.12 - 31.19	8 C						F	10	_
1 -	From 31.15m to 32.20m recovered as slightly sandy gravelly of														30.70					
1 -	fine to coarse. Gravel is subangular to subrounded fine to coa	1136.													32.20	100	7	7		
1 7																				
1 1																				
32 -																			3	32 -
	From 32.20m to 33.30m recovered as slightly sandy clayey su	bangular to									32.20 - 32.30	9 C				П				
	subrounded fine to coarse gravel. Sand is fine to coarse.																		NI	
-															22.20					
33 -															32.20 33.70	100	0	0	9	3 -
	From 33.30m to 33.70m recovered as slightly clayey fine to co	oarse SAND.																		
1 1	Interbedded medium strong to strong dark grey M	IUDSTONE	and		33.70	-11.76										$\vdash$		_	$\dashv$	
-	medium strong light grey thinly laminated fine to		aa																١.	
34 -	grained SANDSTONE. Discontinuities are closely sp	aced													33.70				18	34 -
1 1	subhorizontal (0-15 degrees) planar rough.  From 33.70m to 34.02m 2 no. discontinuities subvertical (85-	00 dagrage)													34.70	100	15	10		
1 1	planar rough.																	F	NI	
1 1	From 34.02m to 34.15m 1 no. discontinuity subvertical (60-70 planar smooth.	) degrees)									34.60 - 34.70	10 C				Ш	$\sqcup$		10	
	From 34.15m to 34.26m 1 no. discontinuity (40-50 degrees) p	lanar									34.87 - 35.05	3 C						H	NI	
35 -	smooth. From 34.25m to 34.50m 1no. discontinuity (70-80 degrees) ui	ndulating			(2.50)														3	85 -
	rough. From 34.50m to 34.60m recovered as clayey subangular to su	ihrounded																		
1 7	fine to coarse gravel.														34.70	100	59	37		
1 1	From 34.70m to 34.82m recovered as subangular medium to gravel.	coarse									35.51 - 35.60	4 C			36.20				10	
1 1											35.80 - 35.97	5 C								
36 -	From 35.80m to 36.05m 1 no. discontinuity subvertical (75-90 undulating rough.	aegrees)									36.02	11 C								86 -
					36.20	-14.26					30.02	110		L		Ш	Ш			
1 1	MUDSTONE and SILTSTONE. (Driller's Description)																			
1 -																				
1 7																				
37 -																			3	37 -
1 1																				
1 1																				
1 1																				
38 -																			3	8 -
39 —																			,	19 -
																			]	
-																				
1																				
40	Continued on Next Page													+	T	П	П	十	7	10 -
Obs	ervations / Remarks		Misc.			Shift Ir	nformatio	n	-		Backfill				Installa	ations	s S			_
			_	Date	Tim			Casing (m)	Water (m		To (m)	Material	Instrument De	etails	s R	Resp. Z	Zone [			am
			tered talled							0.00		Concrete Bentonite	Standpipe Piezo	neter	17	7.00 - 1	19.00	18.0	'	
			Encouni Used 'nt/s Ins							17.00 19.00	19.00 70.00	Sand Bentonite					$\perp$		$\perp$	
			water Er Casing U ing Poin												Water S	itrike				_
			undw Cc vitorin										Strike (m) Rises To ( 1.20 0.75	m) Ti	ime (min) 20	$\vdash$	R	emarl	is	_
			Wor.																	
1									10					- 1						



Combined Borehole

Log Type

Exploratory Hole Number BH17-22

BH17-22 FINAL



Sheet 5 of 7 Location Details Methodology & Plant Scale: Project No: 3043 1:50 Method Plant Used 558398.63 From (m) Easting: 425546.52 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: 21.94mAOD Final Depth: 70.00m ВН

Supplemental Supplemental   Supplemental Supplemental   Supplemental		Torra and Wash	Elevation:	21.9	4mAOD		l Depth:											pprove				ВН	
Section   Sect	Loc		Logged By:	ALB				OSGB															
MUDSTONE and SIXTSTONE. (Driller's Description)	Clie	nt: SLJV	Orientation:	N/A		Т	1		$\perp$		_						Fi	inish Da	ate:			05/20	)18
MUDSTOMS and SILTSTOMI. (Driller's Description)  RAM  RAM  RAM  RAM  RAM  RAM  RAM  RA		Strata Description			Legend	(Stratum	Level	(mm)	(mm)	) vvater	Installa	ation /		_			ethod	Coro				_	
4.60 At as a state of the state		MUDSTONE and SUTSTONE (Drillar's Description)				Thickness)	(mAOD	) Depth (m	) Depth (	m) cever(ii	,, 500	.Kiiii	Depth (m)	Ref	Test Re	sults	Σ	Run	TCR	SCR R	QD	If	
MulDSTONE (Britler's Description)	-	MUDSTONE and SILISTONE. (Driller's Description)																					-
MulDSTONE (Britler's Description)	-																						-
MulDSTONE (Britler's Description)	-																						-
MulDSTONE (Britler's Description)	-																						-
4.00 34.65  WOID.  4.00 34.65  Augustions / Senset is Description)  4.00 34.65  Augustions / Senset is Description   Augustion   Augus	41 -																						41 -
46.20 24.05  Additional continued on Next Page  Continued on Next Page  Continued on Next Page  MUDSTONE. (Onlier's Description)  Additional continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued Opt	-					(9.80)																	Ī
46.20 24.05  Additional continued on Next Page  Continued on Next Page  Continued on Next Page  MUDSTONE. (Onlier's Description)  Additional continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued Opt	-																						-
46.20 24.05  Additional continued on Next Page  Continued on Next Page  Continued on Next Page  MUDSTONE. (Onlier's Description)  Additional continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued Opt	-																						-
46.20 24.05  Additional continued on Next Page  Continued on Next Page  Continued on Next Page  MUDSTONE. (Onlier's Description)  Additional continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued on Next Page  Date Took Option Continued Opt	-																						-
46.00 J4.05  WOID.  46.00 J4.05  WIDSTONE. (Driller's Description)  48.00 J4.05  Continued on Next Page  Continued on Next Pag	42 -																						42 -
46.00 J4.05  WOID.  46.00 J4.05  WIDSTONE. (Driller's Description)  48.00 J4.05  Continued on Next Page  Continued on Next Pag	-																						-
46.00 J4.05  WOID.  46.00 J4.05  WIDSTONE. (Driller's Description)  48.00 J4.05  Continued on Next Page  Continued on Next Pag	-																						-
46.00 J4.05  WOID.  46.00 J4.05  WIDSTONE. (Driller's Description)  48.00 J4.05  Continued on Next Page  Continued on Next Pag	-																						-
46.00 J4.05  WOID.  46.00 J4.05  WIDSTONE. (Driller's Description)  48.00 J4.05  Continued on Next Page  Continued on Next Pag	-																						-
46.00 -24.08  46.00 -24.08  46.00 -24.08  46.00 -26.66  MUDSTONE. (Driller's Description)  48.00 -26.66  48-  49-  Diservations / Remarks  Misc. Shift Information   Shape   S	43 -																						43 -
46.00 -24.08  46.00 -24.08  46.00 -24.08  46.00 -26.66  MUDSTONE. (Driller's Description)  48.00 -26.66  48-  49-  Diservations / Remarks  Misc. Shift Information   Shape   S	-																						1
46.00 -24.08  46.00 -24.08  46.00 -24.08  46.00 -26.66  MUDSTONE. (Driller's Description)  48.00 -26.66  48-  49-  Diservations / Remarks  Misc. Shift Information   Shape   S	-																						-
46.00 -24.08  46.00 -24.08  46.00 -24.08  46.00 -26.66  MUDSTONE. (Driller's Description)  48.00 -26.66  48-  49-  Diservations / Remarks  Misc. Shift Information   Shape   S	-																						
46.00 -24.08  46.00 -24.08  46.00 -24.08  46.00 -26.66  MUDSTONE. (Driller's Description)  48.00 -26.66  48-  49-  Diservations / Remarks  Misc. Shift Information   Shape   S	-																						-
## A6.00 -24.06  ## VOID.  ## A6.00 -24.06  ## A6.00 -24.	44 –																						44 –
## A6.00 -24.06  ## VOID.  ## A6.00 -24.06  ## A6.00 -24.	-																						_
## A6.00 -24.06  ## VOID.  ## A6.00 -24.06  ## A6.00 -24.	-																						_
## A6.00 -24.06  ## VOID.  ## A6.00 -24.06  ## A6.00 -24.	-																						
## A6.00 -24.06  ## VOID.  ## A6.00 -24.06  ## A6.00 -24.	-																						_
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AB.00 -26.06  MUDSTONE. (Driller's Description)  Continued on Next Page  Misc. Shift Information Backfill Installations  Disservations / Remarks  Misc. Shift Information Backfill Installations  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam  Disservations / Remarks Remarks  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam  Disservations / Remarks Rem	46 -	VOID.				46.00	-24.06	;															46 -
AB.00 -26.06  MUDSTONE. (Driller's Description)  Continued on Next Page  Misc. Shift Information Backfill Installations  Disservations / Remarks  Misc. Shift Information Backfill Installations  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam  Disservations / Remarks Remarks  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam  Disservations / Remarks Rem	-																						-
AB.00 -26.06  MUDSTONE. (Driller's Description)  Continued on Next Page  Misc. Shift Information Backfill Installations  Disservations / Remarks  Misc. Shift Information Backfill Installations  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam  Disservations / Remarks Remarks  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam  Disservations / Remarks Rem	-	•																					_
AB.00 -26.06  MUDSTONE. (Driller's Description)  Continued on Next Page  Misc. Shift Information Backfill Installations  Disservations / Remarks  Misc. Shift Information Backfill Installations  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam  Disservations / Remarks Remarks  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam  Disservations / Remarks Rem	-																						-
AB.00 -26.06  MUDSTONE. (Driller's Description)  Continued on Next Page  Misc. Shift Information Backfill Installations  Disservations / Remarks  Misc. Shift Information Backfill Installations  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam  Disservations / Remarks Remarks  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam  Disservations / Remarks Rem	-																						-
Continued on Next Page  Disservations / Remarks  Misc. Shift Information  Backfill Installations  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam Depth (	47 <del>-</del>					(2.00)																	47 —
Continued on Next Page  Disservations / Remarks  Misc. Shift Information  Backfill Installations  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam Depth (																							-
Continued on Next Page  Disservations / Remarks  Misc. Shift Information  Backfill Installations  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam Depth (	-																						_
Continued on Next Page  Disservations / Remarks  Misc. Shift Information  Backfill Installations  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam Depth (	-																						-
Continued on Next Page  Disservations / Remarks  Misc. Shift Information  Backfill Installations  Date Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam Depth (	-																						-
Continued on Next Page	48 -	MUDSTONE. (Driller's Description)				48.00	-26.06	'															48 —
Continued on Next Page	-																						-
Continued on Next Page	-																						-
Continued on Next Page	-																						-
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	49 -																						49 -
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	50 -													]								_	50 -
Date   Time   Depth (m)   Casing (m)   Water (m)   From (m)   To (m)   Material   Instrument Details   Resp. Zone   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Diam   Depth (m)   Depth (m)   Depth (m)   Diam   Depth (m)   Depth (	JU _	Continued on Next Page																					טכ
0.00 0.50 Concrete Standpipe Plezometer 17.00 - 19.00 18.00 0.50 17.00 Bentonite	Obs	ervations / Remarks	١	Misc.																		, .,	
17.00   19.00   17.00   19.0			2	pəl	Date	Tim	ne D	epth (m)	Casing (n	n) Water	0.	0.00	0.50	Concrete	Standp	iment Deta pipe Piezomet	iils ter	17	esp. Zo '.00 - 19	one D	epth 18.0	(m) [	iam
19.00			winter	d Instal.							17	7.00	19.00	Sand									
Strike (m) Rises To (m) Time (min)   Remarks     1.20   0.75   20			er Enco	ng Use Point/s							19	J.00	70.00	oentonite			٧	Nater S	trikes	s			
8 20   1.20   0.75   20			ndwat	Casi oring											Strike (m)	Rises To (m)	Tin	ne (min)		Re	marl	ks	
			Grou	Monit											1.20	U./5		20					



Easting:

Elevation:

425546.52

21.94mAOD

Project No:

Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Final Depth:

70.00m

Combined **Borehole** 

Log Type

Exploratory Hole Number **BH17-22** 

**FINAL** 



ВН

Web: www.central-alliance.co.uk Sheet 6 of 7 GEO Location Details Methodology & Plant Scale: 1:50 From (m) Method Plant Used 558398.63 Checked Bv: RPH Northing:

Approved By: Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 23/02/2018 Client: 10/05/2018 SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness) Level (mAOD) Depth (m) Ref MUDSTONE. (Driller's Description) 52 53 (22.00) 59 60 Continued on Next Page Misc Observations / Remarks Shift Information Backfill To (m)
0.50
17.00
19.00
70.00 Resp. Zone | Depth (m) | Diam | 17.00 - 19.00 | 18.00 | Depth (m) Casing (m) Water (m) Instrument Details Water Strikes Strike (m) Rises To (m) Time (min)
1.20 0.75 20



Easting:

Elevation:

21.94mAOD

Project No:

Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Final Depth:

70.00m

Combined **Borehole** 

Log Type

Exploratory Hole Number **BH17-22** 

**FINAL** 



ВН

Web: www.central-alliance.co.uk Sheet 7 of 7 GEO Location Details Methodology & Plant Scale: 1:50 From (m) Method Plant Used 425546.52 558398.63 Checked Bv: RPH Northing:

Approved By: Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 23/02/2018 10/05/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness) Level (mAOD) Depth (m) Ref MUDSTONE. (Driller's Description) 69 70.00 -48.06 70 EOH at 70.00m - Scheduled Depth Misc Observations / Remarks Shift Information Backfill To (m)
0.50
17.00
19.00
70.00 Instrument Details Resp. Zone Depth (m) Diam Standpipe Plezometer 17.00 - 19.00 18.00 Depth (m) Casing (m) Water (m) Water Strikes Strike (m) Rises To (m) Time (min)
1.20 0.75 20



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Web: www.central-alliance.co.uk

Log Type Header

Sheet

Exploratory Hole Number

BH17-23 FINAL

GEO

Project No:	3043		Location	Details			Met	thodology & F	Plant	Scale:	1:50
		Easting:	425560.00	Northing:	558417.42	From (m)	Met	:hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Edsting.	125500100	rior criming.	330-1271-12	0.00 - 1.20	Inspect		Hand Tools	orrectica.	
		Elevation:	26.13mAOD	Final Depth:	19.98m	1.20 - 19.98	Cable Pe	ercussion	Dando 2000	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	19/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	20/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)
19.70	150

Casing D	iameter
Depth (m)	Diam (mm)
6.00	250
19.50	150

	Groundwater Strikes										
Strike Casing Sealed Time Rose To											
(m)	(m)	(m)	(min)	(m)	Remarks						

	Installation / Instrume	ent Deta	ils	
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)
19/04/2018	Vibrating Wire Piezometer	15.80	15.30 - 16.30	

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Ва	ackfill
Depth (m)	Legend Code
0.00 - 0.50	Concrete
0.50 - 14.30	Grout
14.30 - 15.30	Bentonite
15.30 - 16.30	Gravel
16.30 - 21.05	Bentonite
1	
1	

In-Situ Tests	
PID	7
Hand Vane*	0
Standard Penetration Tests	9

one depth where available.

		01
In-Situ Tests		1
PID PID	7	(NR) Indic
Hand Vane*	0	, ,

Standard Penetration Tests	9	
* One count indicates an ave	aran	<u> </u>
	- 0	
reported result of 3 tests carrie	a ou	it at

	_					
Sample Summary						
Enviror	nmer	ntal Samples				
Soil	9	Water	0			
Geote	chnic	cal Samples				
Bulk	11	Large Bulk	0			
Disturbed	31	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undistu	rbed 1	Thin Wall	5			
Undisturbed Thin Wall (NR)						
Cor	e San	nple	0			

cates sample undertaken but with

	Standard Penetration Test Summary									
							_	est Summary		
Test Type		Casing		Seating		Penetration	l <sub>N</sub>	Reported Result	Hammer Ref	
icst type	(m)	(m)	(m)	Blows	Blows	Total (mm)		<u>'</u>	Tidiiiiici iici	
Cone	1.50	1.50	DRY	9	21	450	21	N=21 (4,5/10,5,2,4)	AR1134	
Cone	2.50	2.50	DRY	5	14	450	14	N=14 (2,3/4,4,2,4)	AR1134	
Cone	3.50	3.50	DRY	14	50	395		N=50 (5,9/50 for 245mm)	AR1134	
Cone	4.50	4.50	3.50	7	16	450	16	N=16 (3,4/4,4,4,4)	AR1134	
Cone	5.50	4.50	3.90	7	14	450	14	N=14 (3,4/3,4,4,3)	AR1134	
Cone	6.50	6.00	DRY	7	24	450	24	N=24 (3,4/5,6,6,7)	AR1134	
Split Spoon	8.50	6.00	DRY	5	15	450	15	N=15 (2,3/4,3,4,4)	AR1134	
Split Spoon	10.50	6.00	DRY	5	15	450	15	N=15 (2,3/3,4,4,4)	AR1134	
Split Spoon	13.50	6.00	DRY	4	15	450	15	N=15 (2,2/4,2,4,5)	AR1134	
L										

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

## **Applicable to Cable Percussion Only**

Chise	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litres

## **Applicable to Rotary Only**

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					

## **Applicable to Dynamic Sampling Only**

	Dynamic	Sampling	Runs	Ш
Depth (m)	Diam (mm)	Recovery %	Remarks	
				П
				П
	Depth (m)			Depth (m) Diam (mm) Recovery % Remarks



Cable Percussion

Log Type

Exploratory Hole Number **BH17-23** 

**FINAL** 



Strike (m) Rises To (m) Time (min)

Sheet 1 of 3 Location Details: Methodology & Plant Project No: Scale: 1:50 3043 Method Inspection Pit Cable Percussion Plant Used Hand Tools Dando 2000 Depth (m) 0.00 - 1.20 1.20 - 19.98 558417.42 Easting: Checked By: RPH 425560.00 Northing: A1 Birtley to Coalhouse Name: Elevation: Final Depth: 19.98m Approved By: 26.13mAOD ВН

Loca	ion: Tyne and Wear	Levation:		SMAOD	Final L		.9.98M								Approved By: BH	
	·	Logged By:	GS		Grid Sy		OSGB								Start Date: 19/04/2	
Clier	t: SUV	Orientation:	N/A		Inclina		10°						T		Finish Date: 20/04/2	2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Chiselling (mins)	Water Added	Hole Ø (mm)	Casing Ø (mm)	Water	Installation / Backfill			Samples & Testing	
					Thickness)	(mAOD)	(IIIIIIS)	(Litres)	Depth (m)	Depth (m)	Level (m)	DdCKIIII	Depth (m)	Ref	Test Results	
1	MADE GROUND: TOPSOIL	- II. CLAV	{		(0.10) 0.10	26.03										1
1	MADE GROUND: Firm dark grey slightly sandy grav Sand is fine to coarse. Gravel is subangular to subr		و و										0.30 0.30	1 D 2 ES	PID 0.30m = 12.4ppm	}
1	to coarse mudstone, sandstone, coal and brick.	ounaca mi									l 1		0.50	3 D	PID 0.50m = 11.3ppm	-
1	······································			*****									0.50 0.60	4 ES 5 B		1
1				******												1
1 -													1.00 1.00	6 D 7 ES	PID 1.00m = 7.4ppm	1 -
4													1.20	8 D		-
7				*****												-
7													1.50 - 1.95	10 B	SPT(C) 1.50m, N=21 (4,5/10,5,2,4)	7
1																1
2					(2.00)								2.00	11 ES	PID 2.00m = 5.6ppm	2 -
- 1					(3.90)								2.00	12 D		- 1
-				*****												
-				******									2.50 - 2.95	14 B	SPT(C) 2.50m, N=14 (2,3/4,4,2,4)	-
7																7
=																1
3 -			8										3.00 3.00	15 ES 16 D	PID 3.00m = 8.0ppm	3 -
																1
1													3.50 - 3.95	18 B	SPT(C) 3.50m, N=50 (5,9/50 for	
-													3.30 3.33	100	245mm)	-
																-
4	Donate de la contraction de la Contraction de la			******	4.00	22.13							4.00	19 ES	PID 4.00m = 7.2ppm	4 -
1	Brown sandy clayey subangular to subrounded fine mudstone, sandstone and rare coal GRAVEL with lo			ه ف									4.00	20 D		1
4	content. Sand is fine to coarse. Cobbles are subang		-	ف ه												1
-	subrounded mudstone and sandstone.	,	ľ	ب 'جب'									4.50 - 4.95	22 B	SPT(C) 4.50m, N=16 (3,4/4,4,4,4)	-
-			-													-
- 1																7
5 -				ف ه	(2.00)								5.00 5.00	23 ES 24 D	PID 5.00m = 3.2ppm	5 -
- 1			ļ	ے۔ ہے۔												1
			-										5.50 - 5.95	26 B	SPT(C) 5.50m, N=14 (3,4/3,4,4,3)	
-																-
-				ف ه												-
6	Brownish grey slightly sandy slightly clayey subang	ularto			6.00	20.13				250 6.00			6.00	27 D		6 -
1	subrounded fine to coarse sandstone GRAVEL with		ا م	ا ف						0.00			6.00	28 ES		1
- 1	content. Cobbles are subangular to subrounded sa		·	<b></b> °												1
=				ا ف	(1.00)								6.50 - 6.95	30 B	SPT(C) 6.50m, N=24 (3,4/5,6,6,7)	_
1			-	ف ،												-
<u>,</u> d				ے۔ ہ	7.00	19.13							7.00	31 D		
´ -	Firm laminated greyish brown CLAY.		+		7.00	15.13							7.00 7.00 7.00	32 ES 9 D		′ -
			F										7.00	30		-
-			t										7.50 - 7.95	33 UT	15 blows, 100% Recovery	4
4			F													1
-																1
8 –			+										8.00	34 D		8 –
}			ļ													-
			H										8 50 005	25.0	CDT/C) 9 E0m N=45 /2 2/4 2 4 **	
7				=									8.50 - 8.95 8.50 - 8.95	35 D 36 B	SPT(S) 8.50m, N=15 (2,3/4,3,4,4)	7
1			+													1
9 -			F										9.00	37 D		9 –
4			t													- 1
-			F													
-			į										9.50 - 9.95	38 UT	18 blows, 100% Recovery	-
-			+													-
-			ļ													1
10	Continued on Next Page												10.00	39 D		10 -
Obse	rvations / Remarks	Mi	isc.			Shift Info	rmation				Backfill				Installations	$\neg$
			_	Date	Time	Depth	n (m) Cas		Vater (m)	From (m)	To (m)	Material	Instrum		ails Resp. Zone Depth (m)	Diam.
		countered d Installed	rrys Installed ergy Ratio (%, 56(%)	19/04 20/04	17:30 07:00	5.5 5.5	60	4.50 4.50	3.90	0.00 0.50	0.50 14.30	Concrete Grout	Vibrating W	rire Piezor	meter 15.30 - 16.30 15.80	
		Encou. Sed	6(%)	20/04	17:30	19.	70   1	9.50	DRY	14.30 15.30	15.30 16.30	Bentonite Gravel				
		water. Sing U	f & En.							16.30	21.05	Bentonite		Gı	roundwater Strikes	



3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Location Details:

## Cable **Percussion**

Log Type

Sheet 2 of 3

Exploratory Hole Number

**BH17-23 FINAL** 

CENTRAL ALLIANCE GEO

1:50

Scale:

Methodology & Plant Depth (m) Method Plant Used 558417.42 RPH Easting: 425560.00 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 26.13mAOD Final Depth: 19.98m Approved By: BH Tyne and Wear Location: 19/04/2018 Logged By: GS Grid System: OSGB Start Date: Client SLIV Orientation: N/A Inclination: Finish Date: 20/04/2018 Depth (m) Reduced Casing Ø Samples & Testing Water Level (m) Installation , Backfill Added (Litres) Strata Description Legend (Stratum Thickness) Level (mAOD) (mm) Depth (m (mins) Depth (m) 10.50 - 10.95 10.50 - 10.95 40 D 41 B SPT(S) 10.50m, N=15 (2,3/3,4,4,4) 11.00 42 D 11 20 blows, 100% Recovery 12 12.50 45 D 46 D 13.00 13 (12.50) SPT(S) 13.50m, N=15 (2,2/4,2,4,5) 13.50 - 13.95 13.50 - 13.95 14.00 49 D 14 15.00 15.00 - 15.45 50 D 51 UT 20 blows, 100% Recovery 15.50 52 D 53 D 16 16.50 - 16.95 16.50 - 16.95 17 From 17.00m becomes silty. 30 blows, 100% Recovery 18 59 D 18.50 19.00 60 D 19 From 19.00m becomes slightly gravelly with rare cobbles. Gravel is subangular to subrounded fine to coarse sandstone. Cobbles are subangular to subrounded sandstone. 19.50 6.63 19.50 - 19.98 61 D Destructured to residual dark grey MUDSTONE recovered as 19.50 150 gravelly silty clay. Gravel is subangular to subrounded fine to (0.48)19.70 coarse. 19.98 6.15 20 ©6Htiatiee.98nvextoftagel Observations / Remarks Shift Information Installations Instrument Details
Vibrating Wire Piezomete Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Resp. Zone Depth (m) Diam. 15.30 - 16.30 15.80 Casing Used
Monitoring Point/s Installed
Hammer Ref & Energy Ratio (%)
AR1134 (56(%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



# Cable Percussion

Log Type

Sheet 3 of 3

Exploratory Hole Number

**BH17-23** FINAL



Project No: Location Details: Methodology & Plant 3043 Scale: 1:50 Depth (m) Method Plant Used Easting: 425560.00 558417.42 Checked By: RPH Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 26.13mAOD Final Depth: 19.98m ВН Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 19/04/2018 Client: 20/04/2018 SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Reduced Level (mAOD) Water Added (Litres) Casing Ø (mm) Depth (m) Samples & Testing Chiselling (mins) Water Level (m) Installation / Backfill Strata Description Legend Depth (m) 22 24 27 28 29 30 Observations / Remarks Shift Information Installations Instrument Details Vibrating Wire Piezomete Resp. Zone Depth (m) Diam. 15.30 - 16.30 15.80 Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Casing Used
Monitoring Point/s Installed
Hammer Ref & Energy Ratio (%)
AR1134 (56(%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



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Log Type

Exploratory Hole Number

BH17-24

FINAL



Projec	t No:	3043		Location Details				Methodology & Plant				1:50
			Easting:	425571.20	Northing:	558363.20	From (m)	Method		Plant Used	Checked:	RPH
Name	:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pi		Hand Tools		
			Elevation:	23.37mAOD	Final Depth:	19.70m	1.20 - 19.70	Cable Percussi	sion	Pilcon Wayfarer 1500	Approved:	BH
Locati	on:	Tyne and Wear	Logger:	ALB	Grid System:	OSGB					Start Date:	20/02/2018
Client:	:	SLIV	Orientation:	N/A	Inclination:	90°					End Date:	21/02/2018

Hole Di	ameter
Depth (m)	Diam (mm)
13.50 19.70	250 200

Casing D	iameter
Depth (m)	Diam (mm)
13.50	250
19.70	200

	Groundwater Strikes								
				Rose To	Remarks				
(m)	(m)	(m)	(min)	(m)					

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					
22/02/2018	Standpipe Piezometer	17.30	13.70 - 17.50						

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill							
Depth (m)	Legend Code						
0.00 - 13.70	Bentonite						
13.70 - 17.50	Sand						
17.50 - 19.70	Bentonite						

In-Situ Tests					
PID	0				
Hand Vane*	0				
Standard Penetration Tests	12				

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at

one depth where available.

Sample Summary							
Environmental Samples							
Soil	5 Water						
Geotechnical Samples							
Bulk	11	Large Bulk	0				
Disturbed	26	Disturbed (NR)	0				
Piston	Piston (NR)		0				
Undisturbed 0 Undisturbed (NR)							
Undisturbed Thin Wall 4							
Undisturbed Thin Wall (NR) 0							
Cor	e San	nple	0				
·							

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary									
Test Type		Casing		Seating		Penetration	N	Reported Result	Hammer Ref	
	(m)	(m)	(m)	Blows	Blows	Total (mm)		•		
Split Spoon	1.20	-	-	16	50	275		50 (6,10/50 for 125mm)	BS07	
Cone	2.00	-	-	6	13	450	13	N=13 (3,3/3,3,4,3)	BS07	
Split Spoon	3.00	-	-	6	5	450	5	N=5 (4,2/1,1,1,2)	BS07	
Split Spoon	5.00	-	-	3	11	450	11	N=11 (1,2/2,2,3,4)	BS07	
Split Spoon	8.00	-	-	3	9	450	9	N=9 (1,2/2,2,2,3)	BS07	
Split Spoon	11.50	-	-	4	12	450	12	N=12 (2,2/3,3,3,3)	BS07	
Split Spoon	14.50	14.50	DRY	6	16	450	16	N=16 (3,3/4,4,4,4)	BS07	
Split Spoon	16.00	15.00	DRY	11	33	450	33	N=33 (5,6/6,7,9,11)	BS07	
Split Spoon	17.50	15.00	DRY	24	58	450	58	N=58 (13,11/22,11,11,14)	BS07	
Split Spoon	18.00	15.00	DRY	15	51	450	51	N=51 (7,8/9,10,14,18)	BS07	
Split Spoon	19.40	15.00	DRY	25	100	450	100	N=100 (10,15/15,25,33,27)	BS07	
Split Spoon	19.70	15.00	DRY	25	100	190		100 (25 for 120mm/100 for 70mm)	BS07	

SPT Hammer Ref.	Energy Ratio (%)
BS07	64

## **Applicable to Cable Percussion Only**

Chiselling										
Depth (m)	Duration (mins)									
17.50 - 18.00	60									
18.00 - 19.40	105									
19.40 - 19.70	60									

Water Added					
Litres					

## **Applicable to Rotary Only**

5 :::: 51 .1								
	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					
	I							

## **Applicable to Dynamic Sampling Only**

			<u> </u>	<u>-</u>			
Dynamic Sampling Runs							
Depth (n	n) Diam (mm)	Recovery %	Remarks				



3043

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Location Details:

Cable Percussion Sheet 1 of 2

Log Type

Exploratory Hole Number **BH17-24** 

**FINAL** 



1:50

Scale:

Methodology & Plant Depth (m) 0.00 - 1.20 1.20 - 19.70 Method Plant Used Easting: 425571.20 Northing: 558363.20 Checked By: RPH A1 Birtley to Coalhouse Hand Tools Pilcon Wayfarer 1500 Name: Elevation: 23.37mAOD Final Depth: 19.70m Approved By: BH Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 20/02/2018 Client SLIV Orientation N/A Inclination: 90 Finish Date: 21/02/2018 Depth (m) Reduced Casing Ø Samples & Testing Water Level (m) Added (Litres) Strata Description Legend (Stratum Thickness Level (mAOD) (mm) Depth (m (mins) Depth (m) MADE GROUND: ROADSTONE (6FS) Yellowish brown sandy (0.35) subangular fine to coarse limestone GRAVEL with medium 0.35 23.02 0.35 1 ES cobble content. Sand is fine to coarse. Cobbles are subangular 0.50 2 D limestone (0.40) MADE GROUND: Dark grey and dark brown gravelly sandy CLAY 0.75 22.62 3 ES 4 D 5 B with roots and low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse slate, brick, coal, clinker 0.80 - 1.20 SPT(S) 1.20m, 50 (6,10/50 for 125mm) and siltstone. Cobbles are subangular sandstone and brick 1.20 1.20 - 1.70 MADE GROUND: Black and orange sandy very gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to 1.50 7 ES coarse slag, brick, coal and sandstone. From 1.50m with low cobble content. Cobbles are subangular brick and (2.35)SPT(C) 2.00m, N=13 (3,3/3,3,4,3) 2 2.50 2.50 - 3.00 From 2.50m no cobbles 3.00 3.00 - 3.50 3.00 - 3.50 SPT(S) 3.00m, N=5 (4,2/1,1,1,2) 3.10 20.27 Soft to firm thinly laminated bluish grey and brown slightly sandy CLAY with occasional 1-2mm silt bands. Sand is fine to 13 ES 3.50 4.00 - 4.45 1 UT 40 blows, 100% Recovery 4.50 14 D 5.00 15 D SPT(S) 5.00m, N=11 (1,2/2,2,3,4) 5.00 - 5.50 6.00 6.50 - 6.95 2 UT 33 blows, 100% Recove 8.00 19 D SPT(S) 8.00m, N=9 (1,2/2,2,2,3) (10.60) 8.50 - 9.00 20 B 21 D 9.00 9.50 - 9.95 3 UT 40 blows, 100% Recov 10.00 22 D 10 Continued on Next Page Observations / Remarks Misc. Shift Information Backfill Installations Depth (m) Casing (m)

13.50 13.50
13.50 13.50 To (m) Material Resp. Zone | Depth (m) | Diam. | 13.70 - 17.50 | 17.30 | Instrument Details Casing Used
Monitoring Point's installed
Hammer Ref & Energy Ratio (%)
8507 (64(%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



3043

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Location Details:

Cable Percussion

Log Type

Exploratory Hole Number **BH17-24**FINAL

Methodology & Plant

CENTRAL ALLIANCE

1:50

Scale:

Sheet 2 of 2

Depth (m) Method Plant Used 425571.20 RPH Easting: Northing: 558363.20 Checked By: A1 Birtley to Coalhouse Name: Elevation: 23.37mAOD Final Depth: 19.70m Approved By: BH Tyne and Wear Location: 20/02/2018 Logged By: ALB Grid System: OSGB Start Date: Client SLIV Orientation: N/A Inclination: Finish Date: 21/02/2018 Depth (m) Reduced Samples & Testing Water Level (m) Added (Litres) Strata Description Legend (Stratum Thickness) Level (mAOD) (mm) Depth (m (mins) Depth (m) 11.00 23 D 11 SPT(S) 11.50m, N=12 (2,2/3,3,3,3) 12 From 12.00m with rare subrounded fine to medium mudstone and sandstone gravel. 13.00 - 13.45 4 UT 50 blows, 100% Recovery 13 From 13.00m becomes silty. 250 13.50 250 13.50 26 D 13.70 9.67 13.70 13.70 - 14.20 27 D 28 B Very soft to soft bluish grey sandy SILT. Sand is fine to coarse. 14 14.50 29 D SPT(S) 14.50m, N=16 (3.3/4.4.4.4) (2.10)15.00 - 15.50 30 B 15 15.80 7.57 15.80 31 D Firm dark bluish grey slightly gravelly slightly sandy CLAY. Sand is 32 D SPT(S) 16.00m, N=33 (5,6/6,7,9,11) 16 fine to coarse. Gravel is subangular fine to coarse sandstone and coal 16.50 - 17.00 33 B 17 SPT(S) 17.50m, N=58 (13,11/22,11,11,14) 17.50 (3.90) 60 SPT(S) 18.00m, N=51 (7,8/9,10,14,18) 18.00 36 D 18 37 B 18.50 - 19.00 105 19 19.40 19.40 37 D 38 D SPT(S) 19.40m, N=100 (10,15/15,25,33,27) 60 200 200 19.70 3.67 19.70 39 D SPT(S) 19.70m, 100 (25 for EOH at 19.70m - Refusal 19.70 19.70 120mm/100 for 70mm 20 Observations / Remarks Shift Information Installations Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone | Depth (m) | Diam. | 13.70 - 17.50 | 17.30 | Casing Used
Monitoring Point/s Installed
Hammer Ref & Energy Ratio (%)
BSO7 (64(%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



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Header

Sheet

Exploratory Hole Number

BH17-25

FINAL



Project No:	3043		Location Details				Methodology & Plant			Scale:	1:50
		Easting:	425605.39 Northing: 5		Northing: 558376.23	From (m)	Meth	od	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection		Hand Tools		
		Elevation:	27.48mAOD	Final Depth:	61.00m	1.20 - 20.50 20.50 - 30.50	Cable Pero Rotary C		Dando 2000 Beretta T41	Approved:	BH
Location:	Tyne and Wear	Logger:	JH+ALB	Grid System:	OSGB	30.50 - 61.00			Beretta T41	Start Date:	22/02/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°					End Date:	28/04/2018

Hole Diameter						
Diam (mm)						

Casing Diameter								
Depth (m)	Diam (mm)							
6.00	250							
l								
l								
l								

Groundwater Strikes							
Remarks	Rose To	Time	Sealed	Casing	Strike		
Remarks	(m)	(min)	(m)	(m)	(m)		
	0.70	20	-	-	1.20		
	3.60	20	-	-	4.00		
	7.20	20	-	-	7.50		

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
28/04/2018	Standpipe Piezometer	27.00	22.00 - 27.00					

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill				
Legend Code				
Bentonite				
Gravel				
Bentonite				

In-Situ Tests	
PID	3
Hand Vane*	0
Standard Penetration Tests	13

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary					
Enviror	nmer	ntal Samples			
Soil	9	Water	0		
Geote	chnic	cal Samples			
Bulk	13	Large Bulk	0		
Disturbed	28	Disturbed (NR)	0		
Piston	0	Piston (NR)	0		
Undisturbed	Undisturbed 0 Undisturbed (NR)				
Undisturbed Thin Wall					
Undisturbed Thin Wall (NR)					
Core Sample					

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
Tost Tuno	Depth	Casing	Water	Seating	Main	Penetration	N	Donarted Decult	Hammer Ref
Test Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	панше ке
Cone	1.50	1.50	0.80	6	24	450	24	N=24 (4,2/4,4,8,8)	AR1710
Cone	2.50	2.50	DRY	6	22	450	22	N=22 (3,3/5,6,6,5)	AR1710
Cone	3.50	3.50	DRY	13	36	450	36	N=36 (5,8/10,10,8,8)	AR1710
Cone	4.50	4.50	DRY	18	50	325		50 (8,10/50 for 175mm)	AR1710
Split Spoon	5.50	5.50	DRY	6	14	450	14	N=14 (2,4/4,2,4,4)	AR1710
Split Spoon	6.50	6.00	DRY	4	8	450	8	N=8 (2,2/2,2,2,2)	AR1710
Split Spoon	7.50	6.00	DRY	4	12	450	12	N=12 (2,2/3,3,4,2)	AR1710
Split Spoon	9.50	6.00	DRY	1	2	450	2	N=2 (1,0/1,0,1,0)	AR1710
Split Spoon	12.00	6.00	DRY	6	15	450	15	N=15 (3,3/3,4,4,4)	AR1710
Split Spoon	15.00	6.00	DRY	6	16	450	16	N=16 (2,4/4,4,4,4)	AR1710
Split Spoon	18.00	6.00	DRY	7	24	450	24	N=24 (3,4/6,6,6,6)	AR1710
Split Spoon	19.50	19.50	DRY	25	100	350		100 (10,15/100 for 200mm)	AR1710
Cone	19.70	19.50	DRY	25	100	200		100 (25 for 40mm/100 for 160mm)	AR1710

SPT Hammer Ref.	Energy Ratio (%)
AR1710	61

## **Applicable to Cable Percussion Only**

Chise	elling
Depth (m)	Duration (mins)
4.00 - 4.20	30
4.30 - 4.50	30
19.30 - 19.50	60
19.50 - 19.70	30

Water Added			
Litres			

#### **Applicable to Rotary Only**

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			
20.00 - 21.00	Air/Mist	Brown	100			
21.00 - 22.00	Air/Mist	Grey/Brown	100			
22.00 - 23.50	Air/Mist	Grey	100			
23.50 - 24.50	Air/Mist	Grey	100			
24.50 - 26.00	Air/Mist	Grey	100			
26.00 - 27.50	Air/Mist	Grey	100			
27.50 - 29.00	Air/Mist	Grey	100			
29.00 - 30.50	Air/Mist	Grey	100			

## **Applicable to Dynamic Sampling Only**

	Dynamic Sampling Runs					
Depth (m)	Diam (mm)	Recovery %	Remarks			
		1				



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Log Type

Combined

**Borehole** 

## BH17-25

FINAL

Exploratory Hole Number



Methodology & Plant Location Details Project No: 3043 Scale: 1:50 Method Inspection Pit Cable Percussion From (m) 0.00 - 1.20 1.20 - 20.50 20.50 - 30.50 Plant Used Hand Tools Dando 2000 Beretta T41 Easting: 425605.39 Northing: 558376.23 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 27.48mAOD Final Depth: 61.00m Approved By: BH Rotary Coring Rotary Open Holing Location: Tyne and Wear 30.50 - 61.00 Beretta T41 Logged By: JH+ALB Grid System: OSGB Start Date: 22/02/2018 Client SLIV Orientation N/A Inclination: 90° Finish Date: 28/04/2018 Samples & Testing Depth (m Reduced Hole Ø Casing Ø Coring Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref MADE GROUND: ROADSTONE (6FS) Yellowish brown sandy subangular fine to coarse limestone GRAVEL with medium (0.50)cobble content. Sand is fine to coarse. Cobbles are subangular 0.50 26.98 limestone (0.20)MADE GROUND: TOPSOIL with roots and rootlets. 0.70 26.78 0.70 1 D 2 ES 0.70 MADE GROUND: Light brown slightly sandy gravelly CLAY with 1.00 1.10 1.20 3 B 4 ES 5 D frequent roots. Sand is fine to coarse. Gravel is subangular to (0.80) subrounded fine to coarse coal, sandstone and limestone. 1.50 1.50 - 1.95 1.60 25.98 MADE GROUND: Dark brown and grey slightly sandy gravelly CLAY with low cobble and boulder content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse coal, sandstone, mudstone and brick. Cobbles and boulders are subangular sandstone and mudstone. 2.50 - 2.95 SPT(C) 2.50m, N=22 (3,3/5,6,6,5) 11 B 12 ES 2.80 3.00 13 D 3.50 - 3.95 14 B SPT(C) 3.50m, N=36 (5,8/10,10,8,8) 4.00 15 D (6.00)4.50 - 4.95 16 B SPT(C) 4.50m, 50 (8,10/50 for 175mm) 4.80 17 ES 5.00 18 D 5.50 - 5.95 SPT(S) 5.50m, N=14 (2,4/4,2,4,4) 5.80 21 ES PID 5.80m = 58.0ppm 6.00 22 D SPT(S) 6.50m, N=8 (2,2/2,2,2,2) 6.50 - 6.95 SPT(S) 7.50m, N=12 (2,2/3,3,4,2) 7.50 - 7.95 Firm greyish brown laminated CLAY. PID 7.80m = 55.0ppm 29 ES 7.80 8.00 30 D 31 UT 15 blows, 100% Recovery 8.50 - 8.95 9.00 32 D 9.50 - 9.95 9.50 - 9.95 SPT(S) 9.50m, N=2 (1,0/1,0,1,0) 10:00 35 D 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill 
 Time
 Depth (m)
 Casing (m)
 Water (m)

 17:00
 5.00
 4.50
 DRY
 To (m) Resp. Zone | Depth (m) | Diam | 22.00 - 27.00 | 27.00 | Instrument Details dwater Encour Casing Used rina Point/s In Water Strikes ime (min) Strike (m) 1.20 4.00 7.50 0.70 3.60 7.20 20 20 20



3043

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Location Details

Combined **Borehole** 

Sheet 2 of 7

Log Type

Exploratory Hole Number

**BH17-25 FINAL** 

Methodology & Plant

Scale:

CENTRAL ALLIANCE GEO

1:50

From (m) Method Plant Used RPH Easting: 425605.39 Northing: 558376.23 Checked By: A1 Birtley to Coalhouse Name: Elevation: 27.48mAOD Final Depth: 61.00m Approved By: BH Location: Tyne and Wear Logged By: JH+ALB Grid System: OSGB Start Date: 22/02/2018 Client SLIV Orientation N/A Inclination: Finish Date: 28/04/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref Firm greyish brown laminated CLAY. 36 UT-NR 37 B 10.50 - 10.95 15 blows, 0% Recovery 10.50 - 10.95 11.00 38 D 11 12.00 12.00 - 12.45 12.00 - 12.45 SPT(S) 12.00m, N=15 (3,3/3,4,4,4) 39 D 40 D 41 B 12 (10.00) 13.00 42 D 13 13.50 - 13.95 43 UT 14.00 44 D 14 15.00 SPT(S) 15.00m, N=16 15 15.00 - 15.45 15.00 - 15.45 46 D 47 B (2,4/4,4,4,4) 16.00 16.50 - 16.95 49 UT 17 blows, 100% Recovery 17 51 D Soft grey slightly gravelly slightly silty CLAY. Gravel is subangular to subrounded fine to coarse mudstone and sandstone. (0.70) SPT(S) 18.00m, N=24 (3,4/6,6,6,6) 18.00 - 18.45 18.00 - 18.45 18 18.20 9.28 Grey slightly silty slightly clayey fine to coarse SAND. (0.50)18.70 8.78 Destructured to residual dark grey MUDSTONE recovered as gravelly silty clay. Gravel is subangular to subrounded fine to 19.00 54 D 19 coarse. (1.28)19.50 19.50 - 19.95 55 D 56 D SPT(S) 19.50m, 100 (10,15/100 for 200mm) SPT(C) 19.70m, 100 (25 fo 40mm/100 for 160mm) 19.98 7.50 20 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 22.00 - 27.00 | 27.00 | Depth (m) Casing (m) Water (m) To (m) Instrument Details Water Strikes Strike (m) 1.20 4.00 7.50 0.70 3.60 7.20 20 20 20



3043

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Location Details

Combined Borehole

Log Type

Exploratory Hole Number

BH17-25

CENTRAL ALLIANCE

 Sheet 3 of 7
 GEO

 Methodology & Plant
 Scale:
 1:50

 From (m)
 Method
 Plant Used
 Checked Bv:
 RPH

1.20 4.00 7.50 0.70 3.60 7.20 20 20 20

Easting 425605.39 Northing: 558376.23 Name: A1 Birtley to Coalhouse Elevation: 27.48mAOD Final Depth: 61.00m Approved By BH Location: Tyne and Wear Logged By: JH+ALB Grid System: OSGB Start Date: 22/02/2018 Client SLIV Orientation N/A Inclination: Finish Date: 28/04/2018 Depth (m Reduced Hole Ø Samples & Testing Coring Strata Description Legend Level (mAOD) (Stratum Thickness Level (m Depth (m) SCR Extremely weak to weak grey interbedded MUDSTONE and SANDSTONE. From 20.00m to 20.40m No Recovery. From 20.60m 21.00m recovered as slightly sandy subangular fine to coarse gravel. Sand is fine to coarse. 21 00 - 21 06 11 C 21 From 21.00m 21.85m recovered as slightly sandy gravelly clay. Sand is fine to coarse. Gravel is subangular fine to coarse. NI 21.50 - 21.73 1 C 0 From 21.85m 22.20m Medium strong sandstone with 1 no. discontinuity subvertical (70-80 degrees) undulating rough. 15 22 From 22.20m 23.40m recovered as clayey subangular fine to coarse 60 0 0 23 From 23.40m 23.70m No Recovery 23.70 3.78 Medium strong to strong light grey interbedded thinly laminated SANDSTONE and SILTSTONE. Discontinuities are set 1) 80 29 24 24 closely spaced subhorizontal (0-15 degrees) planar smooth. NI From 23.75m to 23.89m recovered as subangular fine to coarse grav From 23.89m to 23.98m 1 no. discontinuity inclined (60-70 degrees) 24.27 - 24.50 stepped rough. 24.50 - 24.67 10 C From 23.98m to 24.26m recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse.

From 24.70m to 25.63m very fractured recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse. From 24.90m to 25.45m 1 no. discontinuity subvertical (70-85 degrees) 25 From 25.05m to 25.25m 1 no. discontinuity subvertical inclined (60-70 20 11 26.00 degrees) planar smooth.
From 25.25m to 25.50m 1 no. discontinuity subvertical (70-80 degrees) (3.50)planar rough. From 25.50m to 25.70m 1 no. discontinuity inclined (50-60 degrees) planar 23 25.90 - 26.00 3 C From 25.80m to 25.90m 1 no. discontinuity subvertical (85-90 degrees) From 26.00m to 26.45m very fractured with 1 no. discontinuity subvertical (70-80 degrees) planar rough with orangish brown staining. >25 26.33 - 26.38 9 C From 26.54m to 26.60m recovered as sandy subangular fine to coarse gravel. Sand is fine to coarse 47 100 From 26.70m to 26.76m 1 no. discontinuity inclined (45-50 degrees) planar 27 From 26.84m to 27.10m 1 no. discontinuity inclined to subvertical (65-75 dearees) planar smooth. 0.28 27.20 Weak to medium strong dark grey thinly laminated interbedded MUDSTONE and SILTSTONE. Discontinuities are set 1) closely NI spaced subhorizontal (0-10 degrees) planar smooth. From 27.40m to 27.70m recovered as subangular fine to coarse gravel. From 27.77m to 28.45m recovered as slightly sandy subangular fine to coarse arayel. Sand is fine to coarse. 28 From 27.90m to 28.30m becomes very clayey 21 10 10 From 28.58m to 28.82m recovered as subangular fine to coarse gravel. 28.77 - 29.00 4 C From 28.77m, becomes medium strong to strong. (3.30)29 29.17 - 29.22 7 C From 29.20m to 29.25m and 29.74m to 29.84m 1 no. discontinuity subvertical (85-90 degrees) planar smooth 29.00 30.50 100 69 59 29.54 - 29.80 5 C From 29.74m to 29.80m recovered as subangular fine to medium gravel. 30 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Depth (m) Casing (m) Water (m) Resp. Zone | Depth (m) | Diam | 22.00 - 27.00 | 27.00 | Date To (m) Instrument Details Water Strikes Strike (m)



A1 Birtley to Coalhouse

Easting:

425605.39

Project No:

Name:

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-25 FINAL** 



Web: www.central-alliance.co.uk Sheet 4 of 7 GEO Location Details Methodology & Plant Scale: 1:50 From (m) Method Plant Used 558376.23 RPH Northing: Checked By:

Elevation: 27.48mAOD Final Depth: 61.00m Approved By: BH Location: Tyne and Wear Logged By: JH+ALB Grid System: OSGB Start Date: 22/02/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: 28/04/2018 Samples & Testing Depth (m) Reduced Hole Ø Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref From 30.20m to 30.25m recovered as clayey subangular fine to medium gravel. 6 C 30.44 - 30.50 30.50 -3.02 MUDSTONE. (Driller's Description) 32 (5.00) 33 34 35.50 -8.02 COAL. (Driller's Description) (0.50) 36.00 -8.52 MUDSTONE with interbedded coal. (Driller's Description) 39 Continued on Next Page Misc Observations / Remarks Shift Information Backfill Resp. Zone | Depth (m) | Diam | 22.00 - 27.00 | 27.00 | Depth (m) Casing (m) Water (m) To (m) Material Instrument Details Water Strikes Strike (m) 1.20 4.00 7.50 0.70 3.60 7.20 20 20 20



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Combined Borehole

Log Type

BH17-25

FINAL

1.20 4.00 7.50 0.70 3.60 7.20 20 20 20

Exploratory Hole Number



Web: www.central-alliance.co.uk Sheet 5 of 7 GEO Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Easting: 558376.23 Checked Bv: RPH 425605.39 Northing: Name: A1 Birtley to Coalhouse Elevation: 27.48mAOD Final Depth: 61.00m Approved By: ВН Location: Tyne and Wear Logged By: JH+ALB Grid System: OSGB Start Date: 22/02/2018 28/04/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref MUDSTONE with interbedded coal. (Driller's Description) 42 43 (17.00) 49 50 Continued on Next Page Misc Observations / Remarks Shift Information Backfill Resp. Zone | Depth (m) | Diam | 22.00 - 27.00 | 27.00 | Depth (m) Casing (m) Water (m) To (m) Material Instrument Details Water Strikes Strike (m)



Combined Borehole

Log Type

Exploratory Hole Number **BH17-25** 

FINAL

1.20 4.00 7.50 0.70 3.60 7.20 20 20 20



Sheet 6 of 7 GEO Location Details Methodology & Plant Project No: Scale: 1:50 From (m) Method Plant Used 558376.23 RPH Easting: 425605.39 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 27.48mAOD Final Depth: 61.00m Approved By: BH Location: Tyne and Wear Logged By: JH+ALB Grid System: OSGB Start Date: 22/02/2018 SLJV Client: Orientation: N/A Inclination: Finish Date: 28/04/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) MUDSTONE with interbedded coal. (Driller's Description) 52 53.00 -25.52 53 VOID. (Driller's Description) (3.00)56.00 -28.52 MUDSTONE. (Driller's Description) (1.00) 57.00 -29.52 COAL. (Driller's Description) (1.50) 58 58.50 -31.02 MUDSTONE. (Driller's Description) 59 (2.50) 60 Continued on Next Page Misc Observations / Remarks Shift Information Backfill Resp. Zone | Depth (m) | Diam | 22.00 - 27.00 | 27.00 | Depth (m) Casing (m) Water (m) To (m) Material Instrument Details Water Strikes Strike (m)



Combined **Borehole** 

Sheet 7 of 7

Log Type

Exploratory Hole Number **BH17-25** 

**FINAL** 



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Easting: 558376.23 Checked Bv: RPH 425605.39 Northing: Name: A1 Birtley to Coalhouse Elevation: 27.48mAOD Final Depth: 61.00m Approved By: ВН Location: Tyne and Wear Logged By: JH+ALB Grid System: OSGB Start Date: 22/02/2018 28/04/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref MUDSTONE. (Driller's Description) 61.00 -33.52 EOH at 61.00m - Scheduled Depth 62 69 70 Misc Observations / Remarks Shift Information Backfill Resp. Zone | Depth (m) | Diam | 22.00 - 27.00 | 27.00 | To (m) Material Instrument Details Water Strikes Strike (m) 1.20 4.00 7.50 0.70 3.60 7.20 20 20 20



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Tel: +44 (0)1924 229889 Web: www.central-alliance.co.uk Log Type **Header** 

Sheet

Exploratory Hole Number

BH17-26

**FINAL** 



Location Details Methodology & Plant Scale: 1:50 Project No: 3043 From (m) 0.00 - 1.20 1.20 - 17.50 17.50 - 20.50 Method Inspection Pit Cable Percussion Cable Percussion Plant Used Hand Tools Easting: 425634.98 558346.01 Checked: RPH Northing: Name: A1 Birtley to Coalhouse Elevation: 28.01mAOD Final Depth: 20.50m Approved: BH Dando 2000 Location: Tyne and Wear Logger: ALB Grid System: OSGB Start Date: 05/03/2018 Client: 24/04/2018 SLJV Orientation: N/A Inclination: 90° End Date:

Hole Di	ameter
Depth (m)	Diam (mm)
20.30	250

Casing Diameter						
Depth (m)	Diam (mm)					
9.00	250					

Groundwater Strikes							
Strike	Strike Casing Sealed Time Rose To						
(m)	(m)	(m)	(min)	nin) (m) Remarks			
ł							

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 20.30	Bentonite				
20.30 - 20.50	Arisings				

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	12

	<u> </u>
Standard Penetration Tests	12

reported result of 3 tests carried out at one depth where available.

Sample Summary						
Environmental Samples						
Soil	· · · · · · · · · · · · · · · · · · ·					
Geote	chnic	cal Samples				
Bulk 12 Large Bulk						
Disturbed	26	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Cor	e San	nple	0			

(NR) Indicates sample undertaken but with 0% Recovery

Standard Penetration Test Summary									
Test Type	Depth	Casing	Water	Seating		Penetration	l <sub>N</sub>	Reported Result	Hammer Ref
rest type	(m)	(m)	(m)	Blows	Blows	Total (mm)	14	Reported Result	Hammer Ker
Cone	1.20	1.20	-	3	9	450	9	N=9 (2,1/2,2,3,2)	BS07
Split Spoon	2.00	2.00	-	8	21	450	21	N=21 (3,5/7,5,4,5)	BS07
Split Spoon	3.00	3.00	-	6	21	450	21	N=21 (2,4/5,6,5,5)	BS07
Cone	4.00	4.00	-	6	21	450	21	N=21 (2,4/4,5,5,7)	BS07
Cone	5.00	5.00	-	7	15	450	15	N=15 (3,4/3,3,4,5)	BS07
Split Spoon	6.50	6.00	-	3	12	450	12	N=12 (2,1/2,3,3,4)	BS07
Split Spoon	9.50	9.00	-	3	11	450	11	N=11 (1,2/3,2,3,3)	BS07
Split Spoon	12.50	9.00	-	3	13	450	13	N=13 (2,1/3,3,3,4)	BS07
Split Spoon	15.50	9.00	-	6	24	450	24	N=24 (3,3/5,4,6,9)	BS07
Split Spoon	18.50	9.00	-	8	34	450	34	N=34 (3,5/6,8,10,10)	BS07
Split Spoon	20.00	9.00	-	25	100	350		100 (25 for 125mm/100 for 225mm)	BS07
Split Spoon	20.30	9.00	-	25	100	200		100 (25 for 50mm/100 for 150mm)	BS07

SPT Hammer Ref.	Energy Ratio (%)	
BS07	64	

#### **Applicable to Cable Percussion Only**

Chiselling							
Depth (m)	Duration (mins)						
20.00 - 20.30	90						

Water Added					
Depth (m)	Litres				

## **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

## **Applicable to Dynamic Sampling Only**

			<u> </u>	
		Sampling		
Depth (m)	Diam (mm)	Recovery %	Remarks	
		,		



Cable Percussion

Log Type

Exploratory Hole Number

BH17-26
FINAL



Sheet 1 of 3 Location Details: Methodology & Plant Project No: 3043 Scale: 1:50 Plant Used Hand Tools Method Inspection Pit Cable Percussion Cable Percussion Depth (m) 0.00 - 1.20 1.20 - 17.50 17.50 - 20.50 Easting: 558346.01 425634.98 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Approved By: Final Depth: 20.50m 28.01mAOD ВН

	Tong and Wass	Elevation:	28.01	mAOD	Final D	epth: 2	0.50m	17.50 -	20.50	Cable Pe	rcussion		Dando 2000		Approved By:	BH
Location:	Tyne and Wear	Logged By:	ALB		Grid Sy	stem: <b>C</b>	OSGB								Start Date: 05/0	3/2018
Client:	SUV	Orientation:	N/A		Inclinat	tion: 9	0°								Finish Date: 24/0	04/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Chisellin	Water Added	Hole Ø (mm)	Casing Ø (mm)	Water	Installation /			Samples & Testing	
				Legenu	Thickness)	(mAOD)	(mins)	(Litres)	Depth (m)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	
	DE GROUND: Yellow brown sandy subangular f	ine to coars	se		(0.30)											-
	stone GRAVEL. Sand is fine to coarse.	uith rootlot			0.30	27.71							0.30	1 ES		-
	DE GROUND: Dark brown gravelly sandy CLAY was subangular fine to coarse sandstone, coal				(0.30)								0.50	2 D		
	d is fine to coarse.	i dila bilek.			0.60	27.41							0.50 - 1.00	3 B		_
	DE GROUND: Reddish brown silty very sandy si	ubangular f	fine	******									0.80	4 ES		-
	parse sandstone, concrete, and brick GRAVEL v		8	*****												1 -
	ole content. Sand is fine to coarse. Cobbles are	subangula	ır 🏻	******	(1.00)								1.20 - 1.70	5 B	SPT(C) 1.20m, N=9 (2,1/2,2,3,2)	1
sand	Istone.															1
1			8		1.60	26.41							1.50 1.50	4 D 6 ES		-
	DE GROUND: Brown sandy very gravelly CLAY. S				1.00	20.41							1.80	7 D		-
7	se. Gravel is subangular fine to coarse sandsto	ne and coa	al.	*****									l .			
2 -			Ě										2.00	8 D	SPT(S) 2.00m, N=21 (3,5/7,5,4,5)	2 -
1			×	******												1
			×										2.50	11 ES		_
-			8										2.50 - 3.00	9 B		-
			ě													-
3 -			Ě										3.00	10 D	SPT(S) 3.00m, N=21 (2,4/5,6,5,5)	3 -
1			ě													1
-			8													
4			ě										3.50	12 ES		-
			ě													-
1			8		(4.60)											1
4			8										4.00 - 4.45	13 B	SPT(C) 4.00m, N=21 (2,4/4,5,5,7)	) 4 –
}			Ě													-
4			ě													-
7			8										4.50	14 ES		7
1			8	*****												1
5 -			8	*****									5.00 - 5.50	15 B	SPT(C) 5.00m, N=15 (3,4/3,3,4,5)	- ) 5 –
Ĭ -			8	*****												
4			8													-
1			8										5.50	16 ES		
1			ě										5.50 - 6.00	17 B		1
-			ě	*****												-
6 -			ě										6.00	18 D		6 -
Firm	grey brown thinly laminated CLAY with occasi	ional fina to		<u> </u>	6.20	21.81							6.20	19 D		-
	lium sand bands.	ionai iine tt	٠ <u> </u>										6.20 - 6.50	21 B		1
1	Julia Surius.												6.50 6.50	20 ES 22 D	SPT(S) 6.50m, N=12 (2,1/2,3,3,4)	
			-													-
													7.00	22.0		
7			-										7.00 7.00 - 7.50	23 D 24 B		/-
7																1
1			-													_
1			F													-
-			-													-
8 -													8.00 - 8.45	25 UT	27 blows, 100% Recovery	8 -
7			+										1			-
1			F										1			-
‡			-					1					8.50	26 D		
1			F										1			]
_ \										250			1			_ ]
9 -			F							9.00			1			9 –
7			L	= $=$ $]$									1			† †
1			-										9.50	27 D	SPT(S) 9.50m, N=11 (1,2/3,2,3,3)	, 1
			Ė					1								_
-			-										1			-
10	Continued on Next Page		-					+	1				10.00 - 10.50	28 B		10
		<u> </u>	. +				<u> </u>	1								
Observatio	ns / Remarks		isc.	Date	Time	Shift Info		sing (m)	Mater (m)	From (m)	Backfill To (m)	Material	Instrum	nent Deta	Installations alls Resp. Zone Depth (	m) Diam
		ered lled	No Montoning Point instance Hammer Ref & Energy Ratio (%) BS07 (64(%)	Date	ime	Depth	· (iii)   Ci	13111g (111)	vvater (III)	0.00	20.30	Bentonite	ilistrun	nent Deta	nesp. zone   Depth (	mj Diam.
		counts d	y Rath.							20.30	20.50	Arisings				
		er En. g Usec	Energ. (64(%,											G	roundwater Strikes	
		dwata Casing	Ref & .										Strike (m) Ri			s
		Groun	nmeri										,,	- 17		
		No	Han													
		1			1	1	1				i I				i l	



Name:

3043

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Northing:

558346.01

Location Details:

425634.98

Easting:

## Cable **Percussion**

Log Type

Sheet 2 of 3

Depth (m)

Exploratory Hole Number

**BH17-26 FINAL** 

Plant Used

Methodology & Plant

Method

Scale:

Checked By:



1:50

RPH

A1 Birtley to Coalhouse Elevation: 28.01mAOD Final Depth: 20.50m Approved By: BH Tyne and Wear Location: 05/03/2018 Logged By: ALB Grid System: OSGB Start Date: Client SLIV Orientation: N/A Inclination: Finish Date: 24/04/2018 Depth (m) Reduced Casing Ø Samples & Testing Installation , Backfill Added (Litres) Strata Description Legend (Stratum Thickness) Level (mAOD) (mm) Depth (m Level (m (mins) Depth (m) Firm grey brown thinly laminated CLAY with occasional fine to medium sand bands. 10.50 29 D (9.30) 11.00 - 11.45 30 UT 35 blows, 100% Recov 11.50 31 D 12 32 D SPT(S) 12.50m, N=13 (2,1/3,3,3,4) 33 B 13.00 - 13.50 13 34 D 13.50 14.00 - 14.45 14.00 - 14.45 35 UT 4 UT 35 blows, 100% Recovery 14 14.50 36 D 15 15.50 12.51 15.50 37 D SPT(S) 15.50m, N=24 (3,3/5,4,6,9) Soft brownish grey sandy silty CLAY. Sand is fine to coarse. × × × 16.00 - 16.50 38 B 16 (1.50) 16.50 39 D 11.01 17 Medium dense light grey silty fine to medium SAND. 41 D 42 D 18.00 18 SPT(S) 18.50m, N=34 (3,5/6,8,10,10) 18.50 - 18.95 18.50 - 18.95 43 D 44 B (3.50)45 D 19.00 19 20.00 20.00 - 20.45 SPT(S) 20.00m, 100 (25 for 125mm/100 for 225mm) 20 Continued on Next Page Observations / Remarks Misc. Shift Information Installations Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam. Casing Used
No Monitoring Point Ins
Hammer Ref & Energy Rc
BSO7 (64(%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



Name:

3043

A1 Birtley to Coalhouse

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Northing:

Location Details:

425634.98

Easting:

Cable **Percussion** 

Log Type

Exploratory Hole Number **BH17-26** 

CENTRAL ALLIANCE

Sheet 3 of 3

Depth (m)

558346.01

**FINAL** GEO Methodology & Plant Scale: 1:50 Method Plant Used Checked Bv: RPH

Elevation: 28.01mAOD Final Depth: 20.50m Approved By: ВН Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 05/03/2018 24/04/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Reduced Water Added (Litres) Samples & Testing Chiselling (mins) Water Level (m) Installation , Backfill Strata Description Legend Level (mAOD) Depth (m) Medium dense light grey silty fine to medium SAND. 90 250 20.30 20.30 20.30 - 20.50 48 D 49 D SPT(S) 20.30m, 100 (25 for 50mm/100 for 150mm) 20.50 7.51 EOH at 20.50m - Refusal 22 24 27 28 29 -30 Observations / Remarks Shift Information Installations Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam. No Monitoring Point Installed
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%)
BSO7 (64(%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



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Log Type Header

Sheet

Exploratory Hole Number

BH17-27

FINAL



Project No:	3043	Location Details					Methodolog	Scale:	1:50	
		Easting: <b>425705.42</b>	Northing:	558289.39	From (m)	Method	Plant Used	Checked:	RPH	
Name:	A1 Birtley to Coalhouse			- Horamig.		0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	29.58mAOD	Final Depth:	7.05m	1.20 - 7.05	Dynamic Sampling (Windov	wless) Fraste PLG	Approved:	BH
Location:	Tyne and Wear	Logger:	RA	Grid System:	OSGB				Start Date:	13/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	16/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)
7.05	128

Casina F	iamatar
	iameter
Depth (m)	Diam (mm)
5.20	128

Groundwater Strikes											
Strike	Casing	Sealed	Time	Rose To	Remarks						
(m)	(m)	(m)	(min)	(m)	Remarks						

Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

No Monitoring Point/s Installed

В	ackfill
Depth (m)	Legend Code
0.00 - 7.05	Bentonite

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	6

Hand Vane*	0
Standard Penetration Tests	6

reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
Soil	Soil <b>0</b> Water							
Geotechnical Samples								
Bulk	0	Large Bulk	0					
Disturbed	3	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undistu	rbed	Thin Wall	0					
Undisturbed Thin Wall (NR)								
Co	re San	nple	0					

(NR) Indicates sample undertaken but with

	Standard Penetration Test Summary												
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref				
Split Spoon	1.20	-	-	4	13	450	13	N=13 (2,2/2,3,4,4)	AR1175				
Split Spoon	2.20	-	-	22	28	450	28	N=28 (4,18/9,8,7,4)	AR1175				
Split Spoon	3.20	-	-	11	36	450	36	N=36 (3,8/11,9,7,9)	AR1175				
Split Spoon	4.20	-	-	4	16	450	16	N=16 (2,2/4,4,4,4)	AR1175				
Split Spoon	5.20	-	-	10	24	450	24	N=24 (4,6/8,5,5,6)	AR1175				
Cone	6.90	-	-	21	100	150		100 (7,14/100 for 0mm)	AR1175				

SPT Hammer Ref.	Energy Ratio (%)
AR1175	56

## **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	

Water Added					
Depth (m)	Litres				

#### **Applicable to Rotary Only**

Drilling Flush							
Depth (m)	Flush Colour	Return %					
Deptil (III)	Flush Type	i iusii coloui	NCturri 70				

## **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs						
Depth (m)	Diam (mm)	Recovery %	Remarks			
1.20 - 2.20	128	80				
2.20 - 3.20	128	65				
3.20 - 4.20	113	100				
4.20 - 5.20	113	60				
5.20 - 6.90	113	47				



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Web: www.central-alliance.co.uk Sheet 1 of 1

Dynamic Sampling

Log Type

Exploratory Hole Number

BH17-27
FINAL



Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Plant Used Hand Tools Fraste PLG Depth (m) 0.00 - 1.20 1.20 - 7.05 Method Inspection Pit Dynamic Sampling (Windowless) Easting: 425705.42 Checked By: RPH 558289.39 A1 Birtley to Coalhouse Northing: Name: Final Depth: 7.05m Elevation: 29.58mAOD Approved By: ВН Location: Tyne and Wear Start Date: Logged By: Grid System: OSGB 13/04/2018 RA

Loca	Tylie and wear	Logged By:	RA	Grid Syste		3								3/04/2018
Clien	t: SLJV	Orientation:	N/A	Inclination	n: <b>90°</b>								Finish Date: 1	6/04/2018
					l	Depth		casing Ø	Water	Installation /			Samples & Testing	
	Strata Description				Legend	(Stratu Thickne	(mAOD)	(mm) Depth (m)	Louis Louis	Backfill	Depth (m)	Ref	Test Results	
	MADE GROUND: Dark brownish grey gravelly sand	lv CLAY. San	d is fine to co	parse.	******	×								
-	Gravel is subangular to rounded fine to coarse brid				<b>******</b>	8								-
1					<b>*****</b>	8								1
-					<b>******</b>	8								-
1 7					<b>*****</b>	8								1
1 1					<b>*****</b>	8								1
1 -						8								1 -
1 1						8							SPT(S) 1.20m, N=13 (2,2/2,3	-
-					<b>*******</b>	8							(0), (2)-/,	-
1 7						<b>X</b>								- 1
1 1						8								1
-					<b>******</b>	(3.70	)							-
2 -					<b>******</b>	(J.//	′							2 -
						8							SPT(S) 2.20m, N=28 (4,18/9	+
-						8							371(3) 2.2011, N=20 (4,10/3	.0,7,4)
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					<b>*****</b>	8							SPT(S) 3.20m, N=36 (3,8/11	.9,7,9) -
					<b>*****</b>	×								
-						X								
	Possible MADE GROUND: Stiff brown mottled oran	nge slightly	gravelly CLAY	/. Gravel is		3.70	25.88							1
	subangular to rounded fine to coarse sandstone, c					8								4
4 -						8								4 -
					<b>*****</b>	8							SPT(S) 4.20m, N=16 (2,2/4,4	1,4,4)
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1 7						(3.35	)				3.20 - 3.03	100		7
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1					<b>******</b>	8					6.90	17 D	SPT(C) 6.90m, 100 (7,14/10)	) for
7 -					<b>*******</b>	7.05	22.53						0mm)	7 -
1	EOH at 7.05m - Ref	rusal									1			1
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Ohse	rvations / Remarks	Mi	SC. R:	ackfill		Dvn	amic Samplin	Runs				Inst	tallations	
	, nemano	1411	Depth (m)	Material	From (m)	To (m)	Diam (mm) Reco		Remarks	Inst	rument Deta		Resp. Zone Depth (	m) Diam
		para	0.00 - 7.05	Bentonite	1.20	2.20	128	80		30	5000	-	Septif(	/
		ounte	's Inst		2.20 3.20	3.20 4.20	113	65 .00						
		ır Enc Used	oint		4.20 5.20	5.20 6.90	113	60 47				C '	lucata a Ctaile	
		idwate. Casina	oring P							Chail ( )			water Strikes	D
		ound	ait		]					Strike (m) Ca	ising (m) Seal	ea (m) Ris	ses To (m) Time (min)	Remarks
		Vo Gr		& Energy Ratio (%)										
			< AR11	175 (56%)										



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Log Type Header

Sheet

Exploratory Hole Number

BH17-27A

FINAL



Project No:	3043	Location Details				Methodology & P	Scale:	1:50		
Name:	A1 Birtley to Coalhouse	Easting:	425708.66	Northing:	558290.63	From (m)	Method	Plant Used	Checked:	RPH
		Elevation:	30.85mAOD	Final Depth:	23.20m	0.00 - 1.20 1.20 - 6.50 6.50 - 23.20	Inspection Pit Rotary Open Holing Rotary Coring	Hand Tools Fraste PLG Fraste PLG	Approved:	ВН
Location:	Tyne and Wear	Logger:	RA+GS	Grid System:	OSGB				Start Date:	17/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	24/04/2018

Hole Diameter						
	Diam (mm)					
23.20	140					
23.20	140					

Casing D	iameter
Depth (m)	Diam (mm)
14.80	140

	Groundwater Strikes						
Strike	Casing	Sealed	Time	Rose To	Remarks		
(m)	(m)	(m)	(min)	(m)	Remarks		
ł							

	Installation / Instrument Details						
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)			

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 23.20	Bentonite					

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	5

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Hand Vane* 0		(1411) maleutes sumple undertui
Hand Vane*	0	0% Recovery
Standard Penetration Tests	5	

Sample Summary							
Environmental Samples							
Soil <b>3</b> Water							
Geotechnical Samples							
Bulk	1	Large Bulk	0				
Disturbed	8	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undisturbed Thin Wall							
Undisturbe	ed Thi	n Wall (NR)	0				
Cor	e San	nple	7				

(NR) Indicates sample undertaken but with
0% Recovery

				Sta	ndard	Penetrati	on T	est Summary					
Test Type				Seating		Penetration	Ν	Reported Result	Hammer Ref				
6 III 6	(m)	(m)	(m)	_	Blows	Total (mm)	40	11 40 (2.2/4.4.5.5)	104475				
Split Spoon		-	-	4	19	450	19	N=19 (2,2/4,4,5,6)	AR1175				
Split Spoon	8.80	-	-	16	28	450	28	N=28 (10,6/6,7,7,8)	AR1175				
Split Spoon	11.50	-	-	13	39	450	39	N=39 (4,9/13,10,7,9)	AR1175				
Split Spoon	12.80	-	-	16	48	450	48	N=48 (6,10/10,10,11,17)	AR1175				
Split Spoon	13.50	-	-	25	91	450	91	N=91 (22,3/23,24,14,30)	AR1175				
ł													
i													

SPT Hammer Ref.	Energy Ratio (%)
AR1175	56

## **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	

Water Added										
Depth (m)	Litres									

## **Applicable to Rotary Only**

Drilling Flush											
Depth (m)	Flush Type	Flush Colour	Return %								
13.50 - 14.50	Water	Grey	100								
14.50 - 14.80	Water	Grey	100								
14.80 - 16.20	Water	Grey	100								
16.20 - 16.50	Water	Grey	100								
16.50 - 17.80	Water	Grey	100								
17.80 - 18.10	Water	Grey	100								
18.10 - 19.20	Water	Grey	100								
19.20 - 20.20	Water	Grey	100								
20.20 - 21.70	Water	Grey	100								
21.70 - 23.20	Water	Grey	80								
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## **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs												
Depth (m)	Diam (mm)	Recovery %	Remarks									
6.50 - 7.50	113	100										
7.50 - 8.80	113	92										
8.80 - 10.10	113	100										
10.10 - 10.30	113	100										
10.30 - 11.50	113	58										
11.50 - 12.80	113	85										
12.00 - 13.50	98	47										



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Log Type

Combined

**Borehole** 

## BH17-27A

FINAL

Exploratory Hole Number



Methodology & Plant Location Details Scale: Project No: 3043 1:50 From (m) 0.00 - 1.20 1.20 - 6.50 6.50 - 23.20 Plant Used Hand Tools Fraste PLG Fraste PLG Method Easting: 425708.66 Northing: 558290.63 Checked By: RPH Inspection Pit Rotary Open Holin Rotary Coring A1 Birtley to Coalhouse Name: Elevation: 30.85mAOD Final Depth: 23.20m Approved By: BH Location: Tyne and Wear 17/04/2018 Logged By: RA+GS Grid System: OSGB Start Date: Client SLIV Orientation N/A Inclination: Finish Date: 24/04/2018 Samples & Testing Depth (m) Reduced Hole Ø Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref MADE GROUND: Dark brownish grey gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse brick and sandstone. 27.15 3.70 Possible MADE GROUND: Stiff brown mottled orange slightly gravelly CLAY. Gravel is subangular to rounded fine to coarse sandstone, coal and mudstone. (3.80) 6.50 1 ES 7.50 7.50 7.50 - 7.95 SPT(S) 7.50m, N=19 (2,2/4,4,5,6) Firm locally soft grey mottled orange slightly gravelly CLAY with occasional silty sand lenses. Sand is fine to coarse. Gravel is subangular to rounded fine to coarse sandstone and mudstone. 5 ES 8.50 SPT(S) 8.80m, N=28 (10,6/6,7,7,8) 9.80 8 D 10 Continued on Next Page Observations / Remarks Misc Shift Information | Depth (m) | Casing (m) | 11.50 | 10.30 | 11.50 | 10.30 | 14.80 | 14.50 | 14.80 | 21.70 | 14.80 | 21.70 | 14.80 | 23.20 | 14.80 | 23.20 | 14.80 | 7.37 7.45 3.80 6.55 4.70 14.63 7.60 13.5 From (m) To (m) Material 0.00 23.20 Bentonite Resp. Zone Depth (m) Diam Time 18:00 07:30 17:30 07:30 17:30 07:30 07:30 Instrument Details Water Strikes Strike (m) Rises To (m) Time (min)



3043

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Location Details

Combined **Borehole** 

Log Type

Explor

В

Methodology & Plant

Sheet 2 of 3

ratory Hole Number	
H17-27A	
FINAL	CENTRAL ALLIANCE

Scale:

1:50

Nam	me: A1 Birtley to Coalhouse Easting: 42:		4257	08.66	Northing:		558290.63		m (m)	n) Method		Plant Used		Checked By:		: F		RPH	ł	
		Elevation:	30.8	5mAOD	Final	Depth:	23.20m								pprove	d By	:		ВН	
Loca	ation: Tyne and Wear	Logged By:	RA+	<b>+GS</b> Gri		System:	OSGB								art Dat	te:		17,	/04/2	2018
Clier	nt: SLIV	Orientation:	N/A		Inclir	nation:	90°							Fir	nish Da	ate:		24,	/04/2	2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Hole Ø (mm)	Casing Ø (mm)	Water	Installation /		Samples	s & Testing	thod			Cor	ing		
					Thickness)	(mAOD)	Depth (m)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	ğ	Core Run	TCR	SCR	RQD	If	
	Firm locally soft grey mottled orange slightly grave occasional silty sand lenses. Sand is fine to coarse.		th																	-
	subangular to rounded fine to coarse sandstone ar		ie.								10.30 - 10.70	9 B								-
	-																			-
					10.85	20.00					10.85	10 D								
11 -	Light greenish grey slightly silty fine SAND.			× × ×	10.83	20.00					10.65	100								11 -
=				$\times \times \times$	(0.55)															-
	Siff and the second state of the second seco			×××	11.40	19.45														-
	Stiff greenish grey slightly gravelly CLAY. Gravel is s rounded fine to coarse predominantly sandstone,		to								11.50 11.50 - 11.95		SPT(S) 11.50m, N=39 (4,9/13,10,7,9)							-
	mudstone.																			-
12 -				÷::::																12 -
																				-
-					(2.10)															-
-					` ,															-
													SPT(S) 12.80m, N=48							-
13 -													(6,10/10,10,11,17)							13 -
1																				-
3					13.50	17.35							SPT(S) 13.50m, N=91							-
]	Soft grey slightly sandy gravelly CLAY. Sand is fine t				15.50	17.55							(22,3/23,24,14,30)							-
]	Gravel is subangular to subrounded fine to coarse mudstone and coal.	sandstone,																	NR	-
14 -	From 13.50m to 14.05m No Recovery.				(1.20)										13.50 14.50	35	0	0		14 -
]					(1.20)														NI	-
]																				-
1	From 14.50m to 14.70m, no recovery.				14.70	16.15									14.50 14.80	67	0	0	NR	-
-	Very weak destructured black COAL recovered as s		dy		(0.30)	10.13		140 14.80						-	14.00					
15 -	subangular fine to coarse gravel. Sand is fine to coarse yery weak destructured to residual light to dark gr				15.00	15.85								RC SC						15 -
	MUDSTONE recovered as slightly sandy clayey sub																			-
	subrounded fine to coarse gravel. Sand is fine to co	oarse.													14.80	100	0	0	NI	_
					(1.20)										16.20					-
																				-
16 -																				16 -
	Very strong thinly laminated MUDSTONE.				16.20 (0.20)	14.65									16.20	100	67	43	10	-
	Very weak destructured to residual grey MUDSTO	NE and COA	۱L		16.40	14.45									16.50	100	0,			-
	recovered as slightly sandy slightly silty subangular	r fine to			(0.50)														NI	-
	coarse gravel. Sand is fine to coarse.  Strong dark grey fine to medium grained SANDSTC	NIE with 1 r	20		16.90	13.95												ŀ		-
17 – -	discontinuity inclined (45 degrees) undulating rou		10.		(0.30)	42.55					17.01 - 17.20	1 C			16.50	92	19	15	5	17 -
1	From 17.10m to 17.20m No Recovery.		/		17.20	13.65									17.80					-
1	Very weak destructured to residual dark grey MUE COAL.	DSTONE and	1																	-
	From 17.20m to 18.10m recovered as slightly sandy silty suba to coarse gravel. Sand is fine to coarse.	ingular fine			(1.10)									$\  \ $				_	NI	-
10 -	to course graver. Sand is fine to course.										17.90	7 C			17.80 18.10	100	0	0		10 -
18 -	From 18.10m to 18.30m recovered as subangular fine to coar	se gravel.									18.04 - 18.10	6 C		-	-0.10					18 -
	Medium strong to strong light to dark grey thinly la				18.30	12.55								$\  \ $				ŀ	$\dashv$	-
	MUDSTONE with rare coal. Discontinuities are clos														18.10				23	-
-	horizontal (0-10 degrees) planar smooth.  From 18.70m to 18.90m recovered as sandy clayey subangula	ar fine to													19.20	100	82	15	NI	
- 19 –	coarse gravel. Sand is fine to coarse.	ii jiiic to																ŀ		19 -
-	From 40 30m to 40 47				(1.00)						10.25 42.45	5 C							19	
	From 19.20m to 19.45m recovered as slightly sandy subangul coarse gravel. Sand is fine to coarse.	ur jine to			(1.90)						19.25 - 19.47	3 C							NI	-
	From 19.55m to 19.60m recovered as slightly sandy clayey su	bangular fine												$\  \ $	19.20 20.20	100	65	33	10 NI	-
	to coarse gravel. Sand is fine to coarse. From 19.75m to 19.90m recovered as slightly sandy subangul													$\  \ $	20.20			ŀ	14 NI	-
20 -		,									19,97 - 20,08	. 2 C		$\mathbb{H}$	$\dashv$		_	-	=	20 -
	Continued on Next Page	T				61.5					D 160			Ц						
Obs	ervations / Remarks	1	Misc.	Date	Tim		nformation pth (m) C	asing (m)	Water (m	n) From (m)	Backfill To (m)	/laterial	Instrument Det		nstallat Re			Depth	(m)	Diam
		tered	palled	Dutt	1	-	, ,,	(····/		0.00		Bentonite			1"	p - E		. upu		
		uconu	sed int Inst												$\perp$					
		vater E	Casing Usec oring Point												/ater S	trike				
		wpuno.	Ca. Ionitor										Strike (m) Rises To (m)	) Time	e (min)		F	Remar	ks	
		No Gi	No M																	



## Combined Borehole

Log Type

Borehole
Sheet 3 of 3

Exploratory Hole Number

## BH17-27A

**FINAL** 



Methodology & Plant Location Details Scale: 1:50 Project No: From (m) Method Plant Used RPH Easting: 425708.66 Northing: 558290.63 Checked By: A1 Birtley to Coalhouse Name: Elevation: 30.85mAOD Final Depth: 23.20m Approved By: BH Tyne and Wear Location: Logged By: RA+GS Grid System: OSGB Start Date: 17/04/2018 Client: SLIV Orientation: N/A Inclination: Finish Date: 24/04/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref From 19.75m to 19.90m recovered as slightly sandy subangular fine to coarse gravel. Sand is fine to coarse. 20.20 10.65 Strong to very strong thinly laminated grey fine grained SANDSTONE. Discontinuities are set 1) closely spaced subhorizontal (0-10 degrees) planar smooth. (1.50) 100 100 55 21.02 - 21.25 3 C >25 From 21.50m to 21.70m recovered as subangular coarse gravel with 1 no. discontinuity subvertical (80-90 degrees) undulating rough.

NO RECOVERY due to inner core barrel failure during drilling. 21.60 - 21.70 4 C 22 (1.50) 0 0 23 140 23.20 23.20 7.65 EOH at 23.20m - Abandoned due to equipment failure. 24 25 28 29 30 Observations / Remarks Misc Shift Information 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 23.20
 Bentonite
 Instrument Details Resp. Zone Depth (m) Diam Water Strikes Strike (m) Rises To (m) Time (min)



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Log Type

Header

Sheet

Exploratory Hole Number

BH17-27B

FINAL



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
		Easting:	425705.41	Northing:	558289.46	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	123703112	reor crimig.	330203110	0.00 - 1.20	Inspection Pit	Hand Tools	onconcu.	
		Elevation:	30.54mAOD	Final Depth:	40.00m	1.20 - 40.00	Rotary Open Holing	Fraste PLG	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	24/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	26/04/2018

Hole Diameter					
Depth (m)	Diam (mm)				
40.00	140				

Casing Diameter						
Depth (m)	Diam (mm)					
30.70	140					

	Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Dl			
(m)	(m)	(m)	(min)	(m)	Remarks			

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
26/04/2018	Standpipe Piezometer	11.00	10.00 - 12.00					

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill					
Depth (m)	Legend Code				
0.00 - 0.50	Concrete				
0.50 - 10.00	Bentonite				
10.00 - 12.00	Sand				
12.00 - 40.00	Bentonite				

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary						
Enviror	nmer	ntal Samples				
Soil	0	Water	0			
Geote	chnic	cal Samples				
Bulk	0	Large Bulk	0			
Disturbed	0	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Cor	e San	nple	0			

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

				Sta	ndard	Penetration	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)		

No Standard Penetration Tests Undertaken

## **Applicable to Cable Percussion Only**

Chise	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litre

## **Applicable to Rotary Only**

	Drilling Flush					
Depth (m)	Flush Type	Flush Colour	Return %			
1.20 - 10.50	Water	Grey	100			
10.50 - 14.50	Water	Grey	100			
14.50 - 30.70	Water	Grey	100			
30.70 - 40.00	Water	Grey	100			

	Dynamic	Sampling	Runs				
Depth (m)	Diam (mm)	Recovery %	Remarks				

**Applicable to Dynamic Sampling Only** 



Rotary Borehole

Log Type

Exploratory Hole Number **BH17-27B** 

FINAL



Sheet 1 of 4 Location Details Methodology & Plant Project No: Scale: 1:50 Method Inspection Pit Rotary Open Holing Plant Used Hand Tools Fraste PLG From (m) 0.00 - 1.20 1.20 - 40.00 Easting: 425705.41 558289.46 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Final Depth: 40.00m Elevation: Approved By: 30.54mAOD ВН Location: Tyne and Wear Grid System: **OSGB** Start Date: 24/04/2018 GS Logged By:

LUCA	ation: Tyne and Wear	Logged By:	GS		Grid	System:	OSGB							Start E		24/04/2018
Clien	nt: SLIV	Orientation:	N/A		Inclin	nation:	90°							Finish	Date:	26/04/2018
					Depth (m)	Reduced		Casing Ø	Water	Installation /			Sample	es & Testing		
	Strata Description			Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref		Test Res	ults	
-	MADE GROUND (Driller's Description).															
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Obse	ervations / Remarks	Mi		Date	Time		nformation pth (m)	n Casing (m)	Water (r	m) From (m)	Backfill To (m)	Material	Instrument		lations Resp. Zone De	pth (m) Diam
		No Groundwater Encountered Casing Used Monitorina Polint's Installed	(%) ot	24/04 25/04	17:30 07:30	0	10.50	10.50	4.10 6.70	0.00 0.50	0.50 10.00	Concrete Bentonite	Standpipe Pie	zometer		11.00
		ncount ed	gy Rat.	25/04 25/04 26/04	17:30 07:30	0	30.70 30.70	30.70 30.70	3.15 14.85	10.00 12.00	12.00 40.00	Sand Bentonite				
		ner Er ng Use	& Enery	20/04	07.30		-30	30.70	24.03	12.00	-0.00	Sentonite		Drillin	g Fluid	1
		undwα Casir	r Ref 8										Depth (m)	Туре	Colour	Return %
		lo Grou	атте										1.20 - 10.50 10.50 - 14.50	Water Water	Grey Grey	100 100
		2	I										14.50 - 30.70	Water	Grey	100



3043

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**Rotary Borehole** 

Sheet 2 of 4

Log Type

Exploratory Hole Number

BH17-27B

**FINAL** 



1:50

Scale:

Location Details Methodology & Plant From (m) Method Plant Used Checked Bv: RPH Easting: 425705.41 Northing: 558289.46 Name: A1 Birtley to Coalhouse Elevation: 30.54mAOD Final Depth: 40.00m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 24/04/2018 26/04/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Depth (m) Reduced Samples & Testing Strata Description Legend (Stratum Thickness Level (mAOD) Ref Depth (m) MADE GROUND (Driller's Description). 10.50 20.04 BOULDER CLAY (Driller's Description). 11 12 13 14 14.50 16.04 COAL MEASURES (Driller's Description). 17 18 19 20 Continued on Next Page Backfill Observations / Remarks Misc. Shift Information Installations To (m)
0.50
10.00
12.00
40.00 Resp. Zone | Depth (m) | Diam | 10.00 - 12.00 | 11.00 | Depth (m) Casing (m) Water (m) Instrument Details Casing Used Monitoring Point/s Installed Hammer Ref & Energy Ratio (%) Drilling Fluid Type Water Return %



Rotary Borehole

Sheet 3 of 4

Log Type

Exploratory Hole Number BH17-27B

**FINAL** 



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Easting: 558289.46 Checked Bv: RPH 425705.41 Northing: Name: A1 Birtley to Coalhouse Elevation: 30.54mAOD Final Depth: 40.00m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 24/04/2018 26/04/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Depth (m) Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Ref Depth (m) COAL MEASURES (Driller's Description). (14.30) 22 24 27 28 28.80 1.74 VOID (Driller's Description). 29 (0.55) 29.35 1.19 Very soft COAL MEASURES (Driller's Description). 30 Continued on Next Page Backfill Observations / Remarks Misc. Shift Information Installations To (m)
0.50
10.00
12.00
40.00 Resp. Zone | Depth (m) | Diam | 10.00 - 12.00 | 11.00 | Depth (m) Casing (m) Water (m) Instrument Details Casing Used Monitoring Point/s Installed Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



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**Rotary Borehole** 

Log Type

Exploratory Hole Number BH17-27B

**FINAL** 

Depth (m)

Туре

Colour

Return %



Web: www.central-alliance.co.uk Sheet 4 of 4 GEO Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Easting: Checked Bv: RPH 425705.41 Northing: 558289.46 Name: A1 Birtley to Coalhouse Elevation: 30.54mAOD Final Depth: 40.00m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 24/04/2018 26/04/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Depth (m) Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Ref Depth (m) Very soft COAL MEASURES (Driller's Description). (1.35) 30.70 -0.16 SILTSTONE (Driller's Description). 31 32 33 34 (9.30) 37 38 39 <u>140</u> 40.00 40.00 -9.46 40 EOH at 40.00m - Scheduled Depth Backfill Observations / Remarks Shift Information Installations To (m)
0.50
10.00
12.00
40.00 Resp. Zone | Depth (m) | Diam | 10.00 - 12.00 | 11.00 | Time Depth (m) Casing (m) Water (m) Instrument Details Casing Used Monitoring Point/s Installed Hammer Ref & Energy Ratio (%) Drilling Fluid



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Sheet

Exploratory Hole Number

BH17-28

FINAL



Project No:	3043		Location	Details			Me	thodology & F	Plant	Scale:	1:50
		Easting:	425644.19	Northing:	558411.95	From (m)	Met	:hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Edsting.	123011123	rror crimig.	330-122.33	0.00 - 1.20	Inspec		Hand Tools	onconcu.	
		Elevation:	30.00mAOD	Final Depth:	13.95m	1.20 - 13.95	Cable Pe	ercussion	Dando 2000	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	01/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	01/05/2018

Uala Di	
Hole Di	ameter
Depth (m)	Diam (mm)
13.95	150

If Methodology includes

Dynamic Sampling refer to Runs table for info.

Casing D	iameter
Depth (m)	Diam (mm)
6.00	200

	Groundwater Strikes								
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks				
3.50	-	3.50	20	2.80					

	Installation / Instrume	ent Deta	ils	
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 13.95	Bentonite						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	8

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sam	ple S	Summary	
Enviro	nmer	ntal Samples	
Soil	10	Water	0
Geote	chnic	cal Samples	
Bulk	8	Large Bulk	0
Disturbed	19	Disturbed (NR)	1
Piston	0	Piston (NR)	0
Undisturbed	0	Undisturbed (NR)	0
Undistu	rbed 1	Thin Wall	4
Undisturbe	ed Thi	n Wall (NR)	0
Coi	e San	nple	0

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	_	Reported Result	Hammer Ref
Cone	1.20	1.20	DRY	12	34	450	34	N=34 (4,8/8,9,8,9)	AR1134
Cone	2.50	2.50	DRY	13	40	450	40	N=40 (5,8/10,10,10,10)	AR1134
Cone	3.50	3.50	2.80	4	10	450	10	N=10 (2,2/2,2,3,3)	AR1134
Cone	4.50	4.50	DRY	3	12	450	12	N=12 (1,2/3,4,3,2)	AR1134
Split Spoon	6.50	6.00	DRY	30	29	450	29	N=29 (17,13/6,6,8,9)	AR1134
Split Spoon	8.50	6.00	DRY	4	8	450	8	N=8 (2,2/2,2,2,2)	AR1134
Split Spoon	10.50	6.00	DRY	4	12	450	12	N=12 (2,2/3,3,3,3)	AR1134
Split Spoon	13.50	6.00	DRY	12	35	450	35	N=35 (3,9/8,9,8,10)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	

<b>d</b> res
res

# **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

			<u> </u>
	Dynamic	Sampling	Runs
Depth (m)	Diam (mm)	Recovery %	Remarks



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# Cable Percussion

Log Type

Sheet 1 of 2

Exploratory Hole Number

BH17-28
FINAL

Methodology & Plant

CENTRAL ALLIANCE

GEO

1:50

Scale:

Depth (m) 0.00 - 1.20 1.20 - 13.95 Method Inspection Pit Cable Percussion Plant Used Hand Tools Dando 2000 425644.19 RPH Easting: Northing: 558411.95 Checked By: A1 Birtley to Coalhouse Name: Elevation: 30.00mAOD Final Depth: 13.95m Approved By: BH Tyne and Wear Location: Logged By: GS Grid System: OSGB Start Date: 01/05/2018 Client: SLIV Orientation: N/A Inclination: Finish Date: 01/05/2018 Depth (m) Reduced Water Added (Litres) Casing Ø Samples & Testing Water Level (m) Installation , Backfill Strata Description Legend (Stratum Thickness) Level (mAOD) (mm) Depth (m (mins) Depth (m) (0.10) 0.10 MADE GROUND: TOPSOIL. 29.90 0.20 MADE GROUND: Dark brown gravelly sandy CLAY with low 2 ES cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and rare coal and brick. Cobbles are subangular to subrounded sandstone. 5 ES SPT(C) 1.20m, N=34 (4,8/8,9,8,9) 2.00 2.00 2.50 - 2.95 13 B SPT(C) 2.50m, N=40 (5,8/10,10,10,10) 3.00 3.00 3.50 17 B SPT(C) 3.50m, N=10 (2,2/2,2,3,3) 3.50 - 3.95 (7.70)4.00 4.00 18 D 19 ES 4.50 - 4.95 21 B SPT(C) 4.50m, N=12 (1,2/3,4,3,2) 5.00 5.00 22 D 23 ES 5.50 - 5.95 24 UT 30 blows, 100% Recovery 6.50 - 6.95 6.50 - 6.95 SPT(S) 6.50m, N=29 (17,13/6,6,8,9) 31 UT 39 blows, 100% Recovery 7.80 22.20 Firm laminated brown CLAY. SPT(S) 8.50m, N=8 (2,2/2,2,2,2) 8.50 - 8.95 8.50 - 8.95 34 D 35 B 36 D 9.00 9 9.50 - 9.95 37 UT 15 blows, 100% Recovery 10.00 38 D 10 Continued on Next Page Observations / Remarks Misc. Shift Information 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 13.95
 Bentonite
 Instrument Details Resp. Zone Depth (m) Diam. Casing Used
No Monitoring Point Ins
Hammer Ref & Energy Rc
AR1134 (56(%) Groundwater Strikes Strike (m) Rises To (m) Time (min) 3.50 2.80 20



3043

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Location Details:

# Cable Percussion

Log Type

Sheet 2 of 2

Exploratory Hole Number

Methodology & Plant

**BH17-28** FINAL

CF

Scale:



1:50

Nam	ne: A1 Birtley to Coalhouse	Easting:	4256	644.19	Northir	ng: <b>5</b>	58411.95	Depti	n (m)	Met	hod		Plant Used		Checked By:	RPH	
INdii	ic. Al billiey to coalilouse	Elevation:	30.00	0mAOD	Final De		3.95m								Approved By:	ВН	
Loca	ation: Tyne and Wear	Logged By:	GS		Grid Sy	stem: <b>C</b>	SGB								Start Date:	01/05/20	018
Clie	nt: SLJV	Orientation:	N/A		Inclinat	ion: 9	0°								Finish Date:	01/05/20	
	1				Depth (m)	Reduced	Chiselling	Water	Hole Ø	Casing Ø	Water	Installation /			Samples & Testing		
	Strata Description			Legend	(Stratum Thickness)	Level (mAOD)	(mins)	Added (Litres)	(mm) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Result	is	
-																	
-			-														-
-													10.50 - 10.95 10.50 - 10.95	39 D 40 B	SPT(S) 10.50m, N=12 (2	,2/3,3,3,3)	-
-													10.30 - 10.93	40 6			-
_			ŀ		(6.15)								11.00	41 D			]
11 -													11.00	410			11 -
_																	-
																	-
-																	
12 -													12.00	42 D	20 blows, 100% Recove	·rv	12 -
-	From 12.00m becomes silty.												12.00 - 12.45	43 UT		-,	12
-																	-
-													12.50	44 D			-
-																	-
13 —													13.00	45 D			13 -
_																	
-																	-
=													13.50 - 13.95	46 D-NR	SPT(S) 13.50m, N=35 (3	,9/8,9,8,10)	-
-																	-
14 -	EOH at 13.95m - Refusal				13.95	16.05			150 13.95								14 -
-																	-
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15 -																	15 -
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20 —									1								20 -
Obs	ervations / Remarks	М	lisc.			L Shift Info	rmation	L	1		Backfill				Installations		
- 23	·		_	Date	Time			ing (m)	Water (m)	From (m)		Material	Instrum	ent Det		Depth (m)	Diam.
		itered	No Monitoring Point Installed Hammer Ref & Energy Ratio (%) AR1134 (56(%)														
		ncoun Used	rergy R 56(%)														
		vater E asing (	ef & En 1134 (										Strike (c.) le		roundwater Strikes		
		oundy. C	Mont mer R AR										Strike (m) Ri	эез IU (M)	rane (min)	Remarks	
		6 8	Ham							1							



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Sheet

Log Type

Header

# Exploratory Hole Number

# **BH17-28A**





Project No:	3043		Location Details				Met	Scale:	1:50		
		Easting:	425645.21	Northing:	558413.07	From (m)	Met	hod	Plant Used	Checked:	RPH
Name: A1 Birtley to Coal	A1 Birtley to Coalhouse	Lusting.	125015122	reor criming.	330 123.07	0.00 - 18.20	Cable Percussion		Dando 2000	erreenea.	
		Elevation:	29.99mAOD	Final Depth:	23.70m	18.00 - 23.70				Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	01/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°					End Date:	02/05/2018

ameter
Diam (mm)

If Methodology includes

Dynamic Sampling refer to Runs table for info.

Casing D	iameter
Depth (m)	Diam (mm)
6.00	200

Groundwater Strikes									
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks				
16.90	-	6.00	20	16.50					

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

No Monitoring Point/s Installed

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	3

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at

one depth where available.

Sample Summary  Environmental Samples  Soil 0 Water 0  Geotechnical Samples
Soil <b>0</b> Water <b>0</b>
Geotechnical Samples
Bulk 1 Large Bulk 0
Disturbed 7 Disturbed (NR) 0
Piston 0 Piston (NR) 0
Undisturbed 0 Undisturbed (NR) 0
Undisturbed Thin Wall 1
Undisturbed Thin Wall (NR)
Core Sample 0

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	15.00	6.00	-	12	26	450	26	N=26 (5,7/7,6,7,6)	AR1134
Split Spoon	17.50	6.00	-	25	50	356		N=50 (25 for 130mm/50 for 226mm)	AR1134
Cone	17.70	6.00	-	25	50	253		50 (25 for 88mm/50 for 165mm)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chise	elling
Depth (m)	Duration (mins)
17.50 - 17.70	60

Water Added					
Depth (m)	Litres				

# **Applicable to Rotary Only**

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			

	Dynamic Sampling Runs								
Depth (m)	Diam (mm)	Recovery %	Remarks						



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Location Details

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Log Type

Combined

**Borehole** 

Sheet 1 of 3

# BH17-28A

Methodology & Plant

FINAL

Exploratory Hole Number



1:50

Scale:

Method Cable Pro-From (m) 0.00 - 18.20 18.00 - 23.70 Plant Used 558413.07 RPH Easting: 425645.21 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 29.99mAOD Final Depth: 23.70m Approved By: BH Tyne and Wear Location: Logged By: GS Grid System: OSGB Start Date: 01/05/2018 02/05/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Installation / Backfill Strata Description (Stratum Thickness Level (mAOD) Depth (m) MADE GROUND: TOPSOIL. (0.10)29.89 0.10 MADE GROUND: Dark brown gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and rare coal and brick. Cobbles are subangular to subrounded sandstone. (7.70)7.80 22.19 Firm brown laminated CLAY. 10 Continued on Next Page Misc Observations / Remarks Shift Information 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 23.70
 Bentonite
 Date Instrument Details Resp. Zone Depth (m) Diam Water Strikes Strike (m) Rises To (m) Time (min) 16.90 16.50 20



3043

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Location Details

# Combined Borehole

Log Type

Sheet 2 of 3

Exploratory Hole Number

# **BH17-28A**

FINAL

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used Easting: 425645.21 Northing: 558413.07 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 29.99mAOD Final Depth: 23.70m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 01/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 02/05/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m Depth (m) 11 12 13 13.50 - 13.95 From 13.50m becomes silty 14.00 2 D 14 15.00 14.99 SPT(S) 15.00m, N=26 15 Soft yellowish brown slightly silty gravelly sandy CLAY. Gravel is 15.00 - 15.45 (5,7/7,6,7,6) <u>>¢</u> subangular fine to coarse sandstone and coal. Sand is fine to coarse. <u>></u> (1.80) <u>></u>e 16.00 <u>>¢</u> <u>>¢</u> 16.50 - 16.95 6 UT 29 blows, 100% Recovery <u>></u> 16.80 13.19 Loose brown gravelly clayey fine to coarse SAND. Gravel is (0.30) 17 subangular to subrounded fine to medium sandstone and 17.10 mudstone. Very weathered dark grey MUDSTONE recovered as gravelly SPT(S) 17.50m, N=50 (25 for 130mm/50 for 226mm) SPT(C) 17.70m, 50 (25 for 88mm/50 for 165mm) clay. Gravel is subangular to subrounded fine to coarse mudstone and coal. (1.10) 18 18.20 11.79 Firm black carbonaceous gravelly CLAY. Gravel is angular to subangular fine to coarse mudstone. (0.50)NI From 18.20m to 18.40m, no recovery. 75 0 75 18.70 11.29 Extremely to very weak dark grey fine to medium grained 20 (0.30)SANDSTONE. Discontinuities are extremely closely spaced 19.00 10.99 19 NR subhorizontal (0-10 degrees) planar rough tight clean. From 18.75m to 19.00m 1 no. discontinuity subvertical 90 degrees planar smooth tight clean. NI 0 80 80 Very stiff dark grey gravelly CLAY. Gravel is angular to subangular 20 (1.00)fine to coarse sandstone. From 19.00m to 19.10m, no recovery. NI 20.00 9.99 20 Continued on Next Page Observations / Remarks Misc Shift Information | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | 0.00 | 23.70 | Bentonite Resp. Zone Depth (m) Diam Date Time Instrument Details Water Strikes Strike (m) Rises To (m) 16.90 16.50 Time (min)



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Combined Borehole

Sheet 3 of 3

Log Type

Exploratory Hole Number

BH17-28A

FINAL



Methodology & Plant Location Details Scale: 1:50 Project No: From (m) Method Plant Used 558413.07 RPH Easting: 425645.21 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 29.99mAOD Final Depth: 23.70m Approved By: BH Tyne and Wear Location: Logged By: GS Grid System: OSGB Start Date: 01/05/2018 Client SLIV Orientation: N/A Inclination: Finish Date: 02/05/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description (Stratum Thickness Level (mAOD) Depth (m) Very weak light grey SILTSTONE. Discontinuities are very closely to closely spaced subhorizontal (0-10 degrees) planar smooth tight clean. (1.00) 67 47 From 20.50m to 20.74m recovered as angular fine to coarse gravel. 12 21.00 8.99 Extremely to very weak dark grey SILTSTONE. Discontinuities are NI (0.40) extremely to very closely spaced subhorizontal (0-10 degrees) 24 planar smooth tight clean. 21.40 8.59 From 21.17m to 21.40m, 21.90m to 22.00m and 22.30m to 22.75m 1 no. 12 96 33 discontinuity subvertical 60 degrees planar smooth tight clean.

Very weak dark grey SILTSTONE. Discontinuities are very closely 15 to closely spaced subhorizontal planar smooth tight clean. 22 6 (2.30) From 22.75m to 23.10m, subvertical 90 degrees planar smooth tight clean with black staining 0 100 100 NI 23 From 23.50m to 23.70m, subvertical (60-80 degrees) planar smooth tight 23.70 6.29 EOH at 23.70m - Scheduled Depth 24 25 28 29 30 Observations / Remarks Misc Shift Information | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | 0.00 | 23.70 | Bentonite Resp. Zone Depth (m) Diam Instrument Details Water Strikes Strike (m) Rises To (m) 16.90 16.50 Time (min)



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Sheet

Exploratory Hole Number

BH17-33

FINAL



Project No:	3043	Location Details				Methodology & F	lant	Scale:	1:50	
		Easting:	426003.07	Northing:	558022.53	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	120003107	reor crimig.	550022.55	0.00 - 1.20	Inspection Pit	Hand Tools	circoncu.	
		Elevation:	53.84mAOD	Final Depth:	15.20m	1.20 - 6.20 6.20 - 15.20	Dynamic Sampling (Windowless) Rotary Coring	Massenza MIP3 Massenza MIP3	Approved:	BH
Location:	Tyne and Wear					6.20 - 13.20	Rotary Coring			
Locationi	Tyric and Treat	Logger:	ASH	Grid System:	OSGB				Start Date:	22/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	24/05/2018

Hole Di	Hole Diameter								
Depth (m)	Diam (mm)								
15.20	92								

Carina B	
Casing L	iameter
Depth (m)	Diam (mm)
15.20	140

	Groundwater Strikes								
Strike	Casing	Casing Sealed Time Rose To							
(m)	(m)	(m)	(min)	(m)	Remarks				

	Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							
24/05/2018	Standpipe with Water Level Datalogger	0.00	4.00 - 15.20								

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill					
Depth (m)	Legend Code				
0.00 - 0.50	Concrete				
0.50 - 4.00	Bentonite				
4.00 - 15.20	Gravel				

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	5

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary									
Environmental Samples									
Soil	1	Water	0						
Geotechnical Samples									
Bulk	Large Bulk	0							
Disturbed	16	Disturbed (NR)	0						
Piston	0	Piston (NR)	0						
Undisturbed	0	Undisturbed (NR)	0						
Undisturbed Thin Wall									
Undisturbed Thin Wall (NR)									
Cor	e San	nple	0						

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type		Casing		Seating		Penetration	Ν	Reported Result	Hammer Ref
rest type	(m)	(m)	(m)	Blows	Blows	Total (mm)		Reported Result	mannine nei
Split Spoon		2.00	-	8	20	450	20	N=20 (3,5/5,5,5,5)	AR61
Split Spoon	3.00	2.00	-	6	18	450	18	N=18 (3,3/5,4,4,5)	AR61
Split Spoon	4.00	2.00	-	7	28	450	28	N=28 (3,4/5,6,7,10)	AR61
Split Spoon	5.00	2.00	-	12	50	388		N=50 (5,7/50 for 238mm)	AR61
Split Spoon	6.00	2.00	-	25	50	310		N=50 (8,17/50 for 160mm)	AR61

SPT Hammer Ref.	Energy Ratio (%)
AR61	58

#### **Applicable to Cable Percussion Only**

Chise	elling	
Depth (m)	Duration (mins)	D

	•
Water	Added
Depth (m)	Litres

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %
Depth (m) 6.20 - 15.20	Drilling Flush Type Air/Mist		Return % 99

	Dynamic	Sampling	Runs
Depth (m)	Diam (mm)	Recovery %	Remarks
1.20 - 2.00	102	100	
2.00 - 3.00	102	100	
3.00 - 4.00	102	80	
4.00 - 5.00	102	100	
5.00 - 6.00	102	100	
6.00 - 6.20	98	100	



3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Location Details

Web: www.central-alliance.co.uk

Log Type

# Combined

Borehole
Sheet 1 of 2

Methodology & Plant

Exploratory Hole Number

**FINAL** 

BH17-33



1:50

Scale:

From (m) 0.00 - 1.20 1.20 - 6.20 Method Plant Used Easting: 426003.07 Northing: 558022.53 Checked By: RPH Inspection Pit Sampling (Win Rotary Coring A1 Birtley to Coalhouse Name: Elevation: 53.84mAOD Final Depth: 15.20m Approved By: BH 6.20 - 15.20 Massenza MIP3 Location: Tyne and Wear Logged By: ASH Grid System: OSGB Start Date: 22/05/2018 Client SLIV Orientation N/A Inclination: 90 Finish Date: 24/05/2018 Depth (m Reduced Hole Ø Casing Ø Samples & Testing Coring Strata Description Legend Level (mAOD) Backfill Thickness Depth (m) Ref SCR RQD 53.74 MADE GROUND: Soft dark brown slightly gravelly sandy silty clay 0.10 TOPSOIL. Gravel is angular to subangular fine to coarse 2 D 3 ES (0.50) sandstone and mudstone. Sand is fine to coarse. 0.20 MADE GROUND: Dark brown slightly gravelly silty fine to coarse 0.60 53.24 0.60 - 1.00 4 R SAND. Gravel is angular to subangular fine to coarse mudstone and sandstone MADE GROUND: White angular coarse chalk and limestone (0.80) GRAVEL. 5 D 1.20 - 1.40 52.44 MADE GROUND: Firm dark brown gravelly sandy CLAY. Gravel is angular fine to coarse sandstone and mudstone. Sand is fine to 2.10 Stiff fissured rarely desiccated slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse mudstone and sandstone. (0.80) 2.90 Dark grey angular coarse micaceous sandstone GRAVEL. SPT(S) 3.00m, N=18 (3,3/5,4,4,5) (0.10)50.84 3.00 - 3.45 3.00 - 3.60 Stiff fissured dark brown slightly gravelly slightly sandy CLAY. 3.00 Gravel is angular to subangular fine to coarse mudstone and (0.60) coal. Sand is fine to coarse. 3.60 50.24 3.60 - 3.80 15 D Black COAL (0.20) 16 D 3.80 50.04 3.80 - 4.00 Stiff dark grey gravelly sandy CLAY. Gravel is angular fine to 4.00 - 4.45 4.00 - 4.70 18 D 17 B SPT(S) 4.00m, N=28 (3,4/5,6,7,10) coarse of mudstone. Sand is fine to coarse. (0.90)4.70 49.14 4.70 - 4.90 19 B Extremely weak dark grey MUDSTONE. Discontinuities are 4.90 - 5.00 extremely closely spaced subhorizontal (0-10 degrees) planar 5.00 - 5.10 SPT(S) 5.00m, N=50 smooth tight clean. 5.00 - 5.70 21 B (5.7/50 for 238mm) 23 D 24 D SPT(S) 6.00m, N=50 (8,17/50 for 160mm) From 6.20m to 6.40m, no recovery. 87 87 27 From 6.95m to 7.05m discontinuities are extremely closely spaced subvertical (90 degrees) planar smooth tight clean 12 From 7.70m to 7.90m, no recovery. From 8.35m to 8.50m 1 no. discontinuity subvertical planar smooth 87 87 40 (8.05) From 8.70m to 8.95m 1 no. discontinuity subvertical (90 degrees) planar From 9.05m to 9.15m 1 no. discontinuity subvertical (60 degrees) planar 100 100 10.70 From 9.80m to 9.90m 1 no. discontinuity subvertical (45 degrees) planar 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Instrument Details tandpipe with Water Level Datalogger Resp. Zone | Depth (m) | Diam | 4.00 - 15.20 | 0.00 | Depth (m) Casing (m) To (m) 6.20 6.20 Water Strikes Strike (m) Rises To (m) Time (min)



Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way

Log Type

Exploratory Hole Number

	ANCE		Wakefi	eld 41 Bu eld WF2 (0)1924	0XJ			'		bined hole	В		.7-33					
DE	LIVEK			ww.cen			k		Sheet	2 of 2		FII	NAL	CI	ENTRAL <b>G</b>	EO	LIAN	CE
			Locat	ion Detai	ls					Me	thodology & F	Plant		Sca	le:		1:50	)
	Easting:	4260	03.07	Nort	hing:	558022.5	3	Fro	m (m)	Me	thod		Plant Used	Che	ecked By:		RPH	ł
	Elevation:	53.8	4mAOD	Final	Depth:	15.20m								App	proved By:		ВН	
	Logged By:	ASH		Grid	System:	OSGB								Star	rt Date:	2	2/05/2	2018
	Orientation:	N/A		Inclin	nation:	90°								Fini	ish Date:	2	24/05/2	2018
			Lancad	Depth (m)		Hole Ø		ing Ø	Water	Installation /	Sá	amples	s & Testing	poq	(	Coring		
			Legend	(Stratum	Level	(mm)	(11	nm)	Laurel Cont	01-611				E .			T	

		Elevation:	53.8	4mAOD	Fina	l Depth:	15.20m							,	Approv	ed By	y:		ВН
	ation: Tyne and Wear	Logged By:	ASH			System:	OSGB								Start Da				5/2018
Clie	nt: SLIV	Orientation:	N/A			nation:	90°			1				ı	Finish D	ate:			5/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	(mm)	Casing Ø (mm)	Lovel (m)	Installation / Backfill		Samples 8		ethod	Core		_	ring	. 1
	From 9.80m to 9.90m 1 no. discontinuity subvertical (45 degr	rees) planar			Thickness)	(mAOD)	Depth (m)	Depth (m	) , ,		Depth (m)	Ref	Test Results	2	Run	TCR	SCR	RQD	If
_	with orangish brown staining.	.,																	]
_																			_
_	From 10.60m to 10.70m 1 no. discontinuity subvertical (80 de	egrees) planar																	_
_	smooth tight. From 10.70m to 11.25m, no recovery.																		
11 -																			11 -
_	From 11.25m to 11.40m 1 no. discontinuity subvertical (90 de	egrees)													10.70			_	25
-	undulating smooth tight.														12.20	63	63	0	4I -
_	From 11.80m to 12.00m 1 no. discontinuity subvertical (90 de	agrage) planar																	_ :
12 -	smooth with iron staining.	egrees) piuriur																>	25 12
	From 12.20m to 12.30m, no recovery.																		IR .
_																			41
-	From 12.60m to 12.75m 1 no. discontinuity subvertical (60 de	egrees)			12.75	41.09								RC SC				>	25 _
-	stepped smooth tight clean.  Very weak dark grey fine to medium grained SANE	OSTONE.			12.73	41.03				:    : :					12.20	93	93	40	1 12 -
13 —	Discontinuities are closely spaces subhorizontal (0	-10 degrees	s)												13.70				13 -
_	planar smooth tight clean.				(0.95)														7 ]
-				  -														>	25 _
_	Very weak dark grey MUDSTONE. Discontinuities a	are closely			13.70	40.14													- :
14 -	spaced subhorizontal (0-10 degrees) planar smoot	th.																	.0 14 -
_					(0.80)														1
	From 14.30m to 14.50m 1 no. discontinuity subvertical (90 de planar.	egrees)			14.50	39.34									13.70 15.20	80	50	50	
-	Black COAL.				11.50	33.31													-
_					(0.70)														NI -
15 —							92	140											15 -
	EOH at 15.20m - Scheduled depth	Ì			15.20	38.64	<u>92</u> 15.20	15.20											7 }
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Obs	ervations / Remarks		Misc.	Date	Tim		nformatio		Water (ı	m) From (m)	Backfill To (m)	Material	Instrument D		Installa			Depth	m) Diam
		para	palle	Date	TIM	ie De	ptii (III)	сазнів (т)	vvater (I	0.00 0.50	0.50	Concrete Bentonite	Standpipe with Wa Datalogge	iter Le	evel 4	4.00 - 1	15.20	0.00	, DIAM
		unosu	sed /s Insta							4.00	15.20	Gravel	Башовве						
		water	rsing Us g Point/												Water S				
		indi	Cas.										Strike (m) Rises To (	m) Ti	ime (min)		- 1	Remark	S
1		٥	, é	ı	- 1	- 1	- 1		1	1			1 1	- 1		1			



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Sheet

Exploratory Hole Number

BH17-35

**FINAL** 



Project No	o: <b>3043</b>		Location	n Details			Methodology &	Plant	Scale:	1:50
		Easting:	426446.02	Northing:	557587.56	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	77.95mAOD	Final Depth:	15.50m	1.20 - 10.95 10.50 - 15.50	Cable Percussion Rotary Coring	Dando 2000 Fraste SLG	Approved:	BH
Location:	Tyne and Wear	Logger:	GS+ASH	Grid System:	OSGB				Start Date:	27/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	27/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)
10.95 15.50	150 92

Casing D	iameter
Depth (m)	Diam (mm)
4.50	250
l	
l	
l	

	Groundwater Strikes						
Strike Casing Sealed Time Rose To							
(m)	(m)	(m)	(min)	(m)	Remarks		

	Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill				
Depth (m)	Legend Code			
0.00 - 15.50	Bentonite			

In-Situ Tests				
PID	0			
Hand Vane*	0			
Standard Penetration Tests	10			

Standard Penetration Tests	10	
* One count indicates an av	erage	
reported result of 3 tests carrie	ed out at	

Sample Summary					
Enviro	nmer	ntal Samples			
Soil	8	Water	0		
Geote	chnic	cal Samples			
Bulk	Bulk 9 Large Bulk				
Disturbed	Disturbed 19 Disturbed (NR)				
Piston	0	Piston (NR)	0		
Undisturbed	0	Undisturbed (NR)	0		
Undisturbed Thin Wall					
Undisturbed Thin Wall (NR)					
Co	re San	nple	0		

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
							_	est Summary	
Test Type	Depth	Casing	Water	Seating		Penetration	l <sub>N</sub>	Reported Result	Hammer Ref
rest type	(m)	(m)	(m)	Blows	Blows	Total (mm)	14	Reported Result	Hammer Ker
Cone	1.20	1.20	DRY	4	9	450	9	N=9 (2,2/3,2,2,2)	AR1134
Cone	2.50	2.50	DRY	6	19	450	19	N=19 (2,4/5,5,5,4)	AR1134
Cone	3.50	2.50	DRY	6	26	450	26	N=26 (2,4/6,6,7,7)	AR1134
Cone	4.50	4.50	DRY	7	15	450	15	N=15 (3,4/4,3,4,4)	AR1134
Split Spoon	5.50	4.50	DRY	15	42	450	42	N=42 (5,10/10,11,11,10)	AR1134
Split Spoon	6.50	4.50	DRY	25	50	375	50	N=50 (25 for 75mm/15,15,10,10)	AR1134
Split Spoon	8.50	4.50	DRY	15	50	200		50 (5,10/50 for 50mm)	AR1134
Split Spoon	9.50	4.50	DRY	15	40	450	40	N=40 (5,10/10,10,10,10)	AR1134
Split Spoon	10.50	4.50	DRY	11	38	450	38	N=38 (5,6/7,9,11,11)	AR1134
Split Spoon	10.80	6.00	DRY	25	100	145		100 (25 for 40mm/100 for 105mm)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chise	elling
Depth (m)	Duration (mins)
6.00 - 6.20	30
8.80 - 9.00	30
10.50 - 10.80	90

Water Added					
Depth (m) Litres					

# **Applicable to Rotary Only**

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			
Depth (m) 10.50 - 15.50	Flush Type Water	Flush Colour Brown	50 Solution			

			<u> </u>	<u>-</u>				
	Dynamic Sampling Runs							
Depth (n	n) Diam (mm)	Recovery %	Remarks					



3043

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Location Details

Web: www.central-alliance.co.uk Sheet 1 of 2

Log Type

Combined

**Borehole** 

# BH17-35

Methodology & Plant

FINAL

Exploratory Hole Number



1:50

Scale:

From (m) 0.00 - 1.20 1.20 - 10.95 10.50 - 15.50 Plant Used Hand Tools Dando 2000 Fraste SLG Method Easting: 426446.02 Northing: 557587.56 Checked By: RPH Inspection Pit Cable Percussio Rotary Coring A1 Birtley to Coalhouse Name: Elevation: 77.95mAOD Final Depth: 15.50m Approved By: BH Location: Tyne and Wear Logged By: GS+ASH Grid System: OSGB Start Date: 27/04/2018 Client SLIV Orientation N/A Inclination: 90° Finish Date: 27/04/2018 Samples & Testing Depth (m Reduced Hole Ø Casing Ø Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) (mm) Depth (n Level (m Depth (m) Ref MADE GROUND: Soft to firm dark brown gravelly CLAY. Gravel is 1 D 2 ES subangular fine to coarse sandstone. (1.00) 5 ES 1.00 76.95 1.00 1.00 Possible MADE GROUND: Firm to stiff yellowish brown gravelly 1.20 1.20 - 1.65 SPT(C) 1.20m, N=9 (2,2/3,2,2,2) sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and rare brick and coal. 2.00 2.00 2.50 - 2.95 SPT(C) 2.50m, N=19 (2,4/5,5,5,4) 14 B 3.00 3.00 15 D 16 ES 3.50 - 3.95 18 B SPT(C) 3.50m, N=26 (2,4/6,6,7,7) 4.00 73.95 4.00 4.00 19 D 20 ES Firm to stiff brown gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and rare coal. Cobbles are subangular 250 4.50 4.50 - 4.95 23 D SPT(C) 4.50m, N=15 (3,4/4,3,4,4) sandstone. 5.00 24 ES 5.50 - 5.95 5.50 - 5.95 25 D 26 B SPT(S) 5.50m, N=42 (5,10/10,11,11,10) 27 D 28 ES 6.50 - 6.95 6.50 - 6.95 SPT(S) 6.50m, N=50 (25 for 75mm/15,15,10,10) 100 blows, 0% Recovery NR 33 B 7.50 - 7.95 8.00 34 D SPT(S) 8.50m, 50 (5,10/50 for 50mm) 8.50 - 8.95 8.50 - 8.95 35 D 36 B 37 D 9.00 9.50 - 9.95 9.50 - 9.95 38 D 39 B SPT(S) 9.50m, N=40 (5,10/10,10,10,10) 10:00 40 D 10 Continued on Next Page Observations / Remarks Misc Shift Information | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | 0.00 | 15.50 | Bentonite Date Resp. Zone Depth (m) Diam Instrument Details Water Strikes Strike (m) Rises To (m) Time (min) Remarks



Web: www.central-alliance.co.uk Sheet 2 of 2

Log Type

**Borehole** 

# Combined BH17-35

FINAL

Exploratory Hole Number



Location Details Methodology & Plant Project No: Scale: 1:50 From (m) Method Plant Used Easting 426446.02 Northing: 557587.56 Checked By: RPH Name: A1 Birtley to Coalhouse Elevation: 77.95mAOD Final Depth: 15.50m Approved By BH Location: Tyne and Wear Logged By: GS+ASH Grid System: OSGB Start Date: 27/04/2018 Client SLIV Orientation N/A Inclination: Finish Date: 27/04/2018 Depth (m Reduced Hole Ø Samples & Testing Coring Installation Backfill Strata Description Legend Level (mAOD) (Stratum Thickness Level (m Depth (m) Firm to stiff brown gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and rare coal. Cobbles are subangular 10.50 67.45 10.50 - 10.95 41 D SPT(S) 10.50m, N=38 (5,6/7,9,11,11) sandstone. NR Firm to stiff dark brown slightly gravelly slightly sandy CLAY. 40 10.80 - 11.25 42 D SPT(S) 10.80m, 100 (25 fo 40mm/100 for 105mm) Gravel is subangular to rounded fine to coarse sandstone. Sand NI is fine to coarse (1.00) Weak light orangish brown fine to medium grained SANDSTONE. 12 (0.20)46 23 Discontinuities are closely spaced subhorizontal (0-20 degrees) 11.70 (0.10) 11.80 66.15 planar rough open. Firm orangish brown gravelly CLAY. Gravel is angular fine to 12 coarse sandstone. Weak orangish brown fine to medium grained SANDSTONE. 65.55 12.40 Discontinuities are very closely to closely spaced subhorizontal planar smooth tight clean with orange penetrating staining. From 11.80m to 12.00m, subvertical 90 degrees planar smooth orange 50 10 0 brown discontinuity. (1.10)Stiff dark brown mottled grey gravelly sandy CLAY. Gravel is 13 angular to subangular fine to coarse sandstone. Sand is fine to 13.50 64.45 Very weak orangish brown fine to medium grained SANDSTONE. (0.35) Discontinuities are extremely to very closely spaced 64.10 13.85 subhorizontal (10-20 degrees) planar smooth orange stained. 13.30 14.50 83 83 33 Very weak orangish brown fine to medium grained SANDSTONE. 2 Discontinuities are closely spaced subhorizontal (0-10 degrees) planar smooth tight clean. (1.00)From 14.25m to 14.30m, non-intact recovered as orangish brown medium 12 to coarse sandstone gravel. From 14.70m to 14.85m, non-intact recovered as orangish brown fine to 14.85 63.10 NI Extremely weak dark grey MUDSTONE completely weathered to 60 60 0 15.50 firm dark grey gravelly CLAY. Gravel is angular to subrounded (0.65)NR 92 15.50 15.50 62.45 EOH at 15.50m -17 18 19 20 Observations / Remarks Misc Shift Information Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam Water Strikes Strike (m) Rises To (m) Time (min)



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# Header Sheet

Log Type

Exploratory Hole Number

BH17-36

FINAL



Project No:	3043		Location	Details			Methodology &	Plant	Scale:	1:50
		Easting:	426449.85	Northing:	557582.58	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	120113103	reor criming.	337302130	0.00 - 1.20	Inspection Pit	Hand Tools	Circonca.	
		Elevation:	85.08mAOD	Final Depth:	20.00m	1.20 - 3.50	Dynamic Sampling (Windowless)	Comacchio 205	Approved:	BH
		Licvation.	03.00mA0D	i ilidi beptil.	20.00111	3.50 - 6.00	Rotary Coring	Comacchio 205	Approved.	DIT
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB	6.00 - 7.00	Rotary Open Holing	Comacchio 205	Start Date:	29/05/2018
		Logger.	d3	Grid System.	O3GB	7.00 - 15.00	Rotary Coring	Comacchio 205	Start Date.	25/03/2016
Client:	SLIV	Orientation:	N/A	Inclination:	90°	15.00 - 20.00	Rotary Open Holing	Comacchio 205	End Date:	01/06/2018
			•							,,

Hole Diameter								
Depth (m)	Diam (mm)							
20.00	121							

Casing Diameter								
Depth (m)	Diam (mm)							
7.00	200							

	Groundwater Strikes								
Strike Casing Sealed Time Rose To									
(m)									

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
01/06/2018	Standpipe with Water Level Datalogger	0.00	14.00 - 20.00					

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill							
Legend Code							
Bentonite							
Gravel							

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	3

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary						
Environmental Samples						
Soil	5	Water	0			
Geotechnical Samples						
Bulk 3 Large Bulk						
Disturbed 9 Disturbed (NR)						
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Cor	e San	nple	3			

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	1.20	-	-	6	13	450	13	N=13 (3,3/4,3,3,3)	AR1175
Split Spoon	2.20	-	-	7	13	450	13	N=13 (3,4/3,3,3,4)	AR1175
Split Spoon	3.20	-	-	25	50	285		50 (8,17/50 for 135mm)	AR1175

SPT Hammer Ref.	Energy Ratio (%)
AR1175	56

#### **Applicable to Cable Percussion Only**

	Chise	elling	Water
	Depth (m)	Duration (mins)	Depth (m)
L			

Water Added								
epth (m) Litres								

# **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					

Dynamic Sampling Runs								
Depth (m)	Diam (mm)	Recovery %	Remarks					
1.20 - 2.20	121	100						
2.20 - 3.20	121	100						
3.20 - 3.50	121	100						



Web: www.central-alliance.co.uk Sheet 1 of 2

Log Type

Combined

**Borehole** 

Exploratory Hole Number **BH17-36** 

FINAL



Methodology & Plant Location Details Project No: 3043 Scale: 1:50 From (m) 0.00 - 1.20 1.20 - 3.50 3.50 - 6.00 6.00 - 7.00 7.00 - 15.00 Method Plant Used Easting 426449.85 Northing: 557582.58 Inspection Pit
mic Sampling (Windo
Rotary Coring
Rotary Open Holing
Rotary Coring
Rotary Open Holing Checked By: RPH Hand Tools Comacchio 205 Comacchio 205 Comacchio 205 A1 Birtley to Coalhouse Name: Elevation: 85.08mAOD Final Depth: 20.00m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 29/05/2018 7.00 - 15.00 15.00 - 20.00 Comacchio 205 Comacchio 205 Client SLIV Orientation N/A Inclination: 90 Finish Date: 01/06/2018 Depth (m Reduced Hole Ø Casing Ø Samples & Testing Coring Strata Description Level (mAOD) (Stratum Thickness Level (m Depth (m) Ref MADE GROUND: Firm greyish brown gravelly sandy CLAY with 0.10 - 1.20 0.20 low cobble content. Gravel is subangular to subrounded fine to 2 ES coarse sandstone, concrete, brick, mudstone and rare coal, Sand 0.50 3 D is fine to coarse. Cobbles are subangular sandstone. 0.70 4 ES 1.80 13 D 2.80 15 ES 3.00 3.20 - 3.65 16 D SPT(S) 3.20m, 50 (8,17/50 for 135mm) 17 D 81.58 3.50 MADE GROUND: Soft greyish brown gravelly sandy CLAY. Gravel (0.40)is subangular to subrounded fine to coarse sandstone, brick and rare coal. Sand is fine to coarse. 3.90 81.18 0 MADE GROUND: Orangish yellow angular to subangular fine to (0.10) 81.08 100 0 coarse sandstone GRAVEL. MADE GROUND: Firm orangish brown sandy very gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone. mudstone. brick and rare coal. Cobbles are subangular sandstone. (2.00)0 6.00 6.00 79.08 MADE GROUND (Driller's Description). 78.08 7.00 MADE GROUND: Firm orangish brown sandy very gravelly CLAY with low cobble content. Gravel is subangular to subrounded fine to coarse sandstone, mudstone, brick and rare coal. Sand is fine to coarse. Cobbles are subangular sandstone 0 (1.30) 76.78 8.30 Assumed Zone of Core Loss. (0.70)8.20 9.70 53 0 9.00 76.08 MADE GROUND: Orangish brown slightly silty gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse of various lithologies. 9.55 75.53 Firm grey thinly laminated slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone. 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Instrument Details tandpipe with Water Level Datalogger Resp. Zone | Depth (m) | Diam | 14.00 - 20.00 | 0.00 | Depth (m) Casing (m) Water (m) To (m) Water Strikes Strike (m) Rises To (m) Time (min)



Web: www.central-alliance.co.uk Sheet 2 of 2

Log Type

Combined

Borehole

Exploratory Hole Number

BH17-36

FINAL



Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) Method Plant Used Easting: 426449.85 Northing: 557582.58 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 85.08mAOD Final Depth: 20.00m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 29/05/2018 Client SLIV Orientation N/A Inclination: 90° Finish Date: 01/06/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref SCR RQD Firm grey thinly laminated slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse mudstone. (1.85) 9.70 11.00 62 0 11 73.68 Medium strong to strong orangish grey interbedded SANDSTONE and destructured to residual dark grey MUDSTONE. From 11.40m to 12.05m, extremely to very weak. 93 7 11.80 - 11.90 From 11.50m to 11.70m recovered as gravelly sandy clay. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and rare coal. Sand is fine to coarse. 12 From 12.50m to 12.70m Assumed Zone of Core Loss. From 12.70m to 13.10m and 13.25m to 13.35m recovered as gravelly sandy clay. Gravel is subangular to subrounded fine to coarse sandstone, mudstone and coal. Sand is fine to coarse. 80 15 15 13 (3.60) From 13.40m to 13.70m recovered as subangular to subrounded fine to 14 13.50 15.00 47 13 67 14.75 - 14.80 From 14.70m to 15.00m recovered as gravelly sandy clay. Gravel is 2 C subangular to subrounded fine to coarse sandstone, mudstone and coal. Sand is fine to coarse. 15.00 70.08 15 Medium strength MUDSTONE. (Driller's Description) 17 (5.00) 18 19 <u>121</u> 20.00 20.00 65.08 20 EOH at 20.00m - Scheduled depth Observations / Remarks Misc Shift Information Backfill Instrument Details tandpipe with Water Level Datalogger Resp. Zone | Depth (m) | Diam | 14.00 - 20.00 | 0.00 | Time Depth (m) Casing (m) Water (m) To (m) Material Water Strikes Strike (m) Rises To (m) Time (min)



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Log Type

Exploratory Hole Number

BH17-37

FINAL



Project N	o: <b>3043</b>		Location Details				Methodology	& Plant	Scale:	1:50
		Easting:	426563.91	Northing:	557596.66	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	81.43mAOD	Final Depth:	21.00m	1.20 - 8.00 8.00 - 18.00	Cable Percussion Rotary Coring	Dando 2000 Beretta T41	Approved:	BH
Location:	Tyne and Wear	Logger:	ASH	Grid System:	OSGB	18.00 - 21.00		Beretta T41	Start Date:	03/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	16/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)
21.00	121

Casing D	iameter
Depth (m)	Diam (mm)
8.50	150
I	

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Dl					
(m)	(m)	(m)	(min)	(m)	Remarks					

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
16/05/2018	Standpipe	4.00	3.50 - 4.50					

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill							
Depth (m)	Legend Code						
0.00 - 3.50	Bentonite						
3.50 - 4.50	Gravel						
4.50 - 21.00	Bentonite						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	5

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary						
nmer	ntal Samples					
2	Water	0				
echnic	cal Samples					
7	Large Bulk	0				
9	Disturbed (NR)	0				
Piston <b>0</b> Piston (NR)						
Undisturbed 0 Undisturbed (NR)						
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
re San	nple	0				
	2 echnic 7 9 0 urbed	water    2   Water				

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary									
Test Type	Depth	Casing	Water	Seating	Main	Penetration	N	Reported Result	Hammer Ref	
iest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	панше ке	
Split Spoon	1.20	-	-	8	25	450	25	N=25 (3,5/6,6,6,7)	DC01	
Split Spoon	3.20	3.00	-	8	21	450	21	N=21 (4,4/5,5,5,6)	DC01	
Split Spoon	5.20	5.00	-	25	50	80		50 (25 for 30mm/50 for 50mm)	DC01	
Split Spoon	6.50	6.20	-	25	50	40		50 (25 for 0mm/50 for 40mm)	DC01	
Split Spoon	8.00	7.50	-	20	50	330		50 (8,12/50 for 180mm)	DC01	
									I	

SPT Hammer Ref.	Energy Ratio (%)
DC01	65

#### **Applicable to Cable Percussion Only**

Chiselling									
Depth (m)	Duration (mins)								
4.70 - 5.00	15								
5.30 - 5.70	15								
5.70 - 6.10	45								
7.60 - 8.00	60								

Litres

# **Applicable to Rotary Only**

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					
8.00 - 12.00	Water	Yellow	100					
12.00 - 16.50	Water	Grey	100					
16.50 - 18.00	Water	Grey	80					
1	I	ı						

	Dynamic Sampling Runs									
Ш	Depth (m)	Diam (mm)	Recovery %	Remarks						
					П					
					П					
					П					
					П					
					П					
					П					
					П					
					П					
					П					



3043

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Location Details

Combined **Borehole** 

Sheet 1 of 3

Log Type

Exploratory Hole Number

Methodology & Plant

**BH17-37** 

**FINAL** 



1:50

Scale:

From (m) 0.00 - 1.20 1.20 - 8.00 8.00 - 18.00 Method Plant Used Easting 426563.91 Northing: 557596.66 Checked By: RPH Hand Tools Dando 2000 Beretta T41 A1 Birtley to Coalhouse Name: Elevation: 81.43mAOD Final Depth: 21.00m Approved By: BH Rotary Open Holing Location: Tyne and Wear 18.00 - 21.00 Beretta T41 Logged By: ASH Grid System: OSGB Start Date: 03/05/2018 Client SLIV Orientation N/A Inclination: 90 Finish Date: 16/05/2018 Samples & Testing Depth (m Reduced Hole Ø Casing Ø Coring Strata Description Legend Level (mAOD) (Stratum Thicknes Depth (m) Ref MADE GROUND: Soft dark brown slightly gravelly sandy CLAY. 0.10 1 ES (0.40)Gravel is angular to subangular fine to coarse brick and 0.30 2 B sandstone. Sand is fine to coarse. 0.40 81 03 0.50 3 ES Stiff orangish dark brown mottled grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine 0.70 4 B to coarse mudstone and siltstone. SPT(S) 1.20m, N=25 (3,5/6,6,6,7) 1.20 - 1.65 1.20 - 1.70 8 UT 78.83 2.60 Stiff yellowish brown mottled grey gravelly sandy CLAY with low cobble and boulder content. Gravel is angular to subangular fine (0.70)to coarse sandstone. Cobbles and boulders are angular to 3.00 10 D rounded sandstone. Sand is fine to coarse. 3.20 - 3.65 3.20 - 3.70 SPT(S) 3.20m, N=21 (4,4/5,5,5,6) 78.13 3.30 Stiff orangish brown slightly gravelly CLAY with medium cobble and low boulder content. Gravel is angular to subangular fine to coarse sandstone. Cobbles and boulders are angular to rounded (1.00)sandstone. 4.00 13 D 4.20 - 4.60 15 B 150 blows, 0% Recovery 77.13 4.30 4.20 - 4.65 14 UT Orangish brown slightly gravelly slightly sandy slightly clayey subangular to subrounded COBBLES AND BOULDERS. Gravel is angular to subrounded fine to coarse sandstone. Sand is fine to coarse. 5.20 SPT(S) 5.20m, 50 (25 for 30mm/50 for 50mm) 5.20 - 6.00 5.20 - 6.00 15 B 17 B SPT(S) 6.50m, 50 (25 for 0mm/50 for 40mm) 6.50 8.00 19 D SPT(S) 8.00m, 50 (8,12/50 for 180mm) 150 8.50 50 21 11 >25 8.90 72.53 Very stiff dark brown gravelly CLAY. Gravel is angular fine to (0.20) 9.10 72.33 coarse sandstone. Orangish brown slightly sandy angular fine to coarse sandstone (0.20)72.13 9.30 NI GRAVEL. Sand is fine to coarse. 80 0 (0.40)100 Very stiff dark brown slightly sandy gravelly CLAY. Gravel is 9.70 71.73 angular fine to coarse mudstone and sandstone. Sand is fine to (0.20) 9.90 \coarse 71.53 10 Continued on Next Page (0.20)Observations / Remarks Misc Shift Information Backfill Depth (m) Casing (m) Water (m) To (m) Material Instrument Details Resp. Zone | Depth (m) | Diam | 3.50 - 4.50 | 4.00 | Water Strikes Strike (m) Rises To (m) Time (min)



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Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-37** FINAL

CENTRAL ALLIANCE GEO

Sheet 2 of 3

		*								Sheet 2	2 01 3								GEU	'	
Proj	ect No:	3043			Locat	ion Detai	ls				Met	thodology 8	Plant			Sca	ıle:			1	:50
Nan	20.	A1 Birtley to Coalhouse	Easting:	4265	63.91	Nort	thing:	557596.6	6 Fr	om (m)	Met	hod		Plant Use	d	Che	ecked	By:		R	PH.
Ivaii	ie.	AT Billiey to Coalilouse	Elevation:	81.4	3mAOD	Fina	l Depth:	21.00m								Anı	prove	d Bv		F	ВН
Loca	ation:	Tyne and Wear																			
		•	Logged By:	ASH			System:	OSGB									rt Dat				5/2018
Clie	nt:	SUV	Orientation:	N/A		Incli	nation:	90°								Fini	iish Da	ite:		16/0	5/2018
						Depth (m)	Reduced		Casing Ø	Water	Installation /		Samples	& Testing		DQ			Cori	ng	
		Strata Description			Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Res	sults		Core Run	TCR	SCR F	RQD If	
	Orangish	h brown sandy angular fine to coarse sand	stone GRAV	/EL. /		10.10	71.33									+	Kull				+
-		fine to coarse.		/																>2	5 -
]		ely weak very thinly laminated dark grey M	UDSTONE	_/																	1 1
-	interbed	dded with bands of fine to medium sand.														H	$\dashv$	_	_	N	₹ -
_	Extreme	ely weak dark grey MUDSTONE. Discontinu	ities are																		-
_		spaced planar smooth tight clean.				(1.50)															1 1
11 -	From	10.50m to 10.60m, no recovery.																			11 -
[																1	10.50	100	93	0	1 1
-																1	12.00	100	93	>2	5 -
-																					-
1	Weak or	rangish brown fine to medium grained SAN	IDSTONE		: : : : :	11.60	69.83														1 1
_	interbed	dded with MUDSTONE. Discontinuities are	extremely t	to	: : : : :	(0.30) 11.90	69.53														
12 -	very clos	sely spaced subhorizontal (45 degrees) pla				11.30	09.33									$\vdash$	$\dashv$	+	+	+	12
-	tight cle				: : : : :												- 1				.  1
-		ak orangish brown fine to medium grained		NE.	: : : : :															NE	·   -
-		nuities are extremely to very closely space			: : : : :	(1.30)											- 1			$\vdash$	4 4
-		zontal (45 degrees) planar smooth tight cle	ean.		: : : : :	(1.50)										1	12.00			N	.
	From	12.00m to 12.50m, no recovery.			: : : : :												13.50	67	23	0 1	-
13 -																				>2	5 13
-					: : : : :	13.20	68.23													H	<b>┤</b>
-	Dark gre	ey thinly bedded weathered MUDSTONE re	covered as			13.20	08.23													N	.   - ]
-	very stiff	f clay.				(0.50)										L			$\perp$		1 1
-						40.70														NE	∢ -
-	Extreme	ely weak orangish brown mottled grey MU	DSTONE			13.70	67.73														7 1
14 -	recovere	ed as stiff slightly sandy clay. Sand is fine to	coarse.			(0.50)										ار				>2	5 14 -
-															ľ	-					-
[	Black CC	OAL.				14.20	67.23									1	13.50 15.00	87	40	0	7 1
-																					1 1
-						(0.70)														N	.   -
_																					1 1
-	Evtromo	ely weak dark grey MUDSTONE.				14.90	66.53														-
15 -	Black CC					(0.10) 15.00	66.43														15 -
_		15.00m to 15.40m, no recovery.				(0.50)														NE	: -
_																				N	
_	Extreme	ely weak dark grey MUDSTONE recovered a	as very stiff			15.50	65.93													F	7 :
-		ey gravelly clay. Gravel is angular fine to coa														1	15.00	93	53	0	-
1 1																1	16.50				1 1
16 -	From	16.00m to 16.02m black carbonaceous mudstone.																		>2	5 16
-						(1.40)															1 -
-																					1 1
_																H	-		_		1 1
-																				N	-
]						16.90	64.53													$\perp$	4 4
17 -	,	ak dark grey MUDSTONE. Discontinuities a				(0.30)														>2	5 17 -
-		to closely spaced horizontal planar smooth		١.		17.20	64.23										16.50	100	67	33	
-		ely weak to very weak dark grey MUDSTON nuities are very closely to closely spaced s		al le												1	18.00		-	N N	4 1
-		egrees) planar smooth tight clean.	abiioiiZ0IIT	uı		(0.80)															-
-		egrees) planar sinooth tight clean. n 17.60m to 17.70m 1 no. discontinuity subvertical (90 de	grees) planar			(0.60)														24	,   -
-		oth tight clean.																			
18 —	SILTSTON	NE (Driller's Description).			×××××	18.00	63.43								}	+	$\dashv$	+	+	+	18 -
	SILISIUI	ואב נטווופו ז טפטנווףנוטוון.			x x x x x x																1
-					X																
-					×××××																-
					××××× ×××××																1
-					××××× ×××××																1 1
19 -					××××× ×××××										9	⊋					19 -
-					××××× ×××××																1
-					××××× ×××××																-
-					××××× ×××××	(3.00)															
-					×××××																1
-					× × × × ×																]
20 -					×××××											丄					20 -
20		Continued on Next Page																			20
Obs	ervations /	Remarks		Misc.			Shift I	nformatio	n			Backfill				In	stallat	ions			
				, .	Date	Tim	ie Di	epth (m)	Casing (m)	Water (m			Material		ment Deta	ils				epth (r	n) Diam
			tere	alled							0.00 3.50	4.50	Bentonite Gravel	5	Standpipe		3.	.50 - 4.!	50	4.00	
			unos	ed 's Inst							4.50		Bentonite								
			in the first	ng Usec Point/s												Wa	ater St	trikes	. '		
			DWD.	Casin ring P										Strike (m)	Rises To (m)					marks	
			indus	mitor																	
			Š	Ĭ		1					1			1							



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Combined Borehole

Log Type

Exploratory Hole Number **BH17-37** 

FINAL



Sheet 3 of 3 Project No: Location Details Methodology & Plant Scale: 1:50 From (m) Method Plant Used Easting: 426563.91 557596.66 Checked Bv: RPH Northing: Name: A1 Birtley to Coalhouse Elevation: 81.43mAOD Final Depth: 21.00m Approved By: ВН Location: Tyne and Wear Logged By: ASH Grid System: OSGB Start Date: 03/05/2018 Client: 16/05/2018 SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Samples & Testing Coring Reduced Installation / Backfill Strata Description Legend Level (mAOD) Depth (m) Ref SILTSTONE (Driller's Description). 21.00 60.43 EOH at 21.00m - Scheduled Depth 22 23 28 29 30 Misc Observations / Remarks Shift Information Backfill To (m) Material
3.50 Bentonite
4.50 Gravel
21.00 Bentonite Depth (m) Casing (m) Water (m) From (m) Resp. Zone | Depth (m) | Diam | 3.50 - 4.50 | 4.00 | Instrument Details Water Strikes Strike (m) Rises To (m) Time (min)



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Log Type Header

Sheet

Exploratory Hole Number

**BH17-39** 

**FINAL** 



Proje	ct No:	3043		Location	Details			Methodology & F	lant	Scale:	1:50
l			Easting:	426603.15	Northing:	557528.18	From (m)	Method	Plant Used	Checked:	RPH
Name	e:	A1 Birtley to Coalhouse					0.00 - 1.20 1.20 - 5.45	Inspection Pit	Hand Tools		
			Elevation:	84.26mAOD	Final Depth:	5.45m	1.20 - 5.45	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	BH
Locat	tion:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	23/05/2018
Clien	t:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	23/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)
5.45	86

Casing Diameter									
Diam (mm)									
116									

Sample Summary Environmental Samples 7 Geotechnical Samples

12

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed

Piston

Undisturbed

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)	Remarks					
ł										

	Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill								
Depth (m)	Legend Code							
0.00 - 5.45	Arisings							

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	5

PID	0	(NR) Indicates sample undertaken but with
Hand Vane*	0	0% Recovery
Standard Penetration Tests	5	

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	1.20	2.00	Dry	5	12	450	12	N=12 (3,2/2,2,2,6)	AR1175
Split Spoon	2.00	2.00	Dry	9	16	450	16	N=16 (5,4/4,4,4,4)	AR1175
Split Spoon	3.00	2.00	Dry	7	51	450	51	N=51 (3,4/10,13,14,14)	AR1175
Split Spoon	4.00	2.00	Dry	13	50	450	50	N=50 (6,7/10,14,13,13)	AR1175
Split Spoon	5.00	2.00	Dry	25	58	450	58	N=58 (12,13/14,15,15,14)	AR1175

SPT Hammer Ref.	Energy Ratio (%)
AR1175	56

# \* One count indicates an average reported result of 3 tests carried out at one depth where available.

#### **Applicable to Cable Percussion Only**

Chiselling						
Duration (mins)		Depth (				

Water Added						
Depth (m) Litres						

# **Applicable to Rotary Only**

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				

_				<u> </u>	<u>-</u>				
	Dynamic Sampling Runs								
	Depth (m)	Diam (mm)	Recovery %	Remarks					
	1.20 - 2.00	101	50						
	2.00 - 3.00	101	70						
	3.00 - 4.00	86	20						
	4.00 - 5.00	86	100						
L									



Name:

Location:

3043

A1 Birtley to Coalhouse

Tyne and Wear

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Northing:

Final Depth:

557528.18

5.45m

Location Details

426603.15

84.26mAOD

Easting:

Elevation:

**Dynamic** Sampling

Log Type

Exploratory Hole Number

**BH17-39** 



Sheet 1 of 1

Method

Depth (m) 0.00 - 1.20 1.20 - 5.45

**FINAL** Methodology & Plant

Scale: 1:50 Plant Used Hand Tools Modular Window Sampler Checked By: RPH Approved By: BH Start Date: 23/05/2018

Logged By: GS Grid System: OSGB Client SLIV Orientation N/A Inclination: 90° Finish Date: 23/05/2018 Depth (m) (Stratum Thickness) Casing Ø Samples & Testing Reduced Lev (mAOD) Water Level (m) Installation , Backfill Strata Description Legend (mm) Depth (m Depth (m) Ref MADE GROUND: Brownish grey gravelly very clayey fine to coarse SAND. Gravel is 1 D 2 ES angular to subrounded fine to coarse sandstone coal brick and concrete. 0.20 0.50 3 D 0.70 4 ES (2.00) 1.00 1.00 1.00 1.20 - 1.65 1.20 - 2.00 5 D 6 ES 8 D 10 B SPT(S) 1.20m, N=12 (3,2/2,2,2,6) 1.50 116 2.00 2.00 2.00 - 2.45 2.00 - 3.00 2.00 82.26 SPT(S) 2.00m, N=16 (5,4/4,4,4,4) 2 MADE GROUND: Soft to firm dark brown gravelly sandy CLAY. Gravel is subangular to subrounded fine to coarse sandstone brick coal mudstone and concrete. Sand is fine 2.50 13 D SPT(S) 3.00m, N=51 (3,4/10,13,14,14) 17 D 3.50 (3.45) 4.00 4.00 - 4.45 4.00 - 5.00 SPT(S) 4.00m, N=50 (6,7/10,14,13,13) 18 D 21 B 4.50 20 D 5.00 - 5.45 22 D SPT(S) 5.00m, N=58 (12,13/14,15,15,14) 5.45 78 81 EOH at 5.45m - Scheduled depth 10 Observations / Remarks Misc Backfill Dynamic Sampling Runs Installations From (m) 1.20 2.00 3.00 4.00 Instrument Details Resp. Zone Depth (m) Diam To (m) Diam (mm) Re covery (%) Groundwater Strikes Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks AR1175 (56%)



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Log Type

Header

Exploratory Hole Number BH17-39A

FINAL

GEO

Project No:	3043	Location Details				Methodology & P	Scale:	1:50		
	44 01 11 11 11 11	Easting:	426597.92	Northing:	557510.63	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse			Ü		0.00 - 1.20 1.20 - 5.30	Inspection Pit	Hand Tools		
		Elevation:	77.94mAOD	Final Depth:	10.60m	5.30 - 10.60	Rotary Coring	Fraste SLG	Approved:	BH
Location:	Tyne and Wear	Logger:	ASH	Grid System:	OSGB				Start Date:	18/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	22/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)
10.60	116

Casing Diameter							
Depth (m)	Diam (mm)						
5.30	116						

	Groundwater Strikes								
Strike	Strike Casing Sealed Time Rose To								
(m)									

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

No Monitoring Point/s Installed

В	ackfill
Depth (m)	Legend Code
0.00 - 10.60	Arisings
	, and

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	7

Hand Vane* 0
Standard Penetration Tests 7

reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
Soil	Soil <b>3</b> Water							
Geotechnical Samples								
Bulk	Bulk <b>3</b> Large Bulk							
Disturbed	Disturbed (NR)	0						
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undistu	rbed 1	Thin Wall	0					
Undisturbe	ed Thi	n Wall (NR)	0					
Cor	re San	nple	4					

(NR) Indicates sample undertaken but with

	Chandend Developing Test Comment													
	Standard Penetration Test Summary													
Test Type		Casing				Penetration	N	Reported Result	Hammer Ref					
	(m)	(m)	(m)	Blows	_	Total (mm)		·						
Split Spoon		1.70	Dry	20	34	450	34	N=34 (8,12/10,7,9,8)	AR1175					
Split Spoon	2.50	1.70	Dry	11	34	450	34	N=34 (5,6/4,6,9,15)	AR1175					
Split Spoon	3.50	1.70	Dry	17	38	450	38	N=38 (8,9/9,9,9,11)	AR1175					
Split Spoon	4.50	1.70	Dry	16	47	450	47	N=47 (4,12/13,17,9,8)	AR1175					
Split Spoon	5.30	4.50	Dry	25	100	260		N=100 (25 for 75mm/100 for 185mm)	AR1175					
Cone	6.30	5.30	Dry	25	100	180		N=100 (25 for 75mm/100 for 105mm)	AR1175					
Cone	9.30	5.30	Dry	25	100	295		N=100 (25 for 105mm/100 for 190mm)	AR1175					
I														
I														
I														

SPT Hammer Ref.	Energy Ratio (%)
AR1175	56

#### **Applicable to Cable Percussion Only**

Chiselling								
Depth (m)	Duration (mins)							

Water Added										
Depth (m)	Litres									
	l									

#### **Applicable to Rotary Only**

Drilling Flush										
Depth (m)	Flush Type	Flush Colour	Return %							
Depth (m) 1.20 - 10.60	Flush Type Water	Flush Colour	0 0							

_													
	Dynamic Sampling Runs												
	Depth (m)	Diam (mm)	Recovery %	Remarks									



3043

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Location Details

Combined **Borehole** 

Sheet 1 of 2

Log Type

Exploratory Hole Number

**BH17-39A** 

Methodology & Plant

FINAL CENTRAL ALLIANCE GEO

Scale:

1:50

Nam	ne: A1 Birtley to Coalhouse	Easting:	4265	97.92	Nort	thing:	557510.6	0.0	0 - 1.20	Inspec	tion Pit		Hand Tools	Checke	ed By:			RPH	
		Elevation:	77.9	4mAOD	Fina	l Depth:	10.60m	1.2 5.3	0 - 5.30 0 - 10.60	Rotary	Coring		Fraste SLG	Approv	ed By	/:		ВН	
			ASH		Grid	System:	OSGB							Start D	ate:		18/	05/2	018
Clier	nt: SLIV	Orientation:	N/A		Incli	nation:	90°							Finish	Date:		22/	05/2	018
	Shake Description				Depth (m)	Reduced Level		Casing Ø	Water	Installation /		Sample	s & Testing	poq		Cor	ing		
	Strata Description			Legend	(Stratum Thickness)	(mAOD)	(mm) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	Core Run	TCR	SCR	RQD	If	
	MADE GROUND: Brown gravelly very clayey fine to Gravel is angular to subrounded fine to coarse sand brick and concrete.				(1.20)									<u>a</u>					-
- - -	MADE GROUND: Weathered angular fine to coarse \GRAVEL.	mudstone			1.20 (0.10) 1.30	76.74 76.64					1.20 1.20 1.30	1 D 13 D 3 D							-
2 -	MADE GROUND: Very stiff fissured dark brown gra CLAY. Gravel is angular to subangular fine to coarse and sandstone.				(1.20)						1.30 - 1.60 1.60 1.70 1.85 2.00 2.15 2.30 - 2.50	2 ES 4 D 5 D 6 D 7 D 8 D 9 ES	SPT(S) 2.00m, N=34 (8,12/10,7,9,8)						2 -
-	Stiff fissured dark brown gravelly sandy CLAY. Gravifine to coarse of sandstone. Sand is fine to coarse.	el is angulai	r		2.50	75.44					2.50 - 2.95 2.50 - 3.20	11 D 10 B	SPT(S) 2.50m, N=34 (5,6/4,6,9,15)						-
3 -	Weathered SANDSTONE recovered as orangish bro				3.50	74.44					3.20 3.20 3.30 3.50 - 3.95	12 D 13 D 13 ES 15 D	SPT(S) 3.50m, N=38	WLS					3
4 -	gravelly very silty fine to medium sand. Gravel is su to coarse.				(1.00)						3.50 - 4.50 3.50 - 4.50	13 B 14 B	(8,9/9,9,9,11)						4 -
-	Weak to medium strong orangish brown fine to co	arse graine	d		4.50	73.44							SPT(S) 4.50m, N=47 (4,12/13,17,9,8)						-
5 —	SANDSTONE. Discontinuities are very closely to clo subhorizontal (0-10 degrees) planar smooth tight of	sely spaced						<u>116</u> 5.30			5.15 - 5.20	3 C	SPT(S) 5.30m, N=100 (25						5 —
6 —	From 5.30m to 6.00m, no recovery.							5.30					for 75mm/100 for 185mm)	5.30 6.30	30	0	0	NR	- - - - - -
	From 6.30m to 6.90m, no recovery.				(4.10)								SPT(C) 6.30m, N=100 (25 for 75mm/100 for 105mm)					NI NR	-
7 -	From 7.40m to 7.80m, 1No. subvertical impersistent open iror discontinuity.	n stained									7.00 - 7.12	2 C		6.30 7.80	60	50	13		7
8 —											7.80 - 8.24	1 C		RC				12	8 —
9 —	Extremely weak weathered MUDSTONE recovered dark grey gravelly sandy CLAY. Gravel is angular fine Sand is fine to coarse.  From 8.70m to 9.60m, no recovery.				8.60	69.34								7.80 9.30	60	48		NI NR	- - - 9 —
10	Oralizated N. 12				(2.00)								SPT(C) 9.30m, N=100 (25 for 105mm/100 for 190mm)	9.30 10.60	80	0	0		
	Continued on Next Page									1									
Obse	ervations / Remarks	1	Misc.	_	1		nformation		T	) = :	Backfill		1	Instal				, .1	n.
		- Encountered	Used Point Installed	19/05 21/05	04:0 20:0	00	epth (m) C 4.95 4.95	4.50 4.50	Water (r Dry Dry	m) From (m) 0.00		Materia Arisings	Instrument Det		Resp. 2		Depth	(m)	Diam
		water	asing vring F										Strike (m) Rises To (m)	Water			lor-	les.	
		o Ground	ς to Monitα										Strike (III) kises to (m)	rime (min	7	·	Remar	n.o	



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Location Details

Combined Borehole

Sheet 2 of 2

Log Type

Exploratory Hole Number

BH17-39A

**FINAL** 

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used Easting: 426597.92 557510.63 RPH Northing: Checked By: Name: A1 Birtley to Coalhouse Elevation: 77.94mAOD Final Depth: 10.60m Approved By: BH Location: Tyne and Wear Logged By: ASH Grid System: OSGB Start Date: 18/05/2018 22/05/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref Extremely weak weathered MUDSTONE recovered as very stiff dark grey gravelly sandy CLAY. Gravel is angular fine to coarse. 10.30 - 10.40 4 C NI Sand is fine to coarse. <u>116</u> 10.60 10.60 67.34 EOH at 10.60m - Scheduled depth 12 13 14 18 19 20 Misc Observations / Remarks Shift Information 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 10.60
 Arisings
 Instrument Details Resp. Zone Depth (m) Diam Water Strikes Strike (m) Rises To (m) Time (min) Remarks



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Log Type

Exploratory Hole Number

BH17-41

FINAL



Project No:	3043		Location	Details			Methodolo	Scale:	1:50	
		Easting:	426654.22	Northing:	557509.21	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	720034.22		337303121	0.00 - 1.20 Inspection Pit		Hand Tools	- criconcu.	
		Elevation:	81.49mAOD	Final Depth:	17.00m	1.20 - 11.00	Dynamic Sampling (Windo		Approved:	BH
Location:	Tyne and Wear					11.00 - 17.00	Rotary Coring	Massenza MIP3	1	
LOCATION:		Logger:		Grid System:	OSGB				Start Date:	09/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	11/05/2018

ı	Hole Diameter				
	Depth (m)	Diam (mm)			
ı	12.50	140			
	17.00	92			
ı					
ı					

Casing Diameter						
Depth (m)	Diam (mm)					
11.00	140					

Environmental Samples

3 Water

Geotechnical Samples

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Large Bulk
Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Groundwater Strikes						
Strike	Casing	Sealed	Time	Rose To	Damania.		
(m)	(m)	(m)	(min)	(m)	Remarks		

Installation / Instrument Details						
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)		
11/05/2018	Standpipe	12.00	6.00 - 12.00			

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill				
Depth (m)	Legend Code			
0.00 - 5.50	Arisings			
5.50 - 6.00	Bentonite			
6.00 - 12.00	Gravel			
12.00 - 17.00	Bentonite			

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	6

PID 0 (NR) Indicates sample undertaken but with 0% Recovery

Disturbed

Piston

Undisturbed

			Sta	ndard	Penetrati	on T	est Summary	
Depth	Casing	Water	Seating	Main	Penetration	N	Danasta d Danish	Hammer Ref
(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	
1.20	-	-	11	17	450	17	N=17 (5,6/7,4,3,3)	AR61
2.00	-	-	6	26	450	26	N=26 (3,3/6,7,7,6)	AR61
3.00	-	-	10	21	450	21	N=21 (5,5/5,5,5,6)	AR61
5.00	-	-	14	18	450	18	N=18 (8,6/4,5,4,5)	AR61
9.00	-	-	19	60	310		60 (9,10/60 for 160mm)	AR61
11.00	-	-	25	70	385		N=70 (12,13/70 for 235mm)	AR61
	(m) 1.20 2.00 3.00 5.00 9.00	(m) (m) 1.20 - 2.00 - 3.00 - 5.00 - 9.00 -	(m) (m) (m) 1.20 2.00 3.00 5.00 9.00	Depth (m)         Casing (m)         Water (m)         Seating (m)           1.20         -         -         11           2.00         -         -         6           3.00         -         -         10           5.00         -         -         14           9.00         -         -         19	Depth         Casing         Water         Seating         Main           (m)         (m)         Blows         Blows           1.20         -         -         11         17           2.00         -         -         6         26           3.00         -         -         10         21           5.00         -         14         18           9.00         -         -         19         60	Depth (m)         Casing (m)         Water (m)         Seating Blows (m)         Main Penetration (mm)           1.20         -         -         11         17         450           2.00         -         -         -         6         26         450           3.00         -         -         10         21         450           5.00         -         -         14         18         450           9.00         -         -         19         60         310	Depth (m)         Casing (m)         Water (m)         Seating Blows (m)         Main (penetration for penetration	(m)         (m)         Blows         Blows         Total (mm)         N         Reported Result           1.20         -         -         11         17         450         17         N=17 (5,6/7,4,3,3)           2.00         -         -         6         26         450         26         N=26 (3,3/6,77,6)           3.00         -         -         10         21         450         21         N=21 (5,5/5,5,5,6)           5.00         -         -         14         18         450         18         N=18 (8,6/4,5,4,5)           9.00         -         -         19         60         310         60 (9,10/60 for 160mm)

SPT Hammer Ref.	Energy Ratio (%)
AR61	58

* One count indicates an average
reported result of 3 tests carried out at
one depth where available.

# **Applicable to Cable Percussion Only**

Chise	elling	Water Added			
Depth (m)	Duration (mins)	Depth (m)	Litres		

#### **Applicable to Rotary Only**

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			
3.40 - 5.00	Water	Brown	99			
6.00 - 7.00	Water	Brown	99			
7.00 - 9.00	Water	Brown	99			
9.00 - 11.00	Water	Brown	99			
11.00 - 12.50	Water	Brown	99			

	Dynamic Sampling Runs						
Ш	Depth (m)	Diam (mm)	Recovery %	Remarks			
					П		
					П		
					П		
					П		
					П		
					П		
					П		
					П		
					П		



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Log Type

#### Combined Borehole

Sheet 1 of 2

Exploratory Hole Number **BH17-41** 



Methodology & Plant Project No: Location Details Scale: 1:50 3043 From (m) 0.00 - 1.20 1.20 - 11.00 11.00 - 17.00 Plant Used Hand Tools Massenza MIP3 Massenza MIP3 Method RPH Easting: 426654.22 Northing: 557509.21 Checked By: Inspection Pit Sampling (Wind Rotary Coring A1 Birtley to Coalhouse Name: Elevation: 81.49mAOD Final Depth: 17.00m Approved By: BH Tyne and Wear Location: Logged By: Grid System: OSGB Start Date: 09/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 11/05/2018 Casing Ø (mm) Depth (m) Samples & Testing Depth (m) Reduced Hole Ø Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref 0.00 - 1.00 MADE GROUND: Dark brown very clayey angular to subrounded fine to coarse brick, concrete and sandstone GRAVEL. 0.40 2 ES 0.80 3 ES (2.00) SPT(S) 1.20m, N=17 (5,6/7,4,3,3) 1.20 - 1.65 79.49 MADE GROUND: Dark brown gravelly clayey angular to subrounded brick, concrete and sandstone COBBLES. Gravel is subangular to subrounded fine to coarse of various lithologies. 2.50 8 ES SPT(S) 3.00m, N=21 (5,5/5,5,5,6) 3.30 9 D SPT(S) 5.00m, N=18 (8,6/4,5,4,5) (9.00) 9.00 - 9.45 11 D SPT(S) 9.00m, 60 (9,10/60 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill To (m) 5.50 6.00 Resp. Zone | Depth (m) | Diam | 6.00 - 12.00 | 12.00 | Depth (m) Casing (m) Water (m) Instrument Details Water Strikes Strike (m) Rises To (m) Time (min)



3043

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Location Details

Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-41** 



1:50

Scale:

Sheet 2 of 2

FINAL

Methodology & Plant

FIOJ	ect No. <b>3043</b>				ion Deta	113					tilodology	OX FIBIL	81 1	4	cale.				1.50
Nam	ne: A1 Birtley to Coalhouse	Easting:	4266	54.22	Nor	thing:	557509.2	21	om (m)	Met	noa		Plant Used	- C	Checked	d By:			RPH
		Elevation:	81.49	9mAOD	Fina	al Depth:	17.00m							Д	Approve	ed By	/:		BH
Loca	ation: Tyne and Wear	Logged By:			Grid	d System:	OSGB							S	start Da	ite:		09,	05/201
Clier	nt: SLIV	Orientation:	N/A		Incli	ination:	90°							F	inish D	ate:		11/	05/201
		1			Depth (m)	Reduced	Hole Ø	Casing Ø	l '			Samples	& Testing	,			Cor	ing	
	Strata Description			Legend	(Stratum Thickness)	Level	(mm) Depth (m)	(mm)	Water Level (m)	Installation / Backfill	Depth (m)	Ref	Test Results	Metho	Core	TCR		RQD	If
$\mathbf{H}$	MADE GROUND: Dark brown gravelly clayey angul	lar to		*****		(				· H	Depar (m)	inc.	rest results	H	Run		Jen	пць	
1 -	subrounded brick, concrete and sandstone COBBL		is	*****											i '				
	subangular to subrounded fine to coarse of variou														i '				
				*****											i '				
-				*****											i '				
				*****				140							i '				
11	Weak yellowish brown fine to medium grained SA	NDSTONE.			11.00	70.49		11.00					SPT(S) 11.00m, N=70 (12,13/70 for 235mm)	Ħ			П		11
1 1	Discontinuities are medium spaced subhorizontal	(0-10 degre	ees)	:::::						·   ∏ · .					l '				
-	planar smooth tight.														l '				
1 7															l '				NR
					(1.50)										11.00 12.50	20	20	20	
-				:::::											1				
12 -				:::::											l '				12
															i '			ľ	>25
				: : : : :	12.50	68.99	140								<u> </u>				/25
-	Very weak yellowish brown fine to medium graine				12.30	36.99	12.50							$ \cdot $	i		1	T	
	SANDSTONE. Discontinuties are extremely to very	closely spa	ced	: : : :											i '				NR
13 -	subhorizontal planar rough open clean.														i '			ŀ	NI 13
-				:::::											12.50				>25
1 1				:::::											14.00	73	17	7	NI
	From 13.40m to 13.70m, discontinuities are vertical planar sr	mooth tight													i '			ŀ	. 25
	clean.														i '				>25
-															l '			F	NI
14 -				: : : : :	(2.10)									SC.	<u> </u>		$\sqcup$		>25
1 1				: : : : :	(3.10)										l '				
-				:::::											l '				
1 1				:::::											l '				NR
1 1				:::::											14.00				
-				:::::											15.50	45	13	7	
15 -	Form 45 00m to 45 47m discontinuities are subscribed (00.0	i0 dania.													l '			ŀ	NI 15
	From 15.00m to 15.17m, discontinuties are subvertical (80-90 planar smooth tight clean.	u aegrees)													l '			ŀ	>25 NI
1 -	From 15.30m to 15.37m, subvertical (80 degrees) planar smo	ooth tiaht													l '			ŀ	_
1 1	clean.			:::::											<u> </u>	Н	$\vdash$	_	>25 NR
	Weak greyish brown fine to medium grained SANI	DSTONE.		: : : : :	15.60	65.89									l '			F	
-	Discontinuities are closely to medium spaced subh			: : : : :	(0.32)										l '				9
16	(0-10 degrees) planar smooth tight.		/		15.92	65.57									l '			-	16
	Extremely weak dark grey very thinly laminated M														15.50				
1 1	very stiff very thinly laminated dark grey gravelly C	CLAY. Gravel	lis												17.00	97	87	23	
1 -	angular of mudstone.	n coal band			(1.08)										l '				>25
1 1	From 16.30m to 16.50m, subhorizontal orientated thin 10mm	n cour bunu.													l '				
1 1															l '				
17 -	EOH at 17.00m - Refusal				17.00	64.49	<u>92</u> 17.00							Н	$\vdash$	H	$\vdash$		17
1 1	Lon at 17.00m - Reidsai						17.00								i '				
1 1															i '				
-																			
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20 -												1		Ħ			H	$\dashv$	20
Oha	ervations / Remarks		Misc.			Shift to	nformatio	ın.	1		Backfill	·		ш	Installa	L	$\coprod$	1	
ODSI	Livations / Itematics		IVIISC.	Date	Tim			Casing (m)	Water (n	n) From (m)		Material	Instrument De					Depth	(m) Dia
		tes	lled		1		/	J (···/	(.	0.00	5.50	Arisings Bentonite	Standpipe	_		6.00 - 1		12.0	
			d d Insta							6.00	12.00	Gravel							
		i i	g Used oint/s I							12.00	17.00	Bentonite		١	Water S	Stribo			
			nawate Casing ing Pol										Strike (m) Rises To (m					Remar	ks
			o Groundw Cas Monitoring										50 mc (111) maes 10 (111	1.11	- ()			.cmal	
			Mo																
1					1	- 1	- 1		1	1	1		1 1	1		1			



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Header Sheet

Log Type

Exploratory Hole Number

**BH17-42** FINAL

CENTRAL ALLIANCE

Location Details Methodology & Plant Scale: 1:50 Project No: 3043 From (m) 0.00 - 1.20 1.20 - 7.40 7.40 - 15.00 15.00 - 20.60 Method
Inspection Pit
DYNAMIC SAMPLING (WINDOWLESS)
Rotary Open Holing
Rotary Coring Plant Used

Hand Tools

Massenza MIP3

Massenza MIP3

Massenza MIP3 Easting: 557518.91 Checked: RPH 426722.80 Northing: Name: A1 Birtley to Coalhouse Elevation: 85.98mAOD Final Depth: 20.60m Approved: BH Location: Tyne and Wear Logger: GS+ASH Grid System: OSGB Start Date: 14/05/2018 Client: SLJV 21/05/2018 Orientation: N/A Inclination: 90° End Date:

Hole Di	ameter
Depth (m)	Diam (mm)
20.60	121

Casing D	iameter
Depth (m)	Diam (mm)
15.00	140

Groundwater Strikes										
Strike Casing Sealed Time Rose To										
(m)	(m)	(m)	(min)	(m)	Remarks					
ł										

	Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							
21/05/2018	Standpipe	0.00	14.50 - 20.60								

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill							
Depth (m)	Legend Code						
0.00 - 0.50	Concrete						
0.50 - 14.50	Bentonite						
14.50 - 20.60	Gravel						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	10

<sup>(</sup>NR) Indicates sample undertaken but with 0% Recovery

15

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed

Piston

Undisturbed

Environmental Samples

8 Water

Geotechnical Samples

Large Bulk

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Standard Penetration Test Summary								
Test Type	Depth	Casing	l .	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
Culit Curren	(m)	(m)	(m)	4		, ,	10	N 40 (2.2/2.4.C.C)	ADC1
Split Spoon	1.20	-	-		19	450	19	N=19 (2,2/3,4,6,6)	AR61
Split Spoon	2.00	-	-	10	35	450	35	N=35 (4,6/6,8,13,8)	AR61
Split Spoon	3.00	-	-	10	32	450	32	N=32 (5,5/6,9,9,8)	AR61
Split Spoon	4.00	-	-	14	27	450	27	N=27 (6,8/6,7,7,7)	AR61
Split Spoon	5.00	-	-	14	32	450	32	N=32 (7,7/8,7,8,9)	AR61
Split Spoon	6.00	-	-	13	48	450	48	N=48 (6,7/8,14,12,14)	AR61
Split Spoon	7.00	-	-	12	47	450	47	N=47 (6,6/9,12,12,14)	AR61
Split Spoon	9.00	9.00	-	15	21	450	21	N=21 (9,6/4,5,5,7)	AR61
Split Spoon	11.00	11.00	-	15	28	450	28	N=28 (7,8/6,8,8,6)	AR61
Split Spoon	13.00	13.00	-	18	50	410		N=50 (8,10/50 for 260mm)	AR61

SPT Hammer Ref.	Energy Ratio (%)
AR61	58

* One count indicates an average
reported result of 3 tests carried out at
one depth where available.

# **Applicable to Cable Percussion Only**

Chise	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litres

#### **Applicable to Rotary Only**

Drilling Flush									
Depth (m)	Flush Type	Flush Colour	Return %						
11.00 - 20.60	Air/Mist	Brown	100						

Dynamic Sampling Runs											
Depth (m)	Diam (mm)	Recovery %	Remarks								
1.20 - 2.00	117	100									
2.00 - 3.00	117	100									
3.00 - 4.00	117	100									
4.00 - 5.00	117	100									
5.00 - 6.00	102	100									
6.00 - 7.00	102	100									
7.00 - 7.40	102	100									



Log Type

#### Combined **BH17-42 Borehole**

**FINAL** 

Exploratory Hole Number



Web: www.central-alliance.co.uk Sheet 1 of 3 GEO Methodology & Plant Location Details Scale: Project No: 3043 1:50 From (m) 0.00 - 1.20 1.20 - 7.40 7.40 - 15.00 Plant Used Hand Tools Massenza MIP3 Massenza MIP3 Method RPH Easting: 426722.80 Northing: 557518.91 Checked By: INSECTION
Inspection Pit
SYNAMIC SAMPLING (WINDOWLESS)
Rotary Open Holing
Rotary Coring A1 Birtley to Coalhouse Name: Elevation: 85.98mAOD Final Depth: 20.60m Approved By: BH Tyne and Wear Location: 15.00 - 20.60 Massenza MIP3 Logged By: GS+ASH Grid System: OSGB Start Date: 14/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 21/05/2018 Samples & Testing Depth (m) Reduced Hole Ø Casing Ø Coring Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref MADE GROUND: Brown locally grey gravelly very sandy CLAY. 0.20 0.30 1 D 2 ES Gravel is subangular to subrounded fine to coarse sandstone, brick, concrete, coal and mudstone. Sand is fine to coarse. 0.50 3 D 0.70 4 ES 1.00 1.00 1.20 - 1.65 1.20 - 2.00 11 ES 10 D 13 B 2.50 12 D SPT(S) 3.00m, N=32 (5,5/6,9,9,8) 3.00 3.00 - 3.45 3.00 - 4.00 16 D 3.50 4.00 4.00 - 4.45 4.00 - 5.00 19 ES 18 D 21 B SPT(S) 4.00m, N=27 (6,8/6,7,7,7) (9.00)4.50 20 D 5.00 23 ES SPT(S) 5.00m, N=32 (7,7/8,7,8,9) 5.00 - 5.45 5.00 - 6.00 22 D 25 B 5.50 24 D 6.00 6.00 - 6.45 6.00 - 7.00 27 ES 26 D 29 B SPT(S) 6.00m, N=48 (6,7/8,14,12,14) 6.50 28 D SPT(S) 7.00m, N=47 (6,6/9,12,12,14) 76.97 SPT(S) 9.00m, N=21 9.00 Yellowish brown gravelly slightly clayey fine to coarse SAND. (9,6/4,5,5,7) Gravel is subangular to subrounded fine to coarse sandstone and coal. 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 14.50 - 20.60 | 0.00 | Depth (m) Casing (m) To (m) Instrument Details Date 15/05 15/05 16/05 16/05 17/05 17/05 18/05 3.00 3.00 7.40 7.40 11.00 11.00 13.00 06:00 18:00 06:00 18:00 06:00 18:00 06:00 18:00 06:00 11.00 11.00 13.00 13.00 15.00 Water Strikes Strike (m) Rises To (m) Time (min)



Web: www.central-alliance.co.uk

Log Type Combined **Borehole** 

Exploratory Hole Number

**BH17-42** FINAL



Sheet 2 of 3 Location Details Methodology & Plant Scale: Project No: 3043 1:50 Method Plant Used Easting: From (m) Checked By: RPH 426722.80 557518.91 Northing: Name: A1 Birtley to Coalhouse

Ivan	·	Elevation:	85.9	8mAOD	Fina	l Depth:	20.60m									Approv	ed By	<i>r</i> :		ВН
Loca	ation: Tyne and Wear	Logged By:	GS+	ASH	Grid	System:	OSGB									Start D	ate:		14/0	05/2018
Clie	nt: SLJV	Orientation:	N/A		Incli	nation:	90°									Finish [	Date:		21/0	05/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Hole Ø (mm)	Casing Ø (mm)	Water		llation /		Samples	& Testing	pod			Cori	ing	
					Thickness)	(mAOD)	Depth (m)	Depth (m)	Level (m	i) Ba	ackfill	Depth (m)	Ref	Test Resu	ults ≥	Core Run	TCR	SCR	RQD	If
11 -	Yellowish brown gravelly slightly clayey fine to coar Gravel is subangular to subrounded fine to coarse and coal.				(4.00)									SPT(S) 11.00m, N (7,8/6,8,8,6)	<b>4</b> =28					11 -
12															Q.					12 -
13	Orangish brown SANDSTONE recovered as subangusubrounded medium to coarse gravel.	ular to			13.00	72.97								SPT(S) 13.00m, N (8,10/50 for 260i	N=50 mm)					13 -
14					(3.60)						0 0 0									14 -
15 — - - - - - - - - - - - - - -	From 15.00m to 15.60m, no recovery.							140 15.00								15.00 16.10	45	0	0	15 -
-	From 16.10m to 16.60m, no recovery.  Orangish brown SANDSTONE recovered as very sar	ndy angular			16.60	69.38													1	NR
17 -	fine to coarse gravel with bands of dark grey sandy Sand is fine to coarse.  Very weak yellow fine to coarse grained SANDSTOR	gravelly cla	ıy.		(0.50) 17.10 (0.30)	68.88										16.10 17.60	67	67		17 -
	Discontinuities are closely spaced subhorizontal (0   planar smooth tight clean.   Very weak yellowish brown fine to coarse grained : recovered as slightly sandy slightly clayey angular f gravel. Discontinuities are extremely to very closely	SANDSTONE	/		17.40	68.58									2				1	NI NR 18 -
- - - - - -	planar rough open with sand infill. From 17.60m to 18.10m, no recovery.  Very weak yellow fine to coarse grained SANDSTON Discontinuities are closely spaced subhorizontal (0 planar smooth tight clean.  Orangish brown SANDSTONE recovered as gravelly	-10 degrees	rse /		18.30 (0.20) 18.50 (0.30) 18.80	67.68 67.47 67.18										17.60 19.10	67	67	27	25 25 NI
19	\sand. Gravel is angular to subangular fine to coarse Very weak yellowish brown fine to coarse grained to Discontinuities are very closely to closely subhorized degrees) undulating rough.  Dark grey MUDSTONE recovered as very stiff black Gravel is angular fine to coarse mudstone and coal coalse.	SANDSTONE ontal (0-10 gravelly clay	:. 		(0.30) 19.10 (0.90)	66.88										19.10 20.60	87	87	0	19 -
-	Gravel is angular fine to coarse mudstone and coal From 19.10m to 19.30m, no recovery.	•																		
20 —	Continued on Next Page				20.00	65.97				- 1	7' •		1l		+		H	П		20 -
Obs	ervations / Remarks	N	∕lisc.			Shift I	nformatio	n	1			Backfill				Install	ations	L 3		
		water Encountered	asing Used ng Point/s Installed	Date	Tim			Casing (m)	Water		0.00 0.50 14.50	To (m) 0.50 14.50 20.60	Material Concrete Bentonite Gravel	St		s F	Resp. Z 4.50 - 2 Strike	Zone [20.60	0.00	
		io Ground	C Monitorii											Strike (m) R	10 (m) T	e (min)		R	temark	3



3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Location Details

# Combined Borehole

Log Type

Sheet 3 of 3

Exploratory Hole Number

BH17-42

FINAL

Methodology & Plant



1:50

Scale:

Nar	me: A1 Birtley to Coalhouse	Easting:	42672	22.80	Nort	hing:	557518.9	1 Fro	m (m)	Met	hod		Plant Used	Checke	ed By:			RPH	
	E	Elevation:	85.98	mAOD	Final	Depth:	20.60m							Approv	ved B	y:		ВН	
Loc	cation: Tyne and Wear	Logged By:	GS+A	SH	Grid	System:	OSGB							Start D	ate:		14/	05/2	018
Clie	ent: SUV	Orientation:	N/A		Inclir	nation:	90°							Finish	Date:		21/	05/2	018
	Charle Description			Lancard	Depth (m) (Stratum	Reduced		Casing Ø	Water	Installation /		Samples	& Testing	hod		Cor	ing		
	Strata Description			Legend	Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	Core Run	TCR	SCR	RQD	If	
	- Extremely weak dark grey and black MUDSTONE. Di		ies																]
	are extremely closely spaced subhorizontal (0-10 de planar smooth.	egrees)			(0.60)														1
-	†				20.60	65.38	<u>121</u> 20.60												-
	EOH at 20.60m - Scheduled depth				20.00	03.30	20.60												
21 -	_																		21 -
	1																		
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Obs	servations / Remarks	١	Misc.				nformatio		147 : 1		Backfill		1	Instal			D- ''	/. d	D:
		pas	pəll	Date	Tim	e D	eptn (m)	asing (m)	water (n	n) From (m)	0.50	Material Concrete	Instrument Deta Standpipe		Resp. 14.50 -	∠one 20.60	Depth 0.0		וטam
		rcounte	Casing Used ing Point/s Installea							0.50 14.50	14.50 20.60	Bentonite Gravel							
		ater Er	ing Us Point/											Water		es es			
		mpunc	Cas toring										Strike (m) Rises To (m)	Time (mir	1)		Remar	ks	
1		6	ig.		1				I	1			1		1				



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Log Type

Exploratory Hole Number

BH17-44
FINAL

CENTRAL ALLIANCE

Project No:	3043		Location	Details			Methodology &	Scale:	1:50	
Name:	A1 Birtley to Coalhouse	Easting:	426717.15	Northing:	557484.60	From (m)	Method	Plant Used	Checked:	RPH
		Lusting.	g. 420727129			0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	86.03mAOD	Final Depth:	7.70m	1.20 - 7.40	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	BH
	Tyne and Wear	1				7.40 - 7.70	Dynamic Probing	Modular Window Sampler	/ pproved.	5
Location:		Logger:	RJ	Grid System:	OSGB				Start Date:	23/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	26/04/2018

ı	Hole Diameter										
	Depth (m)	Diam (mm)									
	7.00	66									
I											

Casing D	iameter
Depth (m)	Diam (mm)
2.00	116

	Groundwater Strikes											
Strike	Casing	Sealed	Sealed Time Rose To Remarks									
(m)	(m)	(m)	(min)	(m)	Remarks							

Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							
26/04/2018		5.00	2.00 - 5.20								

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill									
Depth (m)	Legend Code								
0.00 - 2.00	Bentonite								
2.00 - 5.20	Gravel								
5.20 - 7.40	Bentonite								
7.40 - 7.70	Arisings								

In-Situ Tests							
PID	0						
Hand Vane*	3						
Standard Penetration Tests	7						

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
Soil	Soil 4 Water							
Geotechnical Samples								
Bulk	Large Bulk	0						
Disturbed	18	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undisturbed Thin Wall								
Undisturbed Thin Wall (NR)								
Cor	e San	nple	0					

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary												
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref				
Split Spoon		-	-	3	8	450	8	N=8 (1,2/2,1,2,3)	AR1134				
Split Spoon	2.00	-	-	6	14	450	14	N=14 (3,3/4,3,4,3)	AR1134				
Split Spoon	3.00	-	-	5	12	450	12	N=12 (2,3/4,3,2,3)	AR1134				
Split Spoon	4.00	-	-	11	16	450	16	N=16 (6,5/4,6,3,3)	AR1134				
Split Spoon	5.00	-	-	10	18	450	18	N=18 (4,6/4,4,5,5)	AR1134				
Split Spoon	6.00	-	-	12	24	450	24	N=24 (7,5/5,6,5,8)	AR1134				
Split Spoon	7.00	-	-	12	50	365		50 (6,6/50 for 215mm)	AR1134				

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chis	elling
Depth (m)	Duration (mins)
7.20 - 7.50	45
8.50 - 8.80	60
	1

Water Added									
Depth (m)	Litres								

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

	Dynamic	Sampling	Runs
Depth (m)	Diam (mm)		Remarks
1.20 - 2.00	101	100	Remarks
2.00 - 3.00	86	60	
3.00 - 4.00	76	100	
4.00 - 5.00			
	76	95	
5.00 - 6.00	66	96	
6.00 - 7.00	66	90	



**Dynamic** Sampling & Probe

Log Type

Exploratory Hole Number

**BH17-44** 



**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk GEO Sheet 1 of 1 Project No: Location Details Methodology & Plant Scale: 1:50 3043 Depth (m) 0.00 - 1.20 1.20 - 7.40 7.40 - 7.70 Method
Inspection Pit
Dynamic Sampling (Windowless)
Dynamic Probing Plant Used

Hand Tools

Modular Window Sampler

Modular Window Sampler RPH 426717.15 Northing: 557484.60 Checked Bv: Easting: Name: A1 Birtley to Coalhouse Approved By: Elevation: 86.03mAOD Final Depth: 7.70m ВН Location: Tyne and Wear Logger: RJ Grid System: OSGB Start Date: 23/04/2018 Client: 26/04/2018 SLJV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Blows / 100mm Samples & Testing Reduced Lev (mAOD) Water Level (m) Installation / Backfill Strata Description Legend Depth (m) MADE GROUND: Soft medium strength 0.00 - 0.60 1 B

									CLAY. Gravel is subangular I fine to coarse brick										1
								sandstone and								0.40	2 ES		_
1											(2.00)					0.70 0.70 - 1.20 0.80 1.00	5 ES 3 B 4 ES 6 D		1
-											(====)					1.20 - 1.65	5 D	SPT(S) 1.20m, N=8 (1,2/2,1,2,3)	1 -
																1.40 1.50	6 D 10 ES	HV 1.50m, (p)=45 kPa (r)=12 kPa	-
																1.70	7 D	Medium hand vane.	-
2 -									D: Brown medium dense		2.00	84.03	116 2.00		·:\=-:	2.00 - 2.45	8 D	HV 1.80m, (p)=40 kPa (r)=12 kPa Medium hand vane. SPT(S) 2.00m, N=14 (3,3/4,3,4,3)	2 -
- - - - - -									gular to subrounded fine to one siltstone and coal							2.40 2.50 - 2.95	9 D 14 B	HV 2.50m, (p)=42 kPa (r)=16 kPa Medium hand vane.	-
3 -																3.00 3.00 - 3.45 3.00 - 4.00	15 D 11 D 12 B	SPT(S) 3.00m, N=12 (2,3/4,3,2,3)	3 -
4																4.00 - 4.45	13 D	SPT(S) 4.00m, N=16 (6,5/4,6,3,3)	4-
																		(2,) 20 (0,0,0,0,0)	-
																4.30	14 D		-
-											(5.30)					4.70	15 D		-
5															(w)	5.00 - 5.45	16 D	SPT(S) 5.00m, N=18 (4,6/4,4,5,5)	5 -
																5.30	17 D		-
																5.70	18 D		]
6 -																6.00 - 6.45	19 D	SPT(S) 6.00m, N=24 (7,5/5,6,5,8)	6 -
																6.30	20 D		-
																6.70	22 D		-
7 +																7.00 - 7.45	23 D	SPT(S) 7.00m, 50 (6,6/50 for 215mm)	7 -
		14						Weak grey SILT	ISTONE.	×××××	7.30 (0.10) 7.40	78.73 78.63							-
		<u> </u>	17						at 7.70m - Refusal		(0.30) 7.70	78.33							-
8								20110	acrironi reducai										8 -
																			-
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9 -	-																		9 -
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10				_	 1	1													10 -
Obser	vations	s / Rem	narks					Misc.	Equipment Information	F ( )	Dynamic	Sampling F	Runs					allations	Die
1									Dynamic Probe Type:	From (m) De	pth Base Diam	(mm) Recover	'y (%) R	emarks	Ins	trument Type	و	Resp. Zone Depth (m)	Diam

					1	- 1				1						
Ob	servations / Remarks	Misc.	Equipment	Information		Dyr	amic San	npling Runs				In	stallation	s		
			Dynamic	Probe Type:	From (m)	Depth Base	Diam (mm)	Recovery (%)	Remarks	Ir	nstrument Ty	/pe	Resp	. Zone	Depth (m)	Diam
		red	DP.	SH-B	1.20	2.00	101	100					2.00	- 5.20	5.00	
		unte stal	Fall Height:	Hammer Weight:	2.00 3.00	3.00 4.00	86 76	60 100								1
		nco ed /s In	750mm	64.0kg	4.00	5.00	76	95								1
		er E g Us oint,		•	5.00	6.00	66	96				Groun	dwater St	trikes		
		wat Isin <sub>i</sub> g Pi	Cone Base Diam.	Rod Diam.	6.00	7.00	66	90		L						
		on C	50mm	35mm						Strike (m) C	Casing (m) Se	aled (m) F	lises To (m)	Time (min	ı) Rem	narks
		o Gro Nonite	Hammer Referenc	e & Energy Ratio (%)												

AR1134 (56%)



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Sheet

Log Type Exploratory Hole Number

Header

# BH17-44A

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) 0.00 - 1.20 1.20 - 8.94 Method Inspection Pit Cable Percussio Plant Used Hand Tools Dando 2000 Easting: 426702.27 557469.17 Checked: RPH Northing: Name: A1 Birtley to Coalhouse Elevation: 79.64mAOD Final Depth: 8.94m Approved: BH Location: Tyne and Wear Logger: GS Grid System: OSGB Start Date: 25/04/2018 Client: 27/04/2018 SLJV Orientation: N/A Inclination: 90° End Date:

I	Hole Di	ameter
	Depth (m)	Diam (mm)
	8.94	150

iameter
Diam (mm)
250
200

	Groundwater Strikes												
Strike	Casing	Sealed	Time	Rose To	Dl								
(m)	(m)	(m)	(min)	(m)	Remarks								

	Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)								

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

ackfill							
Legend Code							

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	7

Standard Perietration lests	_ ′	
•		
* One count indicates an av	erage	2
reported result of 3 tests carrie	ed ou	ıt at
one depth where availab	le.	

Sample Summary					
Enviro	nmer	ntal Samples			
Soil	6	Water	0		
Geote	chnic	cal Samples			
Bulk	8	Large Bulk	0		
Disturbed	17	Disturbed (NR)	0		
Piston	0	Piston (NR)	0		
Undisturbed	0	Undisturbed (NR)	0		
Undisturbed Thin Wall					
Undisturbed Thin Wall (NR)					
Core Sample					

(NR) Indicates sample undertaken but with 0% Recovery

Standard Penetration Test Summary									
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	1.20	1.20	DRY	2	10	450	10	N=10 (1,1/2,2,3,3)	AR1134
Split Spoon	2.50	2.50	DRY	8	33	450	33	N=33 (4,4/4,6,8,15)	AR1134
Split Spoon	3.50	3.50	DRY	9	48	450	48	N=48 (4,5/8,13,14,13)	AR1134
Split Spoon	4.50	4.50	DRY	12	50	375		50 (5,7/50 for 225mm)	AR1134
Split Spoon	6.50	4.50	DRY	8	40	450	40	N=40 (3,5/8,10,10,12)	AR1134
Split Spoon	8.50	7.50	DRY	25	100	125		100 (25 for 25mm/100 for 100mm)	AR1134
Cone	8.80	7.50	DRY	25	100	140		100 (25 for 30mm/100 for 110mm)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chiselling					
Depth (m)	Duration (mins)				
7.20 - 7.50	45				
8.50 - 8.80	60				

Water Added					
Depth (m)	Litres				

# **Applicable to Rotary Only**

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			

			<u> </u>	<u>•</u>				
Dynamic Sampling Runs								
Depth (m)	Diam (mm)	Recovery %	Remarks					
			l .					



3043

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Location Details:

Cable Percussion Sheet 1 of 1

Log Type

Exploratory Hole Number **BH17-44A** 

**FINAL** 



1:50

Scale:

Methodology & Plant Depth (m) 0.00 - 1.20 1.20 - 8.94 Plant Used Hand Tools Dando 2000 Method Easting: 426702.27 Northing: 557469.17 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 79.64mAOD Final Depth: 8.94m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 25/04/2018 Client SLIV Orientation N/A Inclination: 90 Finish Date: 27/04/2018 Depth (m) Reduced Casing Ø Samples & Testing Installation , Backfill Added (Litres) Strata Description Legend (Stratum Thickness Level (mAOD) (mm) Depth (m (mins) Level (m Depth (m) MADE GROUND: Soft grey slightly gravelly silty CLAY. Gravel is 0.10 - 0.40 (0.40)subangular to subrounded fine to coarse mudstone and rare brick 0.40 - 1.00 0.50 0.40 79 24 MADE GROUND: Yellowish brown sandy clayey subangular fine to coarse sandstone, coal and rare brick GRAVEL with low (0.60) 0.70 5 ES cobble content. Sand is fine to coarse. Cobbles are subangular sandstone. 1.00 78.64 1.00 1.00 1.20 - 1.65 1.20 - 1.65 Possible MADE GROUND: Soft to firm slightly silty gravelly sandy SPT(S) 1.20m, N=10 (1,1/2,2,3,3) CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and rare coal. 2.00 11 D 2.50 2.50 - 2.95 2.50 - 2.95 SPT(S) 2.50m, N=33 (4,4/4,6,8,15) 12 D 14 B (3.50) 3.00 3.00 15 D 16 ES 3 SPT(S) 3.50m, N=48 (4,5/8,13,14,13) 3.50 - 3.95 18 B 4.00 4.00 19 D 20 ES 4.50 - 4.95 4.50 - 4.95 4.50 - 5.95 4.50 75.14 SPT(S) 4.50m, 50 (5,7/50 for 225mm) Interbedded distinctly weathered to destructured MUDSTONE and yellowish brown coarse grained SANDSTONE recovered as slightly gravelly slightly sandy slightly silty clay. Sand is fine to 5.00 23 D coarse. Gravel is subangular to subrounded fine to coarse. 5.50 - 5.95 57 blows, 0% Recovery 6.00 6.50 - 6.95 6.50 - 6.95 (4.00) SPT(S) 6.50m, N=40 (3,5/8,10,10,12) 7.00 45 7.50 - 7.95 38 blows, 75% Recovery 8.00 31 D 71.14 8.50 8.50 - 8.95 32 D SPT(S) 8.50m, 100 (25 for 25mm/100 for 100mm) Brownish yellow coarse grained SANDSTONE recovered as sandy 60 (0.44) subangular fine to coarse gravel. Sand is fine to coarse. SPT(C) 8.80m, 100 (25 for 30mm/100 for 110mm) 8.80 33 D 150 8.94 8.94 70.70 EOH at 8.94m -9 10 Observations / Remarks Shift Information Depth (m) Casing (m) Water (m) From (m) To (m) Material Resp. Zone Depth (m) Diam. Instrument Details Casing Used
No Monitoring Point In
Hammer Ref & Energy R.
AR1134 (56(%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



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Log Type

Header

Sheet

# Exploratory Hole Number **BH17-45**

**FINAL** 



Ī	Project No:	3043		Location	Details			Methodology & P	lant	Scale:	1:50
	Name: A1 Birtley to Coalhouse Easting: 426749.51 Northing: 557463.22 From (m)	Method	Plant Used	Checked:	RPH						
	Name:	AT birtley to Coamouse	Elevation:	83.33mAOD	Final Depth:	22.40m	0.00 - 1.20 1.20 - 8.40 8.40 - 21.90	Inspection Pit Dynamic Sampling (Windowless) Rotary Coring	Hand Tools Massenza MIP3 Massenza MIP3	Approved:	ВН
	Location:	Tyne and Wear	Logger:	RJ	Grid System:	OSGB				Start Date:	26/04/2018
	Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	01/05/2018

Hole Diameter							
Depth (m)	Diam (mm)						
22.40	92						

Casing Diameter							
Depth (m)	Diam (mm)						
17.25	140						

	Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Dl			
(m)	(m)	(m)	(min)	(m)	Remarks			
ł								

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
02/05/2018	Standpipe	22.00	15.50 - 22.40					

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill						
Depth (m)	Legend Code					
0.00 - 16.00	Bentonite					
16.00 - 22.00	Gravel					
22.00 - 22.40	Arisings					
i .						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	6

<sup>(</sup>NR) Indicates sample undertaken but with

Disturbed

Piston

Undisturbed

Sample Summary Environmental Samples 9 Geotechnical Samples 11

13

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Large Bulk

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Standard Penetration Test Summary								
Test Type	Depth	Casing	Water	Seating	Main	Penetration	N	Reported Result	Hammer Ref
lest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	nammer ner
Split Spoon	1.20	-	-	2	5	450	5	N=5 (1,1/1,1,2,1)	AR61
Split Spoon	2.00	-	-	3	8	450	8	N=8 (1,2/1,1,3,3)	AR61
Split Spoon	3.00	-	-	13	22	450	22	N=22 (4,9/5,7,5,5)	AR61
Split Spoon	4.00	-	-	8	21	450	21	N=21 (4,4/4,7,5,5)	AR61
Split Spoon	5.00	-	-	7	22	450	22	N=22 (3,4/5,5,6,6)	AR61
Split Spoon	6.00	-	-	8	22	450	22	N=22 (4,4/5,5,5,7)	AR61

SPT Hammer Ref.	Energy Ratio (%)
AR61	58

* One count indicates an average
reported result of 3 tests carried out at
one depth where available.

# **Applicable to Cable Percussion Only**

Chise	Chiselling						
Depth (m)	Duration (mins)		Depth				
			l				

Water Added						
Depth (m)	Litres					
	l					

### **Applicable to Rotary Only**

	Drilling	Flush						
Depth (m)	Flush Type	Flush Colour	Return %					
8.40 - 11.40	Air/Mist	Grey/Brown	99					
11.40 - 12.15	Air/Mist	Grey/Brown	90					
12.15 - 12.90	Air/Mist	Grey/Brown	50					
12.90 - 22.40	Air/Mist	Grey/Brown	90					

	Dynamic	Sampling	Runs
Depth (m)	Diam (mm)	Recovery %	Remarks
1.20 - 2.00	116	75	
2.00 - 3.00	116	100	
3.00 - 4.00	116	100	
4.00 - 5.00	86	100	
5.00 - 6.00	102	100	



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Combined Borehole

Log Type

Exploratory Hole Number

BH17-45

CENTRAL ALLIANCE GEO

Sheet 1 of 3

FINAL

Project No:	3043		Locat	ion Details				Methodology &	Plant	Scale:	1:50
		Easting:	426749.51	Northing:	557463.22	, F	rom (m)	Method	Plant Used	Checked Bv:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	420745152		337-103121	(	0.00 - 1.20	Inspection Pit	Hand Tools	] enconca by:	
		Elevation:	83.33mAOD	Final Dept	h: <b>22.40m</b>		1.20 - 8.40 3.40 - 21.90	Dynamic Sampling (Windowless) Rotary Coring	Massenza MIP3 Massenza MIP3	Approved By:	BH
Location:	Tyne and Wear	Logged By:	RJ	Grid Syste	m: OSGB	ľ	.40 - 21.50	notary coring	Widdseliza Wiff 5	Start Date:	26/04/2018
Client:	SUV	Orientation:	N/A	Inclination	: 90°					Finish Date:	01/05/2018

		Elevation:	83.33	BmAOD	Final	l Depth:	22.40m	1.2 8.40	- 21.90		ing (Windowless) Coring		Massenza MIP3 Massenza MIP3		Approv	ed By	<b>/</b> :		ВН	
Loc	ation: Tyne and Wear	Logged By:	RJ		Grid	System:	OSGB								Start D	ate:		26/	04/2	018
Clie	nt: SLIV	Orientation:	N/A		Incli	nation:	90°								Finish [	)ate:		01/	05/2	018
	Charles Description			Lancad	Depth (m)	Reduce		Casing Ø	Water	Installation /		Samples	& Testing	pou			Cor	ing		
	Strata Description			Legend	(Stratum Thickness)	Level (mAOD	(mm) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	Met	Core Run	TCR	SCR	RQD	If	
-	MADE GROUND: Black slightly gravelly slightly clay	ey fine to									0.00 - 0.60	1 B			1	П				-
-	coarse SAND with low cobble content. Gravel is su	-																		1
-	to coarse concrete and brick. Cobbles are subangu	ılar concret	e.								0.40	2 ES								1
-											0.70 - 1.20	3 B		<u>-</u>	:					-
-											0.70 1.20	35								-
1 -			8		(2.00)						1.00	4 ES								1 -
-				*****							1.20 - 1.65		SPT(S) 1.20m, N=5	F	-					- 1
-				*****							1.20 - 1.80	6 B (	1,1/1,1,2,1)							1
-				*****																-
-																				1
2 -					2.00	81.33					2.00	14 ES 5	SPT(S) 2.00m, N=8							2 -
-	MADE GROUND: Grey slightly sandy clayey subang		8								2.00 - 2.45 2.00 - 3.00	7 D (	1,2/1,1,3,3)							
-	subrounded fine to coarse siltstone, brick and sand GRAVEL. Sand is fine to coarse.	astone		*****																-
-	GIVVEL Sand is time to course.			*****																-
-				******																- 1
-																				1
3 -											3.00 3.00 - 3.45	9 D (	SPT(S) 3.00m, N=22 4,9/5,7,5,5)							3 —
-											3.00 - 4.00	10 B								1
-																				1
-															1					d
-				******	(2.00)															
4 -				*****	(3.80)						4.00		SPT(S) 4.00m, N=21							4 -
-				*****							4.00 - 4.45 4.00 - 5.00	11 D (	4,4/4,7,5,5)							1
-				******																1
-																				1
-														2						1
-											5.00	17 ES 5	SPT(S) 5.00m, N=22	>						-
5 -											5.00 - 5.45 5.00 - 5.80		3,4/5,5,6,6)							5 -
-				******							3.00 - 3.80	19 6								1
-				******																1
-				*****																1
-	MADE GROUND: Dark grey slightly sandy gravelly s	slightly			5.80	77.53					5.80	20 D								1
6 -	organic CLAY. Sand is fine to coarse. Gravel subang										6.00 6.00 - 6.45	18 ES 5	SPT(S) 6.00m, N=22 (4,4/5,5,5,7)							6 -
-	subrounded fine to coarse coal, sandstone and silt	stone.			(0.70)						6.00 - 6.50	22 B								1
-					6.50	76.83														-
-	MADE GROUND: Orangish brown slightly gravelly s			*****	0.50	70.83					6.60 6.60 - 7.00	23 D 24 B								-
-	slightly organic CLAY. Sand is fine to coarse. Gravel to rounded fine to coarse sandstone, siltstone and	_	lar	*****							6.60 - 7.00	24 B								1
7 -	to rounded fine to coarse sandstone, shtstone and	i coai.									7.00	25 ES								7 -
-					(1.20)						7.00 - 7.45 7.00 - 7.70	26 D 27 B			1					1
-																				1
-																				-
-	MADE GROUND: Dark grey gravelly clayey fine to o	coarse SANI	D.		7.70	75.63					7.70	28 D			1					
9 -	Gravel is angular to subrounded fine to coarse mu				(0.30) 8.00	75.33					8.00	29 ES			1					8 -
-	\sandstone.	n - 20 1 22	/		(0.40)	, 3.33					8.00 8.00	30 D 31 D								٠ -
-	MADE GROUND: Firm greyish brown slightly grave sandy CLAY. Sand is fine to coarse. Gravel is subang					74.00					8.00 - 8.40	32 B			1					1
-	rounded fine to coarse sandstone and siltstone.	<sub>5</sub> uiai lU	/		8.40	74.93					8.40 - 8.55	33 D			1			1		Į
-	MADE GROUND: Soft to firm greyish brown gravel																			1
-	with low cobble content. Gravel is subangular to si		V												1					1
9 -	fine to coarse sandstone coal mudstone and rare b		is	*****											8.40					9 –
-	fine to coarse. Cobbles are subangular to subround sandstone.	ueu													9.90	50	0	0	NI	- 1
-															1					
-															1					}
-															L					1
10 -	Continued on Next Page			******							ļ				$\vdash$	F		$\dashv$		10
										1	L				<u> </u>					$\dashv$
Obs	ervations / Remarks		Misc.	Date	Tim		Informatio epth (m)		Water (n	n) From (m)	Backfill To (m)	Material	Instrument [	)etail	Install	ations Resp. 2		Denth	(m)	Diam
		Para	lled	Date		-   0	-peri (iii)		··acci (II	0.00		Bentonite Gravel	Standpip			15.50 - 2		22.0		- 10111
		Sound	d Instal							16.00 22.00		Gravel Arisings								
		for Fo	ng Use												Water	Strike	es			=
		u	Casin ring P										Strike (m) Rises To					Remar	ks	
		li di di	onito											T						



Project No:

3043

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Location Details

Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-45** 

Sheet 2 of 3

**FINAL** CENTRAL ALLIANCE GEO Methodology & Plant Scale: 1:50

Nan	ne: A1 Birtley to Coalhouse	Easting:	426749.5	1	North	ning:	557463.2	2   "	OIII (III)	ivie	tilou		Plant Oseu	Checke	d By:			RPH	
		Elevation:	83.33mA	OD.	Final	Depth:	22.40m							Approv	ed By	/:		ВН	
Loca	ation: Tyne and Wear	Logged By:	RJ		Grid 9	System:	OSGB							Start Da	ate:		26/	04/2	018
Clie	nt: SLJV	Orientation:	N/A		Inclin	ation:	90°							Finish [	Date:		01/	05/2	018
				r	Depth (m)	Reduced	Hole Ø	Casing Ø	T			Samples	& Testing	0		Cor			
	Strata Description		Le	gend	(Stratum	Level	(mm)	(mm)	vvater	Installation / Backfill				Core	700				
	From 9.90m to 10.65m, no recovery.			×××	hickness)	(mAOD)	Depth (m)	Depth (m	)		Depth (m)	Ref	Test Results	Run	TCR	SCR	RQD	If	
-	From 9.90m to 10.65m, no recovery.																		_
-														9.90 10.65	0	0	0	NR	_
_														10.03					_
-				***	(4.50)														-
_																			
- 11 -				***										10.65	12	0	,	NI	11 -
-														11.40	12	U	0	INI	-
																			_
-	From 11.40m to 12.15m, no recovery.																_	-	_
-				<b>***</b>															-
1														11.40 12.15	0	0	0	NR	1
- 12 -														12.13					- 12
12 -				***															12 -
1				<b>***</b>															1
-				***										12.15					-
_				***										12.90	93	0	0	NI	_
-				***															_
-	NO RECOVERY.		888	****	12.90	70.43								1		Н	-	-	-
13 -	NO RECOVERT.																		13 -
-																			_
_																			I
-																			_
-																			-
_																			]
14 -																			14 —
-																			_
[																			I
-																			-
_					(3.70)														]
_					(3.70)														1
15 -														2					15 -
]																		NR	1
_																			j
-																			-
_																			1
-																			-
16 -																			16 -
_											1								_
-																			-
_										1: 目:	,								_
-	Light yellowish brown subangular to subrounded s	andstone	-	0 0	16.60	66.73					1			15.90 17.40	0	0	0		-
-	COBBLES.	andstone	00											17.40					_
17 —			٥٠		(0.80)						,								17 -
-			0,0	000	,			140			]	1							-
-			00	n I				140 17.25				1							-
-	Strong orangish yellow coarse grained SANDSTONI	E.	::		17.40	65.93					<u> </u>	1				H	_	NI	1
-	5 5 , · · · · · · · · · · · · · · · · ·										]	1					ŀ	$\dashv$	+
]			::	: : :								1							1
- 18 —			::	: : :	(1.13)							1							18 -
-			::	: : :						目:	<u> </u>			17.40	97	73	51	4	-
]			::	: : :							1	1		18.90					-
]			::	: : :	10.53	c						1							_
-	Destructured to residual orangish yellow SANDSTC				18.53 (0.17)	64.80					, 1	1					ľ	, I	-
]	as gravelly fine to coarse sand. Gravel is subangula				18.70	64.63 64.53					1	1						NI	-
10 -	subrounded fine to coarse sandstone and coal.				(0.10) 18.80	64.43					¦	1				Н		NR NR	10
19 -	Destructured to residual brownish grey MUDSTON	IE recovered			(0.10)						.] [	1							19 -
-	as gravelly slightly clayey silt.		-/ =		18.90						1	1							4
-	Black COAL. From 18.85m to 18.90m, no recovery.													18.90 20.40	87	0	0		
-	Destructured to residual dark to light grey MUDST	ONE	-′  =								: I	1		20.40				NI	7
	recovered non-intact as gravelly very silty CLAY. Gr									l: :∃' ;	]	1							1
-	From 18.90m to 19.10m, no recovery.										]			Ш	L	Ll			20
20 -	Continued on Next Page																		20 —
Ohs	ervations / Remarks	M	lisc.			Shift In	formation	<u> </u>	1		Backfill	· ·		Install	ation	l S			
	,	101		Date	Time			asing (m)	Water (	m) From (m)		1aterial	Instrument Det			Zone	Depth	(m)	Diam
		èred	pall			1	- 1	J (···)	1	0.00	16.00 B	entonite	Standpipe		5.50 - 3		22.0		
		onnte	Insta							16.00 22.00		Gravel Arisings							
		r Enc	casing Usea ring Point/s In											147 :	CE-UI				
		wate	asıng ng Po										caster ( Ne: - :	Water			<b>.</b>		
		puno.	lonitorin										Strike (m) Rises To (m	) Fime (min)	+	F	Remar	KS	
		Vo Gr	Mon																
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Project No:

3043

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Location Details

Combined Borehole

Log Type

Exploratory Hole Number

BH17-45

**FINAL** 

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used 557463.22 RPH Easting: 426749.51 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 83.33mAOD Final Depth: 22.40m Approved By: BH Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 26/04/2018 SLJV 01/05/2018 Client: Orientation: N/A Inclination: Finish Date: Samples & Testing Depth (m) Reduced Hole Ø Coring Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) subangular to subrounded fine to coarse mudstone and coal. (2.90) From 20.40m to 21.20m, no recovery. 47 0 0 21.80 61.53 Destructured grey MUDSTONE with oxidation layers recovered 22 as subangular fine to coarse gravel. <u>92</u> 22.40 22.40 60.93 EOH at 22.40m - Scheduled Depth 23 24 25 28 29 30 Observations / Remarks Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 15.50 - 22.40 | | 22.00 | Depth (m) Casing (m) Water (m) To (m) Material Instrument Details Gravel Arisings Water Strikes Strike (m) Rises To (m) Time (min)



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Sheet

Log Type

Header

# BH17-47

Exploratory Hole Number

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 3043 Plant Used Hand Tools Modular Window Sampler From (m) 0.00 - 1.20 1.20 - 5.36 Method Inspection Pit Dynamic Sampling (Windowless) Easting: 426824.38 557469.05 Checked: RPH Northing: Name: A1 Birtley to Coalhouse BH Elevation: 83.30mAOD Final Depth: 5.36m Approved: Location: Tyne and Wear Logger: GS Grid System: OSGB Start Date: 07/06/2018 Client: End Date: 07/06/2018 SLJV Orientation: N/A Inclination: 90°

ameter
Diam (mm)
50

If Methodology includes

Dynamic Sampling refer to Runs table for info.

Casing D	iameter
Depth (m)	Diam (mm)
2.00	115

	Groundwater Strikes												
Strike Casing Sealed Time Rose To Remarks													
(m)	(m)	(m)	(min)	(m)	Remarks								
5.30	-	2.00	20	0.00									

Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							

No Monitoring Point/s Installed

Backfill									
Backfill									
Depth (m) Legend Code									
0.00 - 5.36 Bentonite									

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	5

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
Soil	6	Water	0					
Geotec	hnic	cal Samples						
Bulk	3	Large Bulk	0					
Disturbed	17	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undistur	bed 1	Thin Wall	0					
Undisturbed Thin Wall (NR)								
Core	e San	nple	0					

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
Test Type		Casing		Seating		Penetration	N	Reported Result	Hammer Ref
rest type	(m)	(m)	(m)	Blows	Blows	Total (mm)		Reported Result	
Split Spoon		-	-	3	7	450	7	N=7 (1,2/2,1,3,1)	MOD 02
Split Spoon	2.00	2.00	-	4	11	450	11	N=11 (2,2/2,3,3,3)	MOD 02
Split Spoon	3.00	2.00	-	6	14	450	14	N=14 (3,3/4,4,3,3)	MOD 02
Split Spoon	4.00	2.00	-	6	17	450	17	N=17 (4,2/3,5,6,3)	MOD 02
Split Spoon	5.00	2.00	-	7	57	375		57 (4,3/57 for 225mm)	MOD 02
ł									

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

#### **Applicable to Cable Percussion Only**

Chise	Chiselling						
Depth (m)	Duration (mins)		Dep				

Water Added					
Depth (m)	Litres				

# **Applicable to Rotary Only**

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					
	,,							
	I							

	Dynamic Sampling Runs							
Depth (m)	Diam (mm)	Recovery %	Remarks					
1.20 - 2.00	87	90						
2.00 - 3.00	87	85						
3.00 - 4.00	75	100						
4.00 - 5.00	75	100						
5.00 - 5.36	50	90						



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**Dynamic** Sampling

Log Type

Exploratory Hole Number

**BH17-47** FINAL

CENTRAL ALLIANCE GEO

Sheet 1 of 1

Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Plant Used
Hand Tools
Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 5.36 Method Inspection Pit Dynamic Sampling (Windowless) 426824.38 557469.05 Checked By: RPH Easting: A1 Birtley to Coalhouse Northing: Name: Elevation: Final Depth: 5.36m 83.30mAOD Approved By: ВН Location: Tyne and Wear Start Date: Grid System: OSGB 07/06/2018 Logged By: GS

CI:-	ot. CLIV		I/A Inclinat										2/2018
Clier	nt: SLIV	Orientation: N	N/A Inclinat	on: 90°	I		1					l .	5/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Leve (mAOD)	Casing Ø (mm)	Water Level (m)	Installation / Backfill			Samples & Testing	
					Thickness)	(IIIAOD)	Depth (m)	cever (III)	Dackiiii	Depth (m)	Ref	Test Results	
	MADE GROUND: Dark brown gravelly very clayey fi									0.10 - 1.20 0.20	7 B 1 D		1
1 1	cobble and rootlet content. Gravel is angular to sul sandstone, mudstone and brick. Cobbles are angul									0.30	2 ES		
-	sandstone, mudstone and brick.									0.50	3 D		-
-										0.70	4 ES		-
1 7													-
1 -					(2.20)					1.00 1.00	5 D 6 ES		1 -
1 1										1.20 - 1.65 1.20 - 1.80	8 D 10 B	SPT(S) 1.20m, N=7 (1,2/2,1,3,1)	-
-													-
-										1.80	9 D		-
2 -							115 2.00			2.00	12 ES	SPT(S) 2.00m, N=11 (2,2/2,3,3,3)	2 -
1 7	MADE GROUND: Firm to stiff greyish brown slightly		d. CLAY Carrel is		2.20	81.10				2.00 - 2.45 2.20 - 3.00	11 D 15 B		1
1	subangular fine to medium sandstone, mudstone												-
	coarse.	ina raic coai.	Sana is fine to							2.50	13 D		_
1 1	From 2.70m to 2.80m, 3.20m to 3.30m and 3.40m to 3.50m b									2.70	14 D		-
1, -	subangular fine to medium sandstone, mudstone and brick gr	avel. Sand is fine t	to coarse.		(1.50)					3.00	17 ES	SPT(S) 3.00m, N=14 (3,3/4,4,3,3)	2 -
3 -										3.00 - 3.45	16 D	31 (3) 3.0011, 14-14 (3,3/4,4,3,3)	3 -
7										3.20	18 D		-
										3.40 3.50	19 D 20 D		4
					3.70	79.60							-
	MADE GROUND: Brownish yellow slightly silty sand									3.80	21 D		-
4 -	sandstone, limestone, macadam and brick GRAVEL	sand is fine	to coarse.							4.00 4.00 - 4.45	23 ES 22 D	SPT(S) 4.00m, N=17 (4,2/3,5,6,3)	4 –
-										4.00 - 4.43			-
-													-
					(1.66)					4.50	24 D		-
													1
5 -										5.00	26 D	SPT(S) 5.00m, 57 (4,3/57 for	5 <del>-</del>
]										5.00 - 5.35	25 D	225mm)	]
1 -					5.36	77.94		5.30					-
1	EOH at 5.36m - Ref	usal											-
													-
													-
6 -													6 -
1 1													-
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10				1	1								10
													10
Obse	ervations / Remarks	Misc.				ic Sampling						allations	
		led	Depth (m) Material 0.00 - 5.36 Bentonite	From (m) 1.20		n (mm) Recove		emarks	Inst	rument Detai	ls	Resp. Zone Depth (m)	Diam
		ntered Installed		2.00	3.00	87 85 75 10	5						
		Encou Used oint/s		4.00 5.00	5.00	75 10 50 90	0						
		dwater Encoun Casing Used toring Point/s I						-	rika (m)ka			water Strikes es To (m) Time (min) Rema	arks
		Groundwate Casin Monitoring	Hammer Part 9. En over 19 att - 19					3	5.30		00 (III) KIS	0.00 20 Rema	ui N3
		SR No M	Hammer Ref & Energy Ratio (9 MOD 02 (65%)	"									
L			(05/0)										



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Sheet

Log Type Exploratory Hole Number

Header

# BH17-47A

**FINAL** 



Project No:	3043		Location I	Details			Met	hodology & P	lant	Scale:	1:50
		Easting:	426871.80	Northing:	557496.73	From (m)	Meth	hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	120072100	rior crimig.	337 43017 3	0.00 - 1.20	Inspecti	ion Pit	Hand Tools	erreenea.	
		Elevation:	77.72mAOD	Final Depth:	1.53m	1.20 - 1.53	Dynamic Samplin	g (Windowless)	Premier 110	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	07/06/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°					End Date:	07/06/2018

Hole Di	ameter
Depth (m)	Diam (mm)
1.53	66

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes									
				Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)						

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill								
Depth (m)	Legend Code							
0.00 - 1.53	Bentonite							

In-Situ Tests							
PID	0						
Hand Vane*	0						
Standard Penetration Tests	1						

one depth where available.

Hand Vane*	0
Standard Penetration Tests	1
* One count indicates an av orted result of 3 tests carrie	_

Sample Summary									
Environmental Samples									
Soil	3	Water	0						
Geotechnical Samples									
Bulk	1 Large Bulk								
Disturbed	5	Disturbed (NR)	0						
Piston	0	Piston (NR)	0						
Undisturbed	Undisturbed 0 Undisturbed (NR)								
Undistur	bed 1	Thin Wall	0						
Undisturbed Thin Wall (NR)									
Cor	e San	nple	0						

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)		Main	Penetration Total (mm)		Reported Result	Hammer Ref
Split Spoon		-	-	25	50	325		N=50 (25 for 70mm/50 for 255mm)	110.92
								,	

SPT Hammer Ref.	Energy Ratio (%)				
110.92	65				

# **Applicable to Cable Percussion Only**

Chiselling									
Depth (m)	Duration (mins)								

Water Added									
Depth (m)	Litres								
I	1								

### **Applicable to Rotary Only**

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					

Dynamic Sampling Runs							
Depth (m)	Diam (mm)	Recovery %	Remarks				
1.20 - 1.50	66	67					



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Log Type

# Dynamic Sampling

FINAL

Exploratory Hole Number

**BH17-47A** 



Sheet 1 of 1 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used Hand Tools Premier 110 Depth (m) 0.00 - 1.20 1.20 - 1.53 Easting: 426871.80 557496.73 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: 77.72mAOD Final Depth: 1.53m Approved By: ВН Location: Tyne and Wear

-11	5.111			Grid System		'							Start Date:	07/06/201	
Clie	nt: SLJV	Orientation:	N/A	Inclination	n: <b>90°</b>			1	т т				Finish Date:	07/06/201	.8
	Strata Description				Legend	Depth (n (Stratun	Reduced Leve	Casing Ø (mm)		Installation /			Samples & Testing		
						Thicknes	s) (mAOD)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Re	sults	
1	MADE GROUND: Dark to light brown gravelly claye	y fine to coa	rse SAND with			8					0.10 - 0.80	5 D			
-	frequent rootlets and medium sandstone cobble o	ontent. Grav	el is subangula	ir to		8					0.20 0.30	1 D 2 ES			-
-	subrounded fine to coarse sandstone mudstone ar	na brick.				(0.80)					0.50	3 D			1
-						3					0.70	4 ES			-
-	MADE GROUND: Orangish yellow sandy slightly cla	vev angular	to subangular	fine to		0.80	76.92				0.80 - 1.20	8 B			-
1 -	coarse sandstone GRAVEL and COBBLES. Sand is fir					8					1.00	6 D			1 -
-						(0.73)					1.00 1.20 - 1.50	7 ES 9 D	SPT(S) 1.20m, N=50	(25 for	1
-						8							70mm/50 for 255mr	n)	_
-	EOH at 1.53m - Ref	fueal			********	1.53	76.19								-
-	2017411.001111101	luoui													-
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Obs	ervations / Remarks	Misc					mic Sampling						allations		
		pa.		Material Bentonite	From (m) 1.20	To (m) D	iam (mm) Recove	ry (%) R	emarks	Inst	rument Detai	ls	Resp. Zone D	epth (m) Diar	n
		ounter d													
		r Enco	O CONTRACTOR OF THE CONTRACTOR						-			`ra.:- '	water Ctriling		$\dashv$
		idwate ole Not								Strike (m) Ca			water Strikes es To (m) Time (min)	Remarks	=
		Groun Ho	Hammer Ref & Ene	ergy Ratio (%)					}	() Ca	o () Scale	,, 143	. , ,, (1111)	c.marks	$\dashv$
		No	110.92 (6												



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Sheet

Log Type

Header

Exploratory Hole Number

# **BH17-47AA**

FINAL



Project No:	3043	Location Details				Methodology & P	Scale:	1:50		
Name:	A1 Birtley to Coalhouse	Easting:	426811.74	Northing:	557474.18	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	RPH
		Elevation:	83.11mAOD	Final Depth:	1.37m	1.20 - 1.37	Dynamic Sampling (Windowless)	D	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	07/06/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	07/06/2018

Hole Di	ameter
Depth (m)	Diam (mm)
1.37	66

Dynamic Sampling refer to Runs table for info.

If Methodology includes Ho

Casing Diameter					
Depth (m)	Diam (mm)				

**Hole Not Cased** 

	Groundwater Strikes						
Strike	Casing	Sealed	Time	Rose To	Remarks		
(m)	(m)	(m)	(min)	(m)	Remarks		

No Groundwater Encountered

Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)			

No Monitoring Point/s Installed

Backfill				
Depth (m)	Legend Code			
0.00 - 1.37	Bentonite			

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	1

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary				
Environ	men	ntal Samples		
Soil <b>3</b> Water				
Geoted	chnic	cal Samples		
Bulk	1	Large Bulk	0	
Disturbed	4	Disturbed (NR)	0	
Piston <b>0</b> Piston (NR)				
Undisturbed	0	Undisturbed (NR)	0	
Undisturbed Thin Wall				
Undisturbed Thin Wall (NR)				
Core	e San	nple	0	
		•		

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon		-	- (111)	27	50	170		50 (27 for 140mm/50 for 30mm)	110.92

SPT Hammer Ref.	Energy Ratio (%)
110.92	65

### **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	
		Г

Litres

# **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

	Dynamic Sampling Runs				
Depth (m)	Diam (mm)	Recovery %	Remarks		



Dynamic Sampling

Log Type

Exploratory Hole Number **BH17-47AA** 

Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min)

Remarks

FINAL



Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:50 3043 Depth (m) 0.00 - 1.20 1.20 - 1.37 Plant Used Hand Tools Premier 110 Method 426811.74 RPH Easting: Northing: 557474.18 Checked By: A1 Birtley to Coalhouse Name: Elevation: 83.11mAOD Final Depth: 1.37m Approved By: BH Tyne and Wear Location: Logged By: GS Grid System: OSGB Start Date: 07/06/2018 Client: SLIV Orientation N/A Inclination: 90° Finish Date: 07/06/2018 Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Samples & Testing Reduced Lev (mAOD) Water Level (m) Installation / Backfill Strata Description Legend Depth (m) MADE GROUND: Dark to light brown gravelly clayey fine to coarse SAND with 0.10 - 1.20 0.20 1 D 2 ES frequent rootlets and medium cobble content. Gravel is subangular to subrounded fine to coarse sandstone mudstone and brick. Cobbles are subangular sandstone. 0.50 3 D (1.10) 0.70 4 ES 1.10 82.01 MADE GROUND: Orangish yellow sandy angular to subangular fine to coarse SPT(S) 1.20m, 50 (27 for 140mm/50 for 30mm) (0.27)sandstone GRAVEL and COBBLES. Sand is fine to coarse 81.74 1.37 EOH at 1.37m - Refusal 10 Observations / Remarks Misc Dynamic Sampling Runs Installations | Depth (m) | Material | From (m) | To (m) | Diam (mm) | Recovery (%) | | Instrument Details Resp. Zone Depth (m) Diam Groundwater Strikes

110.92 (65%)



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Log Type

Header

Sheet

Exploratory Hole Number

**BH17-47AB** 

FINAL



Project No:	3043		Location (	Details			Methodology & P	lant	Scale:	1:50
	44 81 11 1 1 1 1 1	Easting:	426813.45	Northing:	557477.77	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Ŭ		Ü		0.00 - 0.80	Inspection Pit	Hand Tools		
		Elevation:	83.12mAOD	Final Depth:	0.80m				Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	07/06/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	07/06/2018

Hole Diameter				
Depth (m)	Diam (mm)			

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes						
Strike	Casing	Sealed	Time	Rose To	Remarks		
(m)	(m)	(m)	(min)	(m)	Remarks		

	Installation / Instrument Details						
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)			

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 0.80	Bentonite				

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

itu Tests		core sample
D D	0	(NR) Indicates sample undertake
Vane*	0	0% Recovery
	. —	

Sam	ple :	Summary						Sta	ndard	Penetrati	on T	est Summary	
Enviro	nmei	ntal Samples		Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Re
Soil	2	Water	0	1	()	()	(.11)	5.5443	5.5W3	rotal (IIIII)			
Geote	chni	cal Samples		1 1									
Bulk	1	Large Bulk	0	1 1									
Disturbed	3	Disturbed (NR)	0	1									
Piston	0	Piston (NR)	0	1									
Undisturbed	0	Undisturbed (NR)	0	1 1									
Undistu	rbed	Thin Wall	0	1 1									
Undisturb	ed Th	in Wall (NR)	0	1									
Co	re Sar	nple	0	1									
•	•	e undertaken but v ecovery	vith										

SPT Hammer Ref.	Energy Ratio (%)

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chise	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litres

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				
	,,						
	1						

**Applicable to Rotary Only** 

Applicable to Dynamic Sampling Only							
Dynamic Sampling Runs							
Depth (m)	Depth (m) Diam (mm) Recovery % Remarks						



Dynamic Sampling

Log Type

Exploratory Hole Number

# BH17-47AB





Groundwater Strikes

Remarks

Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min)

Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:50 3043 Depth (m) 0.00 - 0.80 Method Plant Used 426813.45 RPH Easting: Northing: 557477.77 Checked By: A1 Birtley to Coalhouse Name: Elevation: 83.12mAOD Final Depth: 0.80m Approved By: BH Tyne and Wear Location: Logged By: GS Grid System: OSGB Start Date: 07/06/2018 Client: SLIV Orientation N/A Inclination: 90° Finish Date: 07/06/2018 Depth (m) (Stratum Thickness) Casing Ø Samples & Testing educed Lev (mAOD) Water Level (m) Installation / Backfill Strata Description Legend (mm) Depth (m Depth (m) MADE GROUND: Dark to light brown gravelly clayey fine to coarse SAND with 0.10 - 0.80 (0.30) 0.20 0.30 0.40 0.50 frequent rootlets and medium cobble content. Gravel is subangular to subrounded 0.30 (0.15) 0.45 82.82 fine to coarse sandstone mudstone and brick. Cobbles are subangular sandstone. 82.67 MADE GROUND: Reddish brown sandy clayey angular to subangular fine to coarse (0.35)brick and sandstone GRAVEL. Sand is fine to coarse. 0.70 5 ES 0.80 82.32  $\label{eq:made_ground} \textbf{MADE GROUND: Brown sandy slightly clayey angular to subangular fine to coarse}$ \sandstone and concrete GRAVEL and COBBLES. Sand is fine to coarse.

EOH at 0.80m - Refusal 10 Observations / Remarks Misc Dynamic Sampling Runs Installations | Depth (m) | Material | From (m) | To (m) | Diam (mm) | Recovery (%) | | Instrument Details Resp. Zone Depth (m) Diam



Sheet Web: www.central-alliance.co.uk

Log Type

Header

# Exploratory Hole Number **BH17-47AC**

**FINAL** 



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
	44 01 11 11 11 11	Easting:	426812.45	Northing:	557476.13	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 0.50	Inspection Pit	Hand Tools		
		Elevation:	83.10mAOD	Final Depth:	0.50m				Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	07/06/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	07/06/2018

Hole Diameter						
Depth (m) Diam (mm)						

**Casing Diameter** Depth (m) Diam (mm

	Groundwater Strikes							
	Strike Casing Sealed Time Rose To Remarks							
(111)	(111)	(111)	()	(111)				

	Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Sample Summary Environmental Samples 1 Geotechnical Samples

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 0.50	Bentonite					

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

PID	0	(NR) Indicates sample undertaken but with
Hand Vane*	0	0% Recovery

Disturbed

Piston

Undisturbed

	Standard Penetration Test Summary								
								est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	W	
Depth (m)	Duration (mins)	Depth (

Water Added							
Depth (m) Litres							

# **Applicable to Rotary Only**

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			

Applicat	Applicable to Dynamic Sampling Uniy							
Dynamic Sampling Runs								
Depth (m)	Diam (mm)	Recovery %	Remarks					
	1	l						



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Log Type **Dynamic** 

Exploratory Hole Number **BH17-47AC** 

FINAL



Sheet 1 of 1 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Plant Used Hand Tools Depth (m) 0.00 - 0.50 Method Inspection Pit Easting: 426812.45 557476.13 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Approved By: Elevation: Final Depth: 0.50m 83.10mAOD ВН Tyne and Wear Location:

		Logged By:	GS	Grid Syste									Start Date:	07/06/20	
Clier	nt: SUV	Orientation:	N/A	Inclination	n: <b>90°</b>						1		Finish Date:	07/06/20	)18
	Strata Description				Legend	Depth (m) (Stratum	Reduced Level	Casing Ø (mm)	Water	Installation /			Samples & Testing		
					8	(Stratum Thickness)	(mAOD)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Res	sults	
-	MADE GROUND: Dark to light brown gravelly clayer	y fine to co	arse SAND	with		(0.35)					0.20	1.5			-
-{	frequent rootlets and medium cobble content. Gra	vel is subai	ngular to sı	ubrounded		0.35	82.75				0.20 0.30	1 D 2 ES			-
1	fine to coarse sandstone, mudstone and brick. Cob MADE GROUND: Black sandy subangular to subrou	inded fine t	o coarse s	andstone.	*********	(0.15)	82.60				0.35 - 0.50 0.40	4 B 3 D			-
	macadam, brick and concrete GRAVEL and COBBLE	S. Sand is f	ine to coar	se.		0.50									-
	EOH at 0.50m - Ref	usal													-
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Obse	ervations / Remarks	Mi	sc.	Backfill		Dynam	ic Sampling	Runs	-		'	Inst	tallations		
			Depth (m	n) Material	From (m)		m (mm) Recove		emarks	Inst	rument Detai			Depth (m) Di	iam
		ntered	0.00 - 0.50	) Bentonite		T									
		ncour	nt/s In												
		nter E	g Poir						ļ		(	Ground	water Strikes		
		undwi Hole I	itorin							Strike (m) Ca	sing (m) Seale	ed (m) Ris	ses To (m) Time (min)	Remarks	
		o Gro	Hammer R	ef & Energy Ratio (%)											
Ì		Ž	31		1		1				1	1		1	



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Header

Sheet

Exploratory Hole Number

BH17-47I

FINAL



Project No:	3043	Location Details				Methodology & F	Scale:	1:50		
		Easting:	esting: 426815.27 Northing:		557474.56	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse				0		Inspection Pit	Hand Tools	orrecticus.	
		Elevation:	83.19mAOD	Final Depth:	3.00m	1.20 - 2.80 2.80 - 3.00	Dynamic Sampling (Windowless)  Dynamic Probing	Modular Window Sampler Fraste PLG	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB		,		Start Date:	07/06/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	07/06/2018

Hole Di	ameter
Depth (m)	Diam (mm)
2.80	75

iameter
Diam (mm)
115

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Damania.					
(m)	(m)	(m)	(min)	(m)	Remarks					

	Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					
1									

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 3.00	Bentonite						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	2

Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Core Sample						
(NR) Indicates sample undertaken but v	vith					

0

Disturbed

Piston

Undisturbed

Environmental Samples

4 Water

Geotechnical Samples

Large Bulk
Disturbed (NR)

Piston (NR)

Undisturbed (NR)

	Standard Penetration Test Summary									
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref	
Split Spoon	1.20	-	-	4	14	450	14	N=14 (2,2/3,4,3,4)	MOD 02	
Split Spoon	2.00	2.00	-	4	26	450	26	N=26 (2,2/2,9,8,7)	MOD 02	

SPT Hammer Ref.	Energy Ratio (%)				
MOD 02	65				

* One count indicates an average
reported result of 3 tests carried out at
one depth where available.

# **Applicable to Cable Percussion Only**

Chise	elling		Water	Added	
Depth (m)	Duration (mins)		Depth (m)	Litres	
		J			

# **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

	Dynamic Sampling Runs						
Depth (m)	Diam (mm)	Recovery %	Remarks				
1.20 - 2.00	87	100					
2.00 - 2.80	73	90					



Dynamic
Sampling
& Probe

Exploratory Hole Number

**BH17-47I** 



Groundwater Strikes

Remarks

Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min)

**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk GEO Sheet 1 of 1 Methodology & Plant Location Details Scale: 1:50 Project No: Plant Used
Hand Tools
Modular Window Samples Depth (m) 0.00 - 1.20 1.20 - 2.80 2.80 - 3.00 Method RPH Easting: 426815.27 Northing: 557474.56 Inspection Pit
Dynamic Sampling (Windo Checked By: A1 Birtley to Coalhouse Name: Elevation: 83.19mAOD Final Depth: 3.00m Approved By: BH Fraste PLG Tyne and Wear Location: 07/06/2018 Logger GS Grid System: OSGB Start Date: Client SLJV Orientation N/A Inclination: 90° Finish Date: 07/06/2018 Depth (m) (Stratum Thickness) Blows / 100mm Casing Ø Samples & Testing Reduced Lev Water Level (m) Installation / Backfill Strata Description Legend (mm) Depth (m) (mAOD) Depth (m) MADE GROUND: Dark brown gravelly 0.10 - 1.20 very clayey fine to coarse SAND with (0.40)0.20 medium cobble and rootlet content. 0.40 82 79 Gravel is angular to subangular fine to 0.50 3 D coarse sandstone, mudstone and brick. 0.70 4 ES Cobbles are angular to subangular sandstone and mudstone MADE GROUND: Firm to stiff greyish brown gravelly sandy CLAY. Gravel is 1.20 - 1.65 1.20 - 2.00 SPT(S) 1.20m, N=14 (2,2/3,4,3,4) angular to subangular fine to coarse sandstone, mudstone brick, and (2.00) macadam. Sand is fine to coarse. 1.80 115 2.00 SPT(S) 2.00m, N=26 (2,2/2,9,8,7) 2 80.79 2.40 MADE GROUND: Brownish vellow sandy 2.50 13 D angular to subangular fine to coarse (0.40) sandstone and macadam GRAVEL. Sand is 2.80 80.39 fine to coarse. (0.20)NO RECOVERY 80.19 3.00 EOH at 3.00m - Refusal 10 Observations / Remarks Misc **Equipment Information** Dynamic Sampling Runs Installations Base Diam (mm) Recovery (%) 00 87 100 80 73 90 Resp. Zone Depth (m) Diam Instrument Type DPSH-B Fall Height: Hammer Weight

750mm

Cone Base Diar

50mm

MOD 02 (65%)

64.0kg

Rod Dian



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# Dynamic Probe

Log Type

Sheet 1 of 1

Exploratory Hole Number

# **BH17-47IA**

**FINAL** 



Methodology & Plant Location Details Scale: 1:50 Project No: Depth (m) 0.00 - 1.20 1.20 - 2.50 Method Inspection Pit Dynamic Probing Plant Used Hand Tools Premier 110 426813.65 557473.41 RPH Northing: Checked By: Easting: A1 Birtley to Coalhouse Name: Elevation: 83.17mAOD Final Depth: 2.50m Approved By: ВН Location: Tyne and Wear Logged By: OSGB Start Date: 07/06/2018 GS Grid System: 07/06/2018 Client: SLJV Finish Date: Orientation: N/A Inclination: N/A Depth (m) (Stratum Thickness) Reduced Level (mAOD) Blows / 100mm Strata Description Observations / Remarks Equipment Information Dynamic Probe Type: DPSH-B Fall Height: Hammer Weight: 750mm 64.0kg Cone Base Diam: Rod Diam: 50mm 35mm



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Sheet

Log Type

Header

# Exploratory Hole Number BH17-48

**FINAL** 



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50	
	44 01 11 11 11 11	Easting:	426961.56	Northing:	557421.38	From (m)		Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 0.70	Inspection Pit	Hand Tools		
		Elevation:	84.90mAOD	Final Depth:	0.70m				Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	22/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	N/A				End Date:	22/05/2018

Hole Diameter						
Depth (m)	Diam (mm)					

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes						
Strike	Casing	Sealed	Time	Rose To	Remarks		
(m)	(m)	(m)	(min)	(m)	Remarks		

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
ł								

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

1 Water

Geotechnical Samples

C D Large Bu

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Large Bulk
Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 0.70	Arisings						
1							

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available. Disturbed

Piston

Undisturbed

				Sta	ndard	Penetrati	on T	est Summary	
Test Type						Penetration	N	Reported Result	Hammer Re
icst Type	(m)	(m)	(m)	Blows	Blows	Total (mm)		Reported Result	Tidililile Ne

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# Applicable to Cable Percussion Only

Chis	elling	]	Water Added		
	Duration (mins)				
Depth (m)	Duration (mins)		Depth (m)	Litres	

	Ap	plicable to	Rotary Onl	y						
	Drilling Flush									
П	Depth (m)	Flush Type	Flush Colour	Return %						
Ш										
П										
П										
П										
П										
П										
П										

Applicable to Dynamic Sampling Only										
Dynamic Sampling Runs										
Depth (m)	Diam (mm)	Recovery %	Remarks							

PID 0 (NR) Indicates sample undertaken but with 0% Recovery



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Log Type

**Dynamic BH17-48** Sampling

FINAL

Exploratory Hole Number



Sheet 1 of 1 Methodology & Plant Project No: 3043 Location Details Scale: 1:50 Plant Used Hand Tools Depth (m) 0.00 - 0.70 Method Inspection Pit Easting: 426961.56 557421.38 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Elevation: Final Depth: 0.70m 84.90mAOD Approved By: ВН Location: Tyne and Wear Start Date: Logged By: Grid System: OSGB 22/05/2018 GS

Clie	nt: SLJV	Orientation:	N/A	Inclination	: N/A									Finish Date:	22/05	5/2018
	Strata Description				Legend	Depth (m (Stratum	n) Reduce		Casing Ø (mm)	Water	Installation /			Samples & Testing		
					~~~~~	Thickness	n s) (mA	(OD)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Res	ults	
-	MADE GROUND: Dark brown gravelly clayey fine S Gravel is subangular to subrounded fine to coarse	AND with fr	equent rootlets.	al le								0.00 - 0.70 0.20	5 D 1 D			
-	Graver is subangular to subrounded fine to coarse	sariastoric,	brick and rare co	ui.		(0.70)						0.30 0.35	2 ES 3 D			
-																-
-	EOH at 0.70m - Ret	fusal			*********	0.70	84.	.20		ĺ	Y/A\Y/A	0.70	4 D			
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Obs	servations / Remarks	Mis					mic Samp							tallations		
		pau		aterial risings	From (m)	To (m) Di	iam (mm) R	ecovery	(%) Re	emarks	Ins	trument Deta	ils	Resp. Zone D	epth (m)	Diam
		counte	/s inste													
		ter Enc	Point							}			Ground	water Strikes		
		undwat Hole Ni	itoring							ŀ	Strike (m) C			ses To (m) Time (min)	Rema	ırks
		io Grot	Hammer Ref & Energ	y Ratio (%)												
		2	> I		1	- 1	- 1		1	l l				1		



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Header

Sheet

# Exploratory Hole Number **BH17-48A**

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) 0.00 - 1.20 1.20 - 13.50 13.50 - 16.50 Method Inspection Pit Rotary Coring Rotary Open Holing Plant Used led Backhoe Exc Fraste SLG Fraste SLG Easting: 426960.60 557421.63 RPH Northing: Checked: Name: A1 Birtley to Coalhouse Elevation: 84.46mAOD Final Depth: 16.50m Approved: BH Location: Tyne and Wear Logger: ASH+GS Grid System: OSGB Start Date: 22/05/2018 Client: 25/05/2018 SLJV Orientation: N/A Inclination: 90° End Date:

Hole Di	ameter
Depth (m)	Diam (mm)
16.50	116

Diam (mm)
Diairi (IIIIII)
116

Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Dl		
(m)	(m)	(m)	(min)	(m)	Remarks		

	Installation / Instrume	ent Deta	ils	
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)
ł				

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Depth (m) Legend Code 0.00 - 16.50 Arisings	Backfill						
0.00 - 16.50 Arisings							

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	9

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Hand Vane* 0
Standard Penetration Tests 9

Sample Summary						
Environmental Samples						
Soil <b>3</b> Water						
Geotechnical Samples						
Bulk	4	Large Bulk	0			
Disturbed	9	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Cor	e San	nple	7			

(NR) Indicates sample undertaken but with 0% Recovery

$\overline{}$									
				Sta	ndard	Penetrati	on 1	est Summary	
Test Type		Casing	Water			Penetration	Ν	Reported Result	Hammer Ref
rest type	(m)	(m)	(m)	Blows	Blows	Total (mm)	I (mm)   N	mm)   N   Neported Nesdit	Hammer Ker
Cone	1.20	1.20	Dry	19	24	450	24	N=24 (10,9/8,6,6,4)	AR1175
Cone	1.90	1.20	Dry	17	20	450	20	N=20 (11,6/4,5,5,6)	AR1175
Cone	3.00	1.20	Dry	14	22	450	22	N=22 (8,6/6,4,6,6)	AR1175
Cone	3.70	1.20	Dry	25	100	95		N=100 (25 for 75mm/100 for 20mm)	AR1175
Cone	4.60	3.70	Dry	25	100	275		N=100 (25 for 115mm/100 for 160mm)	AR1175
Cone	5.60	3.70	Dry	25	100	340		100 (11,14/100 for 190mm)	AR1175
Split Spoon	6.60	3.70	Dry	25	84	450	84	N=84 (10,15/21,24,30,9)	AR1175
Split Spoon	7.60	3.70	Dry	18	100	360		100 (8,10/100 for 210mm)	AR1175
Cone	11.20	3.70	Dry	25	100	120		100 (25 for 60mm/100 for 60mm)	AR1175
									1
									1
									1
									1
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									1
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									1

SPT Hammer Ref.	Energy Ratio (%)
AR1175	56

#### **Applicable to Cable Percussion Only**

Chise	Chiselling						
Depth (m)	Duration (mins)						

	•								
Water Added									
Depth (m)	Litres								

# **Applicable to Rotary Only**

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				
9.10 - 13.50	Water	Brown	80				

	Dynamic Sampling Runs									
Ш	Depth (m)	Diam (mm)	Recovery %	Remarks						
					П					
					П					
					П					
					П					
					П					
					П					
					П					
					П					
					П					
					П					
					П					



Project No:

3043

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Location Details

Combined **Borehole** 

Sheet 1 of 2

Log Type

Exploratory Hole Number

**BH17-48A** 

**FINAL** 



1:50

Scale:

Methodology & Plant From (m) 0.00 - 1.20 1.20 - 13.50 13.50 - 16.50 Method Plant Used Easting: 426960.60 Northing: 557421.63 Inspection Pit Rotary Coring Rotary Open Holing Checked By: RPH A1 Birtley to Coalhouse Backhoe Ex Fraste SLG Fraste SLG Name: Elevation: 84.46mAOD Final Depth: 16.50m Approved By: BH Location: Tyne and Wear Logged By: ASH+GS Grid System: OSGB Start Date: 22/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 25/05/2018 Samples & Testing Depth (m Reduced Hole Ø Casing Ø Coring Installation , Backfill Strata Description Legend Level (mAOD) (Stratum Thickness Depth (m) Ref MADE GROUND: Dark brown gravelly clayey fine SAND with 0.20 1 D frequent rootlets. Gravel is subangular to subrounded fine to coarse sandstone, brick and rare coal, 0.50 2 D (1.20) 0.70 3 D 1.20 83.26 SPT(C) 1.20m, N=24 (10,9/8,6,6,4) MADE GROUND: Stiff dark brown mottled grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to 0 subangular fine to coarse brick, coal, mudstone and sandstone. 1.90 1.90 1.90 SPT(C) 1.90m, N=20 (11,6/4,5,5,6) 3.00 3.00 3.00 - 3.70 SPT(C) 3.00m, N=22 (8,6/6,4,6,6) 0 80.76 3.70 3.70 10 D SPT(C) 3.70m, N=100 (25 for 75mm/100 for 20mm) MADE GROUND: Black MACADAM. 33 0 83 NI 3.90 4.00 11 D 4.00 (0.60)12 D NI 4.30 80.16 33 Weathered weak stained brown fine to medium SANDSTONE. 4.60 SPT(C) 4.60m, N=100 (25 for 115mm/100 for 160mm) (1.10)20 20 20 5.40 79.06 5.41 - 5.60 Weak to medium strong orangish brown fine to medium SPT(C) 5.60m, 100 (11,14/100 for 190mm) SANDSTONE. Discontinuities are very closely to closely spaced subhorizontal (0-45 degrees) planar smooth tight. 28 NI SPT(S) 6.60m, N=84 (10,15/21,24,30,9) 0 10 7.60 - 7.65 SPT(S) 7.60m, 100 (8,10/100 for 210mm) 5 C At 7.60m, extremely weak. 15 13 93 60 NI From 8.40m to 8.55m recovered as fine to medium sand. 8.55 - 8.90 2 C 15 NI (7.50)NR NI 80 50 10 10.10 15 10.00 - 10.10 10 Continued on Next Page Observations / Remarks Misc Shift Information From (m) To (m) Material 0.00 16.50 Arisings Resp. Zone Depth (m) Diam Instrument Details 04:00 18:00 06:00 18:00 06:00 18:00 06:00 18:00 06:00 06/04 12/04 25/04 26/04 27/04 27/04 28/04 Water Strikes Strike (m) Rises To (m) Time (min) 09/05



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Combined Borehole

Sheet 2 of 2

Log Type

Exploratory Hole Number

BH17-48A

**FINAL** 



Methodology & Plant Location Details Scale: 1:50 Project No: From (m) Method Plant Used 557421.63 RPH Easting: 426960.60 Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 84.46mAOD Final Depth: 16.50m Approved By: BH Tyne and Wear Location: Logged By: ASH+GS Grid System: OSGB Start Date: 22/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 25/05/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Strata Description Legend Level (mAOD) Depth (m) From 9.90m to 10.10m 1 no. discontinuity subvertical (60-90 degrees) planar smooth tight. 55 55 45 11.06 - 11.20 SPT(C) 11.20m, 100 (25 fo 60mm/100 for 60mm) 12 12.20 - 12.25 93 93 Weathered MUDSTONE recovered as very stiff orangish brown (0.15)13 71.41 mottled grey slightly sandy clay. Sand is fine to coarse. 15 Very weak to weak orangish brown fine to medium SANDSTONE. Discontinuities are closed subhorizontal (0-10 degrees) planar 13.45 - 13.50 6 C From 13.40m to 13.50m 1 no. discontinuity subvertical (60-90 degrees) planar smooth tight. EOH at 16.50m - Scheduled depth 18 19 20 Observations / Remarks Misc Shift Information Depth (m) Casing (m) From (m) To (m) Material 0.00 16.50 Arisings Instrument Details Resp. Zone Depth (m) Diam Time 18:00 06:00 18:00 06:00 18:00 04:00 06:00 18:00 20:00 04:00 18/05 19/05 19/05 22/05 22/05 23/05 23/05 23/05 23/05 24/05 49.80 55.00 1.20 1.20 3.70 7.50 7.50 3.70 9.10 Water Strikes 1.20 5.00 5.00 1.20 3.70 3.70 Strike (m) Rises To (m) Time (min)



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Sheet

Header

Log Type Exploratory Hole Number

**BH17-48B** 

FINAL



Project No: 3043		Location Details			Methodology & Plant			Scale:	1:50	
		Easting:	426955.65	Northing:	557411.25	From (m)	Method	Plant Used	Checked:	RPH
Name: A1 Birtley to Co	palhouse					0.00 - 0.70	Inspection Pit	Hand Tools		
		Elevation:	84.89mAOD	Final Depth:	0.70m				Approved:	BH
Location: Tyne and Wear		Logger:	GS	Grid System:	OSGB				Start Date:	22/05/2018
Client: SLJV		Orientation:	N/A	Inclination:	N/A				End Date:	22/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter
Depth (m) Diam (mm)

Groundwater Strikes									
				Rose To	Remarks				
(m)	(m)	(m)	(min)	(m)					

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 0.70	Arisings						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

Core Sample	0
(NR) Indicates sample undertaken but v 0% Recovery	vith

3

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)

Disturbed

Piston

Undisturbed

Environmental Samples

0 Water

Geotechnical Samples

Large Bulk

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

Standard Penetration Test Summary												
Depth (m)	Casing (m)	Water (m)			Penetration Total (mm)	Z	Reported Result	Hammer Ref				
				Depth Casing Water Seating	Depth Casing Water Seating Main	Depth Casing Water Seating Main Penetration	Depth Casing Water Seating Main Penetration	Depth Casing Water Seating Main Penetration N Paperted Possult				

SPT Hammer Ref.	Energy Ratio (%)

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chise	elling	Water	Added
Depth (m) Duration (mins)		Depth (m)	Litres

Drilling Flush										
Depth (m)	Flush Type	Flush Colour	Return %							
	,									
	1									

**Applicable to Rotary Only** 

Applicable to Dynamic Sampling Only											
Dynamic Sampling Runs											
Depth (m) Diam (mm) Recovery % Remarks											



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Dynamic Sampling

Log Type

Exploratory Hole Number BH17-48B

FINAL



Sheet 1 of 1 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Plant Used Hand Tools Depth (m) 0.00 - 0.70 Method Inspection Pit Easting: 426955.65 557411.25 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Approved By: Final Depth: 0.70m 84.89mAOD ВН Location: Tyne and Wear Grid System: OSGB Start Date: GS 22/05/2018 Logged By:

Clie	nt: SLIV	Orientation: N	/A Inclination	n: <b>N/A</b>								Finish Date:	22/05/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Le	(mm)	Water Level (m)	Installation / Backfill			Samples & Testing	
	MADE GROUND: Dark brown gravelly clayey fine S	AND with from	went rootlets	*******	Thickness)	(mAOD)	Depth (m)	Level (m)	Backiiii	Depth (m) 0.00 - 0.70	Ref 4 B	Test Resu	ults
-	Gravel is subangular to subrounded fine to coarse	sandstone, br	ick and rare coal.							0.20	1 D		
-					(0.70)					0.50	2 D		-
-	EOH at 0.70m - Re	fueal			0.70	84.19				0.70	3 D		
1 -	Lonato./oiii-Ne	iusai											
1 -													1 -
-													
-													-
-													
2 -													2 -
-													
-													_
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-													10 -
10 -													10 -
Obs	servations / Remarks	Misc.	Backfill Depth (m) Material	From (m)		ic Samplin		emarks	Inst	rument Detai		tallations  Resp. Zone De	epth (m) Diam
		ntered	0.00 - 0.70 Arisings	,,	,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	
		r Encoui Cased xint/s In											
		undwater Hole Not itoring Po						ļ	Strike (m) Ca			water Strikes ses To (m) Time (min)	Remarks
		o Grour H Monite	Hammer Ref & Energy Ratio (%)	1				ľ	, 20	3, ,,		1 1 1	
		No N	i	1 1			1			1			



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Header

Sheet

Exploratory Hole Number

BH17-48C

FINAL



Project No:	3043	Location Details					Methodology & F	Scale:	1:50	
			426956.92	Northing:	557412.41	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Easting: <b>426956.92</b>	120330132	rtor timig.	337 112.112	0.00 - 1.20	Inspection Pit	Hand Tools	l Checked.	
		Elevation:	85.01mAOD	Final Depth:	6.45m	1.20 - 6.45	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	22/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	22/05/2018

<b>Hole Diameter</b>									
Depth (m)	Diam (mm)								
6.00	76								

Casing D	iameter
Depth (m)	Diam (mm)
1.00	116
l	
l	

	Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To							
(m)	(m)	(m)	(min)	(m)	Remarks						

	Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)								

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill								
Depth (m)	Legend Code							
0.00 - 6.45	Arisings							
	-							

In-Situ Tests						
PID	0					
Hand Vane*	0					
Standard Penetration Tests	6					

	Standard Penetration Tests							
	* One count indicates an av	- 0						
reported result of 3 tests carried out a								

Sample Summary								
Enviror	Environmental Samples							
Soil <b>7</b> Water								
Geote	chnic	cal Samples						
Bulk	6	Large Bulk	0					
Disturbed	14	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	Undisturbed <b>0</b> Undisturbed							
Undistu	rbed 1	Thin Wall	0					
Undisturbed Thin Wall (NR)								
Cor	re San	nple	0					

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary											
Test Type	Depth	Casing	Water	Seating	Main	Penetration	N	Reported Result	Hammer Ref			
iest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)		Reported Result	nammer ker			
Split Spoon	1.20	1.00	Dry	2	8	450	8	N=8 (1,1/2,2,2,2)	MOD 01			
Split Spoon	2.00	1.00	Dry	7	17	450	17	N=17 (3,4/4,4,4,5)	MOD 01			
Split Spoon	3.00	1.00	Dry	11	25	450	25	N=25 (6,5/5,5,7,8)	MOD 01			
Split Spoon	4.00	1.00	Dry	11	36	450	36	N=36 (4,7/10,8,8,10)	MOD 01			
Split Spoon	5.00	1.00	Dry	5	15	450	15	N=15 (2,3/3,4,4,4)	MOD 01			
Split Spoon	6.00	1.00	Dry	13	54	450	54	N=54 (6,7/10,13,15,16)	MOD 01			

SPT Hammer Ref.	Energy Ratio (%)
MOD 01	67

# **Applicable to Cable Percussion Only**

Chis	elling	
Depth (m)	Duration (mins)	
	1	

Water	Added
Depth (m)	Litres

### **Applicable to Rotary Only**

Drilling Flush									
Depth (m) Flush Type Flush Colour Return %									

Dynamic Sampling Runs									
Depth (m)	Diam (mm)	Recovery %	Remarks						
1.00 - 2.00	101	70							
2.00 - 3.00	101	90							
3.00 - 4.00	86	90							
4.00 - 5.00	86	100							
5.00 - 6.00	76	90							



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Log Type

# Dynamic Sampling

FINAL

Exploratory Hole Number

BH17-48C



Sheet 1 of 1 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Plant Used Hand Tools Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 6.45 Method Inspection Pit Dynamic Sampling (Windowless) Easting: 426956.92 557412.41 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Final Depth: 6.45m Elevation: 85.01mAOD Approved By: ВН Location: Tyne and Wear Start Date: Grid System: OSGB Logged By: GS 22/05/2018

CI:-	SIN/	Logged By: G:			ь							Start Date: 22/05/	
Clie	nt: SLIV	Orientation: N	'A Inclinatio	n: <b>90°</b>						1		Finish Date: 22/05/	2018
	Strata Description			Legend	Depth (Strati	m Reduced	m (mr	n) vvaler	Installation / Backfill			Samples & Testing	_
					Thickn	ess) (ITIAC	Depth	(m) Lever (III)	DdCKIIII	Depth (m) 0.00 - 1.20	Ref	Test Results	
_	MADE GROUND: Dark brown gravelly clayey fine to									0.00 - 1.20	7 B 1 D		1
-	rootlets. Gravel is subangular to subrounded fine to and limestone.	o coarse sands	stone, brick, coai							0.30	2 ES		-
-	and innestone.									0.50	3 D		
_										0.70	4 ES		1
_							1.1	_					1
1 -							1.0	0		1.00 1.00	5 D 6 ES		1 -
-					(2.50	)				1.20 - 1.65	8 D 10 B	SPT(S) 1.20m, N=8 (1,1/2,2,2,2)	+
_					∷ 🐰					1.20 - 2.00			-
1										1.50	9 D		7
_													1
-										2.00	12 ES	SPT(S) 2.00m, N=17 (3,4/4,4,4,5)	
2 -										2.00 - 2.45 2.00 - 3.00	11 D 14 B	3F1(3) 2.00111, 14-17 (3,4)4,4,4,3)	2 -
_										2.00 - 3.00	14 8		1
_					2.50	82.5	1			2.50	13 D		1
-	MADE GROUND: Firm dark grey sandy very gravelly												1
_	angular fine to coarse mudstone, coal, sandstone a coarse.	nu rare brick.	Sand is time to										-
3 —	course.									3.00	16 ES	SPT(S) 3.00m, N=25 (6,5/5,5,7,8)	3 -
_										3.00 - 3.45 3.00 - 4.00	15 D 18 B		1
_													1
-										3.50	17 D		
-					(2.40	)							-
_													
4 -										4.00 4.00 - 4.45	20 ES 19 D	SPT(S) 4.00m, N=36 (4,7/10,8,8,10)	4 -
_										4.00 - 5.00	22 B		1
-										4.50	21 D		1
_					$\otimes$								1
-					4.90	80.1	,						-
5 —	MADE GROUND: Firm orangish grey locally black gr				× 4.90	80	1			5.00	24 ES	SPT(S) 5.00m, N=15 (2,3/3,4,4,4)	5 -
_	coarse. Gravel is angular to subangular fine to coar	se sandstone	mudstone and coal.							5.00 - 5.45 5.00 - 6.00	23 D 27 B		1
_													1
_										5.50	25 D		-
-					(1.55	)							1
-													-
6 -										6.00 - 6.45	28 D	SPT(S) 6.00m, N=54 (6,7/10,13,15,16)	6 -
_													1
1 -	EOH at 6.45m - Schedul	ed depth		******	6.45	78.5	6		X//XX//X				- 1
_													1
-													1
7 -													7 -
-													1
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10 -					4								10
Obs	ervations / Remarks	Misc.	Backfill			amic Samp						tallations	
		pa,	Depth (m) Material 0.00 - 6.45 Arisings	From (m) 1.00	2.00	Diam (mm) Re	70	Remarks	Inst	rument Detai	ils	Resp. Zone Depth (m)	Diam
		ountered I s Installec		2.00 3.00	3.00 4.00	101 86	90 90						
		ndwater Encor Casing Used toring Point/s1		4.00 5.00	5.00 6.00	86 76	100 90				Grane I	water Strikes	
		dwate Casing ving P							Strike (m) C-			water Strikes ses To (m) Time (min) Remar	ks
		No Groundwa Casin No Monitoring	Hammer Ref & Energy Ratio (%)	-					(III) Co	(M) Scale		, , Neman	
		No N	MOD 01 (67%)	1									



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Log Type

Header

Exploratory Hole Number **BH17-49** 

FINAL



Project No:	3043		Location	Details			Methodology & F	Scale:	1:50	
			427188.21	Northing: <b>557314.13</b>		From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Easting:				0.00 - 1.20	Inspection Pit	Hand Tools		
	Elevation:	81.76mAOD	Final Depth:	30.00m	1.20 - 15.00 15.00 - 30.00	Rotary Coring Rotary Open Holing	Fraste PLG Fraste PLG	Approved:	BH	
Location:	Tyne and Wear	Logger:	ASH	Grid System:	OSGB		, , , , ,		Start Date:	21/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	23/05/2018

Hole Diameter						
Diam (mm)						
92						

Casing Diameter						
Depth (m)	Diam (mm)					
6.50	140					
l						
l						

Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Remarks				
(m)	(m)	(m)	(min)	(m)	Remarks				

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
24/05/2018		5.50	1.00 - 5.50					

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill					
Depth (m)	Legend Code				
0.00 - 1.00	Bentonite				
1.00 - 5.60	Gravel				
5.60 - 30.00	Bentonite				

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	8

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Standard Penetration Tests 8

Sample Summary						
Enviror	nmer	ntal Samples				
Soil	7	Water	0			
Geotechnical Samples						
Bulk	6	Large Bulk	0			
Disturbed	6	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Core Sample						
·	<u> </u>					

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type				Seating		Penetration	Ν	Reported Result	Hammer Ref
	(m)	(m)	(m)	Blows	Blows	Total (mm)			
Split Spoon	1.20	-	Dry	3	8	450	8	N=8 (1,2/2,2,2,2)	AR1175
Split Spoon	2.20	-	Dry	4	33	450	33	N=33 (2,2/7,9,9,8)	AR1175
Split Spoon	3.20	-	Dry	8	37	450	37	N=37 (4,4/4,9,12,12)	AR1175
Split Spoon	4.20	-	Dry	8	16	450	16	N=16 (4,4/4,4,4,4)	AR1175
Split Spoon	5.00	-	Dry	25	50	360		50 (10,15/50 for 210mm)	AR1175
Split Spoon	6.50	5.00	Dry	25	50	220		50 (25 for 125mm/50 for 95mm)	AR1175
Split Spoon	7.50	5.00	Dry	24	50	245		50 (11,13/50 for 95mm)	AR1175
Cone	9.00	6.50	Dry	25	50	125		50 (25 for 40mm/50 for 85mm)	AR1175

SPT Hammer Ref.	Energy Ratio (%)
AR1175	56

# **Applicable to Cable Percussion Only**

Chiselling					
Depth (m)	Duration (mins)				
	1				

Water Added				
Depth (m)	Litres			

# **Applicable to Rotary Only**

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				
5.00 - 15.00	Water	Cream	100				
15.00 - 30.00	Water	Grey	100				

	Dynamic	Sampling	Runs
Depth (m)	Diam (mm)	Recovery %	Remarks
1.20 - 2.20	128	100	
2.20 - 3.20	113	100	
3.20 - 4.20	113	100	
4.20 - 5.00	113	100	



Project No:

3043

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Location Details

Combined Borehole

Log Type

Exploratory Hole Number

BH17-49

**FINAL** 

Methodology & Plant



1:50

Scale:

From (m) 0.00 - 1.20 1.20 - 15.00 15.00 - 30.00 Method Plant Used Easting: 427188.21 Northing: 557314.13 Inspection Pit Rotary Coring Rotary Open Holing Checked By: RPH Hand Tools Fraste PLG Fraste PLG A1 Birtley to Coalhouse Name: Elevation: 81.76mAOD Final Depth: 30.00m Approved By BH Location: Tyne and Wear Logged By: ASH Grid System: OSGB Start Date: 21/05/2018 Client SLIV Orientation N/A Inclination: 90 Finish Date: 23/05/2018 Depth (m Reduced Hole Ø Samples & Testing Coring Installation / Backfill Strata Description Legend Level (mAOD) (Stratum Thicknes Level (m) Depth (m) Ref 0.00 - 0.50 MADE GROUND: Dark brown slightly gravelly fine to coarse SAND. Gravel is subangular fine to medium sandstone. (0.50)0.50 0.50 0.50 - 1.20 0.50 81.26 2 D 3 ES 4 B MADE GROUND: Soft to firm dark brown gravelly sandy CLAY. Gravel is angular fine to coarse sandstone and mudstone. Sand (0.70)is fine to coarse. 1.20 1.20 1.20 - 2.20 1.20 80.56 SPT(S) 1.20m, N=8 (1,2/2,2,2,2) MADE GROUND: Firm to stiff fissured and desiccated dark brown slightly sandy gravelly CLAY with frequent rootlets. Gravel is angular to subangular fine to coarse sandstone. Sand is fine to coarse. (3.80)3.20 3.20 3.20 3.20 - 4.20 SPT(S) 3.20m, N=37 (4,4/4,9,12,12) 4.20 SPT(S) 4.20m, N=16 From 4.20m to 5.00m becomes sandy 4.20 4.20 - 5.00 15 ES 16 B (4,4/4,4,4,4) 5.00 76.76 5.00 5.00 SPT(S) 5.00m, 50 (10,15/50 for 210mm) NO RECOVERY. (1.30)20 0 0 Very soft to firm dark brown gravelly sandy CLAY. Gravel is SPT(S) 6.50m, 50 (25 for 125mm/50 for 95mm) angular fine to coarse sandstone. Sand is fine to coarse. From 6.50m to 7.00m, no recovery. (1.20) 50 0 0 NI 74.26 1 C Weak brown MUDSTONE. Discontinuities are very closely to closely spaced subhorizontal planar undulating open rough. (0.95)8.22 - 8.37 2 C 100 60 8.45 73.31 Weak to medium strong yellowish brown MUDSTONE/ SANDSTONE. Discontinuities are very closely to closely spaced 12 subhorizontal (0-10 degrees) planar smooth tight clean. SPT(C) 9.00m, 50 (25 for 40mm/50 for 85mm) From 9.00m to 9.50m, no recovery. 0 60 60 (2.40)9.90 - 10.00 3 C 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Depth (m) Casing (m) Water (m) To (m) Instrument Details Resp. Zone | Depth (m) | Diam 1.00 - 5.50 | 5.50 Water Strikes Strike (m) Rises To (m) Time (min)



Project No:

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Location Details

Combined **Borehole** 

Sheet 2 of 3

Log Type

Exploratory Hole Number

**BH17-49** 

**FINAL** 



1:50

Scale:

Methodology & Plant From (m) Method Plant Used Easting: 427188.21 Northing: 557314.13 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 81.76mAOD Final Depth: 30.00m Approved By: BH Location: Tyne and Wear Logged By: ASH Grid System: OSGB Start Date: 21/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 23/05/2018 Depth (m Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend Level (mAOD) (Stratum Thickness Depth (m) 12 From 10.75m to 12.00m, no recovery. 10.85 70.91 Extremely to very weak orangish brown SANDSTONE recovered as very silty fine to medium sand. 10.50 12.00 57 27 7 (1.65)11.95 - 12.00 Extremely to very weak orangish brown fine to medium  $% \left\{ \mathbf{r}_{i}^{\mathbf{r}_{i}}\right\} =\mathbf{r}_{i}^{\mathbf{r}_{i}}$ SANDSTONE. Discontinuities are very closely spaced 67 67 33 (0.55)20 subhorizontal (0-10 degrees) planar smooth tight clean. 13 68.71 13.05 Weak to medium strong orangish brown fine grained MUDSTONE. Discontinuities are very closely to closely spaced (0.45) 12 subhorizontal (0-10 degrees) planar smooth. 13.50 68.26 Black COAL. (0.35) From 13.50m to 13.85m, no recovery. 67.91 13.85 Very weak dark grey MUDSTONE recovered as soft to firm dark (0.25) 13.95 - 14.00 12 C NI grey slightly gravelly CLAY. Gravel is subangular to subrounded 67.66 14.10 13.50 15.00 14.23 - 14.45 fine to coarse. 77 77 53 Very weak to weak dark grey MUDSTONE. Discontinuities are closely spaced subhorizontal (0-10 degrees) planar smooth tight (0.90)14.60 - 14.70 6 C closed. 14.90 - 14.95 11 C 15.00 66.76 15 Grey MUDSTONE. (Driller's Description) 18 19 20 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Depth (m) Casing (m) Water (m) Material To (m) Instrument Details Resp. Zone | Depth (m) | Diam 1.00 - 5.50 | 5.50 Water Strikes Strike (m) Rises To (m) Time (min)



Combined Borehole

Log Type

Exploratory Hole Number BH17-49

FINAL

Strike (m) Rises To (m) Time (min)



Web: www.central-alliance.co.uk Sheet 3 of 3 GEO Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Easting: 557314.13 Checked Bv: RPH 427188.21 Northing: Name: A1 Birtley to Coalhouse Elevation: 81.76mAOD Final Depth: 30.00m Approved By: ВН Location: Tyne and Wear Logged By: ASH Grid System: OSGB Start Date: 21/05/2018 Client: 23/05/2018 SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref Grey MUDSTONE. (Driller's Description) 22 (15.00) 23 28 29 <u>92</u> 30.00 30.00 51.76 30 EOH at 30.00m - Scheduled depth Misc Observations / Remarks Shift Information Backfill To (m) Material
1.00 Bentonite
5.60 Gravel
30.00 Bentonite Resp. Zone | Depth (m) | Diam | 1.00 - 5.50 | 5.50 | Depth (m) Casing (m) Water (m) Instrument Details Water Strikes



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Sheet

Log Type Exploratory Hole Number

Header

BH17-50

FINAL



Project No:	3043		Location	Details			Met	hodology & P	lant	Scale:	1:50
		Easting:	427108.42	Northing:	557307.90	From (m)	Met	hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lasting.	42/100.42	Northing.	337307.50	0.00 - 1.20	Inspect	ion Pit	Hand Tools	CITCCRCG.	10111
		Elevation:	80.99mAOD	Final Depth:	1.20m					Approved:	BH
Location:	Tyne and Wear	Logger:	RA	Grid System:	OSGB					Start Date:	22/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	22/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes					
				Rose To	Remarks	
(m)	(m)	(m)	(min)	(m)	nemano	

| Installation / Instrument Details | Date | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 1.20	Arisings				

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sam	ple S	Summary	
Enviro	nmer	ntal Samples	
Soil	0	Water	0
Geote	chnic	cal Samples	
Bulk	2	Large Bulk	0
Disturbed	1	Disturbed (NR)	0
Piston	0	Piston (NR)	0
Undisturbed	0	Undisturbed (NR)	0
Undistu	rbed	Thin Wall	0
Undisturb	ed Thi	n Wall (NR)	0
Со	re San	nple	0

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type		Casing (m)			Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
	(m)	(m)	(m)	BIOWS	BIOWS	iotai (mm)		·	

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chis	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litres

Ap	plicable to	Rotary On	y
	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

	Dynamic	Sampling	Runs
Depth (m)	Diam (mm)	Recovery %	Remarks
	1		



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Dynamic Sampling

Log Type

Exploratory Hole Number

BH17-50



Sheet 1 of 1 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Depth (m) 0.00 - 1.20 Method Inspection Pit Plant Used Hand Tools Easting: 427108.42 Checked By: RPH 557307.90 Northing: A1 Birtley to Coalhouse Name: Elevation: Final Depth: 1.20m 80.99mAOD Approved By: ВН Location: Tyne and Wear

CI:-			NA N/A	Grid Syste										2/05/2010	
Clie	nt: <b>SUV</b> Orien	ntation:	N/A	Inclination	n: <b>90°</b>	<u> </u>								2/05/2018	1
	Strata Description				Legend	Depth (m) (Stratum	Reduced Level (mAOD)	Casing Ø (mm)	Water Level (m)	Installation / Backfill			Samples & Testing		4
	MADE COOLINE D. I	CAND C		I I.	*****	Thickness)	(	Depth (m)		~// <i>X</i> \//X	Depth (m)	Ref	Test Results		1
-	MADE GROUND: Dark grey gravelly silty fine to coarse subrounded fine to coarse flint, clinker and sandstone.	SAND. G	ravei is angi	ular to											1
-	substantiated fine to course finite, clinical and surfactories.				<b>******</b>										1
-						(1.20)								-	1
-					******	(=:==,									
1 -	1					1.20	79.79							1 -	-
-	EOH at 1.20m - Refusal	l				1.20	75.75								1
-														-	-
-															-
-														-	1
2 -											2.00	5 D		2 -	1
-															1
-														_	-
-											2.60 - 3.00	6 B			1
-														-	1
3 —														3 -	1
-											3.20 - 4.20	8 B			-
-															1
-														-	1
-															1
4 -														4 -	1
-	1														1
-															1
-														-	1
-															
-															1
5 -														5 -	-
-															1
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-															1
-															1
6 -														6 -	1
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Obs	Eervations / Remarks	Miso	c. Ba	nckfill		Dynami	Sampling F	Runs			•	Inst	allations		1
Pit re	efused at 1.20m and 3 further attempts (BH17-50B-D) were made before		Depth (m)	Material	From (m)		(mm) Recover		emarks	Inst	rument Detai		Resp. Zone Depth (	m) Diam	1
decid	ding on the final borehole location (50E).	ncountered	0.00 - 1.20	Arisings											
		Cased	s/au						]						1
		lwater le Not	N Bull						ļ	Carillo 7 sla			vater Strikes		1
		round Hol	out o							Strike (m) Ca	sing (m) Seale	u (m) Rise	es To (m) Time (min)	Remarks	1
		Vo G	Hammer Ref 8	& Energy Ratio (%)											1



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Log Type Exploratory Hole Number

Header

# BH17-50A

FINAL



Project No:	3043		Location I	Details			Methodology & F	Plant	Scale:	1:50
	A4 D' 11		427102.20	Northing:	557311.57	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Easting:	427 TOZ.ZO NOTCHING.			0.00 - 1.20	Inspection Pit	Hand Tools	CITCCRCG.	
		Elevation:	81.09mAOD	Final Depth:	1.20m				Approved:	BH
Location:	Tyne and Wear	Logger:	RA	Grid System:	OSGB				Start Date:	22/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	22/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes										
				Rose To	Remarks						
(m)	(m)	(m)	(min)	(m)							

Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill								
Legend Code								
Arisings								

In-Situ Tests						
PID	0					
Hand Vane*	0					
Standard Penetration Tests	0					

Hand Vane* 0	ı	0	PID
Standard Bonotration Tosts 0	]	0	Hand Vane*
Standard Perietration lests 0	]	0	Standard Penetration Tests

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
Soil <b>0</b> Water								
Geotechnical Samples								
Bulk	0	Large Bulk	0					
Disturbed	0	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undisturb	ed 1	hin Wall	0					
Undisturbed Thin Wall (NR)								
Core	Sam	ıple	0					

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

	Standard Penetration Test Summary										
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref		

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chise	elling		Water	Added
Depth (m)	n) Duration (mins)		Depth (m)	Litre

Ap	plicable to	Rotary Onl	y							
Drilling Flush										
Depth (m)	Flush Type	Flush Colour								

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

<b>Applicab</b>	le to Dy	namic S	ampling Only							
Dynamic Sampling Runs										
Depth (m)	Diam (mm)	Recovery %	Remarks							



Project No:

3043

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Location Details

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**Dynamic** Sampling

Log Type

Exploratory Hole Number

Methodology & Plant



1:50

Sheet 1 of 1

**BH17-50A** FINAL CENTRAL ALLIANCE GEO

Scale:

Nam	me: A1 Birtley to Coalhouse	Easting:	427102.20	Northing:	55731	1.57	Depth (m)		Meth			Plant Used Hand Tools		Checked By:	RPH	
		Elevation:	81.09mAOD	Final Dep	th: <b>1.20m</b>	1	0.00 - 1.20		mspecu	ЮПТК		riana ioois		Approved By:	ВН	
Loca	ation: Tyne and Wear	Logged By:	RA	Grid Syste	em: OSGB									Start Date:	22/05/20	018
Clien	ent: SLJV	Orientation:	N/A	Inclinatio	n: <b>90°</b>									Finish Date:	22/05/20	018
	Strata Descri	intion			Legend	Depth (	m) Reduce	eu Levei	Casing Ø (mm)	Water	Installation /			Samples & Testing		
					- LEGETIA	(Stratu Thickne	ss) (m/	AOD) De	epth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Resul	ts	
-	MADE GROUND: Dark grey gravelly silty fine t angular to subangular fine to coarse sandston	to coarse SAND	with roots. Grav	vel is												
1	anguar to subungular time to source surfaces.	ic, briok and co	u.,													
7	-					(1.20	)									-
-	-					8										
1 -	-															1 -
7	EOH at 1.20m	- Refusal				1.20	79	.89								
-																-
-																
-																
2 -	_															2 -
-																
4																_
-	- -															
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-	- -															-
1	- -															
5 -	- -															5 -
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10						1				ŀ						10 -
Ohse	servations / Remarks		1isc. Back	dill		Dvn:	amic Sam	nling Rur	ns			<u> </u>	Inst	allations		
	attempted at the top of the embankment and abandoned due to	o refusal.	Depth (m)	Material	From (m)					emarks	Insti	rument Detai			oth (m) Di	iam
		untered	0.00 - 1.20	Arisings												
		.Encon	oint/s I							,						
		iwater	ole Not								Strike (m) c-			water Strikes es To (m) Time (min)	Pomost-	
		Ground	Hammer Ref & E	nergy Ratio (%)							ourke (m) Ca	outg (III) Seale	u (iff) KiS	es to (iii) time (min)	Remarks	_
		No	9	0, 11010 (70)	1											



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Sheet

Exploratory Hole Number

# BH17-50E

FINAL



Project No:	3043		Location	Details			Methodology &	Plant	Scale:	1:50
		Easting:	427108.42	Northing:	557308.90	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Comacchio 205		
		Elevation:	80.99mAOD	Final Depth:	30.00m	1.20 - 5.20 5.20 - 16.70	Dynamic Sampling (Windowless) Rotary Coring	Comacchio 205 Comacchio 205	Approved:	BH
Location:	Tyne and Wear	Logger:	ASH	Grid System:	OSGB	16.70 - 30.00		Comacchio 205	Start Date:	22/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	24/05/2018

	Hole Di	ameter
	Depth (m)	Diam (mm)
	30.00	140
Į		

Casing D	iameter
Depth (m)	Diam (mm)
6.00	140
l	
l	
l	

Environmental Samples

2 Water

Geotechnical Samples

0

0

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Groundwater Strikes											
Strike	Casing	Sealed	Time	Rose To	Remarks							
(m)	(m)	(m)	(min)	(m)	Remarks							
	-	3.10	0	0.00								
l												

	Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)								
24/05/2018	Standpipe Piezometer	5.50	5.00 - 6.00									

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

В	ackfill
Depth (m)	Legend Code
0.00 - 0.50	Concrete
0.50 - 5.00	Bentonite
5.00 - 6.00	Gravel
6.00 - 30.00	Bentonite

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	3

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	2.20	-	-	8	17	450	17	N=17 (4,4/3,4,5,5)	AR1175
Split Spoon	3.20	-	-	16	44	450	44	N=44 (8,8/9,7,13,15)	AR1175
Split Spoon	4.20	-	-	8	21	450	21	N=21 (4,4/5,5,5,6)	AR1175

SPT Hammer Ref.	Energy Ratio (%)
AR1175	56

**Applicable to Cable Percussion Only** 

Chiselling			
Depth (m)	Duration (mins)		

Water Added			
Litres			

Disturbed

Piston

Undisturbed

# Applicable to Rotary Only Drilling Flush

	Depth (m)	Flush Type	Flush Colour	Return %
	1.20 - 2.20	Water	Yellow	
	2.20 - 3.20	Water	Yellow	
	3.20 - 4.20	Water	Yellow	
	4.20 - 5.20	Water	Yellow	
	5.20 - 6.20	Water	Yellow	
	6.20 - 7.70	Water	Yellow	
	7.70 - 9.20	Water	Yellow	
	9.20 - 10.70	Water	Yellow	
	10.70 - 12.20	Water	Grey	
	12.20 - 13.70	Water	Grey	
	13.70 - 15.20	Water	Grey	
	15.20 - 16.70	Water	Grey	
ш				

Dynamic Sampling Runs					
Depth (m)	Diam (mm)	Recovery %	Remarks		
1.20 - 2.20	92	100			
2.20 - 3.20	92	100			
3.20 - 4.20	92	30			
4.20 - 5.20	92	30			
	1.20 - 2.20 2.20 - 3.20	Depth (m) Diam (mm) 1.20 - 2.20 92 2.20 - 3.20 92 3.20 - 4.20 92	Depth (m)         Diam (mm)         Recovery %           1.20 - 2.20         92         100           2.20 - 3.20         92         100           3.20 - 4.20         92         30		

Hand Vane\* 0
Standard Penetration Tests 3



Project No:

3043

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Location Details

Web: www.central-alliance.co.uk Sheet 1 of 3

Log Type

#### Combined **BH17-50E Borehole**

Methodology & Plant

**FINAL** 

Exploratory Hole Number



1:50

Scale:

From (m) 0.00 - 1.20 1.20 - 5.20 5.20 - 16.70 Method Plant Used Easting 427108.42 Northing: 557308.90 Inspection Pit
Dynamic Sampling (Windo
Rotary Coring
Rotary Open Holing Checked By: RPH Name: A1 Birtley to Coalhouse Elevation: 80.99mAOD Final Depth: 30.00m Approved By BH Location: Tyne and Wear 16.70 - 30.00 Comacchio 205 Logged By: ASH Grid System: OSGB Start Date: 22/05/2018 Client SLIV Orientation N/A Inclination: 90 Finish Date: 24/05/2018 Depth (m Reduced Hole Ø Casing Ø Samples & Testing Coring Strata Description Legend Level (mAOD) Thicknes Depth (m) MADE GROUND: Dark brown gravelly slightly clayey fine to coarse SAND. Gravel is angular fine to coarse sandstone. (2.40) 1.20 - 1.40 1 ES 2.00 2.00 - 2.40 78.59 MADE GROUND: Dark brown sandy silty angular fine to coarse (0.20)78.39 sandstone and mudstone GRAVEL. Sand is fine to coarse. 2.60 Stiff dark brown subangular gravelly CLAY. Gravel is angular fine (0.60) to coarse mudstone and sandstone. 77.79 3.20 3.20 3.20 - 4.20 SPT(S) 3.20m, N=44 (8,8/9,7,13,15) Dark brown gravelly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse sandstone and mudstone. (1.00)4.20 76.79 4.20 12 D SPT(S) 4.20m, N=21 Dark brown sandy clayey angular fine to coarse sandstone 4.20 - 5.20 11 B (4,4/5,5,5,6) GRAVEL interbedded with firm dark brown gravelly sandy CLAY. Gravel is angular fine to coarse sandstone. Sand is fine to coarse. (1.00)5.20 75.79 Extremely weak orangish brown fine to coarse SANDSTONE interbedded with clavey angular fine to coarse gravel. (0.70) Discontinuities are extremely to very closely spaced planar 5.20 6.20 100 100 10 smooth open with clay infill. 5 90 75.09 Very weak orangish brown fine to coarse SANDSTONE. Discontinuities are very closely spaced subhorizontal (0-10 12 degrees) planar smooth open. (0.80) From 6.10m to 6.20m 1 no. discontinuity subvertical (45-60 degrees) NI planar rough open with sand infill. 74.29 Weak yellow medium to coarse SANDSTONE. Discontinuities are close to widely spaced subhorizontal (0-10 degrees) planar 60 47 rough clean. From 7.20m to 7.40m 1 no. discontinuity subvertical (60-80 degrees) planar open with sand and gravel infill. From 7.70m to 8.00m, no recovery. (2.50)20 0 0 From 8.70m to 9.20m discontinuities are extremely closely to closely spaced subhorizontal (0-10 degrees) planar smooth tight 9.20 71.79 Very weak to weak orangish brown SANDSTONE. From 9.20m to 9.55m, no recovery 77 From 9.5m to 9.70m recovered as gravelly silty fine to coarse sand. Gravel 77 10.70 is angular fine to coarse.
From 9.70m to 10.30m recovered as very silty fine to medium sand. 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Depth (m) Casing (m) To (m) Instrument Details Resp. Zone | Depth (m) | Diam | 5.00 - 6.00 | 5.50 | 5.00 6.00 30.00 Water Strikes Strike (m) Rises To (m) Time (min)



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Location Details

Combined Borehole

Sheet 2 of 3

Log Type

Exploratory Hole Number

BH17-50E

**FINAL** 

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used Easting: 427108.42 Northing: 557308.90 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 80.99mAOD Final Depth: 30.00m Approved By: BH Location: Tyne and Wear Logged By: ASH Grid System: OSGB Start Date: 22/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 24/05/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref (2.00) NI From 10.30m to 10.50m recovered as slightly gravelly silty fine to coarse sand. Gravel is angular fine to medium. From 10.50m to 10.70m discontinuities are very closely spaced 12 subhorizontal (0-10 degrees) planar smooth tight clean. From 10.70m to 11.20m recovered as brown to light brown fine to coarse 11.20 69.79 Extremely weak orangish brown fine to coarse SANDSTONE recovered as silty fine to coarse sand. 100 7 0 NI (1.00) 12 From 12.10m to 12.20m black coal. 12.20 - 16.70 68.79 12.20 Assumed Zone of Core Loss. (0.80)47 47 0 67.99 13.00 13 Extremely to very weak dark grey MUDSTONE. Discontinuities are extremely to very closely spaced occasionally closed subhorizontal (0-10m degrees) planar smooth tight with clay (0.70)13.70 67.29 Black COAL. (0.15) 13.85 67.14 Extremely weak to weak dark grey MUDSTONE. Discontinuities are extremely to very closely spaced occasionally closed subhorizontal (0-10m degrees) planar smooth tight with clay 13.70 15.20 14.45 - 14.52 100 1 C 100 15 From 15.20 to 15.70m, no recovery. (2.85) 15.90 - 15.97 2 C 67 67 27 16.30 - 16.45 3 C 64.29 Grey MUDSTONE. (Driller's Description) 17 18 19 (4.90)20 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 5.00 - 6.00 | 5.50 Depth (m) Casing (m) Water (m) To (m) Instrument Details 0.50 5.00 6.00 30.00 Water Strikes Strike (m) Rises To (m) Time (min)



Combined Borehole

Sheet 3 of 3

Log Type

Exploratory Hole Number **BH17-50E** 

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Easting: 557308.90 RPH 427108.42 Northing: Checked By: Name: A1 Birtley to Coalhouse Elevation: 80.99mAOD Final Depth: 30.00m Approved By: BH Location: Tyne and Wear Logged By: ASH Grid System: OSGB Start Date: 22/05/2018 24/05/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Samples & Testing Depth (m) Reduced Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Grey MUDSTONE. (Driller's Description) 59.39 Grey SILTSTONE/SANDSTONE. (Driller's Description) 22 23 (8.40) <u>140</u> 30.00 30.00 50.99 30 EOH at 30.00m - Scheduled depth Observations / Remarks Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 5.00 - 6.00 | 5.50 | Time Depth (m) Casing (m) Water (m) To (m) Instrument Details 0.50 5.00 6.00 30.00 Water Strikes 



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Log Type

Exploratory Hole Number

BH17-51

**FINAL** 



Project No:	3043		Location	Details			Me	thodology & F	Plant	Scale:	1:50
		Easting:	427424.44	Northing:	557178.62	From (m)	Met	:hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.		rior criming.	337170.02	0.00 - 1.20	Inspec	tion Pit	Hand Tools	onconcu.	
		Elevation:	82.39mAOD	Final Depth:	6.35m	1.20 - 6.35	Cable Pe	ercussion	Dando 2000	Approved:	BH
Location:	Tyne and Wear	Logger:	ALB	Grid System:	OSGB					Start Date:	24/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°					End Date:	24/05/2018

Hole Di	Hole Diameter									
Depth (m)	Diam (mm)									
6.35	200									

If Methodology includes

Dynamic Sampling refer to Runs table for info.

Casing Diameter									
Depth (m)	Diam (mm)								
5.70	200								
l									
l									
l									

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)	Remarks					
5.50	-	-	20	5.20						

	Installation / Instrume	ent Deta	ils	
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)

No Monitoring Point/s Installed

Backfill								
Depth (m) Legend Code								
0.00 - 6.35 Bentonite								

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	6

one depth where available.

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at

Sample Summary							
Environmental Samples							
Soil	5	Water	0				
Geotechnical Samples							
Bulk	4	Large Bulk	0				
Disturbed	14	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Co	re San	nple	0				

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)		Main	Penetration Total (mm)	_	Reported Result	Hammer Ref
Cone	1.20	1.20	-	3	14	450	14	N=14 (1,2/3,3,4,4)	AR1134
Cone	2.50	2.50	-	7	14	450	14	N=14 (3,4/3,4,3,4)	AR1134
Cone	3.50	3.50	-	6	40	450	40	N=40 (2,4/10,10,10,10)	AR1134
Cone	4.50	4.50	-	13	42	450	42	N=42 (5,8/9,10,11,12)	AR1134
Split Spoon	5.50	5.50	-	20	50	155		50 (20 for 75mm/50 for 80mm)	AR1134
Cone	5.90	5.70	-	25	50	205		50 (25 for 105mm/50 for 100mm)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chiselling										
Depth (m)	Duration (mins)									
5.70 - 5.90	60									

Water Added								
Depth (m)	Litres							

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %
			1

#### **Applicable to Dynamic Sampling Only**

	Dynamic Sampling Runs							
	Depth (m)	Diam (mm)	Recovery %	Remarks	]			
Г					7			
					ı			
					ı			
					ı			
					ı			
					ı			
					ı			
					ı			
-1								



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Cable Percussion

Log Type

Exploratory Hole Number BH17-51

**FINAL** 

 Strike (m) Rises To (m) Time (min)

 5.50
 5.20
 20



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 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 6.35
 Bentonite
 Instrument Details Resp. Zone Depth (m) Diam. Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%)
AR1134 (56/%) Groundwater Strikes



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Sheet

Exploratory Hole Number

BH17-54

FINAL



Р	roject No:	3043	Location Details Methodology & Plant				Scale:	1:50			
١			Easting:	427527.68	Northing:	557062.42	From (m)	Method	Plant Used	Checked:	RPH
N	ame:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools		
			Elevation:	85.18mAOD	Final Depth:	23.50m	1.20 - 9.20 9.20 - 20.20	Cable Percussion Rotary Coring	Dando 2000 Beretta T41	Approved:	BH
Lo	ocation:	Tyne and Wear	Logger:	ALB+GS	Grid System:	OSGB	20.20 - 23.50	Rotary Open Holing	Beretta T41	Start Date:	02/05/2018
С	lient:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	08/05/2018

Hole Diameter						
Depth (m)	Diam (mm)					
23.50	140					

Casing D	iameter
Depth (m)	Diam (mm)
9.20	140
l	

	Groundwater Strikes								
Strike	Casing	Sealed	Time	Rose To	Dl				
(m)	(m)	(m)	(min)	(m)	Remarks				

	Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					
08/05/2018	Standpipe Piezometer	4.00							

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill								
Depth (m)	Legend Code							
0.00 - 0.10	Concrete							
0.10 - 3.50	Bentonite							
3.50 - 4.50	Gravel							
4.50 - 23.50	Bentonite							

In-Situ Tests	
PID	4
Hand Vane*	0
Standard Penetration Tests	6

<sup>(</sup>NR) Indicates sample undertaken but with one\*

Disturbed

Piston

Undisturbed

Environmental Samples

4 Water

Geotechnical Samples

13

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Large Bulk

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Standard Penetration Test Summary								
Test Type	Depth	Casing	Water	Seating	Main	Penetration	N	Reported Result	Hammer Ref
iest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	nammer ker
Split Spoon	1.20	-	DRY	11	39	450	39	N=39 (4,7/7,9,9,14)	DC01
Split Spoon	3.20	3.00	DRY	9	25	450	25	N=25 (4,5/5,6,7,7)	DC01
Split Spoon	5.20	4.70	DRY	25	50	180		50 (25 for 95mm/50 for 85mm)	DC01
Split Spoon	7.50	7.40	DRY	16	61	450	61	N=61 (8,8/12,13,16,20)	DC01
Split Spoon	8.80	8.50	DRY	25	100	415		N=100 (25 for 130mm/100 for 285mm)	DC01
Split Spoon	9.20	9.00	DRY	25	100	260		100 (25 for 40mm/100 for 220mm)	DC01

SPT Hammer Ref.	Energy Ratio (%)
DC01	65

#### **Applicable to Cable Percussion Only**

Chiselling										
Depth (m)	Duration (mins)									
1.50 - 1.90	45									
5.40 - 5.80	45									
8.50 - 8.80	60									
8.80 - 9.00	30									

Litres

#### **Applicable to Rotary Only**

Drilling Flush								
Depth (m)	epth (m) Flush Type Flush Colour Return %							
9.20 - 10.20	Water	Yellow	100					
10.20 - 11.70	Water	Yellow	100					
11.70 - 12.70	Water	Grey	100					
12.70 - 14.20	Water	Grey	100					
14.20 - 15.70	Water	Grey	100					
15.70 - 17.20	Water	Grey	100					
17.20 - 18.70	Water	Grey	100					
18.70 - 20.20	Water	Grey	100					
20.20 - 23.50	Water	Grey	100					

#### **Applicable to Dynamic Sampling Only**

			<u> </u>					
Dynamic Sampling Runs								
Depth (m)		Recovery %						



3043

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Location Details

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Log Type Combined

**Borehole** 

## Exploratory Hole Number

BH17-54

**FINAL** 



1:50

Scale:

Methodology & Plant From (m) 0.00 - 1.20 1.20 - 9.20 9.20 - 20.20 Method Plant Used Easting: 427527.68 Northing: 557062.42 Checked By: RPH Hand Tools Dando 2000 Beretta T41 A1 Birtley to Coalhouse Name: Elevation: 85.18mAOD Final Depth: 23.50m Approved By: BH Rotary Coring Rotary Open Holing Location: Tyne and Wear 20.20 - 23.50 Beretta T41 Logged By: ALB+GS Grid System: OSGB Start Date: 02/05/2018 Client SLIV Orientation N/A Inclination: 90 Finish Date: 08/05/2018 Depth (m Reduced Hole Ø Samples & Testing Coring Strata Description Legend Level (mAOD) Thicknes Depth (m) Ref Test Results 85.08 MADE GROUND: TOPSOIL. 0.10 0.20 1 ES PID 0.20m = 1.7ppm MADE GROUND: Dark greyish brown gravelly silty fine to coarse (0.45) SAND. Gravel is angular to subangular fine to coarse sandstone 0.40 2 P and brick. 0.55 84.63 Possible MADE GROUND: Orangish brown slightly gravelly 0.70 0.70 PID 0.70m = 0.7ppm slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and mudstone. 1.20 - 1.65 1.20 - 1.70 (1.95)2.00 2.00 2.20 - 2.65 Firm dark grey slightly gravelly slightly sandy CLAY with 10 D occasional cobbles. Sand is fine to coarse. Gravel is subrounded fine to coarse sandstone, mudstone and siltstone. Cobbles are subangular to subrounded sandstone. 3.00 3.00 PID 3.00m = 0.4ppm SPT(S) 3.20m, N=25 (4,5/5,6,7,7) 3.20 - 3.65 3.20 - 3.70 12 D 13 B 4.00 14 D 4.20 - 4.65 15 UT 101 blows, 100% Recover (4.10)4.65 - 4.70 16 D 5.00 17 D 5.20 - 5.65 18 D SPT(S) 5.20m, 50 (25 for 95mm/50 for 85mm) 6.50 - 6.95 150 blows, 0% Recovery 78.58 NR 22 B Medium dense orangish brown slightly gravelly clayey fine to 6.50 - 7.10 coarse SAND. Gravel is subangular to subrounded fine to medium sandstone. Yellowish brown weathered SANDSTONE recovered as subangular fine to coarse sandstone gravel. SPT(S) 7.50m, N=61 (8,8/12,13,16,20) (2.10)8.80 25 D SPT(S) 8.80m, N=100 (25 for 130mm/100 for 285mm) 140 9.20 9.20 75.98 9.20 26 D SPT(S) 9.20m, 100 (25 for 40mm/100 for 220mm) Weak to medium strong destructured to residual medium NI grained brownish yellow fine to medium grained SANDSTONE. From 9.20m to 9.50m recovered as gravelly fine to coarse sand. Gravel is subangular to subrounded fine to coarse. From 9.50m to 9.70m No Recovery. 22 NR 80 22 10.20 From 9.70m to 9.92m becomes strong 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Depth (m) Casing (m) Time 17:00 07:30 17:00 07:30 17:00 07:30 To (m) Instrument Details Resp. Zone Depth (m) Diam 9.20 9.20 11.70 11.70 18.70 18.70 Water Strikes Strike (m) Rises To (m) Time (min)



3043

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Location Details

Combined Borehole

Log Type

Exploratory Hole Number

BH17-54
FINAL



1:50

Scale:

Sheet 2 of 3

illole

Methodology & Plant

FIOJ	ECC NO. 3043		Locat	lion Detai	13		-			tilouology c	K I Idilic	81 1	-	cale.				1.50	
Nam	e: A1 Birtley to Coalhouse	Easting:	427527.68	Nort	thing:	557062.4	2 Fro	om (m)	Met	noa		Plant Used	- 0	Checked	d By:			RPH	
		Elevation:	85.18mAOD	Fina	l Depth:	23.50m							A	Approve	ed By	/:		ВН	
Loca	tion: Tyne and Wear	Logged By:	ALB+GS	Grid	System:	OSGB							S	tart Da	ite:		02/	05/2	018
Clier	nt: SUV	Orientation:	N/A	Incli	nation:	90°							F	inish D	ate:		08;	05/2	018
		1		Depth (m)	Reduced	Hole Ø	Casing Ø				Samples	& Testing	p			Cor	ing		
	Strata Description		Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (m)	Water Level (m)	Installation / Backfill	Depth (m)	Ref	Test Results	Jetho	Core	TCR		RQD	If	
	From 9.92m to 10.02m recovered as subangular to subround	ed fine to			(115105)	Depar (iii)	Deptii (iii)			Deptii (iii)	IVEI	rest resurts	F	Run	ICK	JCIN	INQU	-	
1 1	coarse gravel with rare coal.	,	:::::	:						10.20 - 10.28	3 C								
1 1	From 10.02m becomes medium strong. From 10.15m to 10.25m recovered as subangular to subround	ded coarse	:::::	(2.19)															
-	gravel.		:::::	:															-
1 -	From 10.48m to 10.95m recovered as sandy subangular to su fine to coarse gravel. Sand is fine to coarse.	brounded																	
1 1	, g													10.20					
11 -				:										11.70	100	13	13		11 -
1 -	From 11.09m to 11.39m recovered as slightly sandy subangui subrounded fine to coarse gravel. Sand is fine to coarse. Sand		:::::	:						11.20 - 11.25	4 C							NI	
1 1	coarse.	i is jiiic to		11.39	73.79														
1 1	Extremely to very weak destructured dark grey MI																		-
1 -	From 11.60m to 12.35m recovered as gravelly locally sandy C fine to coarse. Gravel is subangular to subrounded fine to coa															Н	_		
1 4	coal.			(0.96)															
12 -										12.15 - 12.30	5 C			44.70					12 -
1 1										12.15 - 12.30	50			11.70 12.70	100	15	15		
-	Black COAL.			12.35 (0.10)	72.83 72.73												,	_	
17	Very weak destructured dark grey MUDSTONE.			12.45	5												, }	7	-
1 1	From 12.60m to 12.70m recovered as silty subangular to subto coarse gravel.	rounded fine														П	$\exists$		
	From 12.70m to 12.95m recovered as gravelly clayey fine to a	coarse sand.		1															13 -
13 -	Gravel is subangular fine. From 12.95m to 13.70m recovered as sightly gravelly silty cla	v Gravel is		(1.25)															13 -
	subangular fine with rare coal.	,. Graveris		1															
														12.70 14.20	100	0	0	NI	-
-				40.70	74.40					13.56 - 13.76	2 C			14.20					
1 7	Very weak to weak black COAL.			13.70	71.48														
14 -				(0.50)															14 -
-				14.20	70.00					14.15 - 14.20	6 C								
H	Medium strong to strong distinctly weathered to o	destructure	d	14.20	70.98														
1 1	thinly laminated grey MUDSTONE. Discontinuities																	13	-
1 -	closely spaced subhorizontal (0-10 degrees) undul		th.															NI	
1 7	From 14.20m to 14.30m recovered as clayey subangular fine gravel.	to coarse																N	
15 -	From 14.68m to 14.72m recovered as gravelly clay. Gravel is	subangular											ç	14.20 15.70	100	60	10	19	15 -
1 -	fine to coarse.  From 14.93m to 14.96m 1 no. discontinuity subvertical (40-45	5 dearees)											Ī				ŀ	NI	
1 -	undulating smooth.																		
1 1	From 15.10m to 15.20m recovered as silty clayey subangular gravel.	fine to coarse																16	_
1 1	From 15.30m to 15.40m 1 no. discontinuity subvertical (45-50	) degrees)															┵	NI	
-	undulating smooth. From 15.65m to 15.70m recovered as gravelly silty clay. Grav	el is															.	4	
16	subangular fine to coarse.																.	NI	16
1 1	From 15.70m becomes medium strong to strong with discont medium spaced subvertical (40-50 degrees) undulating smoo																.	141	
1 -	From 15.70m to 15.75m recovered as gravelly sandy clay. Sar													45.70					
1	coarse. Gravel is subangular fine. From 16.00m to 16.09m recovered as silty clayey subangular	fine to coarse												15.70 17.20	100	72	66	10	-
1 1	gravel.	,																	
1 1																			
17 -	From 16.90m to 17.00m recovered as slightly clayey subangu coarse gravel.	lar fine to								17.02 - 17.20	3 C						, F	NI 5	17 -
	From 17.20m to 17.25m recovered as subangular fine to coar	rse aravel		(6.00)											H	Н	$\dashv$	5 NI	
	. Tom 17.20m to 17.25m recovered as Subungular Jine to coar	se graver.															, [	1	
1 +				1						17.55 - 17.76	4 C								-
1 -				1														10	
														17.20	100	73	45		
18 -														18.70	100	/3	43		18 -
1 -	From 18.20m to 18.30m recovered as clayey subangular fine	to coarse															, }	NI	
	gravel.																F	11	
	From 18.39m to 18.61m recovered as subangular fine to coar	rse gravel.		1													, [	NI	-
1 1	From 18.70m to 18.95m No Recovery.														$\vdash$	$\vdash \vdash$	$\dashv$	19	
1 7	,	_		1													, [	NR	
19 -	From 18.95m to 19.35m recovered as gravelly sandy silty clay subangular fine to coarse.	y. Gravel is																NI	19 -
1 1	<b>3,</b>													18.70				INI	
1 -														20.20	87	50	45	$\neg$	
1 7																			-
				1														6	
											ļ l		L			Ĺ∥			20
20	Continued on Next Page															Π	Т		20 -
Obse	ervations / Remarks		Misc.		Shift In	formatio	n			Backfill				Installa	tions	s			
			Date	Tim				Water (m	) From (m)	To (m)	Material	Instrument De	tails	R			Depth		Diam
		iterea	talled						0.00 0.10		Concrete Bentonite	Standpipe Piezon	neter			I	4.0	0	
		unoou	Used mt/s Inst						3.50 4.50	4.50 23.50	Gravel Bentonite								
		ter Er	ng Us Point,										١	Water S	Strike	es			
		dwa	Casing rring Poir									Strike (m) Rises To (n					Remar	ks	_
		Grou	<i>fonite</i>																
		N.	ž																



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Combined **Borehole** 

Sheet 3 of 3

Log Type

Exploratory Hole Number

**BH17-54** 

**FINAL** 



Location Details Methodology & Plant Project No: Scale: 1:50 From (m) Method Plant Used 427527.68 557062.42 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 85.18mAOD Final Depth: 23.50m Approved By: BH Location: Tyne and Wear Logged By: ALB+GS Grid System: OSGB Start Date: 02/05/2018 08/05/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Samples & Testing Depth (m) Reduced Hole Ø Coring Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Medium strong to strong distinctly weathered to destructured 20.20 thinly laminated grey MUDSTONE. Discontinuities are very 64.98 closely spaced subhorizontal (0-10 degrees) undulating smooth. MUDSTONE. (Driller's Description) 22 23 140 23.50 23.50 61.68 EOH at 23.50m - Scheduled depth 24 28 30 Observations / Remarks Misc Shift Information Backfill Resp. Zone Depth (m) Diam Depth (m) Casing (m) Water (m) To (m) Instrument Details Water Strikes Strike (m) Rises To (m) Time (min)



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Sheet

Log Type Exploratory Hole Number

Header

BH17-55

FINAL



Project No:	3043		Location	Details			Meth	nodology & P	lant	Scale:	1:50
		Easting:	427547.92	Northing:	557121.93	From (m)	Meth	od	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	427547152	rror crimig.	557121.55	0.00 - 1.20	Inspectio		Hand Tools	erreenea.	
		Elevation:	89.84mAOD	Final Depth:	21.00m	1.20 - 4.00 4.00 - 14.00	Cable Perc Rotary Co		Beretta T41	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB	14.00 - 21.00			Beretta T41	Start Date:	09/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°					End Date:	11/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)
21.00	92

Casing Diameter									
Depth (m)	Diam (mm)								
6.50	140								
l									
l									

	Groundwater Strikes									
Strike	ke Casing Sealed Time Rose To Remarks									
(m)	(m)	(m)	(min)	(m)	kemarks					

	Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							
11/05/2018	Standpipe Piezometer	4.50	4.00 - 5.00								

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill							
Depth (m) Legend Code							
0.00 - 0.30	Concrete						
0.30 - 4.00	Bentonite						
4.00 - 5.00	Gravel						
5.00 - 21.00	Bentonite						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	4

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary									
Environmental Samples									
4	Water	0							
Geotechnical Samples									
5	Large Bulk	0							
7	Disturbed (NR)	0							
0	Piston (NR)	0							
0	Undisturbed (NR)	0							
irbed '	Thin Wall	0							
ed Thi	n Wall (NR)	0							
re San	nple	6							
	4 echnic 5 7 0 ourbed	4   Water							

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth	Casing		Seating		Penetration	N	Reported Result	Hammer Ref
rest type	(m)	(m)	(m)	Blows	Blows	Total (mm)	1	Reported Result	Hammer Ker
Split Spoon	1.20	-	-	8	22	450	22	N=22 (3,5/5,5,6,6)	DC01
Cone	2.20	2.00	-	5	14	450	14	N=14 (2,3/3,4,4,3)	DC01
Split Spoon	3.20	3.00	-	17	100	415		N=100 (7,10/100 for 265mm)	DC01
Split Spoon	4.00	3.00	-	25	110	205		110 (25 for 60mm/110 for 145mm)	DC01
ł									

SPT Hammer Ref.	Energy Ratio (%)
DC01	65

#### **Applicable to Cable Percussion Only**

elling
Duration (mins)
45
60

Water Added									
Depth (m)	Litres								

#### **Applicable to Rotary Only**

	Drilling	FIUSII	
Depth (m)	Flush Type	Flush Colour	Return %
4.00 - 5.00 5.00 - 21.00	Water Water	Yellow	100
	4.00 - 5.00	Depth (m) Flush Type 4.00 - 5.00 Water	Depth (m)         Flush Type         Flush Colour           4.00 - 5.00         Water         Yellow

#### **Applicable to Dynamic Sampling Only**

	Dynamic	Sampling	Runs	Ш
Depth (m)	Diam (mm)	Recovery %	Remarks	
				П
				П
	Depth (m)			Depth (m) Diam (mm) Recovery % Remarks



3043

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Location Details

Web: www.central-alliance.co.uk Sheet 1 of 3

Log Type

### Combined **Borehole**

Exploratory Hole Number

**BH17-55** FINAL CENTRAL ALLIANCE GEO Methodology & Plant Scale: 1:50

ject No:	3043			Locati	on Detai	ils				Me	thodology 8	k Plant		Scal	ie:			1:5
me:	A1 Birtley to Coalhouse	Easting:	4275	47.92	Nor	thing:	557121.9		om (m) 0 - 1.20	Met	tion Pit		Plant Used Hand Tools	Che	ecked	Ву:		RPI
	,	Elevation:	89.8	4mAOD	Fina	l Depth:	21.00m	1.2	0 - 4.00	Cable Pe	rcussion			App	orove	d By:		BH
ation:	Tyne and Wear	Logged By:	GS			System:	OSGB		0 - 14.00 0 - 21.00	Rotary Rotary Op	Coring en Holing		Beretta T41 Beretta T41		rt Dat			09/05/
ent:	SLIV	Orientation:	N/A		Incli	ination:	90°	$\perp$		1	1			Fini	ish Da	ite:		11/05/
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Hole Ø (mm)	Casing Ø (mm)	Water	Installation /		Sample	s & Testing	thod			Coring	-
	Stata Description			Legend	Thickness)	(mAOD)	Depth (m)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results		Core Run	TCR	SCR RC	QD If
MADE	GROUND: Dark brown and black slightly gra	avelly slightl	ly															
clayey	fine to coarse sand TOPSOIL. Gravel is angu	ılar to		*****							0.20	1 ES						
subang	gular fine to coarse mudstone and brick.			*****	(0.70)													
1				*****							0.50	2 B		≙				
MADE	GROUND: Firm black slightly sandy gravelly	/ CLAY. Sand	is		0.70	89.14					0.70 0.70	3 ES 4 B						
1	coarse. Gravel is angular to subangular fine			*****														
-1	tone brick sandstone and quartz.			******														
1				*****							1.20 - 1.65 1.20 - 1.70	5 D 6 B	SPT(S) 1.20m, N=22 (3,5/5,5,6,6)					
1				*****														
-																		
				*****														
1					(2.40)						2.00	7 D						
-				******							2.00	8 ES						
1				<b>******</b>							2.20 - 2.65 2.20 - 2.70	9 D 10 B	SPT(C) 2.20m, N=14 (2,3/3,4,4,3)					
1				******														
1														8				
1																		
1											3.00	11 D						
0	tich brown fing to sooms CAND with he all	of firm a	rich	*******	3.10	86.74					3.00	12 ES						
_	ish brown fine to coarse SAND with bands o		gisn								3.10 3.20 - 3.65	13 D 14 D	SPT(S) 3.20m, N=100 (7,10/100 for 265mm)					
prown	n sandy clay. Gravel is angular fine to coarse	sanustone.									3.20 - 3.70	15 B						
1					(0.90)													
1																		
					4.00	85.84					4.00	16 D	SPT(S) 4.00m, 110 (25 for	Ш				
Weak t	to medium strong greyish yellow medium to	o coarse		: : : : :	4.00	85.84					4.00	100	60mm/110 for 145mm)					NI
-	ed SANDSTONE. Discontinuities are set 1) me		ed															
	rizontal (10-20 degrees) rough undulating a										4.40 - 4.55	1 C		4	4.00			. 3
	im spaced subvertical (60-70 degrees) rough		g.												5.00	100	64 64	'
1	om 4.00m to 4.14m recovered as subangular fine to coarse om 4.74m to 5.00m recovered as sandy slightly clayey subo																	$\vdash$
	brounded gravel. Sand is fine to coarse.	9																NI
_	544 1 500 1 1514 1 1 1									×								1
	om 5.11m to 5.30m recovered as slightly clayey subangula brounded gravel. Sand is fine to coarse.	ir to		: : : :	(2.50)													NI
-	,			: : : : :														
	om 5.48m to 5.65m 1 no. vertical discontinuity (85-90 degr	rees) rough		: : : : :														6
1	ndulating.			:::::											5.00 5.50	100	53 53	3 NI
Fro	om 5.78m to 5.83m recovered as subangular fine to coarse	e gravei.		:::::														
-																		2
- Fro	om 6.27m to 6.50m recovered as slightly sandy subangula	r to																-
sub	brounded fine to coarse gravel. Sand is fine to coarse.			:::::	6.50	83.34		140										NI
Weath	nered SANDSTONE recovered as greyish yello	ow sandy			(0.20)			6.50										NI
	gular to subrounded fine to coarse sandstor	ne mudston	e, /	: : : : :	6.70	83.14					6.75 - 6.93	3 C						6
	nd brick GRAVEL. Sand is fine to coarse.		/	:::::										ی				NI
	to medium strong greyish yellow medium to													Γl				6 NI
-	ed SANDSTONE. Discontinuities are set 1) ver y spaced subhorizontal (10-20 degrees) roug														6.50 8.00	100	63 49	)   141
	y spaced subflorizontal (10-20 degrees) rouget 2) medium to widely spaced subvertical (7																	
	undulating.	. 5 50 acgie	,															20
Fro	om 6.88m to 6.95m recovered as subangular fine to coarse																	NI
Fro	om 7.10m to 7.27m recovered as slightly sandy clayey sub-	angular to													$\perp \downarrow$	$\perp$	丄	6
		ungular to	- 1									1						10
sub Fro	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr	-		:::::												- 1	- 1	NI
sub Fro	brounded fine to coarse sandstone and coal gravel.	-																
sub Fro	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr	-		:::::														15
sub Fro	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr	-		:::::											0.0			15 NI 20
sub Fro	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr	-		:::::											3.00 9.50	100	73 47	15 NI 20 NI
sub Fro	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr	-		:::::												100	73 4	15 NI 20 NI 4
sub Fro	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr	-		:::::												100	73 4	15 NI 20 NI 4
sub Fro. una	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr dulating.	rees) rough		:::::												100	73 4	15 NI 20 NI 4 NI 7
sub Fro und Fro	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr dulating. om 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.6	rees) rough		:::::							9.39 - 9.50	4 C				100	73 4	15 NI 20 NI 7 4 NI 7
sub Fro. und Fro. 9.0 sub	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr dulating.  om 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.6 00m to 9.08m and 9.35m to 9.40m recovered as sandy clay bangular to subrounded fine to coarse gravel and rare coa	rees) rough  5m to 8.75m, yey									9.39 - 9.50	4 C				100	73 4	15 NI 20 NI 4 NI 7
Fro 9.00 Subb	brounded fine to coarse sandstone and coal gravel.  om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr dulating.  om 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.60 bongular to subrounded fine to coarse gravel and rare coa coarse.	rees) rough  5m to 8.75m, yey yes									9.39 - 9.50	4 C				100	73 4	15 NI 20 NI 7 4 NI 7
Fro 9.00 Subb	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr ddulating.  om 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.6. 000m to 9.08m and 9.35m to 9.40m recovered as sandy clay bangular to subrounded fine to coarse gravel and rare coa coarse. om 9.60m to 10.00m recovered as slightly gravelly fine to co	rees) rough  5m to 8.75m, yey yes									9.39 - 9.50	4 C				100	73 4	15 NI 20 NI 7 4 NI 7 NI 10
Fro 9.00 Subb	brounded fine to coarse sandstone and coal gravel.  om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr dulating.  om 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.60 bongular to subrounded fine to coarse gravel and rare coa coarse.	rees) rough  5m to 8.75m, yey yes									9.39 - 9.50	4 C				100	73 4	15 NI 20 NI 7 4 NI 7 NI 10
Fro.	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr ddulating.  om 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.6. 000m to 9.08m and 9.35m to 9.40m recovered as sandy clay bangular to subrounded fine to coarse gravel and rare coa coarse. om 9.60m to 10.00m recovered as slightly gravelly fine to co	rees) rough  5m to 8.75m, yey  Il. Sand is fine coarse sand.	Misc.			Shift Ir	formation	1			9.39 - 9.50 Backfill	4 C		9				15 NI 20 NI 7 4 NI 7 NI 10
Fro.	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr dulating.  om 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.6. 00m to 9.08m and 9.35m to 9.40m recovered as sandy clay bangular to subrounded fine to coarse gravel and rare coa coarse. om 9.60m to 10.00m recovered as slightly gravelly fine to a	rees) rough  5m to 8.75m, yey  Il. Sand is fine coarse sand.	Misc.		Tim		oformation		Water (n		Backfill To (m)	Materia		Ins	stallat	tions esp. Zo	one De	7 4 NI 7 NI 10 1 NI NI Ppth (m)
Fro.	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr dulating.  om 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.6. 00m to 9.08m and 9.35m to 9.40m recovered as sandy clay bangular to subrounded fine to coarse gravel and rare coa coarse. om 9.60m to 10.00m recovered as slightly gravelly fine to a	rees) rough  5m to 8.75m, yey  Il. Sand is fine coarse sand.			Tin				Water (n	0.00	Backfill To (m) 0.30	Materia Concrete	Standpipe Piezome	Ins	stallat	tions	one De	15 NI 20 NI 7 4 NI 7 NI 10 1
Fro.	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr dulating.  om 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.6. 00m to 9.08m and 9.35m to 9.40m recovered as sandy clay bangular to subrounded fine to coarse gravel and rare coa coarse. om 9.60m to 10.00m recovered as slightly gravelly fine to a	rees) rough  5m to 8.75m, yey  Il. Sand is fine coarse sand.			Tim				Water (n	0.00 0.30 4.00	Backfill To (m) 0.30 4.00 5.00	Materia Concrete Bentonite Gravel	Standpipe Piezome	Ins	stallat	tions esp. Zo	one De	7 4 NI 7 NI 10 1 NI NI Ppth (m)
Fro.	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr dulating.  om 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.6. 00m to 9.08m and 9.35m to 9.40m recovered as sandy clay bangular to subrounded fine to coarse gravel and rare coa coarse. om 9.60m to 10.00m recovered as slightly gravelly fine to a	rees) rough  5m to 8.75m, yey  Il. Sand is fine coarse sand.			Tim				Water (n	0.00 0.30	Backfill To (m) 0.30 4.00 5.00	Materia Concrete Bentonite	Standpipe Piezome	Ins	Re 4.	tions esp. Zd. .00 - 5.0	one De	7 4 NI 7 NI 10 1 NI NI Ppth (m)
Fro.	brounded fine to coarse sandstone and coal gravel. om 7.70m to 7.85m 1 no. discontinuity vertical (85-90 degr dulating.  om 7.80m to 7.85m, 8.20m to 8.30m, 8.50m to 8.60m, 8.6. 00m to 9.08m and 9.35m to 9.40m recovered as sandy clay bangular to subrounded fine to coarse gravel and rare coa coarse. om 9.60m to 10.00m recovered as slightly gravelly fine to a	rees) rough  5m to 8.75m, yey  Il. Sand is fine coarse sand.	Casing Used in Point's Installed 2		Tim				Water (n	0.00 0.30 4.00	Backfill To (m) 0.30 4.00 5.00	Materia Concrete Bentonite Gravel	Standpipe Piezome	Ins ails eter	stallat Re 4.	tions esp. Zd. .00 - 5.0	one De	7 4 NI 7 NI 10 1 NI NI Ppth (m)



Combined Borehole

Sheet 2 of 3

Log Type

Exploratory Hole Number

BH17-55

FINAL



Methodology & Plant Location Details Project No: 3043 Scale: 1:50 From (m) Method Plant Used Easting: 427547.92 Northing: 557121.93 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 89.84mAOD Final Depth: 21.00m Approved By: BH Tyne and Wear Location: Logged By: GS Grid System: OSGB Start Date: 09/05/2018 Client SLIV Orientation: N/A Inclination: Finish Date: 11/05/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Level (m) Depth (m) Ref From 9.60m to 10.00m recovered as slightly gravelly fine to coarse sand. Gravel is subangular to subrounded fine to coarse. From 10.00m to 10.10m recovered as subangular fine to coarse gravel. 10.33 - 10.55 5 C (7.30) 9.50 11.00 66 53 11 11.00m to 11.10m 1 no. discontinuity vertical (85-90 degrees) rough From 11.23m to 11.38m recovered as subangular medium to coarse NI 67 63 21 From 11.86m to 11.96m recovered as subangular fine to coarse gravel. From 11.96m to 12.00m recovered as clayey subangular fine to medium 12 From 12.00m to 12.50m Assumed Zone of Core Loss. 12.30 - 12.35 From 12.50m to 12.55m recovered as slightly gravelly fine to coarse sand. NR Gravel is subangular to subrounded fine to medium. From 12.55m to 12.75m Assumed Zone of Core Loss 8 From 13.10m to 13.50m and 13.70m to 13.75m recovered as sandy 53 87 20 subangular to subrounded fine to coarse sandstone and coal gravel. Sand is fine to coarse. NI 2 NI 1 13.78 - 13.95 From 13.95m to 14.00m recovered as subangular to subrounded fine to 14.00 75.83 Yellow SANDSTONE (Driller's Description). 15 18 19 20 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 4.00 - 5.00 | 4.50 | Depth (m) Casing (m) Water (m) To (m) Instrument Details Water Strikes Strike (m) Rises To (m) Time (min)



Alliance House, South Park Way Wakefield 41 Business Park

Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-55** 

Wakefield WF2 0XJ Tel +44(0)1924 229889 **FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 3 of 3 GEO Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Plant Used From (m) Method Easting: 427547.92 557121.93 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: 89.84mAOD Final Depth: 21.00m Approved By: ВН Location: Tyne and Wear Start Date: GS Grid System: OSGB 09/05/2018 Logged By: Client: Inclination: Finish Date: 11/05/2018 SLJV N/A 90° Orientation: Depth (m) Reduced Hole Ø Casing Ø Water Installation / Samples & Testing pou Coring

	Strata Description		Legend	(Stratum	Reduced Level	Hole Ø (mm)	Casing Ø (mm)	Water Level (m)	Installation / Backfill		Samples		ethod	-oro T		ring		
					(mAOD)	Depth (m)	Depth (m)	cever (iii)	Dackiiii	Depth (m)	Ref	Test Results	Me Me	Core Run TC	R SCR	RQD	If	
	Yellow SANDSTONE (Driller's Description).  Grey MUDSTONE (Driller's Description).			20.10	69.74													1
	Grey MODSTONE (Driller's Description).																	-
	<u> </u>			(0.90)														-
	-																	-
	1					92												- 1
21	EOH at 21.00m - Scheduled depth			21.00	68.83	<u>92</u> 21.00							П					21 -
	1																	1
																		1
	<u> </u>																	-
	-																	-
22	-																	22 -
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Ol	servations / Remarks	Misc.			Shift In	formatio	n			Backfill			Ins	tallatio	ns			
F			Date	Time			Casing (m)	Water (m	) From (m)	To (m)	Material	Instrument Deta	ails	Resp	. Zone	Depth	(m) D	iam
		ıntere talled							0.00	4.00	Concrete Bentonite	Standpipe Piezome	ter	4.00	- 5.00	4.50	u	
		Encou Ised t/s Ins							4.00 5.00	5.00 21.00	Gravel Bentonite			$\perp$				
		No Groundwater Encountered Casing Used Monitoring Point/s Installed												ter Stril				
		ounds Ca. itoring										Strike (m) Rises To (m)	Time	(min)		Remarl	ks	$\dashv$
		No Gr Moni																
				1		- 1						1	ĺ					



Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel: +44 (0)1924 229889

Tel: +44 (0)1924 229889 Web: www.central-alliance.co.uk Header Sheet

Log Type

Exploratory Hole Number

**BH17-60** 

FINAL



Project No:	3043		Location	Details			Methodology & P	lant	Scale:	1:50
	44 81 11 11 11 11	Easting:	424924.57	Northing:	558540.30	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20 1.20 - 51.92	Inspection Pit Cable Percussion	Hand Tools Dando 2000		
		Elevation:	11.82mAOD	Final Depth:	51.92m	1.20 - 31.32	Cable Fercussion	Danido 2000	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	09/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	16/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)
51.92	150

Casing D	iameter
Depth (m)	Diam (mm)
10.00	250
51.70	150

	Groundwater Strikes											
				Rose To	Remarks							
(m)	(m)	(m)	(min)	(m)								
48.00	-	45.00	20	40.10								

Installation / Instrument Details												
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)								
13/04/2018	Standpipe Piezometer	9.30	2.00 - 9.50									

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill							
Depth (m)	Legend Code						
0.00 - 1.00	Concrete						
1.00 - 2.00	Bentonite						
2.00 - 9.50	Sand						
9.50 - 51.92	Bentonite						

In-Situ Tests						
PID	3					
Hand Vane*	0					
Standard Penetration Tests	17					

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sam	ple S	Summary				
Environmental Samples						
Soil	6	Water	0			
Geote	chnic	cal Samples				
Bulk	Bulk 23 Large Bulk					
Disturbed	79	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	Undisturbed 0 Undisturbed (NR)		0			
Undistu	rbed 1	Thin Wall	13			
Undisturbe	ed Thi	n Wall (NR)	2			
Cor	e San	nple	0			

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	9.50	9.50	5.10	4	18	450	18	N=18 (2,2/4,4,5,5)	AR1134
Split Spoon	12.00	10.00	DRY	3	13	450	13	N=13 (1,2/2,3,4,4)	AR1134
Split Spoon	15.00	10.00	DRY	4	15	450	15	N=15 (2,2/3,4,4,4)	AR1134
Split Spoon	18.00	10.00	DRY	6	18	450	18	N=18 (2,4/5,5,4,4)	AR1134
Split Spoon	21.00	10.00	DRY	5	19	450	19	N=19 (2,3/4,4,5,6)	AR1134
Split Spoon	24.00	10.00	DRY	4	28	450	28	N=28 (2,2/7,7,7,7)	AR1134
Split Spoon		10.00	DRY	7	22	450	22	N=22 (3,4/5,5,6,6)	AR1134
Split Spoon	30.00	10.00	DRY	6	22	450	22	N=22 (2,4/4,5,6,7)	AR1134
Split Spoon	33.00	10.00	DRY	4	28	450	28	N=28 (2,2/6,6,8,8)	AR1134
Split Spoon	36.00	10.00	DRY	7	32	450	32	N=32 (3,4/7,8,8,9)	AR1134
Split Spoon	39.00	10.00	DRY	8	34	450	34	N=34 (3,5/8,9,9,8)	AR1134
Split Spoon	42.00	10.00	DRY	13	40	450	40	N=40 (5,8/10,10,10,10)	AR1134
Split Spoon	45.00	10.00	DRY	6	27	450	27	N=27 (2,4/7,6,6,8)	AR1134
Split Spoon	48.00	45.00	DRY	8	34	450	34	N=34 (3,5/7,7,10,10)	AR1134
Split Spoon	50.00	50.00	20.30	20	50	450	50	N=50 (10,10/10,12,14,14)	AR1134
Split Spoon	51.20	51.20	21.20	25	100	275		100 (25 for 75mm/100 for 200mm)	AR1134
Split Spoon	51.70	51.70	20.90	25	100	215		100 (25 for 40mm/100 for 175mm)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chise	elling
Depth (m)	Duration (mins)
51.50 - 51.70	60

Water Added  Depth (m) Litres							
Litres							

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

#### **Applicable to Dynamic Sampling Only**

			<u> </u>	
		Sampling		
Depth (m)	Diam (mm)	Recovery %	Remarks	
. , ,	, ,	,		_



Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Northing:

Location Details:

424924.57

Easting:

Web: www.central-alliance.co.uk

558540.30

Log Type

Cable

Percussion

Depth (m) 0.00 - 1.20 1.20 - 51.92

# BH17-60

Sheet 1 of 6

Exploratory Hole Number



Elevation: 11.82mAOD Final Depth: 51.92m Approved By: Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 09/04/2018 Client SLIV Orientation N/A Inclination: Finish Date: 16/04/2018 Depth (m) Reduced Casing Ø Samples & Testing Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Added (Litres) (mm) Depth (m (mins) Level (m Depth (m) (0.15) 0.15 MADE GROUND: CONCRETE. 11.66 PID 0.20m = 1.2ppm MADE GROUND: Dark brownish vellow very gravelly coarse (0.25)0.20 SAND. Gravel is subangular to subrounded fine to coarse n 40 11 42 sandstone. (0.30) 0.70 11.12 PID 0.70m = 1.3ppm MADE GROUND: Orangish brown sandy subangular to (0.20) 0.90 10.92 subrounded fine to coarse sandstone and rare brick GRAVEL. PID 1.00m = 1.0ppm (0.30) Sand is fine to coarse. 1.20 10.62 1.20 - 1.65 1.20 - 1.65 At 0.40m geotextile.

MADE GROUND: Yellowish brown gravelly slightly clayey fine to coarse SAND. Gravel is subangular to subrounded fine to coarse sandstone, limestone, mudstone and brick. MADE GROUND: Yellowish black gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, mudstone, coal and rare brick. MADE GROUND: Soft to firm brownish grey slightly gravelly (2.30) slightly sandy locally laminated CLAY. Sand is fine to coarse. 12 UT 2.50 - 2.95 Gravel is subangular to subrounded fine coal and brick. 3.00 3.00 13 D 14 ES 3.50 8.32 Loose brownish grey fine to coarse SAND. 3.50 - 3.95 16 B 4.00 4.00 17 D 18 ES 4.50 - 4.95 19 UT 20 B 4.50 - 4.95 5.00 21 D 5.50 - 5.95 5.50 - 5.95 22 D 23 B 6.00 24 D From 6.00m with rare thin coal bands (5.50) 6.50 - 6.95 6.50 - 6.95 7.00 27 D From 7.50m becomes slightly gravelly. Gravel is subangular to subrounded fine to coarse sandstone and coal. 8.00 30 D 8.50 - 8.95 8.50 - 8.95 31 D 32 B 33 D 9.00 2.82 9.00 Yellowish brown gravelly sandy subangular to subrounded sandstone COBBLES. Gravel is subangular to subrounded fine to (0.50)coarse sandstone. Sand is fine to coarse. 9.50 2.32 9.50 9.50 - 9.95 SPT(S) 9.50m, N=18 (2.2/4.4.5.5) 34 D 35 D Firm brown thinly laminated CLAY. 36 B 9.50 - 9.95 (0.50) 250 10.00 10.00 1.82 10.00 37 D 10 Continued on Next Page Misc. Shift Information Backfill DRY 5.10 DRY DRY DRY 40.10 DRY 20.90 Depth (m) Casing (m) Date 09/04 09/04 10/04 10/04 11/04 11/04 12/04 To (m) Instrument Details Resp. Zone | Depth (m) | Diam. | 2.00 - 9.50 | 9.30 | Running sands causing slow progress: 09.04.18: 0.75hrs,12.04.18: 5hrs 06:00 19:30 06:00 19:30 06:00 19:30 06:00 29.00 8.50 45.00 29.00 48.45 45.00 50.45 10.00 8.50 10.00 10.00 45.00 10.00 50.00 Casing Used
Monitoring Point/s Ins
Hammer Ref & Energy R.
AR1134 (56(%) Groundwater Strikes (m) Time (min) Strike (m) Rises 12/04 13/04 13/04 19:30 06:00 19:30 45.00 51.70 50.00 40.10 20.90 21.20



Cable Percussion

Log Type

BH17-60 FINAL

Exploratory Hole Number

CENTRAL ALLIANCE

Sheet 2 of 6 Location Details: Methodology & Plant Project No: 3043 Scale: 1:50 Depth (m) Method Plant Used Easting: 424924.57 558540.30 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Final Depth: 51.92m Approved By: 11.82mAOD ВН

Location:	T d W/	Elevation:	11.82mA	OD	Final De		1.92m								Approved		MH (2010
		Logged By:	GS N/A		Grid Sys		SGB n°								Start Date		4/2018
Client:	SUV	Orientation:	N/A		Inclinati		J	<u> </u>	1				1		Finish Dat		4/2018
	Strata Description		Le	gend	Depth (m) (Stratum	Reduced Level	Chisellin (mins)	Added	Hole Ø (mm)	(mm)	Water Level (m)	Installation / Backfill			Samples & T		
Firm I	prown thinly laminated CLAY.			_	Thickness)	(mAOD)	, ,	(Litres)	Depth (	m) Depth (m)	` '		Depth (m)	Ref		Test Results	
-	orown triminy familiated CLAT.		-														
			<u> </u>														-
			<u> </u>										10.50 - 10.95	NR	15 blows, 0%	Recovery	-
1				_									10.50 - 10.95	39 B			
			-										11.00	40 D			
11 -			F-										11.00	400			11 -
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]			<u> </u>										12.00 - 12.45	43 B			
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14 -				_									14.00	46 D			14 -
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16 -			<u> </u>										16.00	50 D			16
			<u> </u>														
				_									16.50 - 16.95	51 UT	25 blows, 10	0% Recovery	
- F1	rom 16.50m becomes firm to stiff.		-														-
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18 -			<u> </u>										18.00	53 D	SDT/S) 10 00	m, N=18 (2,4/5,5,4,4	1) 10
<u> </u> "				=									18.00 - 18.45 18.00 - 18.45	54 D	5. 1(3) 10.001	, (2,4/3,3,4,4	18 -
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19 _			E	=									19.00	56 D			19 -
-			<u> </u>														=
-			<u> </u>	-=-													-
7			<u> </u>										19.50 - 19.95	57 UT	20 blows, 10	u% Recovery	-
				=													
20					20.00	-8.18							20.00	58 D			20 -
20	Continued on Next Page				25.00	5.10							20.00	300			20 -
Observation	s / Remarks	Mi	sc.		S	hift Info	rmation				Backfill				Installati	ons	
Running sands	causing slow progress: 09.04.18: 0.75hrs,12.04.18: 5hrs	_	38	Date	Time	Depth	(m) C	asing (m)	Water (m	n) From (m)	To (m)	Material		nent Det pe Piezom		p. Zone Depth ( 0 - 9.50 9.30	m) Diam.
		tered stallec	Hammer Ref & Energy Ratio (%) AR1134 (56/%)										эчапарі	pe riezomi	2.0	9.30	
		ncour Jsed t/s Ins	'56(%)														
		ater E Ising L a Poin	134 (												Froundwater		
		undw Cc itorin	AR.										Strike (m) R	ises To (m	) Time (min)	Remarks	5
		Gro	Hamr														
			_		1												



Name:

3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Northing:

558540.30

Location Details:

424924.57

Easting:

## Cable **Percussion**

Log Type

Sheet 3 of 6

Depth (m)

Exploratory Hole Number

Methodology & Plant

Method

**BH17-60 FINAL** 

Plant Used



1:50

RPH

Scale:

Checked By:

A1 Birtley to Coalhouse Elevation: 11.82mAOD Final Depth: 51.92m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 09/04/2018 Client: SLIV Orientation: N/A Inclination: Finish Date: 16/04/2018 Depth (m) (Stratum Thickness) Reduced Water Added (Litres) Casing Ø Samples & Testing Water Level (m) Installation , Backfill Strata Description Legend Level (mAOD) (mm) Depth (m) (mins) Depth (m) Firm brown thinly laminated CLAY. 21.00 21.00 - 21.45 21.00 - 21.45 SPT(S) 21.00m, N=19 (2,3/4,4,5,6) 21 62 D 22 22.50 - 22.95 63 UT 25 blows, 100% Recovery 64 D 23.00 23 24.00 24.00 - 24.45 24.00 - 24.45 SPT(S) 24.00m, N=28 (2,2/7,7,7,7) 24 (10.00) 25.00 68 D 25 25.50 - 25.95 69 UT 25 blows, 100% Recovery 70 D 26 27.00 27.00 - 27.45 27.00 - 27.45 SPT(S) 27.00m, N=22 (3,4/5,5,6,6) 27 74 D 28.00 28 75 UT 25 blows, 100% Recovery 28.50 - 28.95 76 D 29.00 29 30.00 -18.18 30.00 30.00 - 30.45 SPT(S) 30.00m, N=22 (2,4/4,5,6,7) Continued on Next Page Shift Information Resp. Zone | Depth (m) | Diam. | 2.00 - 9.50 | 9.30 | Running sands causing slow progress: 09.04.18: 0.75hrs,12.04.18: 5hrs Groundwater En... Casing Used Monitoring Used Harmer Ref & Energy Ratio (%) AR1134 (56(%) Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Groundwater Strikes Strike (m) Rises To (m) Time (min)



Cable Percussion

Log Type

BH17-60 FINAL

Exploratory Hole Number

CENTRAL ALLIANCE

Sheet 4 of 6 Location Details: Methodology & Plant Project No: 3043 Scale: 1:50 Depth (m) Method Plant Used Easting: 424924.57 558540.30 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Final Depth: 51.92m Approved By: 11.82mAOD ВН

Location:	Tyne and Wear	Logged By:	GS 11.82mAOD	Final D		1.92m ISGB								Start Date: 09/04/	
Client:	SUV	Orientation:	N/A	Inclinat		0°								Finish Date: 16/04/	
Circite.	351	OTICITATION:	1,7,7	Depth (m)	Reduced		Water	Hole Ø	Casing Ø		-			Samples & Testing	2010
	Strata Description		Legend	(Stratum Thickness)	Level (mAOD)	Chiselling (mins)	Added (Litres)	(mm) Depth (m)	(mm) Depth (m)	Water I Level (m)	nstallation / Backfill	Depth (m)	Ref	Test Results	
- Firn	n brown thinly laminated CLAY.											30.00 - 30.45	1		
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															_
			F-I-												-
1			<u> </u>												-
31 -			<u> </u>									31.00	80 D		31 -
1			F_F_												-
												31.50 - 31.95	81 UT	25 blows, 100% Recovery	-
1			F											,	-
-			F												-
32 -			<u> </u>	-								32.00	82 D		32 -
			<u> </u>												-
1			<u> </u>												_
1			F_=												-
=															
33 -												33.00 33.00 - 33.45		SPT(S) 33.00m, N=28 (2,2/6,6,8,8)	33 -
1			F- <u>-</u> -									33.00 - 33.45	85 B		
1															-
1			<u> </u>												-
1			<u> </u>												-
34 -												34.00	86 D		34 -
1															-
-			<u> </u>									34.50 - 34.95	87 UT	25 blows, 100% Recovery	_
-			F	-											-
1			<u> </u>												
35 -			<u> </u>	(10.00)								35.00	88 D		35 -
1			F_=												-
-			==												_
1			F												-
			<u> </u>												-
36 -			<u> </u>									36.00 36.00 - 36.45 36.00 - 36.45	89 D 90 D 91 B	SPT(S) 36.00m, N=32 (3,4/7,8,8,9)	36 -
-			<u> </u>	-								36.00 - 36.45	918		
7			<u> </u>												-
-			F_=												-
]												27.00	92 D		
37 ]			F									37.00	920		37 -
]			F												
-			<u> </u>									37.50 - 37.95	93 UT	25 blows, 100% Recovery	-
-			<u> </u>	-											-
38 -												38.00	94 D		38 -
-			F_=									30.00	345		- -
-			<u> </u>												-
-			F	1											-
			[ <del>-</del>												-
- 39 —			<u> </u>									39.00	95 D	SPT(S) 39.00m, N=34 (3,5/8,9,9,8)	39 -
			<u> </u>	-								39.00 - 39.45 39.00 - 39.45	96 D 97 B		
			<u> </u>	-											-
			F_=												-
=			= =												-
40	Continued on New Porce			40.00	-28.18	<u> </u>						40.00	98 D		40 -
	Continued on Next Page														
	ons / Remarks		isc. Date	Time	Shift Info	rmation (m) Cas	ing/m\ I	Water (m)	From (m)	Backfill To (m)	Material	Instrum	nent Det	Installations  ails Resp. Zone Depth (m)	Diam
Kunning sa	nds causing slow progress: 09.04.18: 0.75hrs,12.04.18: 5hrs	pal	AR1134 (56/%) AR1134 (56/%)	Time	Deptr	(III) Cas	g (111)	vvatci (III)	110111 (111)	10 (111)	iviatel Idi		nent Det ne Piezome	eter 2.00 - 9.50 9.30	, Didili.
		ounte, ed	9y Rati 5(%)												
		ter Enc ing Uso	& Ener 134 (56										G	roundwater Strikes	
		indwai Casi	AR11									Strike (m) Ri	ises To (m)	Time (min) Remarks	
		Grou	Натт												



Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Northing:

558540.30

Location Details:

424924.57

Easting:

Cable Percussion

Log Type

Exploratory Hole Number **BH17-60**FINAL

CENTRAL ALLIANCE

 Sheet 5 of 6
 GEO

 Methodology & Plant
 Scale:
 1:50

 Depth (m)
 Method
 Plant Used
 Checked By:
 RPH

Elevation: 11.82mAOD Final Depth: 51.92m Approved By: BH Tyne and Wear Location: 09/04/2018 Logged By: GS Grid System: OSGB Start Date: Client SLIV Orientation: N/A Inclination: Finish Date: 16/04/2018 Depth (m) Reduced Water Added (Litres) Casing Ø Samples & Testing Strata Description Legend (Stratum Thickness) Level (mAOD) (mm) Depth (m (mins) Depth (m) Test Results Firm brown thinly laminated CLAY. 40.10 40.50 - 40.95 99 UT 25 blows, 100% Recovery 41.00 100 D 41 42.00 42.00 - 42.45 42 103 B 104 D 43.00 43 43.50 - 43.95 105 UT 25 blows, 100% Reco (8.00) 44.00 106 D 44 45.00 107 D SPT(S) 45.00m, N=27 (2,4/7,6,6,8) 45.00 - 45.45 45.00 - 45.45 108 D 109 B 110 D 46 46.50 - 46.95 111 UT 25 blows, 100% Recover 112 D 47 113 D From 47.50m becomes sandy. Sand is fine to coarse. 48.00 -36.18 SPT(S) 48.00m, N=34 (3,5/7,7,10,10) 48 Dense grey slightly gravelly fine to coarse SAND. 117 D 49.00 49 -(3.00)50.00 50.00 - 50.45 SPT(S) 50.00m, N=50 (10,10/10,12,14,14) 50 Continued on Next Page Shift Information Installations Resp. Zone | Depth (m) | Diam. | 2.00 - 9.50 | 9.30 | Running sands causing slow progress: 09.04.18: 0.75hrs,12.04.18: 5hrs Groundwater En... Casing Used Monitoring Used Harmer Ref & Energy Ratio (%) AR1134 (56(%) Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Groundwater Strikes Strike (m) Rises To (m) Time (min)



3043

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Location Details:

Web: www.central-alliance.co.uk Sheet 6 of 6

Cable Percussion

Log Type

Exploratory Hole Number **BH17-60** 

Methodology & Plant

FINAL



1:50

Scale:

Depth (m) Method Plant Used 424924.57 RPH Easting: Northing: 558540.30 Checked By: A1 Birtley to Coalhouse Name: Elevation: 11.82mAOD Final Depth: 51.92m Approved By: BH Tyne and Wear Location: 09/04/2018 Logged By: GS Grid System: OSGB Start Date: Client SLIV Orientation: N/A Inclination: Finish Date: 16/04/2018 Depth (m) Reduced Water Added (Litres) Casing Ø Samples & Testing Water Level (m) Installation , Backfill Strata Description Legend (Stratum Thickness) Level (mAOD) (mm) Depth (m (mins) Depth (m) Dense grey slightly gravelly fine to coarse SAND. 51.00 39.18 51.00 120 D 51 Grey slightly sandy subangular to subrounded fine to coarse 121 D sandstone, siltstone and mudstone GRAVEL with low cobble (0.50) content. Sand is fine to coarse. Cobbles are subangular sandstone. 60 150 51.70 Extremely weathered dark grey MUDSTONE recovered as (0.42) slightly sandy gravelly clay. Sand is fine to coarse. Gravel is 150 51.92 51.92 -40.10 \subangular to subrounded fine to coarse. 52 EOH at 51.92m - Scheduled depth 53 54 57 58 59 60 Shift Information Installations Resp. Zone | Depth (m) | Diam. | 2.00 - 9.50 | 9.30 | Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Running sands causing slow progress: 09.04.18: 0.75hrs,12.04.18: 5hrs Casing Used
Monitoring Point/s Installed
Hammer Ref & Energy Ratio (%)
AR1134 (56/%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



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Sheet

Log Type Exploratory Hole Number

Header

BH17-61

FINAL



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
	44 81 11 1 1 1 1	Easting:	424926.96	Northing:	g: <b>558537.62</b>	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Elevation:	12.39mAOD	Final Depth:	80.00m	0.00 - 1.00 1.00 - 80.00	Inspection Pit Rotary Open Holing	Hand Tools Fraste PLG	Approved:	ВН
Location:	Tyne and Wear	Logger:	RJ	Grid System:	OSGB				Start Date:	06/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	20/04/2018

Hole Diameter								
Depth (m)	Diam (mm)							
80.00	92							

Casing Diameter
Depth (m) Diam (mm)
49.80 140

	Groundwater Strikes											
Strike	Casing	Sealed	Time	Rose To	Dl							
(m)	(m)	(m)	(min)	(m)	Remarks							

	Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 80.00	Bentonite						

In-Situ Tests						
PID	0					
Hand Vane*	0					
Standard Penetration Tests	0					

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at

one depth where available.

Cample Comment								
Sample Summary								
Enviror	Environmental Samples							
Soil	2	Water	0					
Geotechnical Samples								
Bulk	1	Large Bulk	0					
Disturbed	3	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undisturbed Thin Wall								
Undisturbed Thin Wall (NR)								
Cor	re San	nple	0					

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	Chiselling						
Depth (m)	Duration (mins)						

Water Added						
Litres						

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %
1.00 - 80.00	Water		100

Applicab	le to Dy	namic S	ampling Only
	Dynamic	Sampling	Runs
Depth (m)	Diam (mm)	Recovery %	Remarks



Rotary Borehole

Sheet 1 of 8

Log Type

Exploratory Hole Number **BH17-61** 

FINAL



Location Details Methodology & Plant Project No: Scale: 1:50 3043 From (m) 0.00 - 1.00 1.00 - 80.00 Method Inspection Pit Rotary Open Holing Plant Used Hand Tools Fraste PLG 424926.96 558537.62 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Elevation: 12.39mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 06/04/2018 20/04/2018 Client: SLIV Orientation: N/A Inclination: Finish Date: Depth (m) Reduced Hole Ø Samples & Testing Installation , Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Ref Depth (m) MADE GROUND: GRASSCRETE with rebar. (0.15)0.10 1 D 0.15 12.24 MADE GROUND: Dark brown slightly sandy clayey angular to subangular fine to coarse concrete and brick GRAVEL with high 0.40 0.50 0.50 - 1.00 2 ES 3 D 4 B cobble content. Sand is fine to coarse. Cobbles are subangular (0.85) concrete and brick. 0.80 5 ES Inspection Pit terminated at 1.00m due to concrete obstruction. 1.00 11.39 1.00 6 D CLAY (Driller's Description). 10 Continued on Next Page Observations / Remarks Misc. Shift Information Backfill Installations Date Time | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | 0.00 | 80.00 | Bentonite Instrument Details Resp. Zone Depth (m) Diam Running sands causing slow progress: 16.04.18: 10hrs Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%) Drilling Fluid Type Water Colour Return %



Rotary Borehole

Sheet 2 of 8

Log Type

Exploratory Hole Number **BH17-61** 

FINAL



Location Details Methodology & Plant Project No: Scale: 1:50 3043 From (m) Method Plant Used 424926.96 558537.62 Checked Bv: RPH Easting: Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 12.39mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 06/04/2018 Client: SLJV 20/04/2018 Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Ref Depth (m) CLAY (Driller's Description). 11 12 13 14 17 18 19 20 Continued on Next Page Observations / Remarks Misc. Shift Information Backfill Installations Time | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | 0.00 | 80.00 | Bentonite Instrument Details Resp. Zone Depth (m) Diam Running sands causing slow progress: 16.04.18: 10hrs Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



Rotary Borehole

Sheet 3 of 8

Log Type

Exploratory Hole Number **BH17-61** 

FINAL



Location Details Methodology & Plant Project No: Scale: 1:50 3043 From (m) Method Plant Used Easting: 424926.96 558537.62 Checked Bv: RPH Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 12.39mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 06/04/2018 Client: SLJV 20/04/2018 Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Level (mAOD) Ref Depth (m) CLAY (Driller's Description). (38.80) 22 24 27 28 29 30 Continued on Next Page Observations / Remarks Misc. Shift Information Backfill Installations Time | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | 0.00 | 80.00 | Bentonite Instrument Details Resp. Zone Depth (m) Diam Running sands causing slow progress: 16.04.18: 10hrs Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



Rotary Borehole

Sheet 4 of 8

Log Type

Exploratory Hole Number **BH17-61** 

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used 424926.96 558537.62 Checked Bv: RPH Easting: Northing: Name: A1 Birtley to Coalhouse Elevation: 12.39mAOD Final Depth: 80.00m Approved By: BH Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 06/04/2018 SLJV 20/04/2018 Client: Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Ref Depth (m) CLAY (Driller's Description). 31 32 33 34 37 38 39 39.80 -27.41 Weak SANDSTONE (Driller's Description). 40 Continued on Next Page Observations / Remarks Misc. Shift Information Backfill Installations Time | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | 0.00 | 80.00 | Bentonite Instrument Details Resp. Zone Depth (m) Diam Running sands causing slow progress: 16.04.18: 10hrs Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



Rotary Borehole

Sheet 5 of 8

Log Type

Exploratory Hole Number **BH17-61** 

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Easting: 424926.96 558537.62 Checked By: RPH Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 12.39mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 06/04/2018 Client: 20/04/2018 SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Ref Depth (m) Weak SANDSTONE (Driller's Description). 42 44 (15.20) 48 49 <u>140</u> 49.80 50 Continued on Next Page Observations / Remarks Misc. Shift Information Backfill Installations Time | Depth (m) | Casing (m) | Water (m) | From (m) | To (m) | Material | 0.00 | 80.00 | Bentonite Instrument Details Resp. Zone Depth (m) Diam Running sands causing slow progress: 16.04.18: 10hrs Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



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Rotary **Borehole** 

Log Type

Exploratory Hole Number **BH17-61** 

FINAL



Web: www.central-alliance.co.uk Sheet 6 of 8 Location Details Methodology & Plant Scale: Project No: 1:50 From (m) Method Plant Used 424926.96 558537.62 Checked By: RPH Easting: Northing: A1 Birtley to Coalhouse Name: Final Depth: 80.00m Elevation: Approved By: 12.39mAOD ВН Location: Tyne and Wear Grid System: OSGB Start Date: Logged By: 06/04/2018

Clie	nt: SUV	Orientation: N	/A	- 1	nclination:	90°							Finish Date:	20/04/	2018
	Strata Description		Lege	Depth nd (Strati			Casing Ø (mm)	Water	Installation /			Samples & Te	esting		
				Thickn	ess) (mAC	D) Depth (r	n) Depth (m)	Level (m)	Backfill	Depth (m)	Ref		Test Results		
-	Weak SANDSTONE (Driller's Description).		: : :	: :											-
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55 -	Grey SANDSTONE/SILTSTONE (Driller's Description	1		55.0	-42.6	1									55 -
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60 -	Continued on Next Page		1	• •											60 -
Obs	ervations / Remarks	Misc.				Informati			<u>'</u>	Backfill			Installations		
Run	ning sands causing slow progress: 16.04.18: 10hrs	pa pa	Da	te	Time	Depth (m)	Casing (m)	Water (m	n) From (m) 0.00	To (m) 80.00	Material Bentonite	Instrument Detai	ls Resp. Zone	Depth (m)	Diam
		ounter       Install   Ratio (							1						
		<u>2</u>	1	1				1	1	1		1	1		I
		er Er g Use i Poir Energ											Drilling Fluid		
		No Groundwater Encountered Costago Used No Monitoring Point Installed Hammer Ref & Energy Ratio (%)										Depth (m) Typ	Drilling Fluid e Colour	Ret	turn %



Name:

3043

A1 Birtley to Coalhouse

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Northing:

Final Depth: 80.00m

Location Details

424926.96

12.39mAOD

Easting:

Elevation:

Rotary **Borehole** 

From (m)

558537.62

Log Type

Exploratory Hole Number **BH17-61** 

CENTRAL ALLIANCE

FINAL Sheet 7 of 8

GEO Methodology & Plant Scale: 1:50 Method Plant Used Checked By: RPH Approved By: ВН

Locat	tion: Tyne and Wear Logi	ged By:	RJ		Grid	System	: OSGB							Start Date:	06/04/2018
Clien	it: <b>SLIV</b> Orie	entation: I	N/A		Incli	nation:	90°							Finish Date:	20/04/2018
	-				Depth (m)			Casing Ø	Water	Installation /			Samples &	Testing	
	Strata Description			Legend	(Stratum Thickness)	Leve (mAOI	l (mm) D) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref		Test Results	
-	Grey SANDSTONE/SILTSTONE (Driller's Description).														
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_	ervations / Remarks	Misc	:.				Informatio		ı		Backfill			Installations	
Runni	ing sands causing slow progress: 16.04.18: 10hrs	pa pa	(0/	Date	Tim	ie I	Depth (m)	Casing (m)	Water (n	n) From (m) 0.00	To (m) 80.00	Material Bentonite	Instrument Det	ails Resp. Zone	Depth (m) Diam
		ounter Install	o and							1					
		r Enco Used	46.00												
		Iwate. asing vring F	8							1			Dontk (=-)	Drilling Fluid	D-4: 0/
		round Ca Sonito	NC) NC										Depth (m) Ty	ype Colour	Return %
		No Groundwater Encountered Casing Used No Monitoring Point Installed Homose Bef & Energia Point	Idil							1					
1		1	- 1		1	J			ı	1	1 1		1 1	I	1



**Rotary Borehole** 

Log Type

Exploratory Hole Number **BH17-61** 

**FINAL** 

Depth (m)

Туре

Colour



Sheet 8 of 8 Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Easting: 558537.62 Checked By: RPH 424926.96 Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 12.39mAOD Final Depth: 80.00m BH Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 06/04/2018 Client: 20/04/2018 SLJV Orientation: N/A Inclination: Finish Date: Hole Ø (mm) Depth (m Depth (m) Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Ref Depth (m) Grey SANDSTONE/SILTSTONE (Driller's Description). 72 74 78 79 <u>92</u> 80.00 -67.61 80.00 80 EOH at 80.00m - Scheduled depth Misc. Shift Information Backfill Installations Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Resp. Zone Depth (m) Diam Running sands causing slow progress: 16.04.18: 10hrs Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%) Drilling Fluid Return %



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Log Type

Exploratory Hole Number

BH17-64

**FINAL** 



Project No:	3043		Location [	Details			Methodology & P	Scale:	1:50	
			Easting: <b>424987.54</b>	Northing:	558536.91	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse		13.22mAOD	Final Depth:	_		Inspection Pit Rotary Open Holing	Hand Tools	Approved:	ВН
Location:	Tyne and Wear	Lievation.	13.22IIIAOD	т пат Берип.	80.00111				Approved.	ВΠ
Location:	Tyne and wear	Logger:	TS	Grid System:	OSGB				Start Date:	23/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	27/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)
80.00	92

Diam (mm)
140

					ter Strikes
Strike	Casing	Sealed	Time	Rose To	Remarks
(m)	(m)	(m)	(min)	(m)	Remarks

	Installation / Instrume	ent Deta	ils	
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

В	ackfill
Depth (m)	Legend Code
0.00 - 80.00	Bentonite

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

· · · · · · · · · · · · · · · · · · ·
* One count indicates an average
reported result of 3 tests carried out at
one depth where available.

Sample Summary									
Environmental Samples									
Soil	0	Water	0						
Geotechnical Samples									
Bulk	0	Large Bulk	0						
Disturbed	0	Disturbed (NR)	0						
Piston	0	Piston (NR)	0						
Undisturbed	0	0 Undisturbed (NR)							
Undisturbed Thin Wall									
Undisturbed Thin Wall (NR)									
Core Sample									

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

	Standard Penetration Test Summary														
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref						

ĺ	SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chis	elling		Water Added						
Depth (m)	Duration (mins)		Depth (m)	Litres					
		]							

Applicable	to	Rotary	Only

Drilling Flush											
Depth (m)	Flush Type	Flush Colour	Return %								
	l										

# Applicable to Dynamic Sampling Only Dynamic Sampling Runs Depth (m) Diam (mm) Recovery % Remarks



Rotary Borehole

Sheet 1 of 8

Log Type

Exploratory Hole Number **BH17-64** 

FINAL



Location Details Methodology & Plant Project No: Scale: 1:50 3043 From (m) 0.00 - 1.20 1.20 - 80.00 Method Inspection Pit Rotary Open Holing Plant Used Hand Tools Fraste PLG Easting: 424987.54 558536.91 Checked By: RPH Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 13.22mAOD Final Depth: 80.00m BH Location: Tyne and Wear Logged By: TS Grid System: OSGB Start Date: 23/04/2018 Client: SLJV 27/04/2018 Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Ref Depth (m) CLAY (Driller's Description). At 7.00m coal band (Driller's Description). 10 Continued on Next Page Observations / Remarks Misc. Shift Information Backfill Installations 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 80.00
 Bentonite
 Instrument Details Resp. Zone Depth (m) Diam Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



Rotary Borehole

Log Type

Exploratory Hole Number **BH17-64**FINAL

CENTRAL ALLIANCE

Sheet 2 of 8 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 From (m) Method Plant Used 424987.54 558536.91 Checked By: RPH Easting: A1 Birtley to Coalhouse Northing: Name: Elevation: Approved By: 13.22mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Grid System: OSGB Start Date: Logged By: TS 23/04/2018

	Tyrie and Wear	Logged By:	TS		Grid Sy		OSGB									3/04/2018
Clier	nt: SLIV	Orientation:	N/A		Inclina	tion:	90°							Finish	n Date: 2	7/04/2018
	0.10.10				Depth (m)	Reduced	Hole Ø	Casing Ø	Water	Installation /			Sar	mples & Testing		
	Strata Description			Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref		Test Re	esults	
	CLAY (Driller's Description).															
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Obs	ervations / Remarks	М	isc.				formatio				Backfill				allations	
		7	· · ·	Date	Time	Dep	oth (m)	Casing (m)	Water (n	n) From (m) 0.00		Material Bentonite	Instrum	ent Details	Resp. Zone Dep	th (m) Diam
		intere	Hammer Ref & Energy Ratio (%)							0.00	50.00	sentonite				
		Encou sed	rgy R.													
		ater k ng Us	& Ene											Drilli	ing Fluid	
		Casi	r Ref.										Depth (m)	Туре	Colour	Return %
		Grou	mme.													
		No	문										1			



Rotary Borehole

Log Type

Exploratory Hole Number **BH17-64**FINAL

CENTRAL ALLIANCE

Sheet 3 of 8 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Method Plant Used Easting: From (m) 424987.54 558536.91 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: 13.22mAOD Final Depth: 80.00m Approved By: ВН Location: Tyne and Wear

Locat	ion: <b>Ty</b>	yne and Wear	Logged By:	TS		Grid	System:	OSGB							Start Date:	23/04/2018
Client	: SI	IJV	Orientation:	N/A			nation:	90°			T				Finish Date:	27/04/2018
		Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Hole Ø (mm)	Casing Ø (mm)	Water Level (m)	Installation / Backfill			Samples &		
	CLAV (Drille	er's Description).			_	Thickness)	(mAOD)	Depth (m)	Depth (m)	Level (III)	Dackilli	Depth (m)	Ref		Test Results	
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Obse	vations / Rei	marks	Mi	isc.				formation				Backfill			Installations	
			red	(%)	Date	Tim	e Dep	oth (m) C	asing (m)	Water (ı	m) From (m) 0.00	To (m) I	Material Bentonite	Instrument Det	ails Resp. Zone	Depth (m) Diam
			counte. d	ny Ratio												
			nter En ng Use. a Point	k Energ											Drilling Fluid	
			No Groundwater Encountered Casing Used No Monitoring Point Installed	er Ref S										Depth (m) Ty	ype Colour	Return %
			No Gra	Натт												
				-												



3043

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Location Details

Rotary Borehole

Sheet 4 of 8

Log Type

Exploratory Hole Number **BH17-64** 

FINAL

Methodology & Plant



1:50

Scale:

From (m) Method Plant Used Easting: 424987.54 558536.91 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Approved By: Elevation: 13.22mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Logged By: TS Grid System: OSGB Start Date: 23/04/2018 Client: SLJV 27/04/2018 Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Ref Depth (m) Test Results CLAY (Driller's Description). 32 33 34 37 38 39 40 Continued on Next Page Observations / Remarks Misc. Shift Information Backfill Installations 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 80.00
 Bentonite
 Instrument Details Resp. Zone Depth (m) Diam Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



Rotary Borehole

Sheet 5 of 8

Log Type

Exploratory Hole Number **BH17-64** 

FINAL



Location Details Methodology & Plant Project No: Scale: 1:50 3043 From (m) Method Plant Used Easting: 424987.54 558536.91 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Approved By: Elevation: 13.22mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Logged By: TS Grid System: OSGB Start Date: 23/04/2018 Client: SLJV 27/04/2018 Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Ref Depth (m) Test Results CLAY (Driller's Description). 42 44 48 49 50.00 -36.78 50 Continued on Next Page Observations / Remarks Misc. Shift Information Backfill Installations 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 80.00
 Bentonite
 Instrument Details Resp. Zone Depth (m) Diam Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



Observations / Remarks

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#### **Rotary Borehole**

Log Type

Exploratory Hole Number

**BH17-64 FINAL** 



Web: www.central-alliance.co.uk Sheet 6 of 8 GEO Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Checked By: Easting: 424987.54 558536.91 RPH Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 13.22mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Logged By: TS Grid System: OSGB Start Date: 23/04/2018 Client: 27/04/2018 SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Ref Depth (m) MUDSTONE (Driller's Description). 51 52 53 54 (10.00) 57 58 59 60.00 -46.78 60 Continued on Next Page

Shift Information

 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 80.00
 Bentonite

Backfill

Installations

Drilling Fluid

Colour

Resp. Zone Depth (m) Diam

Return %

Instrument Details

Туре

Depth (m)

Misc.

No Groundwater Encountered
Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%)



Rotary Borehole

Log Type

Exploratory Hole Number **BH17-64** 

FINAL



Sheet 7 of 8 Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Checked By: Easting: 424987.54 558536.91 RPH Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 13.22mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Logged By: TS Grid System: OSGB Start Date: 23/04/2018 Client: 27/04/2018 SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Ref Depth (m) Grey SILTSTONE (Driller's Description). 61 62 64 67 68 69 (20.00) 70 Continued on Next Page Observations / Remarks Misc. Shift Information Backfill Installations 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 80.00
 Bentonite
 Instrument Details Resp. Zone Depth (m) Diam No Groundwater Encountered
Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



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Rotary Borehole

Sheet 8 of 8

Log Type

Exploratory Hole Number **BH17-64** 

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) Method Plant Used Easting: 424987.54 558536.91 Checked Bv: RPH Northing: Name: A1 Birtley to Coalhouse Approved By: Elevation: 13.22mAOD Final Depth: 80.00m ВН Location: Tyne and Wear Logged By: TS Grid System: OSGB Start Date: 23/04/2018 Client: 27/04/2018 SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Hole Ø (mm) Depth (m Reduced Samples & Testing Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Ref Depth (m) Grey SILTSTONE (Driller's Description). 72 74 78 79 <u>92</u> 80.00 80.00 -66.78 80 EOH at 80.00m - Scheduled depth Observations / Remarks Misc. Backfill Installations 
 Time
 Depth (m)
 Casing (m)
 Water (m)
 From (m)
 To (m)
 Material

 0.00
 80.00
 Bentonite
 Instrument Details Resp. Zone Depth (m) Diam Casing Used
No Monitoring Point Installed
Hammer Ref & Energy Ratio (%) Drilling Fluid Depth (m) Туре Colour Return %



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Sheet

Exploratory Hole Number

# BH17-68

FINAL



Project No:	3043		Location	Details			Methodology & F	lant	Scale:	1:50
	44 01 11 11 11 11	Easting:	425833.07	Northing:	558236.66	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Elevation:	37.98mAOD	Final Depth:	12.00m	0.00 - 1.20 1.20 - 7.78 7.00 - 12.00	Inspection Pit Cable Percussion Rotary Coring	Hand Tools Dando 2000 Fraste PLG	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS+ASH	Grid System:	OSGB		,		Start Date:	03/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	03/05/2018

Hole D	Hole Diameter								
Depth (m)	Diam (mm)								
7.78 12.00	150 92								

Casing Diameter									
Depth (m)	Diam (mm)								
5.50	200								
1									

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)	Remarks					

Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						
18/05/2018 18/05/2018	Standpipe Piezometer Water Level Datalogger	0.00 4.50	2.00 - 5.00 2.00 - 5.00							

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill							
Depth (m)	Legend Code						
0.00 - 2.00	Bentonite						
2.00 - 5.00	Gravel						
5.00 - 12.00	Bentonite						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	5

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary							
Environmental Samples							
Soil	8	Water	0				
Geotechnical Samples							
Bulk	6	Large Bulk	0				
Disturbed	13	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Core	e San	nple	6				

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
Cone	1.20	1.20	DRY	2	5	450	5	N=5 (1,1/1,2,1,1)	AR1134
Cone	3.50	3.50	DRY	3	8	450	8	N=8 (1,2/2,1,2,3)	AR1134
Split Spoon	5.50	5.50	DRY	9	16	450	16	N=16 (5,4/3,3,5,5)	AR1134
Split Spoon	7.50	5.50	DRY	25	50	140		50 (25 for 45mm/50 for 95mm)	AR1134
Cone	7.70	5.50	DRY	25	50	155		50 (25 for 50mm/50 for 105mm)	AR1134

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chiselling									
Depth (m)	Duration (mins)								
7.40 - 7.70	90								

Water Added							
Depth (m)	Litres						

#### **Applicable to Rotary Only**

Drilling Flush									
Depth (m)	Flush Type	Flush Colour	Return %						
I	I		1						

#### **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs										
Depth (m)	Diam (mm)	Recovery %	Remarks							
				П						
				П						
	Depth (m)									



Web: www.central-alliance.co.uk Sheet 1 of 2

Log Type

**Borehole** 

# Combined BH17-68

FINAL

Exploratory Hole Number



Methodology & Plant Location Details Project No: 3043 Scale: 1:50 From (m) 0.00 - 1.20 1.20 - 7.78 7.00 - 12.00 Plant Used Hand Tools Dando 2000 Method Easting: 425833.07 Northing: 558236.66 Checked By: RPH Inspection Pit Cable Percussio Rotary Coring A1 Birtley to Coalhouse Name: Elevation: 37.98mAOD Final Depth: 12.00m Approved By BH Fraste PLG Location: Tyne and Wear Logged By: GS+ASH Grid System: OSGB Start Date: 03/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 03/05/2018 Depth (m Reduced Hole Ø Casing Ø Samples & Testing Coring Installation / Backfill Strata Description Level (mAOD) (Stratum Thickness Level (m Depth (m) Ref 37.88 MADE GROUND: TOPSOIL. 0.10 MADE GROUND: Yellowish brown slightly sandy very gravelly 2 ES CLAY with low cobble content. Sand is fine to coarse. Gravel Is subangular to subrounded fine to coarse sandstone, mudstone, limestone, coal and brick. Cobbles are subangular sandstone and mudstone. 1 00 1.00 1.00 1.20 - 1.65 (2.10) SPT(C) 1.20m, N=5 (1,1/1,2,1,1) 35.78 2.20 MADE GROUND: Soft to firm orangish brown gravelly sandy silty CLAY. Gravel is subangular to subrounded fine to coarse 2.50 - 2.95 100 blows, 0% Recovery sandstone, mudstone, coal and brick. Sand is fine to coarse. 2.50 - 2.95 3.00 3.00 3.50 - 3.95 18 B SPT(C) 3.50m, N=8 (1,2/2,1,2,3) (3.30)4.00 4.00 19 D 20 ES **@** 4.50 - 4.95 21 UT 20 blows, 75% Recovery 5.00 5.00 22 D 23 ES 5.50 32.48 5.50 - 5.95 5.50 - 5.95 24 D 25 B SPT(S) 5.50m, N=16 (5,4/3,3,5,5) Extremely weathered orangish grey MUDSTONE recovered as firm to stiff silty gravelly clay. Gravel is subangular to subrounded fine to coarse with coal. 26 D 27 ES (2.00) 6.50 - 6.95 50 blows, 0% Recovery NR 29 B 6.50 - 6.95 7.17 - 7.32 3 C 12 7.30 31 D At 7.30m, discontinuties are subvertical (80-90 degrees) planar smooth SPT(S) 7.50m, 50 (25 for 45mm/50 for 95mm) SPT(C) 7.70m, 50 (25 for 50mm/50 for 105mm) 30.48 Extremely weak dark grey with orange staining SILTSTONE recovered as dark grey and orange slightly sandy angular fine to (0.65) coarse gravel. Sand is fine to coarse. From 7.50m to 7.70m, no recovery. From 8.10m to 8.15m, stiff dark grey gravelly clay.

Weak to medium strong dark grey SILTSTONE. Discontinuities 8.15 29.83 0 75 are very closely to closely subhorizontal (0-10 degrees) planar 12 smooth with clay infill. From 8.15m to 8.60m, discontinuities are subvertical (80 degrees) planar smooth tight clean From 9.00m to 9.70m, no recovery. 33 7 33 10 Continued on Next Page Shift Information Observations / Remarks Misc Backfill Depth (m) Casing (m) Water (m)
7.00 6.00 -To (m) Instrument Details Water Strikes Strike (m) Rises To (m) Time (min)



Combined Borehole

Log Type

Exploratory Hole Number **BH17-68** 

117-08 FINAL



Water Strikes

Strike (m) Rises To (m) Time (min)

Web: www.central-alliance.co.uk Sheet 2 of 2 GEO Methodology & Plant Project No: Location Details Scale: 1:50 From (m) Method Plant Used RPH Easting: 425833.07 Northing: 558236.66 Checked By: A1 Birtley to Coalhouse Name: Elevation: 37.98mAOD Final Depth: 12.00m Approved By: BH Tyne and Wear Location: Logged By: GS+ASH Grid System: OSGB Start Date: 03/05/2018 Client SLJV Orientation: N/A Inclination: Finish Date: 03/05/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Water Level (m) Installation / Backfill Strata Description Legend (Stratum Thickness Level (mAOD) Depth (m) Ref 12 10.44 - 10.50 10.50 - 10.55 From 10.50m to 10.70m, no recovery. NR 10.70 27.28 Medium strong to strong dark grey MUDSTONE. Discontinuities are very closely to closely spaced subhorizontal (0-10 degrees) planar smooth tight with orange staining. From 10.80m to 11.30m, discontinuities are subvertical (60-80 degrees) 10.50 12.00 87 87 planar smooth tight clean. (1.30) 11.60 - 11.70 From 11.70m to 12.00m, discontinuities are extremely closely spaced 11.82 - 11.90 5 C subvertical (60-80 degrees) planar with orange staining. <u>92</u> 12.00 12 EOH at 12.00m - Scheduled Depth 13 14 18 19 20 Observations / Remarks Misc Shift Information Backfill Resp. Zone | Depth (m) | Diam | 2.00 - 5.00 | 0.00 | 2.00 - 5.00 | 4.50 | Depth (m) Casing (m) Water (m) To (m) Instrument Details Standpipe Piezometer Water Level Datalogger



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Log Type Header

Sheet

Exploratory Hole Number

BH17-69

**FINAL** 



Project No:	3043	Location Details				Methodology & Plant			Scale:	1:50
		Easting:	<b>425909.56</b> Northing:	558068.28	From (m)	Method	Plant Used	Checked:	RPH	
Name:	A1 Birtley to Coalhouse	Lusting.	TOTAL ING.		330000120	0.00 - 1.20	Inspection Pit	Hand Tools	Circoncu.	
	Tyne and Wear	Elevation:	46.07mAOD	Final Depth:	14.10m	1.20 - 6.10 6.10 - 14.10	Cable Percussion Rotary Coring	Dando 2000	Approved:	BH
Location:		Logger:	ST+ASH	Grid System:	OSGB	0.10 14.10	notary coring		Start Date:	09/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	09/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)
6.10 14.10	150 92

Casing D	iameter
Depth (m)	Diam (mm)
4.50	200

Groundwater Strikes											
Strike Casing Sealed Time Rose To											
(m) (m) (mi) (mi) Remarks											
ł											

Installation / Instrument Details										
Date Instrument Details To (m) Resp. Zone (m)										
Standpipe Piezometer	0.00	6.00 - 14.10	50mm							
	Instrument Details	Instrument Details To (m)	Instrument Details To (m) Resp. Zone (m)							

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill							
Depth (m)	Legend Code						
0.00 - 0.40	Concrete						
0.40 - 6.00	Bentonite						
6.00 - 14.10	Gravel						

In-Situ Tests	$\neg$
PID	0
Hand Vane*	0
Standard Penetration Tests	4

Sample Summary Environmental Samples 6 Geotechnical Samples

10

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed

Piston

Undisturbed

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Cone	1.20	1.20	DRY	5	22	450	22	N=22 (2,3/4,5,8,5)	AR1134
Cone	3.50	3.50	DRY	5	23	450	23	N=23 (2,3/5,5,5,8)	AR1134
Split Spoon	5.50	4.50	DRY	25	50	250		50 (25 for 95mm/50 for 155mm)	AR1134
Cone	5.90	4.50	DRY	25	50	195		50 (25 for 95mm/50 for 100mm)	AR1134
	I	I	I		I	1	1		1

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

* One count indicates an average	
reported result of 3 tests carried out at	
one depth where available.	
'	

#### **Applicable to Cable Percussion Only**

Chiselling						
Depth (m)	Duration (mins)					
5.70 - 5.90	60					

Water Added						
Depth (m)	Litres					

#### **Applicable to Rotary Only**

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			
I	I		1			

#### **Applicable to Dynamic Sampling Only**

			<u> </u>				
Dynamic Sampling Runs							
Depth (m)	Diam (mm)	Recovery %	Remarks				

<sup>(</sup>NR) Indicates sample undertaken but with



Easting:

Project No:

3043

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Combined **Borehole** 

Log Type

Exploratory Hole Number

**BH17-69** 

CENTRAL ALLIANCE

FINAL Web: www.central-alliance.co.uk Sheet 1 of 2 GEO Location Details Methodology & Plant Scale: 1:50 Method Inspection Pit Cable Percussion Rotary Coring Plant Used Hand Tools Dando 2000 From (m) 0.00 - 1.20 1.20 - 6.10 6.10 - 14.10 RPH 425909.56 558068.28 Checked By: Northing:

Name:	A1 Birtley to Coalhouse	Easting:	425909.56	Nor	thing:	558068.2	0.0	0 - 1.20	Inspec	tion Pit		Hand Tools	٦ ٥	Checked	I By:			RPH	
		Elevation:	46.07mAOD	Fina	l Depth:	14.10m	6.10	0 - 6.10 0 - 14.10		ercussion Coring		Dando 2000	A	Approve	ed By:	:		ВН	
Location:	Tyne and Wear	Logged By:	ST+ASH	Grid	System:	OSGB							S	start Da	te:		09/	05/201	8
Client:	SUV	Orientation:	N/A	Incli	ination:	90°							F	inish D	ate:		09/	05/201	8
				Depth (m)		Hole Ø	Casing Ø	Water	Installation /		Sample	s & Testing	pou	i		Cori	ing		
	Strata Description		Legend	(Stratum Thickness)	Level (mAOD)	(mm) Depth (m)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	Met	Core Run	TCR	SCR	RQD	If	
TOPS	DE GROUND: Grass over dark brown gravelly sa SOIL. Sand is fine to coarse. Gravel is subangul ounded fine to coarse sandstone.	ar to		(1.00)	45.07					0.20 0.20 0.50 0.50 0.60	1 D 2 ES 3 D 4 ES 5 B		d						1 -
Sand	DE GROUND: Yellowish brown slightly gravelly: I is fine to coarse. Gravel is subangular to subr parse sandstone.			(1.30)						1.00 1.00 1.20 1.20 - 1.65	6 D 7 ES 8 D 9 B	SPT(C) 1.20m, N=22 (2,3/4,5,8,5)							2 -
	greyish brown slightly gravelly slightly sandy		s	2.30	43.77					2.30	12 D								
med	to coarse. Gravel is subangular to subrounded ium sandstone and coal.  to stiff brown mottled grey slightly sandy grav			(0.70)	43.07					3.00 3.00	14 D 15 ES								3 -
Sand	to still brown mottled grey signity sandy grad I is fine to coarse. Gravel is subangular to subr parse sandstone and coal.									3.00 3.50 - 3.95	15 ES	SPT(C) 3.50m, N=23 (2,3/5,5,5,8)	CP						-
4 -				(2.50)						4.00	17 D								4 -
							<u>200</u> 4.50			4.50 - 4.95	18 UT								
5 -										5.00	19 D								5 -
	SANDSTONE recovered as sandy angular to stel. Sand is fine to coarse.	ubrounded		5.50	40.57					5.50 - 5.95	20 D	SPT(S) 5.50m, 50 (25 for 95mm/50 for 155mm)							
6 -				:								SPT(C) 5.90m, 50 (25 for 95mm/50 for 100mm)		Ш	Ш				6 -
+'	From 6.00m to 6.60m, no recovery.  grey angular coarse siltstone GRAVEL.		<del></del>	6.10	39.97	150 6.10						,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	H		H			'	,
	to stiff orangish brown gravelly sandy CLAY. G	ravel is		(0.75)	39.22					6.95 - 7.00	10 C			6.00 7.00	40	10	0	NR NI	
angu Firm	Ilar to subangular fine to coarse sandstone. From 7.00m to 7.25m, no recovery. dark grey gravelly CLAY with thin bands of bla onaceous mudstone and coal. Gravel is angula se mudstone.	ıck		7.25	38.82									7.00 8.10	77	77	0	NR	7 -
8 –				(1.39)						8.15 - 8.25	11 C							NI 8	8 -
Very	From 8.30m to 8.64m, becoming extremely weak dark grey m weak orangish brown fine to medium grainecontinuities are very closely to closely spaced s	SANDSTON	/	8.64 (0.03) 8.67	37.43 37.40									8.10 9.60	100	100	23	12 NI	-
Extre extre tight	O degrees) planar smooth tight clean. emely weak dark grey MUDSTONE. Discontinu emely closely spaced subhorizontal (0-10 degr with clay infill.			(0.33) 9.00 (0.15) 9.15 (0.10) 9.25	37.07 36.92 36.82					9.45 - 9.60	1 C							12	9 -
Extre	k COAL. emely weak dark grey MUDSTONE recovered a	as very stiff		(0.35) 9.60 (0.15)	36.47 36.32					9.78 - 9.84	7 C							NI	
10	Continued on Next Page		1	9.75					* 1 1 *	1	4		+		П	+	$\dashv$	10	) -
Observation	ns / Remarks	N	Лisc.	1	Shift I	nformatio	n .	1	Ή	Backfill	•	·		Installa	tions				_
	, ····		Date	Tim			Casing (m)	Water (n	n) From (m)	To (m)	Materia	Instrument D		Re	esp. Z	one D	Depth	(m) Dia	ım
		vandwater Encountered	Casing Used fonitoring Point/s Installed				2,7		0.00 0.40 6.00	0.40 6.00 14.10	Concrete Bentonite Gravel	Standpipe Piezo Strike (m) Rises To (	meter \	Water S	5.00 - 14 Strikes	4.10 S	0.00	50n	
		Vo Gre	Moni												l				



Project No:

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Location Details

Web: www.central-alliance.co.uk Sheet 2 of 2

Log Type Combined Exploratory Hole Number

Methodology & Plant

**BH17-69 FINAL** 

Scale:

CENTRAL ALLIANCE GEO

1:50

**Borehole** 

From (m) Method Plant Used Easting: 425909.56 Northing: 558068.28 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 46.07mAOD Final Depth: 14.10m Approved By: BH Location: Tyne and Wear Logged By: ST+ASH Grid System: OSGB Start Date: 09/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 09/05/2018 Depth (m Reduced Hole Ø Samples & Testing Coring Installation , Backfill Strata Description Level (mAOD) Depth (m) gravelly clay. Gravel is angular fine to coarse. 10.15 - 10.45 2 C Very weak to weak orangish brown fine to medium grained SANDSTONE. Discontinuities are closely spaced subhorizontal (1.45) 9.60 11.10 (0-10 degrees) planar smooth tight clean. 100 100 90 Very weak dark brown MUDSTONE recovered as gravelly sandy clay. Gravel is angular fine to coarse. Sand is fine to coarse. Weak to medium strong orangish brown fine to medium grained SANDSTONE. Discontinuities are closely spaced subhorizontal 34.87 11.25 - 11.30 (0-10 degrees) planar smooth tight clean. 63 38 Very weak dark orangish brown MUDSTONE recovered as (0.65)gravelly sandy clay. Gravel is angular to subangular fine to coarse. Sand is fine to coarse. From 11.25m to 11.80m, no recovery Medium strong to strong dark grey fine grained SANDSTONE. 12 Discontinuities are closely spaced subhorizontal (0-10 degrees) planar smooth tight clean. 12.37 - 12.66 3 C (2.10) 13.03 - 13.28 5 C 13 13.28 - 13.34 93 93 68 13.95 32.12 Medium strong dark grey MUDSTONE. Discontinuities are very 14.00 - 14.10 9 C 31.97 closely spaced (40-60 degrees) planar with clay infill. 14.10 EOH at 14.10m - Scheduled Depth 18 19 20 Observations / Remarks Misc Shift Information Backfill Depth (m) Casing (m) Water (m) Resp. Zone | Depth (m) | Diam | 6.00 - 14.10 | 0.00 | 50mm To (m) Water Strikes Strike (m) Rises To (m) Time (min)



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Header

Sheet

Exploratory Hole Number

BH17-71

**FINAL** 



Project No:	3043	Location Details				Methodology & P	Scale:	1:50		
		Easting:	<b>426415.33</b> Northing:		orthing: 557672.39		Method	Plant Used	Checked:	RPH
Name: A1 Birtley to Coalhouse	A1 Birtley to Coalhouse	Elevation:	79.54mAOD	Final Depth:	5.18m	0.00 - 1.20 1.20 - 5.20	Inspection Pit Dynamic Sampling (Windowless)	Hand Tools Modular Window Sampler	Approved:	ВН
Location:	Tyne and Wear	Logger:	LW	Grid System:	OSGB	5.20 - 5.28	Dynamic Probing	Modular Window Sampler	Start Date:	21/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	21/05/2018

Hole Diameter						
Depth (m)	Diam (mm)					

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes							
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks			

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m) Legend Code						
0.00 - 5.18	Bentonite					

In-Situ Tests				
PID	0			
Hand Vane*	0			
Standard Penetration Tests	5			

- 1	Standard i Crictiation (CStS	,					
	One count indicates an ave	_					
reported result of 3 tests carried out at							
	one depth where availab	le.					

Sample Summary								
Environmental Samples								
Soil 5 Water								
Geotechnical Samples								
Bulk	6 Large Bulk							
Disturbed	11	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	Undisturbed (NR)	0						
Undistu	rbed	Thin Wall	0					
Undisturbed Thin Wall (NR) 0								
Core Sample 0								

(NR) Indicates sample undertaken but with
0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth			Seating		Penetration	N	Reported Result	Hammer Ref
rest type	(m)	(m)	(m)	Blows	Blows	Total (mm)	14	Neported Nesdit	mannine ner
Split Spoon	1.20	-	-	3	12	450	12	N=12 (1,2/2,3,3,4)	MOD 02
Split Spoon	2.00	-	-	8	29	450	29	N=29 (4,4/7,6,7,9)	MOD 02
Split Spoon	3.00	-	-	10	26	450	26	N=26 (4,6/5,6,7,8)	MOD 02
Split Spoon	4.00	-	-	10	18	450	18	N=18 (4,6/5,4,5,4)	MOD 02
Split Spoon	5.00	-	-	25	51	220		51 (11,14/51 for 70mm)	MOD 02

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

#### **Applicable to Cable Percussion Only**

Chise	Chiselling								
Depth (m)	Duration (mins)								

Water Added								
Depth (m)	Litres							

#### **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					

#### **Applicable to Dynamic Sampling Only**

	Dynamic	Sampling	Runs				
Depth (m)	Diam (mm)	Recovery %	Remarks				
1.20 - 2.00	87	90					
2.00 - 3.00	70	100					
3.00 - 4.00	70	95					
4.00 - 5.00	55	80					



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Log Type **Dynamic** Sampling & Probe Sheet 1 of 1

Exploratory Hole Number

**BH17-71 FINAL** 



Location Details Methodology & Plant Scale: 1:50 Project No: 3043 Plant Used
Hand Tools
wless) Modular Window Sou Method Inspection Pit Depth (m) 0.00 - 1.20 1.20 - 5.20 Easting: 426415.33 557672.39 Checked By: RPH Name: Northing: A1 Birtley to Coalhouse

name:	^	T BILLIE	y to t	Joanno	use				Elevation:	79.54mAOD	Final Den	th: <b>5.18m</b>	1.	00 - 1.20 20 - 5.20	ynamic Samp	ection Pit oling (Window	less) Mod	Hand Tools Iular Window Sa	mpler	Approved By:	ВН
Location:	Ty	ne and	Wea	ır					Logger:	LW	Grid Syste		5.	20 - 5.28	Dynam	nic Probing	Mod	lular Window Sa	mpler		21/05/2018
Client:	SI	JV							Orientation:	N/A	Inclination										21/05/2018
Chefft.			Plows	/ 100m	m				Officitation.	177	Hichination	11. 30	Donth (m)		Cooling (f					Samples & Testing	21/03/2018
5	10					35	40 4	15	St	rata Description		Legend	Depth (m) (Stratum Thickness)	Reduced Lev (mAOD)	rel Casing Ø (mm) Depth (m	vvaler	Installation / Backfill	0 11 1 1	Ref	Test Results	
-									gravelly sandy C coarse. Gravel is	D: Dark brown slig CLAY. Sand is fine t s angular to subar	to		(0.60)		Depth (m			0.20 0.20 0.20 0.20 - 0.60	2 D 3 ES ES	lest Results	
1								-	CLAY with rootle Gravel is angula	n slightly gravelly ets. Sand is fine to r to subangular fi	o coarse. ne to		0.60	78.94				0.20 - 0.60 0.60 0.60 0.60 - 1.00	1 B 5 D 6 ES 4 B		1 -
-									coarse sandstor	ne and mudstone.			(1.40)					1.20 1.20 1.20 - 1.65 1.20 - 2.00	10 ES 9 D 7 D 8 B	SPT(S) 1.20m, N=12 (1,2/2	
2									CLAY. Sand is fin	rk brown gravelly ne to coarse. Grave coarse sandstone, granite.	el is		2.00	77.54				2.00 2.00 2.00 - 2.50 2.00 - 3.00	12 B 14 ES 11 D 13 D	SPT(S) 2.00m, N=29 (4,4/7	.6,7,9) 2 -
3													(2.00)					3.00 3.00 - 3.50 3.00 - 4.00	17 D 15 D 16 B	SPT(S) 3.00m, N=26 (4,6/5	.6,7,8) 3 -
4										n gravelly fine to o bands. Gravel is a andstone.			4.00	75.54				4.00 4.00 - 4.45 4.00 - 5.00	20 D 18 D 19 B	SPT(S) 4.00m, N=18 (4,6/5	,4,5,4) 4 -
5									Extremely weak	c orangish brown	fine to		(1.00)	74.54				5.00 - 5.45	21 D	SPT(S) 5.00m, 51 (11,14/5 70mm)	1 for 5 -
								51	medium graine		/		(0.18) 5.18	74.36						Zoninj	
6																					6 <del>-</del>
7																					7 -
8																					8 -
-																					9 -
0													-					-			10 -
Observatio	ons / Re	marks							Misc.	Equipment Info	rmation		Dynam	ic Sampling	g Runs	1			Inst	tallations	
										Dynamic Probe	Type:		epth Base Dia	m (mm) Recov	ery (%)	Remarks	In	strument Typ		Resp. Zone Depth	(m) Diam
									er Encountered ot Cased Point Installed	<b>DPSH-B</b> Fall Height: Ha	ammer Weight:	1.20 2.00 3.00	3.00	70	90 100 95						
									er Ence t Case Point I	750mm	64.0kg	4.00			80				Grove '	huator Strikes	
									dwat le Nc oring	Cone Base Diam.	Rod Diam.						Strike (m)			water Strikes ses To (m) Time (min)	Remarks
									iround Hok Monito	50mm	35mm						June (III) Ci	2011B (111) 3eali	(III) PAR	to the time	ncilial No

Hammer Reference & Energy Ratio (%) MOD 02 (65%)



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Sheet

Exploratory Hole Number

BH17-72

FINAL



Project No:	3043		Location	Details			Methodology & F	Plant	Scale:	1:50
		Easting: 426618.26 Northing: 557570.49 From (m) Method Plant Used Check		Checked:	RPH					
Name:	A1 Birtley to Coalhouse	Lusting.	420010120	reor crimig.	337370143	0.00 - 1.20	Inspection Pit	Hand Tools	circoncu.	
		Elevation:	81.17mAOD	Final Depth:	16.30m	1.20 - 7.30 7.30 - 16.30	Dynamic Sampling (Windowless) Rotary Coring	Massenza MIP3 Massenza MIP3	Approved:	BH
Location:	Tyne and Wear	Logger:	RJ+GS	Grid System:	OSGB	7.30 10.30	notary coming	Widdenia Will S	Start Date:	12/07/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	12/07/2018

ameter
Diam (mm)
92

Casing D	iameter
Depth (m)	Diam (mm)
7.30	140

	Groundwater Strikes											
Strike	Casing Sealed Time Rose To Remarks											
(m)	(m)	(m)	(min)	(m)	Remarks							
ł												

Installation / Instrument Details												
Date	Instrument Details To (m) Resp. Zone (m											
19/06/2018	Standpipe Piezometer	5.00	3.50 - 5.50									

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

В	ackfill
Depth (m)	Legend Code
0.00 - 0.50	Concrete
0.50 - 3.50	Bentonite
3.50 - 5.50	Sand
5.50 - 16.30	Bentonite

In-Situ Tests						
PID	0					
Hand Vane*	0					
Standard Penetration Tests	0					

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
Soil 4 Water		0						
Geotechnical Samples								
4	Large Bulk	0						
4	Disturbed (NR)	0						
0	Piston (NR)	0						
0	Undisturbed (NR)	0						
bed 1	Thin Wall	0						
d Thi	n Wall (NR)	0						
e San	nple	7						
	4 4 0 0 thickent of the second	mental Samples  4 Water chnical Samples  4 Large Bulk  4 Disturbed (NR)  0 Piston (NR)						

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary												
Test Type						Penetration	N	Reported Result	Hammer Ref				
rest type	(m)	(m)	(m)	Blows	Blows	Total (mm)		neported nesare	Tidiiiiiici iici				

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chise	Chiselling Depth (m) Duration (mins)									
Depth (m)		D								
1										

Added
Litres

#### **Applicable to Rotary Only**

Drilling Flush										
Depth (m)	Flush Type	Flush Colour	Return %							
Depth (m) 7.30 - 16.30	Flush Type Air/Mist	Flush Colour Brown	Return % 99							

#### **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs													
Depth (m)	Diam (mm)	Recovery %	Remarks										
1.20 - 2.20	117	40											
1.60 - 2.60	117	100											



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Log Type

# Combined BH17-72

FINAL

Exploratory Hole Number



Sheet 1 of 2 Methodology & Plant Location Details Project No: 3043 Scale: 1:50 From (m) 0.00 - 1.20 1.20 - 7.30 7.30 - 16.30 Plant Used Hand Tools Massenza MIP3 Massenza MIP3 Method Easting: 426618.26 Northing: 557570.49 Checked By: RPH Inspection Pit Sampling (Win Rotary Coring A1 Birtley to Coalhouse Name: Elevation: 81.17mAOD Final Depth: 16.30m Approved By: BH Location: Tyne and Wear Logged By: RJ+GS Grid System: OSGB Start Date: 12/07/2018 Client SLIV Orientation N/A Inclination: Finish Date: 12/07/2018 Depth (m) Reduced Hole Ø Samples & Testing Coring Strata Description Legend Level (mAOD) (Stratum Thickness Depth (m) Ref MADE GROUND: Black gravelly slightly clayey fine to coarse SAND with medium cobble content. Gravel is angular to subangular fine to coarse brick concrete sandstone and 0.40 - 0.60 2 ES siltstone. Cobbles are subangular brick and sandstone. (1.30)0.70 - 1.20 3 B 1.00 4 ES 1.20 - 1.60 1.20 - 1.65 1.30 79.87 MADE GROUND: Very stiff blackish grey gravelly CLAY with 8 ES medium cobble content with occasional pockets of fine to 1.60 - 2.05 1.60 - 2.60 coarse sand. Gravel is angular to subrounded fine to coarse concrete brick siltstone and sandstone. Cobbles are subangular siltstone 9 ES 3.60 - 4.05 10 D (6.00)4.60 - 5.05 11 D Weak to medium strong thinly laminated medium to coarse grained orangish yellow SANDSTONE. Discontinuities are: 1) subhorizontal (10-20 degrees) closely to medium spaced undulating rough. 2) subvertical (80-90 degrees) widely spaced 7.95 - 8.00 undulating rough. NI 24 15 60 From 7.30m to 7.90m, no recovery. From 7.90m to 8.05m, recovered as subangular to subrounded medium to coarse gravel. From 8.80m to 9.30m, recovered as subangular to subrounded fine to coarse gravel. From 9.30m to 10.30m, no recovery. 8.80 10.30 0 33 0 10 Continued on Next Page Observations / Remarks Misc Shift Information Backfill Depth (m) Casing (m) Water (m) To (m) Instrument Details Resp. Zone | Depth (m) | Diam | 3.50 - 5.50 | 5.00 | Water Strikes Strike (m) Rises To (m) Time (min)



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Combined Borehole

Log Type

Exploratory Hole Number BH17-72 FINAL



Sheet 2 of 2

										Sheet 2					$\perp$			GEO		
Proj	ject No: <b>3043</b>				Locat	ion Detai	s			1		thodology &	Plant	-1		Scale:				1:50
Nan	ne: A1 Birtley to Coalho	ouse	Easting:	4266	518.26	Nort	hing:	557570.4	9  -	rom (m)	Me	thod		Plant Used		Checked	d By:		-	RPH
			Elevation:	81.1	7mAOD	Final	Depth:	16.30m								Approve	ed By	':		ВН
Loca	ation: Tyne and Wear		Logged By:	RJ+G	iS	Grid	System:	OSGB							:	Start Da	ite:		12/0	7/2018
Clie	nt: SLIV		Orientation:	N/A		Incli	nation:	90°							1	Finish D	ate:		12/0	7/2018
		Charle Danadakia				Depth (m)	Reduced Level	Hole Ø	Casing (		Installation /		Samples	& Testing	poq			Cori	ng	
	3	Strata Description			Legend	(Stratum Thickness)	(mAOD)	(mm) Depth (m)	(mm) Depth (n	n) Level (m)	Backfill	Depth (m)	Ref	Test Results	Met	Core Run	TCR	SCR F	RQD	If
-					: : : : :															
]	From 10 30m to 10 70m reco	overed as slightly clayey sandy s	uhanaular to									10.25 - 10.30	6 C							
-	subrounded fine to coarse gra		abangalar to																	NI -
_	From 10.70m to 11.80m, no re	racovary																	-	
_	770111 10.70111 10 11.00111, 110 11	ecovery.																		
11 -						(7.50)										10.30 11.80	27	0	0	11 -
-																			١	IR
-					:::::															
_																				
-		overed as sandy subangular to si	ubrounded		: : : :														-	NI
12 -	fine to coarse gravel. Sand is j From 12.00m to 12.80m, no n																			12 -
-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	•			: : : : :											1				
					:::::											11.80				IR .
-					: : : : :											13.30	47	23	23	
					: : : : :											1			-	$\dashv$
13 -												12.95 - 13.30	5 C			1				6 13 -
-					: : : :										8	1				
-					: : : : :															7
-	From 13.45m to 13.85m, no r	ecovery.			: : : :							13.66 - 13.82	2 C			1				ır -
-												13.00 - 13.02	20							
14 -	From 13.85m to 14.05m, reco fine to coarse gravel. Sand is j	overed as sandy subangular to so fine to coarse.	ubrounded		: : : :											13.30	73	56	56	14 -
_																14.80	/3	50	50	
-																				1
_												14.53 - 14.80	1 C							'
_					: : : :	14.80	66.37													_
15 -	NO RECOVERY.																			15 -
-						(0.80)													1	IR .
-						. ,														
-						15.60	65.57					15.60 - 15.65	4 C			14.80 16.30	47	0	0	_   •
-	Extremely weak destructur																			
16 -	MUDSTONE recovered nor angular to subangular fine					(0.70)														NI 16 -
10 -	angular to sabangular ilite	to mediam madatone o										16.20 - 16.30	3 C							10
-	EOH at 16.3	30m - Scheduled Depth	1			16.30	64.87	92 16.30				10.20 - 10.30	30		H			-	+	
-																				.
-																				
-																				
17 -																				17 -
_																				
-																				.
-																1				
-	1															1				
18 -	1																			18 -
-																				
-																1				.
-																1				
-																				
19 -																				19 -
-																				
_																1				.
-																				
-																				
20 -												†				1		+	+	20 -
Ohs	L ervations / Remarks			Misc.			Shift In	formation	 1		Τ	Backfill				Installa	itions	 ;		
- 23	,				Date	Tim			asing (m	) Water (m		To (m)	/laterial			s R	esp. Z	one D		m) Diam
				italled							0.00 0.50	3.50 E	Concrete	Standpipe Pie	zomete	er :	3.50 - 5	5.50	5.00	
				Io Groundwater Encounterel Casing Used Monitoring Point/s Installed							3.50 5.50		Sand entonite							
				ndwater Casing L 'ing Poin										Caville 7 , L.		Water S	strike			
				srounc Ca nitorin										Strike (m) Rises To	(m) T	ıme (min)		Re	emark	S
				Moi																



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Log Type Header Exploratory Hole Number

BH17-73

FINAL GEO

Project No:	3043		Location	Details			Method	dology & Pl	lant	Scale:	1:50
		Easting:	427293.50	Northing:	557250.93	From (m)	Method		Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	12/255.50	rror crimig.	337230.55	0.00 - 1.20	Inspection Pi		Hand Tools	onconcu.	
		Elevation:	80.72mAOD	Final Depth:	4.35m	1.20 - 4.35	Dynamic Sampling (Wi	Vindowless)	Fraste SLG	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	16/05/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	16/05/2018

Hole Diameter						
Depth (m)	Diam (mm)					

Casing Diameter Depth (m) Diam (mm

Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Remarks		
(m)	(m)	(m)	(min)	(m)	Remarks		

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
18/05/2018	Standpipe	0.00	1.00 - 4.00					

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

Backfill							
Depth (m)	Legend Code						
0.00 - 1.00	Bentonite						
1.00 - 4.00	Gravel						
4.00 - 4.35	Bentonite						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	3

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

0 (NR) Indicates sample u	
0% Recov	very

Sam	ple S	Summary	- 1					Sta	ndard	Penetrati	on T	est Summary	
Enviro	nmer	ntal Samples		Test Type	Depth (m)	Casing (m)	Water (m)			Penetration Total (mm)	N	Reported Result	Hammer Ref
Soil	6	Water	0	Split Spoon	1.20	-	-	3	32	450	32	N=32 (1,2/4,17,7,4)	AR1175
Geote	chnic	cal Samples		Split Spoon Split Spoon	3.00 3.90	-	-	6 8	24 27	450 450	24 27	N=24 (3,3/5,5,6,8) N=27 (3,5/5,7,7,8)	AR1175 AR1175
Bulk	4	Large Bulk	0										
Disturbed	10	Disturbed (NR)	0										
Piston	0	Piston (NR)	0										
Undisturbed	0	Undisturbed (NR)	0										
Undistu	rbed 1	Thin Wall	0										
Undisturb	ed Thi	n Wall (NR)	1										
Со	re San	nple	0										
R) Indicates sa	ımple	undertaken but v covery	vith										

SPT Hammer Ref.	Energy Ratio (%)
AR1175	56

Chise	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litres

**Applicable to Cable Percussion Only** 

Applicable to Rotary Only						
Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			

Applicable to Dynamic Sampling Only						
	Dynamic	Sampling	Runs			
Depth (m)	Diam (mm)	Recovery %	Remarks			
1.20 - 2.00	113	100				
2.00 - 3.00	113	50				
3.00 - 3.90	113	50				



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Log Type

# Dynamic Sampling

FINAL

Exploratory Hole Number

**BH17-73** 



Methodology & Plant Project No: 3043 Location Details Scale: 1:50 Plant Used Hand Tools Fraste SLG Depth (m) 0.00 - 1.20 1.20 - 4.35 Method Inspection Pit Dynamic Sampling (Windowless) Easting: 427293.50 557250.93 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Final Depth: 4.35m Elevation: 80.72mAOD Approved By: ВН Location: Tyne and Wear Start Date: Logged By: Grid System: OSGB 16/05/2018 GS

LOCE	Tylie and Wear	Logged By:	GS	Grid Syste	m: OSGE	•							Start Date:	16/05/20	018
Clie	nt: SLIV	Orientation:	N/A	Inclination	: 90°								Finish Date:	16/05/20	018
	Strata Description				Legend	Depth (Strati	Reduced	Level Casii	) water	Installation /			Samples & Testing		
	Strata Description				Legenu	Thickn	ess) (mAC	Depti		Backfill	Depth (m)	Ref	Test Result	is.	
-	MADE GROUND: TOPSOIL.					(0.10		2			0.10 - 1.20	7 B			
]	MADE GROUND: Soft to firm dark brown and black				******	× 0.10	´				0.20 0.30	1 D 2 ES			1
-	with low cobble content. Sand is fine to coarse. Gr sandstone, brick and concrete. Cobbles are subang			barse	*****	×					0.50	3 D			- 1
_	concrete.	guiai sailusi	ione, brick and								0.70	4 ES			1
-					*****										1
1 -					*****	(1.90	0)				1.00 1.00	5 D 6 ES			1 -
-					*****	8				: 目:	1.20 - 1.65	8 D 9 B	SPT(S) 1.20m, N=32 (1,2	2/4,17,7,4)	-
_					*****					l:目:	1.20 - 1.65	98			
_					*****					[:] [] :	1				7
-					*****						1				1
2 -						2.00	78.7	2		ŀ∄	1.90 2.00	10 ES 12 D	0% Recovery		2 -
-	MADE GROUND: Yellowish orangish brown slightly				*****					l∵ 📑 :	2.00 - 2.45	11 UT- NR	,		- 1
-	to coarse SAND. Gravel is subangular to subrounde siltstone, coal and brick.	ed line to co	darse sanustone	,	*****						2.00 - 2.45	13 B			-
-	sitistorie, cour una priek.				*****						2.45	14 D			-
-					*****	8									- 1
-					*****	Ä				:     :		1			1
3 -						(2.20	0)			[: ]	3.00 3.00 - 3.45	15 ES 16 D	SPT(S) 3.00m, N=24 (3,3	3/5,5,6,8)	3 –
=						<b>3</b>				[:]目:	3.00 - 3.45	17 B			1
-						8					3.50	18 D			
-						8					. 5.50				}
-					******	<b>X</b>					300 : 25	100	CDT/C) 2 00 ** 03 **	E /E 7 7 0)	7
4 -					*****					H	3.90 - 4.35 3.90 - 4.35	19 D 20 D	SPT(S) 3.90m, N=27 (3,5	5,7,7,8)	4 -
_	O				*****	4.20	76.5	2			4.00	21 ES			1
-	Orangish yellow coarse grained SANDSTONE. EOH at 4.35m - Schedul	ed Denth			: : : : :	(0.15 4.35		7							1
-	Eon at 1.00m Conduct	ou Dopin				4.5.	´								
-															1
-															
5 -															5 -
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9 -												1			9 –
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-															1
-															1
10 —						1					1	1			10 -
Ohs	ervations / Remarks	Mi	sc. Backf	ill		Dvn	amic Samp	ing Runs			1	Ins	<u> </u>		$\dashv$
203	,	1411	Depth (m)	Material	From (m)	To (m)	Diam (mm) Re	covery (%)	Remarks	Ins	trument Deta		Resp. Zone Dep		iam
		itered	0.00 - 1.00 1.00 - 4.00	Bentonite Gravel	1.20 2.00	2.00 3.00	113 113	100 50			Standpipe			0.00	
		ncoun	4.00 - 4.35	Bentonite	3.00	3.90	113	50							
		rater Er Not Ca	Poin									Ground	lwater Strikes		
		undwe Hole I								Strike (m) C	asing (m) Seal	ed (m) Ri	ses To (m) Time (min)	Remarks	,
		o Gro	Hammer Ref & End	ergy Ratio (%)											
		Ž	AR1175 (	56%)											



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Header

Sheet

Exploratory Hole Number

BH17-75

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 From (m) 0.00 - 1.20 1.20 - 10.00 Method Inspection Pit Cable Percussio Plant Used Hand Tools Dando 2000 Easting: 425287.00 558582.99 Checked: RPH Northing: A1 Birtley to Coalhouse Name: ВН Elevation: 17.67mAOD Final Depth: 10.00m Approved: Location: Tyne and Wear Logger: ALB Grid System: OSGB Start Date: 19/02/2018 Client: End Date: 19/02/2018 SLJV Orientation: N/A Inclination: 90°

Hole Di	ameter
Depth (m)	Diam (mm)
10.00	150

n (mm)
150

	Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To	Remarks						
(m)	(m)	(m)	(min)	(m)	Remarks						
0.70	-	-	20	0.60							

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam					
Date	instrument Details	10 (111)	kesp. Zone (iii)	(mm)					
19/02/2018	Standpipe	3.00	1.00 - 3.00						

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill								
Depth (m)	Legend Code							
0.00 - 0.30	Concrete							
0.30 - 1.00	Bentonite							
1.00 - 3.00	Gravel							
3.00 - 10.00	Bentonite							

In-Situ Tests	
PID	5
Hand Vane*	0
Standard Penetration Tests	5

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary							
Environmental Samples							
Soil <b>5</b> Water							
Geotechnical Samples							
Bulk	7	Large Bulk	0				
Disturbed	17	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Core Sample							

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetration	on T	est Summary	
Test Type	Depth	Casing	Water	Seating	Main	Penetration	N	Reported Result	Hammer Ref
iest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	nammer ker
Split Spoon		1.00	-	3	15	450	15	N=15 (1,2/3,4,4,4)	AR1134
Split Spoon	2.50	1.50	-	7	16	450	16	N=16 (3,4/5,3,3,5)	AR1134
Split Spoon	4.50	1.50	-	5	13	450	13	N=13 (2,3/3,3,3,4)	AR1134
Split Spoon	6.50	1.50	-	5	13	450	13	N=13 (2,3/3,4,3,3)	AR1134
Split Spoon	8.50	1.50	-	5	12	450	12	N=12 (2,3/3,3,3,3)	AR1134
ł									

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chise	Chiselling							
Depth (m)	Duration (mins)							

•								
Water Added								
Litres								

#### **Applicable to Rotary Only**

	Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %				
	1		1				

#### **Applicable to Dynamic Sampling Only**

Depth (m)	Diam (mm)	D 0/	
		Recovery %	Remarks



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Cable Percussion

Log Type

Exploratory Hole Number **BH17-75** 

FINAL



Sheet 1 of 1 Methodology & Plant Location Details: Scale: Project No: 3043 1:50 Depth (m) 0.00 - 1.20 1.20 - 10.00 Method Plant Used Easting: 425287.00 Northing: 558582.99 Checked By: RPH A1 Birtley to Coalhouse Name: Hand Tools Dando 2000 Elevation: 17.67mAOD Final Depth: 10.00m Approved By: BH Location: Tyne and Wear Logged By: ALB Grid System: OSGB Start Date: 19/02/2018 Client SLIV Orientation N/A Inclination: Finish Date: 19/02/2018 Depth (m) Reduced Casing Ø Samples & Testing Water Level (m Installation , Backfill Added (Litres) Strata Description Legend (Stratum Thickness) Level (mAOD) (mm) Depth (m (mins) Depth (m) Test Results (0.10) 0.10 17 57 MADE GROUND: TOPSOIL. 17.47 PID 0.20m = 0.7ppm MADE GROUND: Dark grey slightly sandy very gravelly CLAY with (0.10) roots and low cobble content. Sand is fine to coarse. Gravel is 0.40 angular to subangular fine to coarse sandstone and brick. Cobbles are subangular brick. PID 0.70m = 0.9ppm MADE GROUND: Dark grey and brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, siltstone and brick. 1.20 1.20 - 1.65 1.20 - 1.65 1.50 SPT(S) 1.20m, N=15 (1,2/3,4,4,4) (2.50) PID 1.50m = 0.3ppm 2.00 7 D 2 2.50 2.50 - 2.95 2.50 - 2.95 SPT(S) 2.50m, N=16 (3,4/5,3,3,5) PID 2.50m = 0.0ppm Soft to firm light grey and brown slightly sandy laminated CLAY with occasional silt lenses. Sand is fine. 3.00 10 D 15 blows, 100% Reco PID 3.50m = 0.0ppm 3.50 - 3.95 11 UT 4.00 12 D 4.50 - 4.95 4.50 - 4.95 13 D 14 B SPT(S) 4.50m, N=13 (2.3/3.3.3.4) 5.00 15 D 5.50 - 5.95 16 UT 27 blows, 100% Recover 6.00 17 D (7.30) 6.50 - 6.95 6.50 - 6.95 SPT(S) 6.50m, N=13 (2,3/3,4,3,3) 20 blows, 0% Recovery NR 22 B 7.50 - 7.95 8.00 23 D SPT(S) 8.50m, N=12 (2,3/3,3,3,3) 8.50 - 8.95 8.50 - 8.95 24 D 25 B 26 D 9.00 9 9.50 - 9.95 27 UT 10.00 7.67 10.00 28 D 10 EOH at 10.00m - Scheduled Depth 10.00 Observations / Remarks Misc. Shift Information Backfill Installations Date Time Depth (m) Casing (m) Water (m) To (m) Instrument Details Resp. Zone | Depth (m) | Diam. 1.00 - 3.00 | 3.00 Casing Used
Monitoring Point/s Installed
Hammer Ref & Energy Ratio (%)
AR1134 (56/%) Groundwater Strikes Strike (m) Rises To (m) Time (min)
0.70 0.60 20



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Header

Log Type

Exploratory Hole Number

BH17-76

FINAL



Project No:	3043	Location Details				Methodology & F	lant	Scale:	1:50	
		Easting:	424878.12	Northing:	558592.48	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools		*****
		Elevation:	11.29mAOD	Final Depth:	10.00m	1.20 - 10.00	Cable Percussion	Dando 2000	Approved:	BH
Location:	Tyne and Wear	Logger:	ST	Grid System:	OSGB				Start Date:	10/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	10/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)
10.00	150

Casing D	iameter
Depth (m)	Diam (mm)
9.50	200

	Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To	Remarks						
(m)	(m)	(m)	(min)	(m)	Keiliaiks						
2.50	-	-	20	2.00							
5.50	-	-	20	2.50							

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				
10/05/2018	Standpipe	8.50	2.50 - 8.50					

If Methodology includes Dynamic Sampling refer to Runs table for info.

Backfill						
Depth (m)	Legend Code					
0.00 - 0.50	Concrete					
0.50 - 2.50	Bentonite					
2.50 - 8.00	Gravel					
8.00 - 8.50	Bentonite					
8.50 - 10.00	Arisings					

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	6

one depth where available.

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at

Sample Summary							
l Samples	nmer	Enviror					
Water 0	5	Soil					
Samples	chnic	Geote					
Large Bulk 0	8	Bulk					
Disturbed (NR) 0	17	Disturbed					
Piston (NR) 0	0	Piston					
Undisturbed (NR) 0	Undisturbed 0 Undisturbed (NR)						
n Wall 1	Undisturbed Thin Wall						
Vall (NR) 2	Undisturbed Thin Wall (NR)						
e <b>0</b>	e San	Cor					

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary									
Test Type	Depth	Casing	Water	Seating	Main	Penetration	N	Reported Result	Hammer Ref	
lest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	keported kesuit	nammer kei	
Cone	1.20	1.20	DRY	3	6	450	6	N=6 (1,2/1,2,1,2)	AR1134	
Cone	2.50	2.50	2.00	1	5	450	5	N=5 (1,0/1,1,1,2)	AR1134	
Split Spoon	3.50	3.50	2.70	1	4	450	4	N=4 (1,0/1,1,1,1)	AR1134	
Split Spoon	5.50	5.50	2.80	0	4	450	4	N=4 (0,0/1,1,1,1)	AR1134	
Split Spoon	6.50	6.50	2.80	2	6	450	6	N=6 (1,1/2,2,1,1)	AR1134	
Split Spoon	8.50	8.50	3.50	2	10	450	10	N=10 (1,1/2,2,3,3)	AR1134	

SPT Hammer Ref.	Energy Ratio (%)
AR1134	56

#### **Applicable to Cable Percussion Only**

Chiselling							
Depth (m)	Duration (mins)						

	•							
Water Added								
Depth (m) Litres								

#### **Applicable to Rotary Only**

Drilling Flush							
		riusii					
Depth (m)	Flush Type	Flush Colour	Return %				

#### **Applicable to Dynamic Sampling Only**

Depth (m)	Diam (mm)	D 0/	
		Recovery %	Remarks



Project No:

3043

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Location Details:

Cable Percussion Sheet 1 of 1

Log Type

Exploratory Hole Number **BH17-76** 

**FINAL** 



1:50

Scale:

Methodology & Plant Depth (m) 0.00 - 1.20 1.20 - 10.00 Plant Used Hand Tools Dando 2000 Method Easting: 424878.12 Northing: 558592.48 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 11.29mAOD Final Depth: 10.00m Approved By: BH Location: Tyne and Wear Logged By: ST Grid System: OSGB Start Date: 10/05/2018 Client SLIV Orientation N/A Inclination: Finish Date: 10/05/2018 Depth (m) Reduced Casing Ø Samples & Testing Water Level (m) Installation , Backfill Added (Litres) Strata Description (Stratum Thickness) Level (mAOD) (mm) Depth (m (mins) Depth (m) (0.05) 0.05 11.24 MADE GROUND: Vegetation over TOPSOIL. 1 D 2 ES MADE GROUND: Dark brown gravelly clayey fine to coarse SAND 0.20 with low cobble content. Gravel is angular to subrounded fine to 0.50 0.50 0.60 coarse sandstone, coal, concrete and brick. Cobbles are angular to subangular sandstone and brick. SPT(C) 1.20m, N=6 (1,2/1,2,1,2) (2.45) 2.00 2.00 2 2.50 14 B SPT(C) 2.50m, N=5 (1,0/1,1,1,2) Soft greyish brown slightly sandy silty CLAY. Sand is fine. 2.50 3.00 15 D SPT(S) 3.50m, N=4 (1,0/1,1,1,1) 3.50 - 3.95 3.50 - 3.95 16 D 17 B (3.00) 4.00 18 D 4.50 - 4.95 19 UT 15 blows, 0% Recovery NR 20 B 4.50 - 4.95 5.00 21 D 5.50 5.50 5.79 5.50 - 5.95 5.50 - 5.95 22 D 23 ES SPT(S) 5.50m, N=4 (0,0/1,1,1,1) Brown silty fine to medium SAND with occasional silt pockets. 6.00 24 D 6.50 - 6.95 6.50 - 6.95 SPT(S) 6.50m, N=6 (1,1/2,2,1,1) (3.00) 28 UT 20 blows, 75% Recovery 8.00 29 D 8.50 2.79 SPT(S) 8.50m, N=10 (1,1/2,2,3,3) 8.50 - 8.95 8.50 - 8.95 30 D 31 B Soft locally firm laminated brown CLAY. 32 D 9.00 9 (1.50)200 9.50 9.50 - 9.95 33 UT 15 blows, 0% Recovery 34 B 9.50 - 9.95 10.00 1.29 10.00 35 D 10 EOH at 10.00m - Scheduled depth 10.00 Observations / Remarks Shift Information Backfill Installations Date Time Depth (m) Casing (m) Water (m) Resp. Zone Depth (m) Diam. 2.50 - 8.50 8.50 To (m) Instrument Details 0.50 2.50 8.00 8.50 10.00 Groundwater Strikes (m) Time (min) Strike (m) Monitor Hammer 2.50 5.50



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Sheet

Exploratory Hole Number

BH17-77

FINAL



Project No:	3043	Location Details					Methodology & F	lant	Scale:	1:50	
Name	A1 Birtley to Coalhouse		44 B) 11		asting: 424898.17 Northing: 55846	558464.95	From (m)	Method	Plant Used	Checked:	RPH
Name:							1.20 Inspection Pit Hand Tool: 0.45 Cable Percussion Dando 400				
		Elevation:	12.56mAOD	Final Depth:	10.45m	1.20 - 10.45	Cable Fercussion	Dando 4000	Approved:	BH	
Location:	Tyne and Wear	Logger:	RJ	Grid System:	OSGB				Start Date:	07/04/2018	
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	09/04/2018	

Hole Diameter									
Depth (m)	Diam (mm)								
10.45	150								

Casing Diameter							
Depth (m)	Diam (mm)						
4.50	150						
l							

	Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Dl			
(m)	(m)	(m)	(min)	(m)	Remarks			
ł								

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					
10/04/2018	Standpipe	10.00	3.00 - 10.00						

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill						
Depth (m)	Legend Code					
0.00 - 3.00	Bentonite					
3.00 - 10.45	Gravel					

In-Situ Tests	
PID	5
Hand Vane*	0
Standard Penetration Tests	6

<sup>(</sup>NR) Indicates sample undertaken but with 0% Recovery

Disturbed

Piston

Undisturbed

Environmental Samples

5 Water

Geotechnical Samples

18

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Large Bulk

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Standard Penetration Test Summary									
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref	
Split Spoon	1.20	1.20	DRY	4	12	450	12	N=12 (2,2/3,2,4,3)	AR1710	
Split Spoon	2.00	2.00	DRY	11	23	450	23	N=23 (5,6/4,7,6,6)	AR1710	
Split Spoon	3.00	3.00	DRY	3	5	450	5	N=5 (1,2/1,1,2,1)	AR1710	
Split Spoon	5.00	4.00	DRY	4	8	450	8	N=8 (2,2/1,3,2,2)	AR1710	
Split Spoon	7.00	4.00	DRY	7	13	450	13	N=13 (4,3/3,4,3,3)	AR1710	
Split Spoon	9.00	4.00	DRY	8	17	450	17	N=17 (3,5/3,4,5,5)	AR1710	

SPT Hammer Ref.	Energy Ratio (%)
AR1710	61

#### **Applicable to Cable Percussion Only**

Chise	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litres

#### **Applicable to Rotary Only**

Drilling Flush									
Depth (m)	Flush Type	Flush Colour	Return %						
Deptii (iii)	Trush Type	i iusii coloui	NCturri 70						

#### **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs										
Depth (m)	Diam (mm)	Recovery %	Remarks							
	I	1	l e							



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Cable Percussion

Log Type

Exploratory Hole Number **BH17-77** 

FINAL



Sheet 1 of 2 Methodology & Plant Location Details: Project No: 3043 Scale: 1:50 Depth (m) 0.00 - 1.20 1.20 - 10.45 Method Plant Used Easting: 424898.17 Northing: 558464.95 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 12.56mAOD Final Depth: 10.45m Approved By: BH Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 07/04/2018 Client SLIV Orientation: N/A Inclination: Finish Date: 09/04/2018 Depth (m) Reduced Casing Ø Samples & Testing Strata Description Legend (Stratum Thickness) Level (mAOD) Added (Litres) (mm) Depth (m Level (m (mins) Depth (m) Test Results MADE GROUND: Firm dark brown slightly gravelly CLAY with 0.10 1 D medium cobble content. Gravel is subangular to subrounded fine to coarse of various lithologies. Cobbles are subrounded of PID 0.40m = 0.1ppm 0.50 0.50 - 1.00 various lithologies. 0.80 5 ES PID () 80m = () 2nnm (1.70) 1.00 6 D SPT(S) 1.20m, N=12 (2,2/3,2,4,3) 1.20 - 1.65 1.20 - 1.70 1.50 9 ES PID 1.50m = 3.1ppm 1.70 10 D MADE GROUND: Brown sandy slightly clayey angular to subrounded fine to coarse roadstone GRAVEL. Sand is fine to SPT(S) 2.00m, N=23 (5,6/4,7,6,6) 2 coarse. (1.30) PID 2.50m = 2.0ppm 3.00 9.56 SPT(S) 3.00m, N=5 (1,2/1,1,2,1) 3 Soft brownish grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse of various lithologies. PID 3.50m = 0.8ppm 3.50 3.50 17 ES 4.00 - 4.45 18 UT 37 blows, 100% Recovery 4.50 19 D 5.00 - 5.45 5.00 - 5.50 SPT(S) 5.00m, N=8 (2,2/1,3,2,2) (4.50) 5.50 22 D 23 UT 6.50 24 D SPT(S) 7.00m, N=13 (4,3/3,4,3,3) 7.50 27 D Very soft brown very sandy CLAY. Sand is fine to coarse. 8.00 - 8.45 28 UT 50 blows, 100% Recovery 8.50 29 D SPT(S) 9.00m, N=17 (3,5/3,4,5,5) 9 9.00 - 9.50 31 B 9.50 32 D 10.00 - 10.45 33 UT 55 blows, 100% Reco 10 Continued on Next Page Observations / Remarks Misc. Shift Information Installations Date Depth (m) Casing (m) Water (m) To (m) Material Resp. Zone | Depth (m) | Diam. 3.00 - 10.00 | 10.00 From (m) Instrument Details Casing Used
Monitoring Point/s Installed
Hammer Ref & Energy Ratio (%)
AR1710 (61(%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



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Cable Percussion

Sheet 2 of 2

Log Type

BH17-77

Exploratory Hole Number

FINAL



Project No: Location Details: Methodology & Plant Scale: 1:50 3043 Depth (m) Method Plant Used Easting: 424898.17 558464.95 Checked Bv: RPH Northing: Name: A1 Birtley to Coalhouse Elevation: 12.56mAOD Final Depth: 10.45m Approved By: ВН Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 07/04/2018 09/04/2018 Client: SLJV Orientation: N/A Inclination: Finish Date: Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Samples & Testing Reduced Water Added (Litres) Chiselling (mins) Water Level (m) Installation / Backfill Strata Description Legend Level (mAOD) Depth (m) Very soft brown very sandy CLAY. Sand is fine to coarse. 150 10.45 10.45 2.11 EOH at 10.45m - Scheduled Depth 11 12 14 17 18 19 20 Observations / Remarks Shift Information Installations Resp. Zone | Depth (m) | Diam. | 3.00 - 10.00 | 10.00 | Time Depth (m) Casing (m) Water (m) From (m) To (m) Material Instrument Details Casing Used
Monitoring Point/s Installed
Hammer Ref & Energy Ratio (%)
AR1710 (611%) Groundwater Strikes Strike (m) Rises To (m) Time (min)



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Log Type Header

Sheet

Exploratory Hole Number

**CPT17-01** 

**FINAL** 



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50	
Name: A1 Birtley to Coalhouse		Easting:	425211.65	Northing:	558486.98	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	RPH
rvanic.	At billiey to coalliouse	Elevation:	16.54mAOD	Final Depth:	1.20m	1.20 - 17.53	Static Cone Penetrometer	Massenza MIP18	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS+NE	Grid System:	OSGB				Start Date:	18/01/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/01/2018

Hole Diameter								
Depth (m)	Diam (mm)							

**Casing Diameter** Depth (m) Diam (mm

	Groundwater Strikes								
Strike	Casing	Sealed	Time	Rose To	Remarks				
(m)	(m)	(m)	(min)	(m)	Remarks				

	Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 1.20	Arisings						

In-Situ Tests	
PID	2
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Disturbed

Piston

Undisturbed

Sample Summary Environmental Samples 2 Geotechnical Samples 0 0

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Standard Penetration Test Summary									
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref	

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chise	elling	Wate
Depth (m)	Duration (mins)	Depth (m)

	•				
Water Added					
Depth (m)	Litres				

# Drilling Flush Depth (m) Flush Type Flush Colour Return %

**Applicable to Rotary Only** 

Applicab	Applicable to Dynamic Sampling Only									
	Dynamic Sampling Runs									
Depth (m)	Diam (mm)	Recovery %	Remarks							
			,							

<sup>(</sup>NR) Indicates sample undertaken but with



Trial Pit

Log Type

CPT17-01

FINAL

Backfill: Arisings

Exploratory Hole Number



CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:30 425211.65 Easting: Northing: 558486.98 RPH Checked By: A1 Birtley to Coalhouse Name: Inspection Pit 16.54mAOD Elevation: Final Depth: 1.20m Approved By: BH Location: Tyne and Wear Grid System: OSGB Logger: GS+NE Start Date: 18/01/2018 Hand Tools 18/01/2018 Client: SLIV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results MADE GROUND: Greyish brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is (0.20) subangular to subrounded fine to medium brick and sandstone. Sand is fine to coarse. 0.20 16.34 0.20 1 ES PID 0.20m = 10.8ppm MADE GROUND: Firm to stiff light brownish grey slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium brick, coal and sandstone. Sand is fine to (1.00) 0.80 2 ES PID 0.80m = 8.2ppm 1.20 15.34 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m



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Log Type Header Exploratory Hole Number CPT17-01A

**FINAL** 



Project No:	3043		Location	Details			Methodology & P	lant	Scale:	1:50
Name:	A1 Birtley to Coalhouse	Easting:	N/A	Northing:	N/A	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	
		Elevation:	N/A	Final Depth:	1.20m	1.20 - 18.77	Static Cone Penetrometer	Massenza MIP18	Approved:	
Location:	Tyne and Wear	Logger:	NE	Grid System:					Start Date:	18/01/2018
Client:	SUV	Orientation:		Inclination:					End Date:	18/01/2018

Hole Diameter					
Depth (m)	Diam (mm)				

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes								
Strike	Strike Casing Sealed Time Rose To								
(m)	(m)	(m)	(min)	(m)	Remarks				

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill				
Legend Code				
Arisings				

In-Situ Tests		
PID	0	
Hand Vane*	0	
Standard Penetration Tests	0	

* One count indicates an average
reported result of 3 tests carried out at
one denth where available

Sample Summary						
Environn	nen	tal Samples				
Soil	0	Water	0			
Geotech	nnic	al Samples				
Bulk <b>0</b> Large Bulk						
Disturbed	Disturbed 0 Disturbed (NR)					
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Core	Sam	ıple	0			

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litres

	D

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				
Deptii (iii)	riusii iype	Flusii Coloui	Return %				

**Applicable to Rotary Only** 

Applicable to Dynamic Sampling Only									
Dynamic Sampling Runs									
Depth (m)	Diam (mm)	Recovery %	Remarks						
		l							



Trial Pit

Log Type

Exploratory Hole Number CPT17-01A

**FINAL** 

Backfill: Arisings

CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Location Details Methodology & Plant Scale: Project No: 1:30 Easting: Northing: N/A Checked By: A1 Birtley to Coalhouse Name: Inspection Pit Final Depth: 1.20m Elevation: N/A Approved By: Location: Tyne and Wear Logger: NE Grid System: Start Date: 18/01/2018 Hand Tools Finish Date: 18/01/2018 Client: SLIV Orientation: Inclination: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results MADE GROUND: Greyish brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is (0.20) subangular to subrounded fine to medium brick and sandstone. Sand is fine to coarse. 0.20 MADE GROUND: Firm to stiff light brownish grey slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to medium brick, coal and sandstone. Sand is fine to (1.00) 1.20 EOH at 1.20m - Scheduled Depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Shoring: m Orientation:



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Sheet

Exploratory Hole Number

# **CPT17-02**

**FINAL** 



Project No:	3043		Location	Details			Met	hodology & P	lant	Scale:	1:50
		Easting:	425248.33	Northing:	558512.47	From (m)	Met	hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lasting.	423240.33	Northing.	330312.47	0.00 - 0.80	Inspect	ion Pit	Hand Tools	CITCCRCU.	14111
		Elevation:	17.00mAOD	Final Depth:	0.80m					Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	24/01/2018
Client:	SUV	Orientation:	N/A	Inclination:	N/A					End Date:	24/01/2018

Hole Diameter					
Depth (m)	Diam (mm)				

Casing Diameter
Depth (m) Diam (mm

	Groundwater Strikes						
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks		

	Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

1 Water

Geotechnical Samples

0

0

0

Disturbed

Piston

Undisturbed

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 0.80	Arisings				

In-Situ Tests	
PID	1
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chiselling						
Depth (m)	Duration (mins)					

Water Added							
Depth (m)	Litres						

#### **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					

S Remarks
Remarks



Trial Pit

Log Type

Exploratory Hole Number **CPT17-02** 

Backfill: Arisings

**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:30 425248.33 Easting: Northing: 558512.47 RPH Checked By: A1 Birtley to Coalhouse Name: Inspection Pit Final Depth: 0.80m Elevation: 17.00mAOD Approved By: BH Location: Tyne and Wear Grid System: OSGB Logger: GS Start Date: 24/01/2018 Hand Tools 24/01/2018 Client: SLIV Orientation: N/A Inclination: N/A Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results MADE GROUND: TOPSOIL. (0.10) 16.90 0.10 MADE GROUND: Brownish grey gravelly CLAY with low cobble content. Gravel is subangular 0.20 1 ES PID 0.20m = 20.3ppm to subrounded fine to coarse mudstone, siltstone, sandstone and brick. Cobbles are  $\,$ subangular to subrounded sandstone. (0.70)0.80 16.20 At 0.80m 1 no. yellowish orange fine grained sandstone boulder.

EOH at 0.80m - Abandoned due to cobble/boulder obstruction Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m



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Log Type Header Sheet

Exploratory Hole Number

CPT17-02a **FINAL** 

Project No:	3043		Location Details			Methodology & Plant				Scale:	1:50
		Easting:	425266.30	Northing:	558515.29	From (m)	Met	hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	425200.50	reor crimig.	550515125	0.00 - 0.80	Inspec	tion Pit	Hand Tool	erreenea.	
		Elevation:	17.00mAOD	Final Depth:	0.80m					Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	25/01/2018
Client:	SLIV	Orientation:	N/A	Inclination:	N/A					End Date:	25/01/2018

Hole Di	Hole Diameter							
Depth (m)	Diam (mm)							

**Casing Diameter** Depth (m) Diam (mm

	Groundwater Strikes							
				Rose To	Remarks			
(m)	(m)	(m)	(min)	(m)	nemano			

Installation / Instrument Details						
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)		

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

Sample Summary Environmental Samples 1 Geotechnical Samples

0

Undisturbed Thin Wall

Undisturbed Thin Wall (NR)

Core Sample

Large Bulk

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 0.80	Arisings					

In-Situ Tests	
PID	1
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

PID	1	(NR) Indicates sample undertaken but with
Hand Vane*	0	0% Recovery

Disturbed

Piston

Undisturbed

_										
ı									est Summary	
ı	Test Type						Penetration	N	Reported Result	Hammer Ref
		(m)	(m)	(m)	Blows	BIOWS	Total (mm)		•	
	ı	1	1	I	1		1	1		1

ĺ	SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	De

	•						
Water Added							
Depth (m)	Litres						

#### **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					
	1		1					

	<b>Applicable to Dynamic Sampling Only</b>								
ſ	Dynamic Sampling Runs								
	Depth (m)	Diam (mm)	Recovery %	Remarks					
-									



Trial Pit

Log Type

CPT17-02a

Exploratory Hole Number

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Sheet 1 of 1

Location Details

Pit
Sheet 1 of 1

Methodology & Plant
Scale:

Project No: 1:30 425266.30 Easting: Northing: 558515.29 RPH Checked By: A1 Birtley to Coalhouse Name: Inspection Pit Final Depth: 0.80m Elevation: 17.00mAOD Approved By: BH Location: Tyne and Wear Grid System: OSGB Logger: GS Start Date: 25/01/2018 Hand Tool 25/01/2018 Client: SLIV Orientation: N/A Inclination: N/A Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Legend Depth (m) Test Results MADE GROUND: TOPSOIL. (0.10) 16.90 0.10 MADE GROUND: Brownish grey gravelly CLAY with low cobble content. Gravel is subangular 0.20 1 ES PID 0.20m = 16.1ppm to subrounded fine to coarse mudstone, siltstone, sandstone and brick. Cobbles are subangular to subrounded sandstone. (0.70)0.80 16.20 At 0.80m 1 no. yellowish orange fine grained sandstone boulder.

EOH at 0.80m - Abandoned due to cobble/boulder obstruction Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m Backfill: Arisings



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Sheet

Exploratory Hole Number

**CPT17-03** 

FINAL



Project No:	3043		Location [	Details			Methodology & P	Scale:	1:50	
Name:	A1 Birtley to Coalhouse	Easting:	425264.11	Northing:	558481.40	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	RPH
	•	Elevation:	17.19mAOD	Final Depth:	1.20m	1.20 - 16.11	Static Cone Penetrometer	Massenza MIP18	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	18/01/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/01/2018

Hole Diameter							
Depth (m)	Diam (mm)						

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Damanda.			
(m)	(m)	(m)	(min)	(m)	Remarks			

	Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					
1									

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

2 Water

Geotechnical Samples

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 1.20	Arisings					

In-Situ Tests	
PID	2
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

PID	2	
Hand Vane*	0	0% Recovery

Disturbed

Piston

Undisturbed

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# Applicable to Cable Percussion Only

Chise		
Depth (m)	Duration (mins)	

Water Added						
Litres						

#### **Applicable to Rotary Only**

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				

# Applicable to Dynamic Sampling Only Dynamic Sampling Runs Depth (m) Diam (mm) Recovery % Remarks



Trial Pit

Log Type

CPT17-03

CP117-0

Exploratory Hole Number

CENTRAL ALLIANCE

**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Location Details Methodology & Plant Scale: 1:30 Project No: 425264.11 Easting: Northing: 558481.40 RPH Checked By: A1 Birtley to Coalhouse Name: Inspection Pit Elevation: 17.19mAOD Final Depth: 1.20m Approved By: BH Tyne and Wear Location: Grid System: OSGB Logger GS Start Date: 18/01/2018 Hand Tools 18/01/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: Samples & Testing Installation , Backfill Strata Description Thickness! Depth (m) Test Results MADE GROUND: TOPSOIL (0.10) 17.09 0.10 MADE GROUND: Firm orangish brown slightly gravelly slightly sandy CLAY with rootlets. (0.20)1 ES PID 0.20m = 10.2ppm 0.20 Gravel is subangular to subrounded fine to medium sandstone coal and brick. Sand is fine to 0.30 16.89 (0.20)MADE GROUND: Yellowish brown slightly clayey subangular to subrounded fine to coarse 0.50 16.69 sandstone and mudstone GRAVEL and COBBLES. MADE GROUND: Firm light to dark brown slightly gravelly slightly sandy CLAY. Gravel is subangular to subrounded fine to coarse brick sandstone mudstone and coal. Sand is fine to 0.80 2 ES PID 0.80m = 10.5ppm (0.70)

1.20 15.99 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions



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Sheet

Exploratory Hole Number

Log Type

Header

# CPT17-04

FINAL



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50	
Name	A4 Distance Coally area	Easting:	425290.50	Northing:	558461.61	From (m)	Method	Plant Used	Checked:	RPH
Name: A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools	I		
		Elevation:	16.09mAOD	Final Depth:	1.20m				Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	18/01/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/01/2018

Hole Di	Hole Diameter						
Depth (m)	Diam (mm)						

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes									
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks					
(111)	(111)	(111)	()	(111)						

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 1.20	Arisings					

In-Situ Tests			
PID	2		
Hand Vane*	0		
Standard Penetration Tests	0		

Hand Vane* 0
ard Penetration Tests 0

Sample Summary					
Environmental Samples					
Soil	2	Water	0		
Geote	chnic	cal Samples			
Bulk 0 Large Bulk 0					
Disturbed 0		Disturbed (NR)	0		
Piston	0	Piston (NR)	0		
Undisturbed	0	Undisturbed (NR)	0		
Undisturbed Thin Wall 0					
Undisturbed Thin Wall (NR)					
Core Sample 0					

(NR) Indicates sample undertaken but with

Standard Penetration Test Summary								
Depth (m)	Casing (m)	Water (m)				N	Reported Result	Hammer Ref
				Depth Casing Water Seating	Depth Casing Water Seating Main	Depth Casing Water Seating Main Penetration	Depth Casing Water Seating Main Penetration	Depth Casing Water Seating Main Penetration N Penetral Result

SPT Hammer Ref.	Energy Ratio (%)

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chis	elling		Water	Added
Depth (m)	Duration (mins)		Depth (m)	Litres
		]		

Depth (m)	Flush Type	Flush Colour	Return %	ш
				П
				П
				П
				П
				П
				П
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				П
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Applicable to Rotary Only

Drilling Flush

Applicable to Dynamic Sampling Only							
	Dynamic	Sampling	Runs				
Depth (m)	Diam (mm)	Recovery %	Remarks				



Trial Pit

Log Type

Exploratory Hole Number

CPT17-04

**FINAL** 

CENTRAL ALLIANCE

Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Location Details Methodology & Plant Project No: Scale: 1:30 425290.50 558461.61 Easting: Northing: RPH Checked By: Name: A1 Birtley to Coalhouse Inspection Pit Final Depth: 1.20m Elevation: 16.09mAOD Approved By: BH Location: Tyne and Wear Grid System: OSGB Logger: GS Start Date: 18/01/2018 Hand Tools Client: 18/01/2018 SLIV Orientation: N/A Inclination: 90° Finish Date: Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results MADE GROUND: TOPSOIL. (0.10) 15.99 MADE GROUND: Soft brown slightly gravelly CLAY with rootlets. Gravel is subangular to 0.10 0.20 1 ES PID 0.20m = 5.2ppm subrounded fine to medium sandstone and brick. (1.00) 0.80 2 ES PID 0.80m = 4.9ppm 1.10 (0.10) 14.99 MADE GROUND: Firm laminated orangish grey CLAY. EOH at 1.20m - CPT not undertaken. 1.20 Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m Backfill: Arisings



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# Log Type Header Sheet

Exploratory Hole Number

# CPT17-05

FINAL



Project No:	3043	Location Details			Methodology & Plant				Scale:	1:50	
			425264.25	Northing:	558481.16	From (m)	Met	hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Easting:	123201123	Northing.	330401.10	0.00 - 0.90	Inspect	ion Pit	Hand Tools	CITCCRCG.	
		Elevation:	17.23mAOD	Final Depth:	0.90m					Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	18/01/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	18/01/2018

Hole Diameter						
Depth (m)	Diam (mm)					

Depth (m) Diam (mm

**Casing Diameter** 

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)	Remarks					

| Installation / Instrument Details | Date | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 0.90	Arisings					

In-Situ Tests	
PID	2
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at

Disturbed

Piston

Undisturbed

Environmental Samples

2 Water

Geotechnical Samples

0

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Standard Penetration Test Summary										
Test Type				Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref		
	(m)	(m)	(m)	BIOWS	BIOWS	iotai (mm)					

SPT Hammer Ref. Energy Ratio (%)

one depth where available.

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

	Chise	V	
Dep	oth (m)	Duration (mins)	Depth

Water Added						
Depth (m)	Litres					

			-						
Drilling Flush									
Depth (m) Flush Type Flush Colour Return %									
	1								

**Applicable to Rotary Only** 

Applicable to Dynamic Sampling Only										
Dynamic Sampling Runs										
Depth (m) Diam (mm) Recovery % Remarks										
	l	L								

<sup>2 (</sup>NR) Indicates sample undertaken but with 0% Recovery



Project No:

Name:

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Trial Pit

Log Type

CPT17-05

Exploratory Hole Number

FINAL

CENTRAL ALLIANCE

Sheet 1 of 1 Location Details Methodology & Plant Scale: 1:30 558481.16 Easting: 425264.25 Checked By: RPH Northing: A1 Birtley to Coalhouse Inspection Pit Elevation: 17.23mAOD Final Depth: 0.90m Approved By: BH Tyne and Wear

Hand Tools			Elevation:	17.23mAOD	Final Depth	0.90m						Approved By:	ВН
Gleec. Styl (Presenter). MA Includes Per Per Per Per Per College 1 (20) (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)   10 (2015)	Location:	Tyne and Wear	Logger:	GS	Grid System	: OSGB			Hand <sup>-</sup>	Tools		Start Date:	18/01/2018
MACE GROUND: Sirt dark yer splitty larget spartly CAW with received. Green is stranged to submanded for the common and muchations, band if fine to common and muchations and in fine to common and muchations. Shall fine to be common and muchations and in fine to common and muchations. Shall fine to be common and muchations and fine to common common and muchations and fine to common common and muchations. Shall fine to common common and muchations are common and muchations and fine to common common and muchations are common common and muchations and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchatio	Client:	SLIV	Orientation:	N/A	Inclination:	90°			Hand	10013		Finish Date:	18/01/2018
MACE GROUND: Sirt dark yer splitty larget spartly CAW with received. Green is stranged to submanded for the common and muchations, band if fine to common and muchations and in fine to common and muchations. Shall fine to be common and muchations and in fine to common and muchations. Shall fine to be common and muchations and fine to common common and muchations and fine to common common and muchations. Shall fine to common common and muchations are common and muchations and fine to common common and muchations are common common and muchations and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchations are common common and muchatio						Depth (m)						Samples & Testing	
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MADE GROUND's reliablesh brawen slightly cann'ty growiny CLAX Sand in fine to coarse. Gravel is subgraphed to subcouncied time to coarse sendation and sillations.  MADE GROUND's reliablesh to range angular to subarquish randor coarse. Gravel  MADE GROUND's reliablesh to range angular to subarquish randor coarse. Gravel  GROWN with how cobile content. Sand is fine to coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish and other coarse. Cobilets are angular to subarquish angular to subarquish angular to subarquish angular to subarquish angular to subarquish angular to subarquish angular to subarquish angular to subarquish angular to subarquish angular to subarquish angular to subarquish angular to subarquish angular to sub						(0.20)							]
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EOH at 0.95m - Pit terminated upon hard strata  5  Consentions / Itematics  Consentions / Itemat			re angular to	subangular	1 1		10.55						1 -
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From (m) Remarks Shoring: None 0.40m Stability: Stable Orientation:	Observations	s / Remarks			Bre	aking Out	/ Hard Strat	a	Stabi	lity & Backf	ill	Pit Dimens	sions
Stability: Stable  Orientation:													
Stability: Stable Orientation:									Shoring: N	one			
Orientation:									Stability: St	table			0.40m
												Oriental	
									Backfill: A	risings			1.



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Sheet

Exploratory Hole Number

**CPT17-06** 

FINAL



Project No:	3043	Location Details				Methodology & P	Scale:	1:50		
Name:	ame: A1 Birtley to Coalhouse		425290.90	Northing:	558461.94	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tool	Checked:	RPH
		Elevation:	16.09mAOD	Final Depth:	1.20m	1.20 - 11.48	Static Cone Penetrometer	Massenza MIP18	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	25/01/2018
Client:	SLIV	Orientation:	N/A	Inclination:	N/A				End Date:	25/01/2018

Hole Diameter								
Depth (m)	Diam (mm)							

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes									
				Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)						

	Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill				
Depth (m)	Legend Code			
0.00 - 1.20	Arisings			

In-Situ Tests			
PID	2		
Hand Vane*	0		
Standard Penetration Tests	0		

* One count indicates an average
reported result of 3 tests carried out at
•
one depth where available.

Sample Summary					
Environi	men	ntal Samples			
Soil <b>2</b> Water					
Geotec	hnic	cal Samples			
Bulk	0	Large Bulk	0		
Disturbed	0	Disturbed (NR)	0		
Piston	Piston <b>0</b> Piston (NR)				
Undisturbed 0 Undisturbed (NR)					
Undisturbed Thin Wall					
Undisturbed Thin Wall (NR)					
Core Sample					
·					

(NR) Indicates sample undertaken but with
0% Recovery

	Standard Penetration Test Summary								
Test Type						Penetration	N	Reported Result	Hammer Ref
rest type	(m)	(m)	(m)	Blows	Blows	Total (mm)		neported nesare	Tidiiiiici tici
			l			l			

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	W	
Depth (m)	Duration (mins)	Depth

Water Added				
Depth (m)	Litres			

#### **Applicable to Rotary Only**

	Drilling Flush				
Depth (m)	Flush Type	Flush Colour	Return %		

Applicable to Dynamic Sampling Only							
Dynamic Sampling Runs							
Depth (m)	Diam (mm)	Recovery %	Remarks				



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Trial Pit

Sheet 1 of 1

Log Type

**FINAL** 

**CPT17-06** 

Exploratory Hole Number

CENTRAL ALLIANCE GEO

Methodology & Plant Location Details Project No: 3043 Scale: 1:30 558461.94 Easting: 425290.90 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Inspection Pit Elevation: Final Depth: 1.20m Approved By: 16.09mAOD ВН

		Elevation:	16.09mAOD	Final Depth							Approved By:	BH
Loc		Logger:	GS	Grid System				Hand	Tool			/01/2018
Clie	nt: SLIV	Orientation:	N/A	Inclination:	N/A	1					Finish Date: 25	/01/2018
					Depth (m)	Reduced Level	Water	Installation /			Samples & Testing	
	Strata Description			Legend	(Stratum Thickness)	(mAOD)	Level (m)	Backfill	Depth (m)	Ref	Test Results	
-	MADE GROUND: TOPSOIL.			X//XX//	(0.10)			XXXXX				
	MADE GROUND: Brownish yellow sandy subangular to subrounded	I fine to coa	rse sandstone		0.10 (0.10)	15.99 15.89			0.20	1 ES	PID 0.20m = 42.3ppm	]
	\and siltstone GRAVEL. Sand is medium to coarse.	al in automo	/		0.20	13.69			0.20	115	PID 0.2011 - 42.5pp111	-
	MADE GROUND: Soft to firm dark brown slightly gravelly CLAY. Grav subrounded fine to medium sandstone, siltstone, brick and coal.	vei is subanį	guiar to									-
-	At 0.20m geotextile.											-]
												_
					(1.00)				0.80	2 ES	PID 0.80m = 19.6ppm	]
	From 0.80m to 0.95m concrete.								0.00	213	FID 0.80III = 19.0ppIII	-
1 -												1 -
												-
	EOH at 1.20m - Scheduled depth				1.20	14.89		X///XX///X				-
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Obs	ervations / Remarks			Bre	aking Out ,	/ Hard Strata	a	Stabi	ity & Backfi		Pit Dimensior	ns
				From (m)	T - '	Remarks		Shoring: N			0.40m	
								Janoining: IN	o.ic			7
								Stability:				0.40m
											Orientation	_
				1				Backfill: A	risings		Orientation:	



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Header Sheet

Log Type

Exploratory Hole Number

**CPT17-06A** 

**FINAL** 



Project No:	3043	Location Details				Methodology & P	Scale:	1:50		
Name:	A4 Binton to Coolleans	Easting:	N/A	Northing:	N/A	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Elevation:	N/A	Final Depth:	1.20m	0.00 - 1.20 1.20 - 21.45	Inspection Pit Static Cone Penetrometer	Hand Tools Massenza MIP18	Approved:	ВН
Location:	Tyne and Wear	Logger:	NE	Grid System:	OSGB				Start Date:	25/01/2018
Client:	SLIV	Orientation:		Inclination:					End Date:	25/01/2018

Hole Diameter						
Depth (m)	Diam (mm)					

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes							
				Rose To	Remarks			
(m)	(m)	(m)	(min)	(m)				

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 1.20	Arisings				

In-Situ Tests						
PID	0					
Hand Vane*	0					
Standard Penetration Tests	0					

reported result of 3 tests carried out at one depth where available.

, ,						
Environmental Samples						
Soil	0	Water	0			
Geotechnical Samples						
Bulk	0	Large Bulk	0			
Disturbed	0	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Core Sample						

Sample Summary

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

				Sta	ndard	Penetrati	on T	est Summary	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref								

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chiselling	Water Add
Depth (m) Duration (m	nins) Depth (m) I

Applicable to Rotary Only								
	Drilling	Flush						
Depth (m)	Flush Type	Flush Colour	Return %					
			l					

Applicable to Dynamic Sampling Only							
	Dynamic	Sampling	Runs				
Depth (m)	Diam (mm)	Recovery %	Remarks				
	I	I					



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Trial Pit

Log Type

Exploratory Hole Number CPT17-06A

**FINAL** 

CENTRAL ALLIANCE GEO

Sheet 1 of 1 Location Details Methodology & Plant Scale: 1:30 Project No: 3043 Easting: N/A Northing: Checked By: RPH N/A A1 Birtley to Coalhouse Name: Inspection Pit Elevation: Final Depth: 1.20m Approved By: N/A ВН

		Elevation:	N/A	Final Depth	: 1.20m						Approved By: B	H
Location	n: Tyne and Wear	Logger:	NE	Grid Systen	n: OSGB			Hand "	Fools		Start Date: 25/01	./2018
Client:	SLIV Orientation:							Hand Tools		Finish Date: 25/01	/2018	
					Depth (m)						Samples & Testing	
	Strata Description			Legend	(Stratum	Reduced Level (mAOD)	Water Level (m)	Installation / Backfill			Samples & Testing	
					Thickness)	, ,	, ,		Depth (m)	Ref	Test Results	
	ADE GROUND: TOPSOIL.				(0.10)							-
	ADE GROUND: Brownish yellow sandy subangular to subrounded	d fine to coa	rse sandstone		0.10 (0.10)							3
-\ar	nd siltstone GRAVEL. Sand is medium to coarse.		/		0.20							}
	ADE GROUND: Soft to firm dark brown slightly gravelly CLAY. Gra	vel is suban	gular to									7
] su	ubrounded fine to medium sandstone, siltstone, brick and coal.											1
1 7	At 0.20m geotextile.											7
1 -					(1.00)							1
1 7					(1.00)							7
1 7												7
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1 -												1 -
1 1					1.20							3
	EOH at 1.20m - Scheduled Depth				1.20							1
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Observa	ations / Remarks			Bre	aking Out	/ Hard Strata	a	Stabi	ity & Backfi	11	Pit Dimensions	
				From (m)	5 17	Remarks			,		m	
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								Stability:				
											Orientation:	
								Backfill: A	risings		۰	



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Log Type **Header** 

Exploratory Hole Number

**CPT17-07** 

FINAL



Project No:	3043	Location Details					Methodology & P	Scale:	1:50	
Name:	A1 Birtley to Coalhouse	Easting:	425338.85	Northing:	558447.26	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	RPH
ivanie.	•	Elevation:	15.98mAOD	.98mAOD Final Depth:		1.20 - 14.35 Static Cone Penetrometer		Massagan MID19	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	18/01/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/01/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes								
Strike	Casing	Sealed	Time	Rose To	Damanda.				
(m)	(m)	(m)	(min)	(m)	Remarks				

	Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						
1										

If Methodology includes Dynamic Sampling refer to Runs table for info. Hole Not Cased

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill								
Depth (m)	Legend Code							
0.00 - 1.20	Arisings							

In-Situ Tests					
PID	2				
Hand Vane*	0				
Standard Penetration Tests	0				

2	(NR) Indicates sample undertaken but witl
	0% Recovery

Disturbed

Piston

Undisturbed

Environmental Samples

2 Water

Geotechnical Samples

0

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)

Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

0

	Standard Penetration Test Summary									
Test Type						Penetration	N	Reported Result	Hammer Ref	
iest type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN.	Reported Result	nammer ker	

SPT Hammer Ref.	Energy Ratio (%)

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

No Standard Penetration Tests Undertaken

## **Applicable to Cable Percussion Only**

Chise	elling		Water /	Adde
Depth (m)	Duration (mins)		Depth (m)	Lit
		l		

Depth (m)	Flush Type	Flush Colour	Return %	
			1	

Applicable to Rotary Only

Drilling Flush

Applicable to Dynamic Sampling Only											
Dynamic Sampling Runs											
Depth (m)	Diam (mm)	Recovery %	Remarks								
			[								
			[								
			[								
			[								
			[								



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Trial Pit

Sheet 1 of 1

Log Type

Exploratory Hole Number

CPT17-07
FINAL

CENTRAL ALLIANCE

Location Details Methodology & Plant Scale: Project No: 3043 1:30 425338.85 Easting: 558447.26 Northing: Checked By: RPH A1 Birtley to Coalhouse Name: Inspection Pit 15.98mAOD Final Depth: 1.20m ВН

	Elevation: 15.98mAOD				Final Depth: 1.20m			ilispecti	OIIFIL	Approved By:	ВН	
Loc	ation: Tyne and Wear	Logger:	GS	Grid System	: OSGB			Hand <sup>-</sup>	Tools		Start Date:	18/01/2018
Clie	nt: SLIV	Orientation:	N/A	Inclination:	90°	1					Finish Date:	18/01/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Water	Installation /			Samples & Testing	
	Strata Description			Legenu	Thickness)	(mAOD)	Level (m)	Backfill	Depth (m)	Ref	Test Results	
Τ.	MADE GROUND: TOPSOIL.				(0.10)	15.00		XXXXX				-
	MADE GROUND: Firm dark brown slightly gravelly slightly silty CLA	Y. Gravel is	subangular to		0.10	15.88			0.20	1 ES	PID 0.20m = 11.2ppm	-
	subrounded fine to coarse sandstone coal and brick.				(0.35)				0.20			‡
					0.45	15.53						
-	MADE GROUND: Firm orangish grey gravelly sandy CLAY with low or	cobble conte	ent. Gravel is		0.43	15.55						=
	subangular to subrounded fine to coarse sandstone coal and brick to subrounded sandstone. Sand is fine to coarse.	. Copples ar	e subangular									1
					(0.75)				0.80	2 ES	PID 0.80m = 0.2ppm	‡
					(0.73)							1
1 -												1 -
					1 20	14.70						1
	EOH at 1.20m - Scheduled depth				1.20	14.78						]
												1
-												
												‡
												]
:												=
2 -												2 -
												=
												]
:												=
-												-
												=
												-
												]
3 -												3 =
												=
												=
-												
												=
:												=
4 -												4 =
												=
												=
-												
												]
												‡
5 -												5 -
:												-
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												‡
												]
												‡
6 -				$\vdash$								6 -
Obs	ervations / Remarks				aking Out	/ Hard Strata	9	Stabi	lity & Backfi	II	Pit Dimen	sions
				From (m)		Remarks		Shoring: N	one		0.40m	_
								Chall 181				0.40m
								Stability: St	able			
								Backfill: A	risings		Orientation •	n:



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Sheet

Log Type

Header

Exploratory Hole Number

**CPT17-08** 

FINAL



Project No:	3043	Location Details					Methodology & P	Scale:	1:50	
Name:	A1 Birtley to Coalhouse	Easting:	425368.45	Northing:	558455.35	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	RPH
	•	Elevation:	16.50mAOD	Final Depth:	1.20m	1.20 - 14.47	Static Cone Penetrometer	Massenza MIP18	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	18/01/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/01/2018

Hole Diameter									
Depth (m)	Diam (mm)								

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes									
Strike	Strike Casing Sealed Time Rose To Remarks									
(m)	(m)	(m)	(min)	(m)	Remarks					

Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							
1											

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

2 Water

Geotechnical Samples

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill								
Depth (m)	Legend Code							
0.00 - 1.20	Arisings							

In-Situ Tests	
PID	2
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

PID	2	
Hand Vane*	0	0% Recovery

Disturbed

Piston

Undisturbed

	Standard Penetration Test Summary										
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref		

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	elling		Water	Added
Depth (m)	Duration (mins)		Depth (m)	Litre
		J		

	Applicable to Rotary Only							
		Drilling	Flush					
	Depth (m)	Flush Type	Flush Colour	Return %				
ıl								

Applicable to Dynamic Sampling Only								
	Dynamic Sampling Runs							
Depth (m)	Diam (mm)	Recovery %	Remarks					
	1	l .						



Trial Pit

Log Type

Exploratory Hole Number

Backfill: Arisings

CPT17-08
FINAL

CENTRAL ALLIANCE

Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:30 425368.45 Easting: Northing: 558455.35 RPH Checked By: A1 Birtley to Coalhouse Name: Inspection Pit Final Depth: 1.20m Elevation: 16.50mAOD Approved By: BH Location: Tyne and Wear Grid System: OSGB Logger: GS Start Date: 18/01/2018 Hand Tools 18/01/2018 Client: SLIV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results MADE GROUND: Soft to firm orangish brown slightly gravelly slightly silty CLAY. Gravel is subangular to subrounded fine to coarse coal brick and sandstone. (0.30)0.20 1 ES PID 0.20m = 9.7ppm 0.30 16.20 MADE GROUND: Firm to stiff dark grey slightly gravelly slightly silty CLAY. Gravel is subangular to subrounded fine to coarse sandstone and brick. (0.50)15.70 0.80 0.80 2 ES PID 0.80m = 8.9ppm Firm to stiff laminated dark orangish grey CLAY. (0.40)1.20 15.30 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m



Header Sheet

Log Type

Exploratory Hole Number

**CPT17-09 FINAL** 

Project No:	3043		Location I	Details			Met	hodology & P	lant	Scale:	1:50
		Easting:	425420.42	Northing:	558451.46	From (m)	Met	hod	Plant Used	Checked:	RPH
Name:	e: A1 Birtley to Coalhouse	Edding.	rior cining.	330-1321-10	0.00 - 1.20	Inspect	ion Pit	Hand Tools	l .		
		Elevation:	18.27mAOD	Final Depth:	1.20m					Approved:	BH
ocation:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	18/01/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	18/01/2018

Hole Di	ameter
Depth (m)	Diam (mm)

If Methodology includes

Dynamic Sampling refer to Runs table for info.

Casing Diameter Depth (m) Diam (mm

**Hole Not Cased** 

Sample Summary Environmental Samples 2 Geotechnical Samples

0

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed

Piston

Undisturbed

Added Litres Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Groundwater Strikes								
Strike	Casing	Sealed	Time	Rose To	Remarks				
(m)	(m)	(m)	(min)	(m)	Remarks				
1.10	-	-	20	0.90					

Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

No Monitoring Point/s Installed

Ва	ackfill
Depth (m)	Legend Code
0.00 - 1.20	Arisings

In-Situ Tests	
PID	2
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

<sup>(</sup>NR) Indicates sample undertaken but with

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
	(,	(,	()			,			

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	elling	Water
Depth (m)	Duration (mins)	Depth (m)

ı		
ı		

Depth (m)	Flush Type	Flush Colour	Return %
	I	l	1

**Applicable to Rotary Only** Drilling Flush

Applicab	Applicable to Dynamic Sampling Only							
	Dynamic Sampling Runs							
Depth (m)	Diam (mm)	Recovery %	Remarks					



Trial Pit

Log Type

Exploratory Hole Number

Backfill: Arisings

CPT17-09

CENTRAL ALLIANCE

**FINAL** Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Location Details Methodology & Plant Scale: 1:30 Project No: 425420.42 Northing: 558451.46 RPH Easting: Checked By: A1 Birtley to Coalhouse Name: Inspection Pit Elevation: 18.27mAOD Final Depth: 1.20m Approved By: BH Tyne and Wear Location: Logger GS Grid System: OSGB Start Date: 18/01/2018 Hand Tools 18/01/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results MADE GROUND: Soft to firm brown slightly gravelly slightly sandy CLAY with rootlets. Gravel is subangular to subrounded fine to coarse sandstone limestone mudstone coal and brick. (0.30)1 ES PID 0.20m = 6.1ppm 0.20 Sand is fine to coarse. 0.30 17.97 MADE GROUND: Yellowish brown slightly sandy slightly clayey subangular to subrounded fine to coarse sandstone GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subrounded sandstone. (0.55) From 0.65m to 0.85m 1no. yellowish orange sandstone boulder. 17.42 2 ES PID 0.85m = 2.1ppm 0.85 MADE GROUND: Dark yellowish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone mudstone coal and brick. (0.35)1.20 17.07 EOH at 1.20m - CPT not undertaken. Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m



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Header

Sheet

Exploratory Hole Number

**CPT17-10** 

**FINAL** 



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50	
	44 81 11 1 1 1 1	Easting:	425399.51	Northing:	558468.99	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	U		Ü		0.00 - 1.20	Inspection Pit	Hand Tool		
		Elevation:	17.89mAOD	Final Depth:	1.20m				Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	26/01/2018
Client:	SLIV	Orientation:	N/A	Inclination:	N/A				End Date:	26/01/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Remarks			
(m)	(m)	(m)	(min)	(m)	Remarks			

	Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

2 Water

Geotechnical Samples

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Legend Code							
Arisings							

In-Situ Tests	
PID	2
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available. Disturbed

Piston

Undisturbed

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)		Reported Result	Hammer Ref
	(111)	(111)	(111)	BIOWS	biows	Total (IIIII)			

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	elling	W
Depth (m)	Duration (mins)	Depth
l		

Water Added						
Depth (m)	Litres					

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

<b>Applicable to Dynamic Sampling Only</b>					
	Dynamic	Sampling	Runs		
Depth (m)	Diam (mm)	Recovery %	Remarks		

PID 2 (NR) Indicates sample undertaken but with 0% Recovery



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Trial Pit

Sheet 1 of 1

Log Type

CPT17-10

FINAL

Exploratory Hole Number

CENTRAL ALLIANCE

Location Details Methodology & Plant Scale: 1:30 Project No: 425399.51 Northing: 558468.99 RPH Easting: Checked By: A1 Birtley to Coalhouse Name: Inspection Pit Elevation: 17.89mAOD Final Depth: 1.20m Approved By: BH Tyne and Wear Location: Logger GS Grid System: OSGB Start Date: 26/01/2018 Hand Tool Client SLIV Orientation: N/A Inclination: N/A Finish Date: 26/01/2018 Samples & Testing Installation Strata Description Thickness! Depth (m) Test Results MADE GROUND: Brownish grey subangular to subrounded fine to coarse sandstone (0.10) 17.79 0.10 siltstone and brick GRAVEL (0.20)PID 0.20m = 22.3ppm MADE GROUND: Yellowish brown gravelly clayey fine SAND. Gravel is subangular to 0.20 1 ES 0.30 17.59 subrounded fine to coarse sandstone. MADE GROUND: Brownish yellow slightly sandy clayey subangular to subrounded fine to medium siltstone ,sandstone ,mudstone, brick and ceramic GRAVEL. Sand is fine to coarse At 0.30m geotextile. (0.60) From 0.40m to 0.50m 1no. yellowish brown siltstone boulder. From 0.70m to 0.90m 1no. yellowish brown siltstone boulder. 0.80 2 ES PID 0.80m = 31.5ppm 16.99  $\label{eq:made_ground} \textbf{MADE GROUND: Brownish black gravelly CLAY}. \ \textbf{Gravel is subangular to subrounded fine to}$ coarse sandstone and mudstone. (0.30)From 1.15m becomes laminated.

EOH at 1.20m - CPT not undertaken. 16.69 Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m Backfill: Arisings



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Log Type

Header

Exploratory Hole Number

**CPT17-11** 

FINAL



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
	44 81 11 1 1 1 1	Easting:	425412.25	Northing:	558478.16	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Ŭ				0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	18.27mAOD	Final Depth:	1.20m				Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	23/01/2018
Client:	SLJV	Orientation:	N/A	Inclination:	N/A				End Date:	23/01/2018

Hole Diameter					
Depth (m)	Diam (mm)				

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes									
Strike Casing Sealed Time Rose To Remarks										
(m)	(m)	(m)	(min)	(m)	Keiliaiks					
1.10	-	-	20	1.10						

Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)			

No Monitoring Point/s Installed

If Methodology includes
Dynamic Sampling refer
to Runs table for info.

Н	lol	e i	٧	0	t	С	а	s	е	C

Backfill							
Depth (m)	Legend Code						
0.00 - 1.20	Arisings						

In-Situ Tests	
PID	2
Hand Vane*	0
Standard Penetration Tests	0

one depth where available.

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at

Sample Summary						
Environmental Samples						
Soil	2	Water	0			
Geotechnical Samples						
Bulk	0	Large Bulk	0			
Disturbed	0	Disturbed (NR)	0			
Piston	0	Piston (NR)				
Undisturbed 0 Undisturbed (NR)						
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Co	re San	nple	0			
		· ·				

(NR) Indicates sample undertaken but with 0% Recovery

Standard Penetration Test Summary											
						N	Reported Result	Hammer Ref			
(,	()	()			,						
	Depth (m)			Depth Casing Water Seating	Depth Casing Water Seating Main	Depth Casing Water Seating Main Penetration	Depth Casing Water Seating Main Penetration	Depth Casing Water Seating Main Penetration N Penetral Popular			

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	W	
Depth (m)	Duration (mins)	Depth

	•						
Water Added							
Depth (m)	Litres						

#### **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					

# Applicable to Dynamic Sampling Only Dynamic Sampling Runs Depth (m) Diam (mm) Recovery Remarks



Trial Pit

Log Type

Exploratory Hole Number **CPT17-11** 

Backfill: Arisings



**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Location Details Scale: 1:30 Project No: 425412.25 Northing: 558478.16 RPH Easting: Checked By: A1 Birtley to Coalhouse Name: Inspection Pit Elevation: 18.27mAOD Final Depth: 1.20m Approved By: BH Tyne and Wear Location: Logger GS Grid System: OSGB Start Date: 23/01/2018 Hand Tools Client SLIV Orientation: N/A Inclination: N/A Finish Date: 23/01/2018 Samples & Testing Installation , Backfill Strata Description Thickness) Depth (m) Test Results MADE GROUND: Brown gravelly CLAY with rootlets. Gravel is subangular to subrounded fine to coarse mudstone siltstone and coal. 1 ES PID 0.20m = 0.6ppm 0.20 (0.70)0.70 17.58 MADE GROUND: Greyish black subangular to subrounded fine to coarse sandstone and (0.20)0.80 2 ES PID 0.80m = 0.8ppm mudstone GRAVEL with low cobble content. Cobbles are subangular to subrounded 0.90 sandstone and mudstone. MADE GROUND: Brownish black gravelly CLAY. Gravel is subangular to subrounded fine to (0.30)coarse sandstone siltstone and mudstone. At 1.10m, groundwater enco 1.20 17.08 EOH at 1.20m - CPT not undertaken. Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Groundwater strike at 1.10m. 0.40m 0.40m



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Log Type

Exploratory Hole Number

**CPT17-12 FINAL** 

GEO

Project No:	3043		Location Details			Methodology & Plant				Scale:	1:50
		Easting:	425441.78	Northing:	558463.67	From (m)	Meti	nod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	125112110	reor criming.	330 103.07	0.00 - 1.20	Inspecti	on Pit	Hand Tool	orrecticus.	
		Elevation:	20.26mAOD	Final Depth:	1.20m	1.20 - 15.18	Static Cone Pe	enetrometer	Massenza MIP18	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	23/01/2018
Client:	SLIV	Orientation:	N/A	Inclination:	N/A					End Date:	23/01/2018

Hole Diameter						
Depth (m)	Diam (mm)					

**Casing Diameter** Depth (m) Diam (mm

	Groundwater Strikes									
Strike	trike Casing Sealed Time Rose To									
(m)	(m)	(m)	Remarks							

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Disturbed

Piston

Undisturbed

Sample Summary Environmental Samples 2 Geotechnical Samples

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 1.20	Arisings					

In-Situ Tests	
PID	2
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

<sup>(</sup>NR) Indicates sample undertaken but with

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
	(111)	(111)	(111)	DIOWS	DIOWS	iotai (iiiii)			

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Г	Chise	Г	
	Depth (m)	Duration (mins)	
			l

Water	Added
Depth (m)	Litres

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %
	l .		

# **Applicable to Dynamic Sampling Only** Dynamic Sampling Runs



Trial Pit

Log Type

**CPT17-12** 

Backfill: Arisings

Exploratory Hole Number

**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:30 425441.78 Easting: Northing: 558463.67 RPH Checked By: A1 Birtley to Coalhouse Name: Inspection Pit Elevation: 20.26mAOD Final Depth: 1.20m Approved By: BH Location: Tyne and Wear Grid System: OSGB Logger: GS Start Date: 23/01/2018 Hand Tool 23/01/2018 Client: SLIV Orientation: N/A Inclination: N/A Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results MADE GROUND: Brownish black gravelly CLAY. Gravel is subangular to subrounded fine to (0.20) coarse sandstone siltstone mudstone coal and brick. 0.20 20.06 0.20 1 ES PID 0.20m = 1.0ppm MADE GROUND: CONCRETE. (0.05) MADE GROUND: Firm to stiff orangish grey gravelly CLAY. Gravel is subangular to 0.25 subrounded fine to coarse coal concrete and brick. From 0.70m becomes laminated. (0.95) 0.80 2 ES PID 0.80m = 0.2ppm 1.20 19.06 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m



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Log Type

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# Exploratory Hole Number **CPT17-13**

**FINAL** 



Project No:	3043		Location Details			Methodology & Plant			Scale:	1:50
Managa	A4 Binton to Coolle one	Easting:	: <b>425427.66</b> No		558451.72	From (m)	Method	Plant Used	Checked:	RPH
Name: A1 Birtley to Coal	A1 Birtley to Coalhouse			· ·		0.00 - 1.20 1.20 - 16.27	Inspection Pit Static Cone Penetrometer	Hand Tool Massenza MIP18		
		Elevation:	18.83mAOD	Final Depth:	1.20m	1.20 - 10.27	Static Cone Penetrometer	MIGSSELIZA MILL TO	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	27/01/2018
Client:	SLIV	Orientation:	N/A	Inclination:	N/A				End Date:	27/01/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes						
Strike	Casing	Sealed	Time	Rose To	Dl		
(m)	(m)	(m)	(min)	(m)	Remarks		
ł							

Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)			

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 1.20	Arisings				

In-Situ Tests	
PID	2
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

PID	2	(NR) Indicates sample undertaken but v
Hand Vane* (		0% Recovery
	-	

Sample Summary  Environmental Samples								Sta	ndard	Penetrati	on T	est Summary	
				Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hamme
Soil	2	Water	0		(111)	(111)	(111)	Diows	Diows	Total (IIIII)			
Geote	chnic	al Samples											
Bulk	0	Large Bulk	0										
Disturbed	0	Disturbed (NR)	0										
Piston	0	Piston (NR)	0										
Indisturbed	0	Undisturbed (NR)	0										
Undistu	rbed 1	hin Wall	0										
Undisturb	ed Thi	n Wall (NR)	0										
Core Sample 0			0										

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

## **Applicable to Cable Percussion Only**

Chise	elling	w		
Depth (m)	Duration (mins)	Depth		
		l		

Water Added					
Depth (m)	Litres				

Drilling Flush					
Depth (m)	Flush Type	Flush Colour	Return %		
	l .				

<b>Applicable to Dynamic Sampling Only</b>							
	Dynamic	Sampling	Runs				
Depth (m)	Diam (mm)	Recovery %	Remarks				



Trial Pit

Log Type

Exploratory Hole Number

CPT17-13

Backfill: Arisings

1/-13



**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:30 425427.66 558451.72 Easting: Northing: RPH Checked By: A1 Birtley to Coalhouse Name: Inspection Pit Final Depth: 1.20m Elevation: 18.83mAOD Approved By: BH Location: Tyne and Wear Grid System: OSGB Logger GS Start Date: 27/01/2018 Hand Tool 27/01/2018 Client: SLIV Orientation: N/A Inclination: N/A Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results MADE GROUND: TOPSOIL (0.10) 18.73 0.10 MADE GROUND: Soft to firm slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is 0.20 1 ES PID 0.20m = 29.6ppm subangular to subrounded fine to coarse sandstone siltstone coal and brick. From 0.40m becomes very gravelly with low cobble content. Cobbles are subangular to subrounded sandstone. (1.10) 0.80 2 ES PID 0.80m = 35.9ppm From 1.10m becomes slightly gravelly 1.20 17.63 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m



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Sheet

Exploratory Hole Number

**CPT17-14** 

FINAL



Project No:	3043		Location	Details			Methodology &	Plant	Scale:	1:50
		Easting:	425401.28	Northing:	558432.04	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	125 102120	rtor crimig.	330-132.0-1	0.00 - 1.20	Inspection Pit	Hand Tool	erreeneu.	
		Elevation:	16.42mAOD	Final Depth:	1.20m	1.20 - 14.79	Static Cone Penetrometer	Massenza MIP18	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	23/01/2018
Client:	SLIV	Orientation:	N/A	Inclination:	N/A				End Date:	23/01/2018

Hole Diameter						
Depth (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info.

Casing D	iameter
Depth (m)	Diam (mm)

Hole Not Cased

	Groundwater Strikes						
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks		

No Groundwater Encountered

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 1.20	Arisings				

In-Situ Tests	
PID	2
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary							
Environmental Samples							
Soil	Soil <b>0</b> Water						
Geotechnical Samples							
Bulk	0 Large Bulk						
Disturbed	0	Disturbed (NR)					
Piston	0	Piston (NR)	0				
Undisturbed	Undisturbed 0 Undisturbed (NR)						
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Core Sample							

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

Standard Penetration Test Summary									
Depth (m)	Casing (m)	Water (m)				N	Reported Result	Hammer Ref	
				Depth Casing Water Seating	Depth Casing Water Seating Main	Depth Casing Water Seating Main Penetration	Depth Casing Water Seating Main Penetration	Depth Casing Water Seating Main Penetration N Reported Result	

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	De

Water Added						
Depth (m)	Litres					

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					
	I		1					

	Applicable to Dynamic Sampling Only										
ſ	Dynamic Sampling Runs										
Į	Depth (m)	Diam (mm) Recovery % Remarks									



Project No:

3043

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Location Details

Trial Pit

Log Type

**CPT17-14** FINAL

CENTRAL ALLIANCE

Sheet 1 of 1

GEO Methodology & Plant Scale: 1:30

Exploratory Hole Number

FIU	ect No. 3043	Easting: 425401.28 Northing: 558432.04					IV	retriouoloį	gy & Flailt	Scale.	1.30	
Nar					558432.	.04		Inspecti	on Pit		Checked By:	RPH
		Elevation:	16.42mAOD	Final Depth	: <b>1.20m</b>		mspection it			Approved By:	ВН	
Loc	ation: Tyne and Wear	Logger: <b>GS</b>									Start Date:	23/01/2018
Clie					n: OSGB N/A		Hand Tool				Finish Date:	23/01/2018
			•								1	
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Water	Installation /			Samples & Testing	
	'			_	Thickness)	(mAOD)	Level (m)	Backfill	Depth (m)	Ref	Test Results	s
	MADE GROUND: TOPSOIL.			**********				XXXXXX				
					(0.20)							1
	MADE GROUND: Firm orangish brown gravelly CLAY with low cobb	le content.	Gravel is		0.20	16.22					PID 0.20m = 0.6ppm	1
	subangular to subrounded fine to coarse coal brick sandstone and											1
	subangular to subrounded sandstone and siltstone.				(0.00)							4
-	From 0.20m to 0.40m becomes very gravelly.				(0.60)							7
												1
					0.00	45.63						1
	MADE GROUND: Firm to stiff laminated slightly gravelly CLAY. Grave	el is subang	gular to		0.80	15.62					PID 0.80m = 0.7ppm	4
	subrounded fine to coarse coal, brick and sandstone.				(0.40)							
1 -					(0.40)							1 -
					1 20	45.22						1
	EOH at 1.20m - Scheduled depth				1.20	15.22						-
												-
												7
-												7
												1
												1
												‡
												7
2 -												2 -
												1
												1
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												=
-												-
												1
												1
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												1
3 -												3 -
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												3
-						1						7
												7
:												1
												1
												-
6 -								ļ				6 -
Oh	l ervations / Remarks	Rra	aking Out	/ Hard Strata	1 a	Stahil	ity & Backfi	II.	Pit Dimer	nsions		
Suc	erranons / nemano			From (m)		Remarks	-	Jeanii	.cy & Dackii			.510115
				. 70.11 (111)	1	ricinal K3		Shoring: No	one		0.40m	
												0.40m
								Stability: St	able			0.4011
											0.00	.n.
				1				Backfill: Ar	isings		Orientatio •	n1:
1				1				I			1	



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Sheet

Exploratory Hole Number

**CPT17-15** 

**FINAL** 



Project No:	3043	Location Details				Methodology & P	Scale:	1:50										
			sting: 425450.85		425450.85 Northing: !		sting: 425450.85 Northing:		Easting: <b>425450.85</b> Northi		425450.85 Northing: 558425		Northing: <b>558425.94</b>		Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Elevation:	18.91mAOD	Final Depth: 1.20m		0.00 - 1.20 1.20 - 19.07			Approved:	ВН								
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				''	23/01/2018								
	•		ds	Grid System.	OSGB				Start Date:	23/01/2016								
Client:	SLIV	Orientation:	N/A	Inclination:	N/A				End Date:	23/01/2018								
					•													

Hole Diameter						
Depth (m)	Diam (mm)					

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To							
(m)	(m)	(m)	(min)	(m)	Remarks						
l											

Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)			

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 1.20	Arisings					

In-Situ Tests					
PID	2				
Hand Vane*	0				
Standard Penetration Tests	0				

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Hand Vane*	0	0% Recovery
6. 1 18		1

			_
San	ple S	Summary	
Enviro	nmer	ntal Samples	
Soil	2	Water	0
Geot	echni	cal Samples	
Bulk	0	Large Bulk	0
Disturbed	0	Disturbed (NR)	0
Piston	0	Piston (NR)	0
Undisturbed	0	Undisturbed (NR)	0
Undist	ırbed	Thin Wall	0
Undisturb	ed Th	in Wall (NR)	0
Co	re Sar	nple	0
		e undertaken but v covery	vith
•	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,	

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	Chiselling					
Depth (m)	Duration (mins)		Depth			

Water Added					
Depth (m)	Litres				

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			

Applicable to Dynamic Sampling Only						
Dynamic Sampling Runs						
Depth (m)	Diam (mm)	Recovery %	Remarks			



Trial Pit

Log Type

Exploratory Hole Number

CPT17-15

FINAL

CENTRAL ALLIANCE

Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Project No: Methodology & Plant Location Details Scale: 1:30 425450.85 Easting: Northing: 558425.94 RPH Checked By: A1 Birtley to Coalhouse Name: Inspection Pit Final Depth: 1.20m Elevation: 18.91mAOD Approved By: BH Location: Tyne and Wear Grid System: OSGB Logger: GS Start Date: 23/01/2018 Hand Tool 23/01/2018 Client: SLIV Orientation: N/A Inclination: N/A Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results MADE GROUND: TOPSOIL. (0.20) 0.20 18.71 0.20 1 ES PID 0.20m = 0.8ppm MADE GROUND: Firm greyish brown gravelly CLAY with rootlets. Gravel is subangular to subrounded fine to coarse brick, concrete, siltstone, coal and ceramic fragments. (1.00) 0.80 2 ES PID 0.80m = 0.8ppm 1.20 17.71 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m Backfill: Arisings



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Sheet

Exploratory Hole Number

**CPT17-16** 

FINAL



Project No:	3043		Location [	Details			Methodology & P	lant	Scale:	1:50
Name:	A1 Birtley to Coalhouse	Easting:	425545.14	Northing:	558410.88	From (m)	Method	Plant Used	Checked:	JMH
Name:	AT Birtiey to Coamouse	Elevation:	22.68mAOD	Final Depth:	1.20m	0.00 - 1.20 1.20 - 15.01	Inspection Pit Static Cone Penetrometer	Hand Tools Yanmar 9T	Approved:	PH
Location:	Tyne and Wear	Logger:		Grid System:	OSGB				Start Date:	10/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	10/04/2018

Hole Diameter					
Depth (m)	Diam (mm)				

Casing Diameter
Depth (m) Diam (mm

	Groundwater Strikes									
				Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)						

Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 1.20	Arisings						
	Arisings						

In-Situ Tests						
PID	0					
Hand Vane*	0					
Standard Penetration Tests	0					

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary									
Enviro	nmer	ntal Samples							
Soil <b>0</b> Water									
Geotechnical Samples									
Bulk <b>0</b> Large Bulk									
Disturbed	0	Disturbed (NR)	0						
Piston	0	Piston (NR)	0						
Undisturbed	Undisturbed 0 Undisturbed (NR)								
Undisturbed Thin Wall									
Undisturbed Thin Wall (NR)									
Cor	e San	nple	0						

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

ĺ	SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

lling	Water Adde					
Duration (mins)	Depth (m)	Li				

Applicable to Rotary Onl	y

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					
	l .							

Dynamic Sampling Runs									
Depth (m)	Diam (mm)	Recovery %	Remarks						

**Applicable to Dynamic Sampling Only** 



Trial Pit

Log Type

**CPT17-16** FINAL

Exploratory Hole Number

		Web: www	.central-alliance	.co.uk	Sheet :	1 of 1			, ,_		GE	
Project No:	3043		Locati	on Details			Ν	/lethodolo	gy & Plant	-	Scale:	1:30
Name:	A1 Birtley to Coalhouse	Easting:	425545.14	Northing:	558410.	88	Sta	atic Cone Pe	netromete	r	Checked By:	JMH
Location	Tune and Ween	Elevation:	22.68mAOD	Final Depth			50	and come i c			Approved By:	PH
Location:	Tyne and Wear	Logger:		Grid Syster				Yanma	ar 9T		Start Date:	10/04/2018
Client:	SLIV	Orientation:	N/A	Inclination	: 90°	1		I			Finish Date:	10/04/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level (mAOD)	Water Level (m)	Installation / Backfill			Samples & Testing	
					Thickness)	(111100)	ecver (m)	×///×///×	Depth (m)	Ref	Test Result	:s
Possib coarse Light I	GROUND: TOPSOIL.  See MADE GROUND: Black and dark brown sandy clayey angues and stone and mudstone GRAVEL. Sand is fine to coarse.  Brown and orangish brown sandy clayey angular to subround tone, mudstone and coal GRAVEL. Sand is fine to coarse.				(0.10) 0.10 (0.10) 0.20	22.58 22.48						-
					(1.00)							-
1 -	EOH at 1.20m - Scheduled depth				1.20	21.48						1 <del>-</del> - - - -
												-
2 -												2 -
3												3-
4-												4 -
5 -												5 -
6												6 -
Observation:	s / Remarks					/ Hard Strate	a	Stabil	lity & Backf	ill	Pit Dime	nsions
				From (m)		Remarks		Shoring: Stability: Backfill: A	risings		Orientatio	m on:



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Sheet

Exploratory Hole Number

**CPT17-17** 

FINAL



Project No:	3043	Location Details				Methodology & P	Scale:	1:50		
	A1 Birtley to Coalhouse	Easting:	425565.39	Ü		From (m)	Method	Plant Used	Checked:	JMH
Name:		Elevation:	28.16mAOD			0.00 - 1.20 1.20 - 21.15	Inspection Pit Static Cone Penetrometer	Hand Tools Yanmar 9T	Approved:	PH
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB				Start Date:	10/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	N/A				End Date:	10/04/2018

Hole Diameter							
Depth (m)	Diam (mm)						

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To	Damania.						
(m)	(m)	(m)	(min)	(m)	Remarks						
0.40	-	-	20	0.40							

Installation / Instrument Details										
Date	Instrument Details To (m) Resp. Zone (m)									
				, ,						

No Monitoring Point/s Installed

If Methodology includes
Dynamic Sampling refer
to Runs table for info.

Hol	P	N	'n	ŧ	c	'n	c	0	,
ΠUI		ľV	u	ι	u	u.	31	۲	L

Backfill								
Depth (m)	Legend Code							
0.00 - 1.20	Arisings							

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary							
Environmental Samples							
Soil <b>2</b> Water							
Geoted	hnic	cal Samples					
Bulk <b>0</b> Large Bulk							
Disturbed	0	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Core	e San	nple	0				

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	elling	Water Added		
Depth (m)	Duration (mins)	Depth (m)	Litr	

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

Applicab	Applicable to Dynamic Sampling Only								
	Dynamic Sampling Runs								
Depth (m)	Diam (mm)	Recovery %	Remarks						



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Trial Pit

Log Type

**CPT17-17** FINAL

Exploratory Hole Number



Sheet 1 of 1 Location Details Methodology & Plant Project No: Scale: 1:30 Easting: 425565.39 Northing: 558378.99 Checked By: JMH A1 Birtley to Coalhouse Name: Inspection Pit Elevation: Final Depth: 1.20m Approved By: 28.16mAOD PH

Loc	ation:	Tyne and Wear	Logger: JH	Grid System							1 ''	04/2018
CI:-								Hand <sup>1</sup>	Tools			
Clie	int:	SLIV	Orientation: N/A	Inclination:	N/A	1						04/2018
		Strata Description		Legend	Depth (m) (Stratum	Reduced Level	Water	Installation /			Samples & Testing	
		Strata Description		LEGENO	Thickness)	(mAOD)	Level (m)	Backfill	Depth (m)	Ref	Test Results	
	TOPSOIL	L with rootlets.		XXXXXX	(0.10)			X/X\X/X				
		own and black sandy clayey angular to subrounded fine to	coarse sandstone and		0.10	28.06						-
		ne GRAVEL. Sand is fine to coarse.			(0.20)	27.00						1
		own and dark brown sandy clayey angular to subrounded f			0.30	27.86			0.30	1 ES		-
		ne and coal GRAVEL with medium cobble content. Sand is	ine to coarse. Cobbles are				0.40 0.40					3
	subangu	ılar sandstone. 40m, groundwater encountered.					0.40					-
	7.0	40m, groundwater encountered.										_
					(0.90)				0.80	2 ES		1
												1
1 -	]											1 -
												]
		EOH at 1.20m - Scheduled depth			1.20	26.96		(///2(///2	1			-
		·										1
	1											1
-												7
	1											]
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									]			6
6 -												6 -
O.	L	Domarks			aking Out	/ Hard Ctm. 1		C+-1:	litur O Darat C		Die Dieses	
_	servations /	remarks trike at 0.40m.		From (m)	aking Out	/ Hard Strata Remarks	1	Stabi	lity & Backfi	111	Pit Dimensions	
010	unuwater si	LLINE at U.HUIII.						Shoring: N	one		0.40m	1
												0.40m
								Stability: St	table			J
								Backfill. *	ricings		Orientation:	
								Backfill: A	119111R2		۰	



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#### Header Sheet

Log Type

Exploratory Hole Number

## **CPT17-18**

**FINAL** 



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
Name:	A1 Birtley to Coalhouse	Easting:	425591.80	Northing:	558385.55	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	JMH
		Elevation:	27.15mAOD	Final Depth:	1.20m	1.20 - 4.96	Static Cone Penetrometer	Yanmar 9T	Approved:	PH
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB				Start Date:	11/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	11/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To	Remarks						
(m)	(m)	(m)	(min)	(m)	Remarks						

| Date | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 1.20	Arisings						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available. Disturbed

Piston

Undisturbed

Environmental Samples

2 Water

Geotechnical Samples

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Standard Penetration Test Summary									
Test Type						Penetration	N	Reported Result	Hammer Ref	
icst type	(m)	(m)	(m)	Blows	Blows	Total (mm)		neported nesalt	Transmer ner	
ı										

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	elling		Water Added			
Depth (m)	Duration (mins)		Depth (m)	Litres		
		]				

Depth (m)		Flush									
Depth (m) Flush Type Flush Colour Return %											
		i									
		l									
		i									
		i									
		i									
		i									
ı		i									
		i									
		i									
		i									

Applicable to Dynamic Sampling Only									
Dynamic Sampling Runs									
Depth (m) Diam (mm) Recovery % Remarks									

<sup>0 (</sup>NR) Indicates sample undertaken but with 0% Recovery



Trial Pit

Log Type

Exploratory Hole Number **CPT17-18** 

Backfill: Arisings

**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:30 Easting: 425591.80 Northing: 558385.55 Checked By: JMH A1 Birtley to Coalhouse Name: Inspection Pit Elevation: 27.15mAOD Final Depth: 1.20m Approved By: PH Location: Tyne and Wear Grid System: OSGB Logger: Start Date: 11/04/2018 Hand Tools Client: SLIV Orientation: N/A Inclination: 90° Finish Date: 11/04/2018 Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Ref Test Results Dark brown TOPSOIL with rootlets. (0.20) 0.20 26.95 Dark brown and black sandy clayey angular to subrounded fine to coarse coal, sandstone (0.20)0.30 1 ES and mudstone GRAVEL. Sand is fine to coarse. 0.40 26.75  $\label{eq:control_problem} \mbox{Dark grey and black clayey angular to subangular fine to coarse mudstone GRAVEL with}$ medium cobble content. Cobbles are subrounded to rounded sandstone. (0.80)0.80 2 ES 1.20 25.95 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m



Header Sheet

Log Type

Exploratory Hole Number

**CPT17-19** FINAL

Project No:	3043	Location Details				Methodology & Plant			Scale:	1:50	
	Easting: 42	425551.01	Northing:	558419.71	From (m)	Met	hod	Plant Used	Checked:	JMH	
Name:	me: A1 Birtley to Coalhouse	Lusting.		Northing.	330 123.72	0.00 - 0.96	Inspect	tion Pit	Hand Tools	onconcu.	314111
		Elevation:	25.06mAOD	Final Depth:	0.96m					Approved:	PH
Location:	Tyne and Wear	Logger:		Grid System:	OSGB					Start Date:	11/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	11/04/2018

Hole Diameter								
Depth (m) Diam (mm)								

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes									
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks					

Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

- 100								
Backfill								
Depth (m)	Legend Code							
0.00 - 0.96	Arisings							

In-Situ Tests					
PID	0				
Hand Vane*	0				
Standard Penetration Tests	0				

* One count indicates an average
reported result of 3 tests carried out at
one depth where available.

Sample Summary							
Enviro	Environmental Samples						
Soil	0	Water	0				
Geote	chnic	cal Samples					
Bulk 0 Large Bulk							
Disturbed	Disturbed 0 Disturbed (NR)						
Piston	0	Piston (NR)					
Undisturbed	Undisturbed 0 Undisturbed (NR)						
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Cor	e San	nple	0				

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

Standard Penetration Test Summary									
						N	Reported Result	Hammer Ref	
(,	()	()			,				
	Depth (m)			Depth Casing Water Seating	Depth Casing Water Seating Main	Depth Casing Water Seating Main Penetration	Depth Casing Water Seating Main Penetration	Depth Casing Water Seating Main Penetration N Penetral Popular	

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

	Water	Added
[	Depth (m)	Litres
[		

# **Applicable to Rotary Only**

	Drilling Flush						
ĺ	Depth (m) Flush Type		Flush Colour	Return %			
l							

#### **Applicable to Dynamic Sampling Only** Dynamic Sampling Runs Depth (m) Diam (mm) Recovery %



Trial Pit

Log Type

Exploratory Hole Number **CPT17-19** 

**FINAL** 

Backfill: Arisings

CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:30 425551.01 Easting: Northing: 558419.71 Checked By: JMH A1 Birtley to Coalhouse Name: Inspection Pit Final Depth: 0.96m Elevation: 25.06mAOD Approved By: PH Location: Tyne and Wear Grid System: OSGB Logger Start Date: 11/04/2018 Hand Tools 11/04/2018 Client: SLIV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results Dark brown TOPSOIL with roots and rootlets. (0.10) 24.96 0.10 Dark brown and black sandy clayey angular to subrounded fine to coarse sandstone, (0.25)mudstone and coal GRAVEL. Sand is fine to coarse. 0.35 24.71 Dark grey and black clayey angular to subangular fine to coarse predominantly mudstone GRAVEL with medium cobble content. Cobbles are subrounded to rounded sandstone. (0.61)0.96 24.10 EOH at 0.96m - Refusal Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Shoring: m Orientation:



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Sheet

Exploratory Hole Number

**CPT17-19A** 

FINAL



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
Name:	A4 Distance Coally and	Easting:	425550.16	Northing:	558420.25	From (m)	Method	Plant Used	Checked:	JMH
Name:	A1 Birtley to Coalhouse	- ·		F: 15 //		0.00 - 1.20 1.20 - 12.64	Inspection Pit Static Cone Penetrometer	Hand Tools Yanmar 9T		511
		Elevation:	25.30mAOD	Final Depth:	1.20m				Approved:	PH
Location:	Tyne and Wear	Logger:	JG	Grid System:	OSGB				Start Date:	11/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	11/04/2018

Hole Diameter				
Depth (m)	Diam (mm)			

Strike Casing Sealed Time Rose To (m) (m) (m) (min) (m

| Date | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm)

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

**Casing Diameter** 

Depth (m) Diam (mm

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 1.20	Arisings					

In-Situ Tests				
PID	0			
Hand Vane*	0			
Standard Penetration Tests	0			

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sam	Sample Summary						
Enviro	nmer	ntal Samples					
Soil	0	Water	0				
Geote	chnic	cal Samples					
Bulk	0	Large Bulk	0				
Disturbed	0	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Cor	e San	nple	0				

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

ĺ	SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chis	elling	Water Added		
Depth (m)	Duration (mins)	Depth (m)	Litres	

.		
	ı	
	ı	
	ı	
	ı	
	ı	
	ı	
	ı	
	ı	
	ı	

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			

	Applicable to Dynamic Sampling Only								
ĺ	Dynamic Sampling Runs								
	Depth (m)	Diam (mm)	Recovery %	Remarks					



Trial Pit

Log Type

Exploratory Hole Number

CPT17-19A

CENTRAL ALLIANCE

Orientation:

Backfill: Arisings

**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Project No: Location Details Methodology & Plant Scale: 1:30 Easting: 425550.16 Northing: 558420.25 Checked By: JMH A1 Birtley to Coalhouse Name: Static Cone Penetrometer Elevation: 25.30mAOD Final Depth: 1.20m Approved By: PH Location: Tyne and Wear Grid System: OSGB Logger: Start Date: 11/04/2018 Yanmar 9T Client: SLIV Orientation: N/A Inclination: 90° Finish Date: 11/04/2018 Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Legend Depth (m) Test Results Dark brown TOPSOIL with roots and rootlets. (0.10) 25.20 0.10 Dark brown and black sandy clayey angular to subrounded fine to coarse sandstone, mudstone and coal GRAVEL. Sand is fine to coarse. (0.30) 0.40 24.90 Dark grey and black clayey angular to subangular fine to coarse predominantly mudstone GRAVEL with medium cobble content. Cobbles are subrounded to rounded sandstone. (0.80) 1.20 24.10 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Shoring: m



Header Sheet Web: www.central-alliance.co.uk

Log Type

Exploratory Hole Number

**CPT17-20** 

FINAL



Project No:	3043		Location	Details			Met	thodology & P	lant	Scale:	1:50
		Easting:	425583.53	Northing:	558374.22	From (m)	Met	hod	Plant Used	Checked:	JMH
Name:	A1 Birtley to Coalhouse	Lusting.	-123303133	rtor crimig.	33037-1122	0.00 - 1.20	Inspect		Hand Tools	circoncu.	3,,,,,
		Elevation:	24.52mAOD	Final Depth:	1.20m	1.20 - 4.52	Static Cone P	enetrometer	Yanmar 9T	Approved:	PH
Location:	Tyne and Wear	Logger:	JG	Grid System:	OSGB					Start Date:	10/04/2018
Client:	SLJV	Orientation:	N/A	Inclination:	90°					End Date:	10/04/2018

Hole Diameter					
Depth (m)	Diam (mm)				

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes								
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks				

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill				
Depth (m)	Legend Code			
0.00 - 1.20	Arisings			

In-Situ Tests				
PID	0			
Hand Vane*	0			
Standard Penetration Tests	0			

Standard Penetration Tests	0	
* One count indicates an av	- 0	

Sample Summary							
Environmental Samples							
Soil <b>0</b> Water							
Geote	Geotechnical Samples						
Bulk	0	Large Bulk	0				
Disturbed	0	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Cor	re San	nple	0				

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

				Sta	ndard	Penetrati	on T	est Summary	Standard Penetration Test Summary									
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref									

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litres

Applicable to Rotary Only								
	Drilling	Flush						
Depth (m)	Flush Type	Flush Colour	Return %					
		Drilling	Drilling Flush					

	Applicab	le to Dy	namic S	ampling Only	
		Dynamic	Sampling	Runs	
	Depth (m)	Diam (mm)	Recovery %	Remarks	
-					-



Trial Pit

Log Type

Exploratory Hole Number **CPT17-20** 

Backfill: Arisings



**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Location Details Methodology & Plant Scale: 1:30 Project No: Easting: 425583.53 Northing: 558374.22 Checked By: JMH A1 Birtley to Coalhouse Name: Static Cone Penetrometer Elevation: 24.52mAOD Final Depth: 1.20m Approved By: PH Tyne and Wear Location: Grid System: OSGB Logger Start Date: 10/04/2018 Yanmar 9T 10/04/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results TOPSOIL with rootlets. (0.20) 0.20 24.32 Dark brown and black sandy angular to subangular fine to coarse sandstone, coal and mudstone GRAVEL with medium cobble content. Cobbles are subangular to subrounded (0.30)sandstone and mudstone. Sand is fine to coarse. 0.50 24.02 Dark orangish brown angular to subangular fine to coarse sandstone GRAVEL with low cobble content. Cobbles are angular subangular sandstone. (0.70) 1.20 23.32 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Shoring m Orientation:



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Log Type Header

Sheet

Exploratory Hole Number

### **CPT17-20A**

**FINAL** 



Project No:	3043		Location [	Details			Methodology & P	lant	Scale:	1:50
Name:	A1 Birtley to Coalhouse	Easting:	425584.27	Northing:	558374.90	From (m)	Method	Plant Used	Checked:	JMH
Name:	AT birtiey to Coamouse	Elevation:	24.52mAOD	Final Depth:	1.20m	0.00 - 1.20 1.20 - 20.55	Inspection Pit Static Cone Penetrometer	Hand Tools Yanmar 9T	Approved:	PH
Location:	Tyne and Wear	Logger:	JG	Grid System:	OSGB				Start Date:	10/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	10/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter Depth (m) Diam (mm

			Grou	ındwa	ter Strikes
Strike	Casing	Sealed	Time	Rose To	Damanda.
(m)	(m)	(m)	(min)	(m)	Remarks

	Installation / Instrume	ent Deta	ils	
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)
1				

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

В	Backfill						
Depth (m)	Legend Code						
0.00 - 1.20	Arisings						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

* One count indicates an average
reported result of 3 tests carried out at
one depth where available.

Sam	ple S	Summary	
Enviror	nmer	ntal Samples	
Soil	0	Water	0
Geote	chnic	cal Samples	
Bulk	0	Large Bulk	0
Disturbed	0	Disturbed (NR)	0
Piston	0	Piston (NR)	0
Undisturbed	0	Undisturbed (NR)	0
Undistu	rbed 1	Thin Wall	0
Undisturbe	ed Thi	n Wall (NR)	0
Cor	e San	nple	0

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

ded	Water	elling	Chise
Litn	Depth (m)	Duration (mins)	Depth (m)

Applicable to Rotary Only								
	Drilling	Flush						
Depth (m) Flush Type Flush Colour								

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			

Applicable to Dynamic Sampling Only											
Dynamic Sampling Runs											
Depth (m)	Diam (mm)	Recovery %	Remarks								



Trial Pit

Log Type

**CPT17-20A** 

Exploratory Hole Number



Orientation:

Backfill: Arisings

**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk GEO Sheet 1 of 1 Location Details Methodology & Plant Scale: 1:30 Project No: 425584.27 Easting: Northing: 558374.90 Checked By: JMH A1 Birtley to Coalhouse Name: Static Cone Penetrometer Elevation: 24.52mAOD Final Depth: 1.20m Approved By: PH Tyne and Wear Location: Logger Grid System: OSGB Start Date: 10/04/2018 Yanmar 9T 10/04/2018 Client SLIV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results TOPSOIL with rootlets. (0.15) 0.15 24.37 Dark brown and black sandy angular to subangular fine to coarse sandstone, coal and mudstone GRAVEL with medium cobble content. Cobbles are subangular to subrounded (0.35)sandstone and mudstone. Sand is fine to coarse. 0.50 24.02 Dark orangish brown angular to subangular fine to coarse sandstone GRAVEL with low cobble content. Cobbles are angular subangular sandstone. (0.70) 1.20 23.32 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Shoring m



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Log Type Header Sheet

Exploratory Hole Number

**CPT17-21** 

FINAL



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50	
Name:	A1 Birtley to Coalhouse	Easting:	425613.36	Northing:	558367.83	From (m)	Method	Plant Used	Checked:	JMH
Name.	•	Elevation:	27.55mAOD	Final Depth:	1.20m	0.00 - 1.20 1.20 - 5.47	Inspection Pit Static Cone Penetrometer	Hand Tools Yanmar 9T	Approved:	PH
Location:	Tyne and Wear	Logger:	JH+JG	Grid System:	OSGB				Start Date:	10/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	N/A				End Date:	10/04/2018

Hole Diameter						
Depth (m)	Diam (mm)					

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes								
				Rose To	Remarks				
(m)	(m)	(m)	(min)	(m)					

Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 1.20	Arisings				

In-Situ Tests					
PID	0				
Hand Vane*	0				
Standard Penetration Tests	0				

	Stallualu Pelletration Tests	U	ı
			•
	* One count indicates an av	erage	e
rep	orted result of 3 tests carrie	ed ou	ıt at

Sample Summary						
Environmental Samples						
Soil :	2	Water	0			
Geotech	nic	al Samples				
Bulk	0	Large Bulk	0			
Disturbed	0	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Core S	San	ıple	0			

(NR) Indicates sample undertaken but with

	Standard Penetration Test Summary										
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)		Reported Result	Hammer Ref		
	(111)	(111)	(111)	BIOWS	biows	Total (IIIII)					

ĺ	SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chis	Chiselling		Water	Added
Depth (m)	Duration (mins)		Depth (m)	Litres

			D
1 [	Depth (n	n)	Flush
П			
П			
П			
П			
П			
П			
П			
П			

Drilling Flush			
Depth (m)	Flush Type	Flush Colour	Return %

Applicable to Dynamic Sampling Only					
	Dynamic Sampling Runs				
Depth (m)	Diam (mm)	Recovery %	Remarks		



Trial Pit

Log Type

Exploratory Hole Number

**CPT17-21** 



**FINAL** Web: www.central-alliance.co.uk Sheet 1 of 1 **GEO** Location Details Methodology & Plant Scale: 1:30 Project No: 425613.36 Northing: 558367.83 Easting: Checked By: JMH A1 Birtley to Coalhouse Name: Inspection Pit Flevation: 27.55mAOD Final Depth: 1.20m Approved By: PH Tyne and Wear Location: Logger JH+JG Grid System: OSGB Start Date: 10/04/2018 Hand Tools 10/04/2018 Client SLIV Orientation: N/A Inclination: N/A Finish Date: Samples & Testing Installation Strata Description Thickness) Depth (m) Ref Test Results TOPSOIL with rootlets. (0.20) 0.20 27.35 Dark brown and black sandy angular to subrounded fine to coarse sandstone, mudstone and 0.30 1 ES coal GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular to (0.30)subrounded sandstone and mudstone. 0.50 27.05 Dark orangish brown angular to subangular fine to coarse sandstone GRAVEL with high (0.20) cobble content. Cobbles are angular to subangular sandstone. 0.70 26.85 Dark brown and grey sandy angular to subrounded fine to coarse sandstone, coal and 0.80 2 ES mudstone GRAVEL with medium cobble content and low boulder content. Sand is fine to coarse. Cobbles are subangular to subrounded mudstone and sandstone. Boulders are (0.50)rounded mudstone. 1.20 26.35 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m Backfill: Arisings



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Log Type

Header

Exploratory Hole Number **CPT17-21A** 

FINAL



Project No:	3043		Location [	Details			Methodology & P	lant	Scale:	1:50
Name:	A1 Birtley to Coalhouse	Easting:	425612.65	Northing:	558368.54	From (m)	Method	Plant Used	Checked:	JMH
Name.	AT Bittley to Coamouse	Elevation:	27.58mAOD	Final Depth:	1.20m	0.00 - 1.20 1.20 - 8.65	Inspection Pit Static Cone Penetrometer	Hand Tools Yanmar 9T	Approved:	PH
Location:	Tyne and Wear	Logger:	JG	Grid System:	OSGB				Start Date:	10/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	10/04/2018

Hole Diameter					
Depth (m)	Diam (mm)				

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Damania.			
(m)	(m)	(m)	(min)	(m)	Remarks			

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 1.20	Arisings				

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sam	Sample Summary						
Enviror	nmer	ntal Samples					
Soil	0	Water	0				
Geote	chnic	cal Samples					
Bulk	0	Large Bulk	0				
Disturbed	0	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Cor	e San	nple	0				

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

Added Litres

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chis	elling	Water
Depth (m)	Duration (mins)	Depth (m)

		Dep

#### **Applicable to Rotary Only**

	Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %				

Dynamic Sampling Runs								
Depth (m)	Diam (mm)	Recovery %	Remarks					
	I	1	l e					



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Trial Pit

Log Type

Exploratory Hole Number

CPT17-21A

FINAL

CENTRAL ALLIANCE

					Sheet :	l of 1					GEO
Proj	ect No: <b>3043</b>		Locati	ion Details			N	1ethodolo	gy & Plant	Scale:	1:30
,		F			FF03C0				5,		
Nan	ne: A1 Birtley to Coalhouse	Easting:	425612.65	Northing:	558368.	54	Sta	atic Cone Pe	netrometer	Checked By:	JMH
		Elevation:	27.58mAOD	Final Depth	: 1.20m		50	atio conc i c	c.c.oc.c.	Approved By:	PH
Loca	ation: Tyne and Wear	Loggor	JG	Grid System	. OSCP					Start Date:	10/04/2018
		Logger:						Yanma	ır 9T		
Clie	nt: SLIV	Orientation:	N/A	Inclination:	90°					Finish Date:	10/04/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Water	Installation /		Samples & Testin	g
	Strata Sestington			8	Thickness)	(mAOD)	Level (m)	Backfill	Depth (m) Re	of Test 6	esults
				V///X////				X///XX///X	Deptii (iii) Ki	:i lest n	esuits
-	TOPSOIL with rootlets.				(0.10)	27.48		X( X()			Ī
-	Dark brown and black sandy angular to subrounded fine to coarse	sandstone,	coal and		0.10	27.40					-
-	mudstone GRAVEL with medium cobble content. Cobbles are suba							<i>[X())X()</i>			-
-	sandstone and mudstone. Sand is fine to coarse.	Ü			(0.40)						-
-	Sanastone and madstoner sand is time to course.										
_					0.50	27.08					_
-	Dark orangish brown angular to subangular fine to coarse sandsto	ne GRAVEL	with high			27.00					-
-	cobble content. Cobbles are angular to subangular sandstone.				(0.20)						-
-	Dark brown and grey sandy angular to subrounded fine to coarse s	andstone	mudstone and		0.70	26.88		Y///X////			_
-	coal GRAVEL with medium cobble content and low boulder content							\X(\)X(\			-
-											-
	Cobbles are subangular to subrounded mudstone and sandstone.	Boulders ar	e rounaea		(0.50)			<i>)X())X()</i>			-
1 -	mudstone.										1 -
-											-
-	EOH at 1.20m - Scheduled depth			*: :	1.20	26.38		X///XX///X			-
-	Lori at 1.2011 - Ochedaled depth										-
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Oho	ervations / Remarks			D	aking Out	/ Hard Strata		C+~F:1	ity & Backfill	Di+ D	imensions
ODS	ervations / Remarks				akirig Out ,		2	Stabil	ity & DdUKIIII		
				From (m)		Remarks		Shoring:		r	n
								_			
								Carlotte			m
								Stability:			
										Orien	tation:
								Backfill: Ar	isings	Orient	



Header Sheet

Log Type

Exploratory Hole Number

**CPT17-22** FINAL

GEO

Project No:	3043	Location Details				Methodology & Plant				Scale:	1:50
		Easting:	425555.19	Northing: <b>558386.84</b>		From (m)	Met	hod	Plant Used	Checked:	JMH
Name:	A1 Birtley to Coalhouse	Sirtley to Coalhouse	423333123	rtortimig.	330300.01	0.00 - 1.20	Hand	Tools	Hand Tools	onconcu.	314111
		Elevation:	21.93mAOD	Final Depth:	1.20m	1.20 - 3.07	Static Cone P	enetrometer	Yanmar 9T	Approved:	PH
ocation:	Tyne and Wear	Logger:		Grid System:	OSGB					Start Date:	12/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°					End Date:	12/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To							
(m)	(m)	(m)	(min)	(m)	Remarks						
I											

	Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							
1											

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

	1-611							
Backfill								
Depth (m)	Legend Code							
0.00 - 1.20	Arisings							

In-Situ Tests					
PID	0				
Hand Vane*	0				
Standard Penetration Tests	0				

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
Soil	0	Water	0					
Geotechnical Samples								
Bulk	0	Large Bulk	0					
Disturbed	0	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undisturbed Thin Wall								
Undisturbed Thin Wall (NR)								
Core :	Sam	ıple	0					

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chis	elling		Water Added			
Depth (m)			Depth (m)	Litres		

Applicable to Rotary Only						
Daillin - Elizab						

Drilling Flush									
Depth (m)	Flush Type	Flush Colour	Return %						

Applicable to Dynamic Sampling Unity													
	Dynamic Sampling Runs												
Depth (m)	Diam (mm)	Recovery %	Remarks										



Trial Pit

Log Type

Exploratory Hole Number

CPT17-22

FINAL

Backfill: Arisings

CENTRAL ALLIANCE

Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Project No: Location Details Methodology & Plant Scale: 1:30 425555.19 Easting: Northing: 558386.84 Checked By: JMH A1 Birtley to Coalhouse Name: Static Cone Penetrometer Elevation: 21.93mAOD Final Depth: 1.20m Approved By: PH Location: Tyne and Wear Grid System: OSGB Logger Start Date: 12/04/2018 Yanmar 9T Orientation: N/A 12/04/2018 Client: SLIV Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Test Results TOPSOIL with roots. (0.10) 21.83 0.10 Dark brown and black sandy angular to subrounded fine to coarse sandstone, coal and (0.20)mudstone GRAVEL with low cobble content. Sand is fine to coarse. Cobbles are subangular 0.30 21.63 to subrounded sandstone and mudstone. Dark brown and grey slightly clayey sandy angular to subangular fine to coarse coal, sandstone and mudstone GRAVEL with medium cobble content. Cobbles are subangular to subrounded sandstone and mudstone. Sand is fine to coarse. (0.90) 1.20 20.73 EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Shoring: m Orientation:



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Sheet

Log Type Exploratory Hole Number

Header

**CPT17-22A** 

FINAL



Project No:	3043		Location I	Details		Methodology & Plant			Scale:	1:50
Name:	A1 Pintley to Coellague	Easting:	425555.78	Northing:	558386.03	From (m)	Method	Plant Used	Checked:	JMH
Name:	Name: A1 Birtley to Coalhouse			•		0.00 - 1.20 1.20 - 3.04	Inspection Pit Static Cone Penetrometer	Hand Tools Yanmar 9T		811
		Elevation:	24.30mAOD	Final Depth:	1.20m				Approved:	PH
Location:	Tyne and Wear	Logger:		Grid System:	OSGB				Start Date:	12/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	12/04/2018

Hole Diameter						
Depth (m) Diam (mm)						

Casing Diameter
Depth (m) Diam (mm

	Groundwater Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks						

	Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 1.20	Arisings					

In-Situ Tests				
PID	0			
Hand Vane*	0			
Standard Penetration Tests	0			

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary						
Environmental Samples						
Soil	Soil <b>0</b> Water					
Geote	chnic	cal Samples				
Bulk <b>0</b> Large Bulk						
Disturbed 0 Disturbed (NR)						
Piston	Piston <b>0</b> Piston (NR)					
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Coi	e San	nple	0			

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Water	Added
Depth (m)	Litres
	Depth (m)

Applicable to Rotary Only
Drilling Flush

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				

	Applicable to Dynamic Sampling Only										
	Dynamic Sampling Runs										
Ш	Depth (m)	Diam (mm)	Recovery %	Remarks							
Ш											



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Trial Pit

Log Type

Exploratory Hole Number **CPT17-22A** 

FINAL

ENTRAL ALLIANCI

	*				Sheet	1 01 1				GEC	<u>,                                    </u>
Pro	ect No: <b>3043</b>		Locati	ion Details			N	1ethodolog	gy & Plant	Scale:	1:30
		Easting:	425555.78	Northing:	558386.	US				Checked By:	JMH
Nar	ie. At bittley to coallouse		423333.76	Northing.	330300.	.03	Sta	atic Cone Pe	netrometer	Checked by.	JIVIN
		Elevation:	24.30mAOD	Final Depth	: 1.20m					Approved By:	PH
Loc	ation: Tyne and Wear	Logger:		Grid System	OSGR					Start Date:	12/04/2018
								Yanma	r 9T		
Clie	nt: SLIV	Orientation:	N/A	Inclination:	90°					Finish Date:	12/04/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level	Water	Installation /		Samples & Testing	
	Strata Description			Legend	Thickness)	(mAOD)	Level (m)	Backfill	Depth (m) Ref	Test Results	
				V///XV///X	(0.4=)			V///XV///X	Depth (iii) Nei	Test Nesures	
	TOPSOIL with roots.				(0.15)			X()X()			
	Deal, because and black and a second at the			7//>	0.15	24.15					
	Dark brown and black sandy angular to subrounded fine to coarse	sandstone,	coai and		(0.15)			)X())X()			
	mudstone GRAVEL with low cobble content. Sand is fine to coarse.	Cobbles ar	e subangular		0.30	24.00					-
	to subrounded sandstone and mudstone.			/ : : : : : 1							-
-	Dark brown and grey slightly clayey sandy angular to subangular fir										_
	sandstone and mudstone GRAVEL with medium cobble content. Co	obbles are s	ubangular to								
	subrounded sandstone and mudstone. Sand is fine to coarse.										-
					(0.90)						-
					(0.00)			<i>XXXX</i>			
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					4.20	22.40					
	EOH at 1.20m - Scheduled depth			1 1	1.20	23.10					-
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Obs	ervations / Remarks			Bre	aking Out	/ Hard Strata	a	Stabil	ity & Backfill	Pit Dimer	nsions
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				. 10117 (111)				Shoring:		m	
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Log Type Exploratory Hole Number

Header

## **CPT17-23**

**FINAL** 



3043	Location Details				Methodology & P	Scale:	1:50		
	Fasting:	425644.84	Northing:	g: <b>558345.50</b>	From (m)	Method	Plant Used	Checked:	JMH
Name: A1 Birtley to Coalhouse	125011101		rtortimig.		0.00 - 1.20	Inspection Pit	Hand Tools		
	Elevation:	28.26mAOD	Final Depth:	1.20m	1.20 - 1.99	Static Cone Penetrometer	Yanmar 91	Approved:	PH
Tyne and Wear	Logger:	JH	Grid System:	OSGB				Start Date:	11/04/2018
SLIV	Orientation:	N/A	Inclination:	N/A				End Date:	11/04/2018
	A1 Birtley to Coalhouse  Tyne and Wear	A1 Birtley to Coalhouse Easting: Tyne and Wear Logger:	A1 Birtley to Coalhouse Easting: 425644.84 Elevation: 28.26mAOD Logger: JH	A1 Birtley to Coalhouse Easting: 425644.84 Northing: Elevation: 28.26mAOD Final Depth: Tyne and Wear Logger: JH Grid System:	A1 Birtley to Coalhouse Easting: 425644.84 Northing: 558345.50 Elevation: 28.26mAOD Final Depth: 1.20m Tyne and Wear Logger: JH Grid System: OSGB	A1 Birtley to Coalhouse	A1 Birtley to Coalhouse         Easting:         425644.84         Northing:         558345.50         From (m)         Method           Elevation:         28.26mAOD         Final Depth:         1.20m         1.20 - 1.99         Static Cone Penetrometer           Tyne and Wear         Logger:         JH         Grid System:         OSGB         OSGB	A1 Birtley to Coalhouse  Easting: 425644.84 Northing: 558345.50 From (m) Method Plant Used  0.00 - 1.20 Inspection Pit Hand Tools  1.20 - 1.99 Static Cone Penetrometer  Tyne and Wear  Logger: JH Grid System: OSGB	A1 Birtley to Coalhouse  Easting: 425644.84 Northing: 558345.50 From (m) Method Plant Used 0.00 - 1.20 Inspection Pit Hand Tools 1.20 - 1.99 Static Cone Penetrometer Yannar 9T  Tyne and Wear  Logger: JH Grid System: OSGB  Easting: 425644.84 Northing: 558345.50 From (m) Method Plant Used 0.00 - 1.20 Inspection Pit Hand Tools 1.20 - 1.99 Static Cone Penetrometer Yannar 9T  Approved: Start Date:

Hole Diameter						
Depth (m)	Diam (mm)					

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)	Remarks					
1.00	-	-	20	1.00						

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

No Monitoring Point/s Installed

If Methodology includes
Dynamic Sampling refer
to Runs table for info.

Hol	le N	ot	Cas	ec

Ва	ackfill						
Depth (m)	Legend Code						
0.00 - 1.20	Arisings						

In-Situ Tests					
PID	0				
Hand Vane*	0				
Standard Penetration Tests	0				

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Disturbed Piston

Undisturbed

Sam	ple S	Summary		Standard Penetration Test Summary								
Enviro	nmer	ntal Samples		Test Type   Depth   Casing   Water   Seating   Main   Penetration   N   Reported Result							Hammer F	
Soil	2	Water	0									
Geote	chnic	cal Samples										
Bulk	0	Large Bulk	0									
isturbed	0	Disturbed (NR)	0									
Piston	0	Piston (NR)	0									
disturbed	0	Undisturbed (NR)	0									
Undistu	irbed '	Thin Wall	0									
Undisturb	ed Thi	n Wall (NR)	0									
Со	re San	nple	0									
		e undertaken but v covery	with									

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

## **Applicable to Cable Percussion Only**

Chise	Wa	
Depth (m)	Duration (mins)	Depth (
	1	

	•						
Water Added							
Depth (m)	Litres						

#### **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					

Applicable to Dynamic Sampling Only										
Dynamic Sampling Runs  Depth (m) Diam (mm) Recovery % Remarks										
Diam (mm)	Recovery %	Remarks								
		· · · ·								

<sup>(</sup>NR) Indicates sample unde



Trial Pit

Log Type

Exploratory Hole Number

CPT17-23

Backfill: Arisings

CENTRAL ALLIANCE

**FINAL** Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:30 425644.84 Easting: Northing: 558345.50 Checked By: JMH A1 Birtley to Coalhouse Name: Inspection Pit Final Depth: 1.20m Elevation: 28.26mAOD Approved By: PH Location: Tyne and Wear Grid System: OSGB Logger: Start Date: 11/04/2018 Hand Tools 11/04/2018 Client: SLIV Orientation: N/A Inclination: N/A Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Depth (m) Ref Test Results TOPSOIL with rootlets. (0.30)0.30 27.96 0.30 1 ES Dark brown and grey sandy slightly clayey angular to subangular fine to coarse coal, sandstone and mudstone GRAVEL with medium cobble content and low boulder content. Sand is fine to coarse. Cobbles are subangular to subrounded mudstone and sandstone. Boulders are subrounded mudstone. (0.90) 0.80 2 ES At 1.00m, groundwater encountered. 1.20 27.06 EOH at 1.20m - Scheduled depth Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Groundwater strike at 1.00m. 0.40m Shoring: None 0.40m



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Sheet

Log Type

Header

Exploratory Hole Number

**CPT17-23A** 

**FINAL** 



Project No:	3043	Location Details					Methodology & P	Scale:	1:50	
Name:	A1 Birtley to Coalhouse	Easting:	425643.89	Northing:	558345.19	From (m)	Method	Plant Used	Checked:	JMH
Name:	AT birtiey to Coamouse	Elevation:	28.29mAOD	Final Depth:	1.20m	0.00 - 1.20 1.20 - 5.99	Inspection Pit Static Cone Penetrometer	Hand Tools Yanmar 9T	Approved:	PH
Location:	Tyne and Wear	Logger:		Grid System:	OSGB				Start Date:	12/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	12/04/2018

Hole Diameter							
Depth (m)	Diam (mm)						

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes								
				Rose To	Remarks				
(m)	(m)	(m)	(min)	(m)	nemano				

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 1.20	Arisings						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at

one depth where available.

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
									1

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	elling	
Depth (m)	Duration (mins)	Dep

•							
Water Added							
Litres							

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

Applicab	le to Dy	namic S	ampling Only
	Dynamic	Sampling	Runs
Depth (m)	Diam (mm)	Recovery %	Remarks



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Trial Pit

Log Type

Exploratory Hole Number **CPT17-23A** 

**FINAL** 

CENTRAL ALLIANCE GEO

Sheet 1 of 1

		*				Sheet :	L OT 1					GEO	
Proj	ect No:	3043		Locati	on Details			٨	/lethodolo	gy & Plant		Scale:	1:30
Nam	ne:	A1 Birtley to Coalhouse	Easting:	425643.89	Northing:	558345.	19	St	atic Cone Pe	netrometer		Checked By:	JMH
			Elevation:	28.29mAOD	Final Depth:	1.20m						Approved By:	PH
Loca	ition:	Tyne and Wear	Logger:		Grid System	: OSGB			Yanma	ar 9T		Start Date:	12/04/2018
Clier	nt:	SLIV	Orientation:	N/A	Inclination:	90°						Finish Date:	12/04/2018
						Depth (m) (Stratum	Reduced Level	Water	Installation /			Samples & Testing	
		Strata Description			Legend	(Stratum Thickness)	(mAOD)	Level (m)	Backfill	Depth (m)	Ref	Test Results	
-	TOPSOIL	L with rootlets.			X//XX//A				X/XXV/X				
						(0.30)							-
]						0.30	27.99						-
-	Dark bro	own and grey sandy slightly clayey angular to subangular fi	ne to coars	e coal,		0.50	27.55						-
-		ne and mudstone GRAVEL with medium cobble content ar fine to coarse. Cobbles are subangular to subrounded muc											_
]		rs are subrounded mudstone.	otoric aria c	and stories									
						(0.90)							-
]					-								
1 -													1 -
-													
, ]		EOH at 1.20m - Scheduled depth			** · ** · * · · ·	1.20	27.09		K///X////				-
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Obs	ervations /	Remarks			Bre.	aking Out	/ Hard Strata	1	Stabil	lity & Backfill		Pit Dimens	ions
	/				From (m)	3	Remarks			,		m	
									Shoring:				
									Stability:				m
												Orientati	
									Backfill: A	risings		Orientation °	
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Header Sheet

Log Type

Exploratory Hole Number

**CPT17-24** 

FINAL



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
	44 81 11 1 1 1 1 1	Easting:	425667.73	Northing:	558326.98	From (m)	Method	Plant Used	Checked:	JMH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20 1.20 - 7.17	Inspection Pit Static Cone Penetrometer	Hand Tools Yanmar 9T		
		Elevation:	28.46mAOD	Final Depth:	1.20m	1.20 - 7.17	Static Cone Penetrometer	ranmar 91	Approved:	PH
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB				Start Date:	11/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	N/A				End Date:	11/04/2018

Hole Diameter							
Diam (mm)							

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes									
				Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)						
1.00	-	-	20	1.00						

Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

No Monitoring Point/s Installed

If Methodology includes
Dynamic Sampling refer
to Runs table for info.

**Hole Not Cased** 

Backfill								
Depth (m)	Legend Code							
0.00 - 1.20	Arisings							

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
Soil <b>2</b> Water								
Geotechnical Samples								
Bulk	0	Large Bulk	0					
sturbed	0	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
disturbed	0	Undisturbed (NR)	0					
Undisturbed Thin Wall								
Undisturbed Thin Wall (NR)								
Cor	e San	nple	0					

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litres

# Applicable to Rotary Only

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					

Applicable to Dynamic Sampling Only										
Dynamic Sampling Runs										
Depth (m)	Diam (mm)	Recovery %	Remarks							



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Trial Pit

Log Type

Exploratory Hole Number

CPT17-24
FINAL

Backfill: Arisings

CENTRAL ALLIANCE

Sheet 1 of 1 Methodology & Plant Scale: Project No: 3043 Location Details 1:30 425667.73 Easting: 558326.98 Checked By: JMH Northing: A1 Birtley to Coalhouse Name: Inspection Pit Elevation: Final Depth: 1.20m Approved By: 28.46mAOD PH

١.		Elevation:	28.46mAOD	Final Depth	1: <b>1.20m</b>						Approved By: PI	H
Loc	ation: Tyne and Wear	Logger:	JH	Grid Systen	n: <b>OSGB</b>			Hand <sup>-</sup>	Tools		Start Date: 11/04	/2018
Clie	nt: SLJV	Orientation:	N/A	Inclination:	N/A						Finish Date: 11/04	/2018
					Depth (m)	Dardonard Laurel	14/-4	In stallands of			Samples & Testing	
	Strata Description			Legend	(Stratum Thickness)	Reduced Level (mAOD)	Water Level (m)	Installation / Backfill			1	
	TORGOL When the			V/////////////////////////////////////	,			V//2V///2	Depth (m)	Ref	Test Results	
	TOPSOIL with rootlets.											1
					(0.40)							1
									0.30	1 ES		1
	Dark brown and grey gravelly sandy CLAY. Gravel is angular to subr	ounded fine	to coarse		0.40	28.06						3
-	coal, sandstone and mudstone. Sand is fine to coarse.	ounded iine	to coarse	÷ 0	(0.30)							
				9 9 9								1
	Dark brown and black sandy slightly clayey angular to subangular f	ine to coars	se sandstone,	9 9 0	0.70	27.76						1
	coal and mudstone GRAVEL with medium cobble content. Sand is t	fine to coars	se. Cobbles are						0.80	2 ES		1
	subangular to subrounded mudstone and sandstone.				(0.50)							- 1
1 -							1.00 1.00					1 -
					1.20	27.26	1.00					- 1
	EOH at 1.20m - Scheduled depth											1
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Obs	servations / Remarks					/ Hard Strati	a	Stabi	lity & Backfi	II	Pit Dimensions	
		_		From (m)		Remarks		Shoring: N	one		0.40m	
												0.40~
								Stability: St	able			0.40m
											Orientation:	
				1				Backfill: A	risings		Julianion.	



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Sheet

Exploratory Hole Number CPT17-24A

FINAL



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
		Easting:	425667.03	Northing:	558327.70	From (m)	Method	Plant Used	Checked:	JMH
Name:	A1 Birtley to Coalhouse	Lusting.	423007103	rtor triing.	330327170	0.00 - 0.89	Inspection Pit	Hand Tools	erreenea.	3,,,,,
		Elevation:	28.54mAOD	Final Depth:	0.89m				Approved:	PH
Location:	Tyne and Wear	Logger:		Grid System:	OSGB				Start Date:	11/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	11/04/2018

Hole Diameter				
Depth (m)	Diam (mm)			

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes						
Strike	Casing	Sealed	Time	Rose To	Damania.		
(m)	(m)	(m)	(min)	(m)	Remarks		

	Installation / Instrument Details						
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)			

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 0.89	Arisings				

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

		-	_	
Sam	ple S	Summary		
Enviro	nmer	ntal Samples		
Soil	0	Water	0	
Geote	chnic	cal Samples		
Bulk	0	Large Bulk	0	
Disturbed	Disturbed 0 Disturbed (NR)			
Piston	0	Piston (NR)	0	
Undisturbed	0	Undisturbed (NR)	0	
Undisturbed Thin Wall				
Undisturbed Thin Wall (NR)				
Cor	e San	nple	0	

(NR) Indicates sample undertaken but with 0% Recovery

No Samples Taken

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
									1

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	Chiselling					
Depth (m)	Duration (mins)		Depth (m			

	-				
Water Added					
Depth (m)	Litres				

#### **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					

# Applicable to Dynamic Sampling Only Dynamic Sampling Runs Depth (m) | Diam (mm) | Recovery % | Remarks



Trial Pit

Log Type

Exploratory Hole Number CPT17-24A

CENTRAL ALL

FINAL

Backfill: Arisings

CENTRAL ALLIANCE

Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Project No: Location Details Methodology & Plant Scale: 1:30 425667.03 Northing: 558327.70 Checked By: Easting: JMH Name: A1 Birtley to Coalhouse Inspection Pit Elevation: Final Depth: 0.89m Approved By: 28.54mAOD PH Location: Tyne and Wear Grid System: OSGB Logger: Start Date: 11/04/2018 Hand Tools Client: 11/04/2018 SLIV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation / Backfill Strata Description Depth (m) Test Results TOPSOIL with rootlets. (0.40)0.40 28.14 Dark brown and grey gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse coal, sandstone and mudstone. Sand is fine to coarse. (0.49) 0.89 27.65 EOH at 0.89m - Refusal Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Shoring: m Orientation:



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Sheet

Exploratory Hole Number

**CPT17-25** 

FINAL



Project No:	3043	Location Details					Methodology & P	Scale:	1:50	
Name:	A1 Birtley to Coalhouse	Easting:	425698.64	<b>425698.64</b> Northing:		From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	JMH
		Elevation:	27.38mAOD	Final Depth:	: 1.20m	1.20 - 1.96	Static Cone Penetrometer	Vanmar OT	Approved:	PH
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB				Start Date:	12/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	12/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes										
				Rose To	Remarks						
(m)	(m)	(m)	(min)	(m)							

| Installation / Instrument Details | Date | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm)

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

2 Water

Geotechnical Samples

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

В	ackfill
Depth (m)	Legend Code
0.00 - 1.20	Arisings

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available. Disturbed

Piston

Undisturbed

	Standard Penetration Test Summary											
Test Type						Penetration	N	Reported Result	Hammer Ref			
rest type	(m)	(m)	(m)	Blows	Blows	Total (mm)	14	neported nesult	Trailinier Nei			

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

elling		Water	Added
Duration (mins)		Depth (m)	Litres
	Duration (mins)		

Drilling Flush											
Depth (m)	Flush Type	Flush Colour Return %									
I											
	I	I	1								

**Applicable to Rotary Only** 

Applicable to Dynamic Sampling Only										
Dynamic Sampling Runs										
Depth (m) Diam (mm) Recovery % Remarks										
	•	•								

PID 0 (NR) Indicates sample undertaken but with 0% Recovery



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Trial Pit

Log Type

Exploratory Hole Number **CPT17-25** 

**FINAL** 

CENTRAL ALLIANCE GEO

Sheet 1 of 1 Methodology & Plant Project No: Location Details Scale: 1:30 425698.64 Easting: Northing: 558296.56 Checked By: JMH A1 Birtley to Coalhouse Name: Inspection Pit Final Depth: 1.20m Elevation: 27.38mAOD Approved By: PH Location: Tyne and Wear Grid System: OSGB Logger: Start Date: 12/04/2018 Hand Tools 12/04/2018 Client: SLIV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Legend Depth (m) Ref Test Results TOPSOIL with rootlets. (0.40) 0.30 1 ES 0.40 26.98 Hand excavated inspection pit. (1.20) (0.80)0.80 2 ES 1.20 Dark brown and grey slightly sandy clayey angular to rounded fine to coarse coal, sandstone 1.20 26.18 and mudstone with medium cobble content and low boulder content. Cobbles are subangular to subrounded mudstone. Boulders are rounded mudstone and sandstone EOH at 1.20m - Scheduled depth Observations / Remarks Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks 0.40m Shoring: None 0.40m Backfill: Arisings



Trial Pit

Log Type

Exploratory Hole Number

TH01



**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:30 3043 425536.16 Easting: Northing: 558409.76 RPH Checked By: A1 Birtley to Coalhouse Name: Trial Pit Elevation: 20.73mAOD Final Depth: 0.60m Approved By: BH Location: Tyne and Wear Grid System: OSGB Logger ALB Start Date: 21/02/2018 Hand Tools 21/02/2018 Client: SLIV Orientation: N/A Inclination: N/A Finish Date: Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Legend Depth (m) Ref Test Results MADE GROUND: Dark brown and grey slightly gravelly slightly sandy CLAY with roots. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone and brick. (0.30)0.30 20.43 MADE GROUND: Light brown and orange sandy silty angular to subangular fine to coarse sandstone limestone and siltstone GRAVEL with medium cobble content. Sand is fine to (0.30)coarse. Cobbles are subangular sandstone. 0.60 20.13 EOH at 0.60m - Abandoned due to water ingress Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Water strike at 0.30m. Hole abandoned at 0.60m due to water ingress not allowing safe excavation. 0.40m Shoring: None 0.40m Orientation: Backfill: Arisings



Trial Pit

Log Type

Exploratory Hole Number

TH02

Backfill: Arisings



**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Methodology & Plant Project No: Location Details Scale: 1:30 3043 Easting: 425544.66 Northing: 558408.35 RPH Checked By: A1 Birtley to Coalhouse Name: Trial Pit Elevation: 22.24mAOD Final Depth: 0.65m Approved By: BH Tyne and Wear Location: Grid System: OSGB Logger ALB Start Date: 21/02/2018 Hand Tools Client: SLIV Orientation: N/A Inclination: N/A Finish Date: 21/02/2018 Depth (m) (Stratum Thickness) Samples & Testing Installation , Backfill Strata Description Legend Depth (m) Ref Test Results MADE GROUND: Dark brown and grey slightly gravelly slightly sandy CLAY with roots. Sand is fine to coarse. Gravel is subangular fine to coarse sandstone and brick. (0.40)0.40 0.40 0.40 21.84 MADE GROUND: Light brown and orange sandy silty angular to subangular fine to coarse (0.25) sandstone limestone and siltstone GRAVEL with medium cobble content. Sand is fine to coarse. Cobbles are subangular sandstone. 0.65 21 59 EOH at 0.65m - Abandoned due to water ingress Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Water strike at 0.40m. Hole abandoned at 0.60m due to water ingress not allowing safe excavation. 0.40m Shoring: None 0.40m Orientation:



Trial Pit

Log Type

**TP17-01** 

Backfill: Arisings

CENTRAL ALLIANO

**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Location Details Methodology & Plant Scale: 1:30 Project No: 425128.14 Northing: 558474.26 RPH Easting: Checked By: A1 Birtley to Coalhouse Name: Trial Pit Elevation: 15.50mAOD Final Depth: 3.50m Approved By: BH Tyne and Wear Location: Logger Grid System: OSGB Start Date: 19/02/2018 Wheeled Backhoe Excavator 19/02/2018 Client SLIV Orientation: 94° Inclination: N/A Finish Date: Samples & Testing Installation , Strata Description Thickness) Depth (m) Test Results Ref MADE GROUND: Firm dark brown and black gravelly CLAY. Gravel is angular to subrounded 0.00 - 0.70 1 B fine to coarse coal sandstone porcelain and glass. (0.70)0.50 2 ES PID 0.50m = 4.7ppm 0.70 14.80 0.70 - 1.00 Firm to stiff light orangish brown mottled grey CLAY. 0.80 5 ES PID 0.80m = 3.3ppm HV 1.00m, (p)=140 kPa (r)=42 kPa (1.20)7 D HV 1.50m, (p)=204 kPa (r)=70 kPa 1.90 13.60 1.90 - 2.30 Firm to stiff dark brown mottled grey CLAY. 2.00 9 ES HV 2.00m, (p)=184 kPa (r)=33 kPa PID 2.00m = 5.0ppm (0.60)2.40 10 D 2.50 13.00 12 D HV 2.50m, (p)=162 kPa (r)=39 kPa Firm to stiff thinly laminated dark brown mottled grey CLAY. 2.50 - 3.00 (1.00)HV 3.00m, (p)=170 kPa (r)=39 kPa 3.50 12.00 HV 3.50m, (p)=172 kPa (r)=36 kPa EOH at 3.50m - Scheduled depth Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Hand dug inspection pit undertaken to 1.20m prior to excavation. 2.50m Shoring: None 1.20m



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Trial Pit

Log Type

Exploratory Hole Number

TP17-02

FINAL

CENTRAL ALLIANCE

Sheet 1 of 1 Methodology & Plant Project No: Location Details Scale: 1:30 558470.04 Easting: 425190.01 Northing: Checked By: RPH A1 Birtley to Coalhouse Name: Trial Pit Elevation: Approved By: Final Depth: 3.50m 16.10mAOD ВН Tyne and Wear Location:

	ation:	Tyne and Wear	Logger:	JH	Grid System			Wh	eeled Backh	noe Excavat	or		06/02/2018	
Clie	nt:	SLIV	Orientation: 164° Inclination:									1	19/02/2018	-
		Strata Description			Legend	Depth (m) (Stratum Thickness)	Reduced Level (mAOD)	Water Level (m)	Installation / Backfill			Samples & Testing		_
	MADE	GROUND: TOPSOIL			X//XX//X	(0.10)			XXXXX	Depth (m)	Ref	Test Results		-
	MADE 0	GROUND: Black slightly gravelly slightly sandy silty CLAY. Grock sandstone coal and siltstone. Sand is fine to coarse.	avel is suba	ngular fine to		0.10 (0.30)	16.00			0.10 - 0.30 0.20 0.20	3 B 1 ES 2 D			
		SROUND: Light brown slight gravelly slightly sandy CLAY wi s subangular fine to coarse sandstone and brick. Sand is fii				(0.70)	15.70			0.40 0.40 - 1.00 0.50	4 D 6 B 5 ES	HV 0.50m, (p)=102 kPa (r)=	:24 kPa	1
1 -	Blueish	grey laminated slightly silty CLAY.			×	1.10	15.00			1.10	7 D	HV 1.00m, (p)=110 kPa (r)=	:30 kPa 1	
-					× × ×	(0.60)				1.50	8 ES	HV 1.50m, (p)=106 kPa (r)=	:24 kPa	
2 -	Firm to	stiff thinly laminated dark brown and grey silty CLAY with s	silt partings.		X X X X X X X X X X X X X X X X X X X	1.70	14.40			1.70 1.70 - 2.00	9 B 10 B	HV 1.80m, (p)=166 kPa (r)=	-45 kPa 2	
-					×x ×x ×x	(1.80)				2.50	11 D	HV 2.50m, (p)=174 kPa (r)=	:50 kPa	
					×x	(1.80)				2.70 - 3.00	12 B			
3 -					××					3.20	13 D	HV 3.00m, (p)=170 kPa (r)=	:48 kPa 3	
-					X X X	3.50	12.60			3.50	14 D	HV 3.50m, (p)=169 kPa (r)=	-49 kPa	1
		EOH at 3.50m - Scheduled depth				5.50	12.00							
4 -													4	1
5 -													5	
-														
6 -													6	1
Obs	ervations /	Remarks			Bre	aking Out	/ Hard Strata	a	Stabil	lity & Backf	l <u> </u>	Pit Dimensi	ions	+
Har	d dug insp	ection pit undertaken to 1.20m prior to excavation.			From (m)		Remarks		Shoring: No			3.00m	2.50n	n
									Backfill: A			Orientation:	:	



Trial Pit

Log Type

**TP17-03** 

CENTRAL

1.30m

Backfill: Arisings

**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Location Details Methodology & Plant Scale: Project No: 3043 1:30 425230.12 558480.99 RPH Easting: Northing: Checked By: A1 Birtley to Coalhouse Name: Trial Pit Flevation: 17.10mAOD Final Depth: 3.50m Approved By: BH Location: Tyne and Wear 20/02/2018 Logger: Grid System: OSGB Start Date: Wheeled Backhoe Excavator Client SLIV Orientation: 96° Inclination: N/A Finish Date: 20/02/2018 Samples & Testing Installation Strata Description (mAOD) Backfill Thickness) Depth (m) Ref Test Results MADE GROUND: Grass over TOPSOIL. (0.20) 0.20 16.90 0.20 - 1.00 MADE GROUND: Firm dark brown and grey and orangish brown slightly gravelly sandy CLAY 0.30 2 FS PID 0.30m = 14.9ppm with fragments of tile and metal. Sand is fine to coarse. Gravel is medium to coarse subangular sandstone. (0.80) 0.80 3 D HV 1.00m, (p)=117 kPa (r)=35 kPa PID 1.00m = 12.4ppm 16.10 1.00 1 Probable MADE GROUND: Firm to stiff light orangish brown mottled grey CLAY. 1.00 - 1.50 5 B (0.50)1.40 HV 1.50m, (p)=160 kPa (r)=57 kPa 1.50 15.60 Firm to stiff dark brown mottled grey slightly gravelly silty CLAY. Gravel is subrounded fine to coarse sandstone and mudstone. 1.80 PID 1.80m = 11.0ppm 9 ES HV 2.00m, (p)=165 kPa (r)=61 kPa (2.00)2.50 - 3.00 10 B HV 2.50m, (p)=164 kPa (r)=54 kPa 3.00 - 3.50 12 B HV 3.00m, (p)=181 kPa (r)=57 kPa <u>২</u>ং <u>×</u> 3.20 11 D <u>></u> 3.50 13.60 HV 3.50m, (p)=180 kPa (r)=60 kPa EOH at 3.50m - Scheduled depth Breaking Out / Hard Strata Stability & Backfill Pit Dimensions From (m) Remarks Multiple hand pit locations were attempted prior to the trial pit being carried out but obstructions were 3.00m Shoring: None encountered at shallow depth



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Trial Pit

Sheet 1 of 1

Log Type

Exploratory Hole Number **TP17-04** 

FINAL

CENTRAL ALLIANCE GEO

Ī	Project No:	3043	Location Details					Methodology & Plant			Scale:	1:30
	Name:	A1 Birtley to Coalhouse	Easting:	425304.09	Northing:	558444.	33	Trial Pit		Checked By:	RPH	
		•	Elevation:	15.71mAOD	Final Depth:	2.00m			IIIdi FIL		Approved By:	ВН
	Location:	Tyne and Wear	Logger:	JH	Grid System	OSGB		\A/I-	ll Dl -l		Start Date:	19/02/2018
l	Client:	SUV	Orientation:	1°	Inclination:	N/A		vvn	ееіей васкії	oe Excavator	Finish Date:	19/02/2018

		Elevation:	15.71mAOD	Final Depth	: 2.00m						Approved By: BI	4
Location:	Tyne and Wear	Logger:	JH	Grid Systen	n: OSGB		Wh	eeled Backl	nne Evravati	or	Start Date: 19/02/	/2018
Client:	SLIV	Orientation:	1°	Inclination:	N/A		VVI	leeleu backi	IOE EXCAVAD	UI	Finish Date: 19/02/	/2018
					Depth (m)						Samples & Testing	
	Strata Description			Legend	(Stratum Thickness)	Reduced Level (mAOD)	Water Level (m)	Installation / Backfill				
14455	GROUND: Grass over dark brown and black gravelly CLAY. G		To a to	***********				V// <i>E</i> V// <i>E</i>	Depth (m) 0.00 - 0.50	Ref 1 B	Test Results	
	unded fine to coarse sandstone coal and pottery.	ravei is arigu	ular to									]
	,				(0.50)							1
					, ,				0.30	2 ES	PID 0.30m = 14.7ppm	1
1					0.50	15.21			0.50 - 1.00	3 B		3
	GROUND: Firm dark brown slightly gravelly CLAY. Gravel is a	ingular to su	ıbangular fine		0.50	15.21			0.60	4 ES	HV 0.60m, (p)=87 kPa (r)=23 kPa	-
sandst	one.										PID 0.60m = 13.9ppm	-
] ]									0.80	5 D		]
												=
1 -									1.00 - 1.50	6 B	HV 1.00m, (p)=89 kPa (r)=23 kPa	1 -
] ]					(1.25)							]
] ]									1.40	7 D		]
											HV 1.50m, (p)=81 kPa (r)=21 kPa	-
1									1.60	8 ES	PID 1.60m = 13.4ppm	=
MADE	GROUND: Light yellowish brown sandy silty angular to suba	ingular fine t	to coarse		1.75	13.96			1.75 - 2.00	9 B		3
limesto	one GRAVEL. Sand is fine to coarse.	J. 2c (			(0.25)				1.90	10 ES	PID 1.90m = 15.0ppm	1
2 Fro	om 1.75m to 2.00m strong diesel odour.  EOH at 2.00m - Abandoned upon discovery of service	e marker ta	ne		2.00	13.71						2 -
]	EOT at 2.00m - Abandoned upon discovery of service	c marker ta	PC									-
												=
] ]												]
												_
												1
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												-
3 –												3 -
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4 -												4
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												3 -
												1
]												]
												-
]												7
]												3
												-
												‡
6				$\vdash$								6 -
Observations				L		/ Hard Strate	9	Stabi	lity & Backfi	II	Pit Dimensions	
	pection pit undertaken to 1.20m prior to excavation. extended as TP4A and TP4B to avoid trace of apparent buried service	the ground or	anditions in 44/p	From (m)		Remarks		Shoring: N	one		3.40m	
were the san		are ground to	onattions III 4A/D									2.50m
								Stability: St	able			,
								D160			Orientation:	
								Backfill: A	risings		1°	



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Sheet

Log Type **Header** 

Exploratory Hole Number

WS17-01

FINAL



Project No: Location Details Methodology & Plant Scale: 1:50 3043 From (m) 0.00 - 1.20 1.20 - 5.45 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used Hand Tools Modular Window Sampler Easting: 425348.79 558487.04 Checked: RPH Northing: Name: A1 Birtley to Coalhouse Elevation: 16.91mAOD Final Depth: 5.45m Approved: BH Location: Tyne and Wear Logger: JH Grid System: OSGB Start Date: 20/12/2017 Client: End Date: 20/12/2017 SLJV Orientation: N/A Inclination: 90°

Hole Di	ameter
Depth (m)	Diam (mm)

If Methodology includes

Dynamic Sampling refer to Runs table for info.

iameter
Diam (mm)
116

	Groundwater Strikes									
				Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)	Remarks					
2.50	-	2.00	20	2.30						
ł										

	Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

No Monitoring Point/s Installed

In-Situ Tests	
PID	2
Hand Vane*	3
Standard Penetration Tests	5

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary							
Enviror	nmer	ntal Samples					
Soil	2	Water	0				
Geotechnical Samples							
Bulk	3	Large Bulk	0				
Disturbed	8	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed	0	Undisturbed (NR)	0				
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Core Sample							
· ·		•					

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth			Seating		Penetration	N	Reported Result	Hammer Ref
iest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	N	Reported Result	nammer ker
Split Spoon	1.20	-	-	2	9	450	9	N=9 (1,1/2,1,3,3)	MOD 01
Split Spoon	2.00	2.00	-	1	5	450	5	N=5 (1,0/1,1,2,1)	MOD 01
Split Spoon	3.00	2.00	-	0	0	450	0	N=0 (0,0/0,0,0,0)	MOD 01
Split Spoon	4.00	2.00	-	0	3	450	3	N=3 (0,0/0,1,1,1)	MOD 01
Split Spoon	5.00	2.00	-	2	4	450	4	N=4 (1,1/1,1,1,1)	MOD 01

SPT Hammer Ref.	Energy Ratio (%)
MOD 01	67

#### **Applicable to Cable Percussion Only**

Chise	elling	
Depth (m)	Duration (mins)	De

Water Added								
Litres								

#### **Applicable to Rotary Only**

Drilling Flush					
Depth (m)	Flush Type	Flush Colour	Return %		

#### **Applicable to Dynamic Sampling Only**

	Dynamic Sampling Runs							
	Depth (m)	Diam (mm)	Recovery %	Remarks				
	1.20 - 2.00	101	75	141 Blows				
	2.00 - 3.00	86	80	30 Blows				
	3.00 - 4.00	86	50	19 Blows				
П	4.00 - 5.00	86	70	12 Blows				
П								
		l	l					



Project No:

3043

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Location Details

Log Type

# Dynamic Sampling

Sheet 1 of 1

Exploratory Hole Number

WS17-01

Methodology & Plant

FINAL CEI

Scale:



1:50

Depth (m) 0.00 - 1.20 1.20 - 5.45 Method Plant Used Easting: 425348.79 Northing: 558487.04 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 16.91mAOD Final Depth: 5.45m Approved By: BH Location: Tyne and Wear Logged By: Grid System: OSGB Start Date: 20/12/2017 Client SLIV Orientation N/A Inclination: 90° Finish Date: 20/12/2017 Depth (m) Casing Ø Samples & Testing Water Level (m) Installation , Backfill Strata Description (Stratum Thickness) (mm) Depth (m (mAOD) Depth (m) (0.10) 16.81 MADE GROUND: Light yellow silty subangular to subrounded fine to coarse 1 D 0.10 \limestone GRAVEL 0.30 2 ES PID 0.30m = 0.3ppm MADE GROUND: Firm dark greyish brown sandy very gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse sandstone, mudstone, coal and glass. Cobbles are angular to subangular mudstone. At 0.10m geotextile. 0.80 5 ES PID 0.80m = 0.2ppm (1.70) 1.00 6 D SPT(S) 1.20m, N=9 (1,1/2,1,3,3) HV 1.20m, (p)=104 kPa (r)=24 kPa 1.20 - 1.65 1.20 - 2.00 15.11 Firm dark brown mottled dark grey slightly gravelly silty CLAY. Gravel is subrounded 116 2.00 to rounded fine to medium coal and mudstone. 2 (1.20) 2.90 3.00 - 3.45 At 2.95m and 3.25m sand band. Sand is fine to coarse. 3.00 13.91 SPT(S) 3.00m, N=0 (0,0/0,0,0,0) HV 3.00m, (p)=48 kPa (r)=20 kPa 13 D Soft to firm dark grey silty CLAY. SPT(S) 4.00m, N=3 (0,0/0,1,1,1) SPT(S) 5.00m, N=4 (1,1/1,1,1,1) 5.45 11.46 EOH at 5.45m - Scheduled Depth 10 Observations / Remarks Misc Backfill Dynamic Sampling Runs Installations Instrument Details Resp. Zone Depth (m) Diam To (m) Diam (mm) Re 2.00 3.00 4.00 Groundwater Strikes 
 Strike (m) Casing (m)
 Sealed (m)
 Rises To (m)
 Time (min)

 2.50
 2.00
 2.30
 20
 Remarks

MOD 01 (67%)



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Sheet

Exploratory Hole Number

WS17-02 FINAL CENTRAL ALLIANCI

Project No:	3043	Location Details		Methodology & Plant			Scale:	1:50			
		Easting:	425339.92	Northing:	558515.08	From (m)	Meti	hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	423333132	rior crimig.	330313.00	0.00 - 1.20	Inspecti	ion Pit	Hand Tools	erreenea.	
		Elevation:	21.29mAOD	Final Depth:	1.43m	1.20 - 1.43	Dynamic Samplin	g (Windowless)	Modular Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB					Start Date:	18/12/2017
Client:	SLIV	Orientation:	N/A	Inclination:	90°					End Date:	18/12/2017

Hole Di	ameter
Depth (m)	Diam (mm)

Strike Casing Sealed (m) (m) (m) (m) Remarks

| Date | Instrument Details | To (m) | Resp. Zone (m) | Diam (mm) |

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Casing Diameter

Depth (m) Diam (mm

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 1.43	Bentonite						

In-Situ Tests	
PID	2
Hand Vane*	0
Standard Penetration Tests	1

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Standard Penetration Tests 1

Sample Summary						
Environmental Samples						
Soil	2	Water	0			
Geotechnical Samples						
Bulk	1	Large Bulk	0			
Disturbed	3	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed 0 Undisturbed (NR)						
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Cor	e San	nple	0			

(NR) Indicates sample undertaken but with
0% Recovery

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon		-	- (111)	25	50	225		50 (25 for 125mm/50 for 100mm)	MOD 01

SPT Hammer Ref.	Energy Ratio (%)
MOD 01	67

#### **Applicable to Cable Percussion Only**

Chiselling							
Depth (m)	Duration (mins)						

Water Added							
Depth (m)	Litres						

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %
	I		

#### **Applicable to Dynamic Sampling Only**

		Dynamic	Sampling	Runs
Depth	(m)	Diam (mm)	Recovery %	Remarks
1.20 -		101	100	Refusal



Log Type Dynamic Sampling Exploratory Hole Number

WS17-02

Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min)

Remarks

FINAL

	EXPLORE > IDENTIF	Y > DELIVER		0)1924 2298 ww.central-a		.uk	Samp			FIN	AL		CENTRAL AL	
ect No:	3043		Locatio	on Details			Sheet 1		thodology 8	Dlant			GEO Scale:	1:50
		Easting:	425339.92	Northing:	558515		epth (m)	Me	thod	Tiant	Plant Used		Checked By:	RPH
ne:	A1 Birtley to Coalhouse	Elevation:	21.29mAOD	Final Dept		0.	.00 - 1.20 .20 - 1.43 D	Insped ynamic Sampl	ction Pit ling (Windowless)	Mod	Hand Tools ular Window Sa	mpler	Approved By:	ВН
ition:	Tyne and Wear	Logged By:	JH	Grid Syste										18/12/20
nt:	SLIV	Orientation:	N/A	Inclination										18/12/20
п.	350	Orientation.	N/A	IIICIIIIatioii	. 50	Depth (m)		Casing Ø					Samples & Testing	10/12/20
	Strata Des	scription			Legend	(Stratum Thickness)	Reduced Leve (mAOD)	el (mm) Depth (m)	Lough (m)	nstallation / Backfill	Depth (m)	Ref		
and low to coarse sandstor		rse. Gravel is subro . Cobbles are subr	ounded to rou ounded to rou	nded fine Inded		(0.50) 0.50 (0.20)	20.79	Depth (m)			0.30 0.40	1 ES 2 D	Test Results PID 0.30m = 0.4ppm	
with low	ey sandy silty subangular to subrour or cobble content. Sand is fine to coa ded fine to coarse sandstone.			RAVEL	× × ×	0.70	20.59				0.80 0.80 - 1.20	3 ES 4 B	PID 0.80m = 0.5ppm	
Dark gre	ey slightly gravelly sandy SILT. Sand i ded fine to coarse mudstone, siltsto	one and sandston		gular to	8 0 X	1.43	19.86				1.20 - 1.65 1.30	5 D 6 D	SPT(S) 1.20m, 50 (25 for 1 for 100mm)	.25mm/50
	EOH at 1.43r	m - Refusal												
							1							
an oti - 1	Domarka	1	ioo ~	olefill		D	in Carret	Due -					tallation-	
ervations /	Remarks	M		ckfill Material	From (m)		ic Sampling		Remarks	Inct	rument Detai		tallations	(m)   r
ervations /	Remarks	M pa4.	Depth (m) 0.00 - 1.43			To (m) Dia	m (mm) Recove	ery (%)	Remarks Refusal	Inst	rument Deta		Resp. Zone Depth	n (m) [
ervations /	Remarks	Ountered S	Depth (m)	Material		To (m) Dia	m (mm) Recove	ery (%)		Inst	rument Detai			n (m) [
/ations /	Remarks	Encountered	Depth (m)	Material		To (m) Dia	m (mm) Recove	ery (%)		Inst		ils		n (m)

MOD 01 (67%)



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Header

Sheet

Exploratory Hole Number WS17-02a

FINAL



Project No:	3043		Location Details				Methodology & P	Scale:	1:50	
	44 81 11 1 1 1 1 1	Easting:	425340.17	Northing:	558516.09	From (m)	Method	Plant Used	Checked:	RPH
Name:	At Birtley to Coalnouse	Elevation:	22.17mAOD	Final Depth:	1.40m	0.00 - 1.20 1.20 - 1.40	Inspection Pit Dynamic Sampling (Windowless)	Hand Tools Modular Window Sampler	Approved:	ВН
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB				Start Date:	18/12/2017
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/12/2017
Cilett.	3LJ V	Orientation.	IN/A	memation.	30				Liiu Date.	10/12/2017

Hole Diameter								
Depth (m)	Diam (mm)							

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes								
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks				
(111)	(111)	(111)	()	(111)					

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

0 Water

Geotechnical Samples

0

Undisturbed Thin Wall

Undisturbed Thin Wall (NR)

Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

0

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill								
Depth (m)	Legend Code							
0.00 - 1.40	Bentonite							

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	1

PID	0	(NR) Indicates sample undertaken but with
Hand Vane*	0	0% Recovery

Disturbed

Piston

Undisturbed

	Standard Penetration Test Summary										
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref		
Split Spoon		-	-	25	50	200		50 (25 for 105mm/50 for 95mm)	MOD 01		

SPT Hammer Ref.	Energy Ratio (%)				
MOD 01	67				

* One count indicates an average
reported result of 3 tests carried out at
one depth where available.

#### **Applicable to Cable Percussion Only**

Chise	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litres

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %
	I		1

#### **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs								
Depth (m)	Diam (mm)	Recovery %	Remarks					
1.20 - 1.30	101	100	Refusal					



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Log Type

# Dynamic Sampling

FINAL

Exploratory Hole Number

WS17-02a



Sheet 1 of 1 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used Hand Tools Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 1.40 Easting: 425340.17 558516.09 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: 22.17mAOD Elevation: Final Depth: 1.40m Approved By: ВН Location: Tyne and Wear

	•	Logged by.	JH.	Grid Syste									Start Date:	10/12/20	
Clier	nt: SLJV	Orientation:	N/A	Inclination	n: <b>90°</b>								Finish Date:	18/12/20	17
		•				Depth (m)	I	Casing Ø					Samples & Testing		
	Strata Description				Legend	(Stratum	Reduced Level (mAOD)	(mm)	Water Level (m)	Installation / Backfill					_
						Thickness)	()	Depth (m)	()		Depth (m)	Ref	Test Results		
-	MADE GROUND: Dark brown and grey gravelly sar	idy CLAY wit	th frequent	rootlets.	×××××	*									-
1 1	Sand is fine to coarse. Gravel is subrounded to rou	nded fine to	o coarse mu	idstone,		(0.50)					0.30	1 D			-
-	clinker and sandstone.										0.50	15			-
lt	MADE GROUND: Dark grey slightly gravelly sandy S	SIIT Gravel	is suhangula	ar to		0.50	21.67								-
1	subrounded fine to coarse siltstone. Sand is fine to	n coarse	is suburibuit	ui to											-
-	subrounded fine to coarse sitistorie. Sand is fine to	coarse.			**************************************	Ä					0.00	2.0			-
1 -						(0.90)					0.90	2 D			1 -
						*									-
1											1.20 - 1.65	3 D	SPT(S) 1.20m, 50 (25 for 1) for 95mm)	105mm/50	-
+	EOH at 1.40m - Rei	funal			××××××××××××××××××××××××××××××××××××××	1.40	20.77								-
1	EOH at 1.40III - Rei	lusai													
-															-
-															-
2 -															2 -
1 1															-
1 7															_
-															-
]															_
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Obse	ervations / Remarks	Mi	sc. B	Backfill		Dynam	ic Sampling I	Runs				Inst	allations		
			Depth (m)	Material	From (m)	To (m) Diar	n (mm) Recove	ry (%) R	emarks	Inst	rument Detai		Resp. Zone Depti	n (m) Dia	ım
		ered	0.00 - 1.40	Bentonite	1.20	1.30	101 10	0	Refusal						
		p q	0.00 - 1.40												
		. Ence	oint/.												
		nater	ng Pc										water Strikes		
		undw 40k	itori						5	Strike (m) Ca	sing (m) Seale	d (m) Rise	es To (m) Time (min)	Remarks	
		Grot	Hammer Ref	f & Energy Ratio (%)											
l		No	0	0,	1			1							



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Header

Sheet

Exploratory Hole Number WS17-02b

FINAL



Project No:	3043		Location	Details			Methodology & P	lant	Scale:	1:50
		Easting:	425338.42	Northing:	558514.44	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	125550112	rior crimig.	33032	0.00 - 1.20	Inspection Pit	Hand Tools	Circoncu.	
		Elevation:	20.97mAOD	Final Depth:	1.45m	1.20 - 1.45	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB				Start Date:	18/12/2017
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/12/2017

Hole Diameter							
Depth (m)	Diam (mm)						

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Dama da					
(m)	(m)	(m)	(min)	(m)	Remarks					

	Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 1.45	Bentonite					

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	1

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Hand Vane\* 0

Standard Penetration Tests 1

_	_					
Sam	ple S	Summary				
Enviror	Environmental Samples					
Soil	0	Water	0			
Geote	chnic	cal Samples				
Bulk	0	Large Bulk	0			
Disturbed	3	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Cor	e San	nple	0			

(NR) Indicates sample undertaken but with
0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type				Seating		Penetration	N	Reported Result	Hammer Ref
	(m)	(m)	(m)	Blows		Total (mm)		•	
Split Spoon	1.20	-	-	25	50	250		50 (25 for 135mm/50 for 115mm)	MOD 01

SPT Hammer Ref.	Energy Ratio (%)
MOD 01	67

#### **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	

Water Added							
Depth (m)	Litres						

#### **Applicable to Rotary Only**

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				
Dept. (III)	riusii iype	riasii coloai	netarii 70				

#### **Applicable to Dynamic Sampling Only**

	Dynamic	Sampling	Runs	
Depth (m)	Diam (mm)	Recovery %	Remarks	
Depth (m) 1.20 - 1.20	Diam (mm) 101	Recovery %	Remarks Refusal	



Easting:

Elevation:

425338.42

Project No:

Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

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**Dynamic** Sampling

Log Type

Exploratory Hole Number

WS17-02b **FINAL** 



Sheet 1 of 1 GEO Methodology & Plant Location Details Scale: 1:50 Plant Used Hand Tools Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 1.45 Method RPH Northing: 558514.44 Checked By: 20.97mAOD Final Depth: 1.45m Approved By: BH

Tyne and Wear Location: Logged By: Grid System: OSGB Start Date: 18/12/2017 Client: SLIV Orientation N/A Inclination: 90° Finish Date: 18/12/2017 Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Samples & Testing Reduced Lev (mAOD) Water Level (m) Installation , Backfill Strata Description Legend Depth (m) MADE GROUND: Dark brown and grey gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is subrounded to rounded fine to coarse mudstone, (0.50) 0.30 1 D clinker and sandstone. 0.50 20.47 MADE GROUND: Dark grey slightly gravelly sandy SILT. Gravel is subangular to subrounded fine to coarse siltstone. Sand is fine to coarse. (0.95) 1.00 2 D SPT(S) 1.20m, 50 (25 for 135mm/50 for 115mm) 1.45 19.52 EOH at 1.45m - Refusal 10 Observations / Remarks Misc Dynamic Sampling Runs Installations 
 Depth (m)
 Material
 From (m)
 To (m)
 Diam (mm)
 Recovery (%)

 0.00 - 1.45
 Bentonite
 1.20
 1.20
 101
 Instrument Details Resp. Zone Depth (m) Diam Groundwater Strikes Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks

MOD 01 (67%)



Header Sheet Web: www.central-alliance.co.uk

Log Type

Exploratory Hole Number

WS17-03 **FINAL** 

GEO

Project No:	3043		Location	Details			Met	hodology & P	lant	Scale:	1:50
		Easting:	425397.94	Northing:	558502.51	From (m)	Meti	hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	423337134	rror crimig.	550502.52	0.00 - 1.20	Inspecti	ion Pit	Hand Tools	erreenea.	
		Elevation:	23.21mAOD	Final Depth:	1.60m	1.20 - 1.60	Dynamic Samplin	g (Windowless)	Modular Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB					Start Date:	19/12/2017
Client:	SLIV	Orientation:	N/A	Inclination:	90°					End Date:	19/12/2017

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)	Remarks					

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

Sample Summary Environmental Samples 2 Geotechnical Samples

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 1.60	Bentonite					

In-Situ Tests						
PID	2					
Hand Vane*	0					
Standard Penetration Tests	1					

PID	2	(NR) Indicates sample undertaken but with
Hand Vane*	0	0% Recovery

Disturbed

Piston

Undisturbed

	Standard Penetration Test Summary											
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref			
Split Spoon	1.20	-	-	8	50	390		N=50 (3,5/50 for 240mm)	MOD 01			

SPT Hammer Ref.	Energy Ratio (%)
MOD 01	67

## \* One count indicates an average reported result of 3 tests carried out at one depth where available.

#### **Applicable to Cable Percussion Only**

elling	Water	Added
Duration (mins)	Depth (m)	Litres

#### **Applicable to Rotary Only**

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					

#### **Applicable to Dynamic Sampling Only**

	Dynamic	Sampling	Runs
Depth (m)	Diam (mm)	Recovery %	Remarks
1.20 - 1.60	101	75	Refusal



Project No:

Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Northing:

Final Depth: 1.60m

Location Details

425397.94

23.21mAOD

Easting:

Elevation:

**Dynamic** Sampling Web: www.central-alliance.co.uk

558502.51

Exploratory Hole Number

WS17-03 **FINAL** 



Log Type

Sheet 1 of 1 GEO Methodology & Plant Scale: 1:50 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used Hand Tools Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 1.60 Checked By: RPH Approved By: ВН

Loca	ation: Tyne and Wear	Logged By:	JH	Grid Syste	m: OSGB									Start Date:	19/12/2017
Clie			N/A	Inclination										Finish Date:	19/12/2017
						Depth (	[m) Redu	iced Level	Casing Ø	Water I	nstallation /			Samples & Testing	
	Strata Description				Legend	(Stratu Thickne	1111	nAOD)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Resul	lts
-	MADE GROUND: Grass over dark greyish brown slig frequent rootlets. Gravel is subrounded to rounded mudstone and siltstone. Sand is fine to coarse					(0.80	))					0.00 - 0.30 0.30 0.40	1 B 2 ES 3 D	PID 0.30m = 0.1ppm	
-	MADE GROUND: Dark grey slightly gravelly very sar		evel is subangu	ılar to		0.80	) 2	2.41				0.70 0.80 0.80 - 1.20	4 D 5 ES 6 B	PID 0.80m = 0.0ppm	
1 -	subrounded fine to coarse siltstone. Sand is fine to	coarse.				(0.80	))					1.10 1.20 - 1.65	7 D 8 D	SPT(S) 1.20m, N=50 (3, 240mm)	,5/50 for
-	EOH at 1.60m - Ref	usal				1.60	) 2	1.61				1.40	9 D 10 D		-
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Obs	ervations / Remarks	Miso	c. Back	fill		Dvna	amic San	npling R	Runs				Inst	allations	
	·	2 3		Material Bentonite	From (m)		Diam (mm) 101		y (%) Re	emarks Refusal	Inst	rument Detai		Resp. Zone Dep	pth (m) Diam
		counter	/s Insta					"							
		ater En Not Cas	ng Point											water Strikes	
		roundw Hole	onitorii							St	rike (m) Ca	sing (m) Seale	d (m) Ris	es To (m) Time (min)	Remarks
		No G	Hammer Ref & En												



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Sheet

Log Type **Header** 

Exploratory Hole Number

WS17-03a

FINAL



Project No:	3043		Location Details				Methodology & P	Scale:	1:50	
		Easting:	425397.52	Northing:	558501.95	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	22.72mAOD	Final Depth:	1.53m	1.20 - 1.53	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB				Start Date:	19/12/2017
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	19/12/2017

Hole Diameter								
Depth (m)	Diam (mm)							

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes											
Strike	Casing	Sealed	Time	Rose To								
(m)	(m)	(m)	(min)	(m)	Remarks							

Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill								
Depth (m)	Legend Code							
0.00 - 1.53	Bentonite							

In-Situ Tests							
PID	0						
Hand Vane*	0						
Standard Penetration Tests	1						

one depth where available.

Standard Penetration Tests	1
* One count indicates an av	- 0

Sample Summary								
Environmental Samples								
Soil	Soil <b>0</b> Water							
Geotechnical Samples								
Bulk	Bulk 1 Large Bulk							
Disturbed	4	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undisturbed Thin Wall								
Undisturbed Thin Wall (NR)								
Core	e San	nple	0					
· ·		•						

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary													
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref					
Split Spoon		-	-	8	50	325		50 (3,5/50 for 175mm)	MOD 01					

SPT Hammer Ref.	Energy Ratio (%)
MOD 01	67

#### **Applicable to Cable Percussion Only**

Chise		
Depth (m)		
		Chiselling  Depth (m) Duration (mins)

Water Added							
Litres							

### **Applicable to Rotary Only**

Drilling Flush										
Depth (m) Flush Type Flush Colour Return %										
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#### **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs										
Depth (m)	Diam (mm)	Recovery %	Remarks							
Depth (m) 1.20 - 1.20	Diam (mm) 101	Recovery %	Remarks Refusal							



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Log Type

#### **Dynamic** Sampling



Exploratory Hole Number



Sheet 1 of 1

	*						Sł	neet 1 o	of 1					GI	EO	
Project N	No: <b>3043</b>			on Details			Donath (o	- \ I		thodology	/ & Plant	Disabilisad		Scale:		1:50
Name:	A1 Birtley to Coalhouse	Easting:	425397.52	Northing:		1.95	Depth (n	0	Inspec	thod tion Pit ing (Windowle		Plant Used Hand Tools		Checked By:		RPH
	Torra and Mann	Elevation:	22.72mAOD	Final Dept			1.20 - 1.5	3 Dyn	namic Sampli	ing (Windowle	ess) Mod	dular Window Sa	mpler	Approved By:		ВН
Location:	: Tyne and Wear	Logged By:	JH	Grid Syste	m: OSGB									Start Date:	19/1	2/2017
Client:	SUV	Orientation:	N/A	Inclination	n: <b>90°</b>									Finish Date:	19/1	2/2017
						Depth		uced Level	Casing Ø	Water	Installation /			Samples & Testing		
	Strata Descripti	ion			Legend	(Stratu Thickne	JIII /.	mAOD)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Res	ults	
fre	ADE GROUND: Grass over dark greyish brown equent rootlets. Gravel is subrounded to rour udstone and siltstone. Sand is fine to coarse					(0.80						0.30 0.50	1 D 2 D			
	ADE GROUND: Dark grey slightly gravelly very brounded fine to coarse mudstone and siltsto			gular to	·	(0.73		21.92				0.80 0.80 - 1.20 1.20 - 1.65	3 D 4 B 5 D	SPT(S) 1.20m, 50 (3,5	/50 for	1
	EOH at 1.53m -	Refusal				1.53	3 2	21.19						175mm)	,	
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bservat	tions / Remarks	М	isc. Bac	:kfill		Dyn	amic Sar	npling F	Runs	•			Inst	allations		
			Depth (m)	Material		To (m)	Diam (mm)		ry (%) R	emarks	Ins	trument Detai			epth (m)	Dia
		y Encountered	0.00 - 1.53	Bentonite	1.20	1.20	101			Refusal			Srew	untar Strik		
		dwater	oring 1								Strike (m)			water Strikes es To (m) Time (min)	Por	narks
		Frount	Hammer Ref & E	Energy Ratio (%)							Strike (III) Ci	Sing (III) seale	(111) INISI	10 (m) time (timi)	леп	ui KS
		ŏ		07 110110 (70)				1	1							

MOD 01 (67%)



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Sheet

Log Type

Header

Exploratory Hole Number

WS17-04

**FINAL** 



Project No:	3043	Location Details					Methodology & P	Scale:	1:50	
Name:	A1 Birtley to Coalhouse	Easting:	426216.79	Northing:	557809.87	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	RPH
	·	Elevation:	65.93mAOD Final Depth:		2.88m	1.20 - 2.40 2.40 - 2.88	Dynamic Sampling (Windowless)  Dynamic Probing	Madular Window Campler	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	20/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	20/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter				
Depth (m)	Diam (mm)			
2.00	116			
l				
l				
l				

	Groundwater Strikes							
Strike	Strike Casing Sealed Time Rose To							
(m)								

Installation / Instrument Details						
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)		
				, ,		

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill				
Depth (m)	Legend Code			
0.00 - 2.40	Bentonite			
2.40 - 2.88	Arisings			

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	2

(NR) Indicates sample undertaken but v	vit
Core Sample	0
Offdisturbed Trill Wall (WK)	·

0% Recovery

0

0

Undisturbed Thin Wall

Disturbed

Piston

Undisturbed

Environmental Samples

4 Water

Geotechnical Samples

Large Bulk
Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

Standard Penetration Test Summary									
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon		-	-	0	0	0		0 (0 for 0mm/0 for 0mm)	MOD 02
Split Spoon		-	-	17	50	395		0 (b for dumm/b for dumm) N=50 (8,9/50 for 245mm)	MOD 02 MOD 02

SPT Hammer Ref.	Energy Ratio (%)	
MOD 02	65	

* One count indicates an average
reported result of 3 tests carried out at
one depth where available.

#### **Applicable to Cable Percussion Only**

Chiselling			Water	Added
Depth (m)	Duration (mins)		Depth (m)	Litres

#### **Applicable to Rotary Only**

Drilling Flush					
Depth (m)	Flush Type	Flush Colour	Return %		

#### **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs				
Depth (m)	Diam (mm)	Recovery %	Remarks	
1.20 - 2.00	101	88	107 Blows	
2.00 - 3.00	86	40	150 Blows	



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Dynamic
Sampling
& Probe
Sheet 1 of 1

Exploratory Hole Number

WS17-04 FINAL



Methodology & Plant Location Details Scale: 1:50 Project No: Depth (m) 0.00 - 1.20 1.20 - 2.40 2.40 - 2.88 Plant Used
Hand Tools
Modular Window Sampler
Modular Window Sampler Method RPH Easting: 426216.79 Northing: 557809.87 Checked By: Inspection Pit
Dynamic Sampling (Wind A1 Birtley to Coalhouse Name: Elevation: 65.93mAOD Final Depth: 2.88m Approved By: BH Tyne and Wear Location: 20/04/2018 Logger GS Grid System: OSGB Start Date: Client SLJV Orientation N/A Inclination: 90° Finish Date: 20/04/2018 Depth (m) (Stratum Thickness) Blows / 100mm Casing Ø Samples & Testing Reduced Lev Water Level (m) Installation / Backfill Strata Description (mm) Depth (m) (mAOD) Depth (m) MADE GROUND: Brownish black gravelly 0.10 - 1.20 slightly clayey fine to coarse SAND. Gravel 0.20 2 ES is subangular to subrounded fine to coarse sandstone and coal. 0.50 3 D (1.10) 0.70 4 ES 1.10 64.83 Firm to stiff dark greyish brown slightly SPT(S) 1.20m, 0 (0 for 0mm/0 for gravelly silty CLAY locally slightly sandy. (0.40) Gravel is subangular fine to coarse coal and rare brick. Sand is fine to coarse 1.50 64.43 1.50 - 2.00 11 B 10 ES 9 D Destructured to residual light grey (0.40) MUDSTONE recovered as gravelly silty 1.90 64.03 clay. Gravel is subangular fine to coarse. Destructured to residual light grey 116 2.00 SPT(S) 2.00m, N=50 (8,9/50 for 245mm) 2 (0.50) MUDSTONE recovered as silty subangular fine to coarse gravel.

Dynamic Probing. 63.53 2.40 (0.48) 2.88 63.05 EOH at 2.88m - Refusal 10 Observations / Remarks Misc **Equipment Information** Dynamic Sampling Runs Installations 
 From (m)
 Depth Base
 Diam (mm)
 Recovery (%)

 1.20
 2.00
 101
 88

 2.00
 3.00
 86
 40
 Resp. Zone Depth (m) Diam Instrument Type DPSH-B Fall Height: Hammer Weight 750mm 23.5kg Groundwater Strikes Cone Base Diam Rod Diam Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks

Reference & Energy Ratio (% MOD 02 (65%)



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Sheet

Exploratory Hole Number

Log Type

Header

WS17-06

FINAL



Project No:	3043		Location [	Details			Methodology & P	lant	Scale:	1:50
Name	A4 Birthauta Caalhaura	Easting:	426377.00	Northing:	557718.00	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Ŭ		Ü		0.00 - 0.70	Inspection Pit	Hand Tools		
		Elevation:	79.12mAOD	Final Depth:	0.70m				Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	20/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	20/04/2018

Hole Diameter							
Depth (m)	Diam (mm)						

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes							
				Rose To	Remarks			
(m)	(m)	(m)	(min)	(m)	nemano			

	Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

2 Water

Geotechnical Samples

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 0.70	Bentonite					

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available. Disturbed

Piston

Undisturbed

	Standard Penetration Test Summary								
Test Type						Penetration	N	Reported Result	Hammer Ref
71.	(m)	(m)	(m)	Blows	Blows	Total (mm)			

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chis	Chiselling						
Depth (m)	Duration (mins)						
	1	l					

	•						
Water Added							
Depth (m)	Litres						

#### **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					

Applicable to Dynamic Sampling Only								
Dynamic Sampling Runs								
Depth (m)	Diam (mm)	Recovery %	Remarks					

PID 0 (NR) Indicates sample undertaken but with 0% Recovery



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Dynamic Sampling

Log Type

Exploratory Hole Number WS17-06

FINAL

Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min)



	*						Sneet 1	OT 1					GE	U	
Proj	ect No: <b>3043</b>		Location	Details				Me	thodology	& Plant			Scale:	1:50	
	44 01 11 11 11 11	Easting:	426377.00	Northing:	557718	3.00	Depth (m) 0.00 - 0.70	Me	thod		Plant Used		Checked By:	RPH	
Nan	ie. At birtiey to Coamouse						0.00 - 0.70	Inspec	ction Pit		Hand Tools				
		Elevation:	79.12mAOD	Final Depth	: 0.70m								Approved By:	ВН	
Loc	ation: Tyne and Wear	Logged By:	GS	Grid Systen	n: OSGB								Start Date:	20/04/2018	8
Clie	nt: SLJV	Orientation:	N/A	Inclination:	90°								Finish Date:	20/04/2018	8
														,,	-
	Strata Description				Legend	Depth (Strati	im Keduced Leve	(mm)	Water Level (m)	Installation / Backfill		_	Samples & Testing		_
						Thickne	ess) (MAOD)	Depth (m)	Level (III)	DdCKIIII	Depth (m)	Ref	Test Result	is .	
-	MADE GROUND: Black sandy clayey subangular to s				******						0.00 - 0.50	3 B			-
-	sandstone and coal GRAVEL with low cobble conter	nt. Sand is f	fine to coarse. O	Cobbles	******	(0.50	))				0.20 0.30	1 D 2 ES			-
-	are subangular sandstone.			8	*****										-
-	MADE GROUND: Orangish yellow gravelly slightly c	lavev fine t	o coarse SAND.	Gravel	******	0.50 (0.20					0.50 - 0.70 0.60	6 B 4 D			-
-	is subangular to subrounded fine to coarse sandsto				*******	0.70					0.70	5 ES			-
-	EOH at 0.70m - Refu	usal													-
1 -														1	1 -
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-															-
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Obs	ervations / Remarks	Mi	sc. Backf	fill		Dyn	amic Sampling	Runs	`			Inst	allations		
		_	Depth (m)	Material I	rom (m)		Diam (mm) Recove		Remarks	Inst	rument Detai		Resp. Zone Dep	th (m) Diam	<del>-</del>
		nterec	0.00 - 0.70	Bentonite											
		pas	t/s Ir												
		er E	Poir						İ		(	Fround	water Strikes		



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Sheet

# Header WS17-07

FINAL

Exploratory Hole Number



Project No:	3043		Location [	Details			Methodology & P	lant	Scale:	1:50
Name:	A1 Birtley to Coalhouse	Easting:	427749.71	Northing:	556992.90	From (m)	Method	Plant Used	Checked:	RPH
	,	Elevation:	93.49mAOD	Final Depth:	2.37m	0.00 - 1.20 1.20 - 2.10 2.10 - 2.37	Inspection Pit Dynamic Sampling (Windowless) Dynamic Probing	Hand Tools Modular Window Sampler Modular Window Sampler	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	20/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	20/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter
Depth (m) Diam (mm)

			Grou	ındwa	ter Strikes
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks
(111)	(111)	(111)	()	(111)	

	Installation / Instrume	ent Deta	ils	
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

В	ackfill
Depth (m)	Legend Code
0.00 - 2.37	Bentonite

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	2

rialia varic	اٽا	
Standard Penetration Tests	2	
* One count indicates an avo	- 0	

one depth where available.

Sample Summary					
Enviror	nmer	ntal Samples			
Soil	4	Water	0		
Geotechnical Samples					
Bulk	3	Large Bulk	0		
Disturbed	7	Disturbed (NR)	0		
Piston	0	Piston (NR)	0		
Undisturbed	0	Undisturbed (NR)	0		
Undistu	rbed 1	Thin Wall	0		
Undisturbe	ed Thi	n Wall (NR)	0		
Cor	e San	nple	0		

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	1.20	-	-	9	21	450	21	N=21 (4,5/4,6,4,7)	MOD 02
Split Spoon	1.90	-	-	25	50	240		50 (25 for 105mm/50 for 135mm)	MOD 02

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

#### **Applicable to Cable Percussion Only**

Chiselling								
Depth (m)	Duration (mins)							

Water Added								
Depth (m)	Litres							

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

Dynamic Sampling Runs									
Depth (m)	Diam (mm)	Recovery %	Remarks						
1.20 - 1.90	101	100	150 Blows						



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Dynamic
Sampling
& Probe
Sheet 1 of 1

Exploratory Hole Number

WS17-07
FINAL



Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Method Plant Used
Inspection Pit Hand Tools
Dynamic Sampling (Windowless)
Dynamic Probing Modular Window Sampler
Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 2.10 2.10 - 2.37 Easting: 427749.71 556992.90 Checked By: RPH Northing: Name: A1 Birtley to Coalhouse Elevation: Approved By: Final Depth: 2.37m 93.49mAOD ВН

Loca	ation:		Tyne	e and	Wear						Logger:		GS		Grid Syste	m: OSGI	3			,	0					Start Date:	20/04	1/2018
Clie	nt:		SLJV	,							Orientation	n: I	N/A		Inclination	n: <b>90°</b>										Finish Date:	20/04	1/2018
				Е	lows /	100mr	n										Depth	(m) <sub>Po</sub>	educed Level	Casing Ø	Water	Installat	tion /			Samples & Testing	g	
	5	1	0 1	.5 2 I	0 2	5 30	3	5 4	0 4	5		Strat	ta Descrip	otion		Legend	(Strat Thickn	ulli	(mAOD)	(mm) Depth (m)	Level (m)	Back	611	Depth (m)	Ref	Test R	esults	
										$\Box$	TOPSOIL.						(0.10		93.39					0.10 - 0.50	4 B			
-											MADE GROU						0.10	י ו						0.20 0.30	1 D 2 ES	İ		-
-											sandy gravell content. San					<b>******</b>	Š (0.0)	٠,								İ		-
_											subangular to						(0.80	)						0.50	3 D	İ		-
_											sandstone ar			bles are										0.70 0.70 - 1.10	5 ES 8 B	İ		
1 -											subangular s			stiff oran	ıgish		0.90	ו	92.59					1.00	6 D	İ		1 -
1 -											grey slightly					<b>******</b>	8							1.00	7 ES			1 -
-											subangular to	o sub	orounde	d fine to										1.10 - 1.90 1.20 - 1.65	13 B 9 D	SPT(S) 1.20m, N=2:	1 (4,5/4,6,4,7)	-
_											sandstone, co	oal a	nd rare l	brick.			(1.00	0)						1.50	10 D			_
_																								1.70	11 ES			-
-																<b>******</b>	×		91.59					1.80	12 D 14 D	SPT(S) 1.90m, 50 (2	35 for 405 //	-
2 -											MADE GROU						1.90		91.59					1.90 - 2.14	140	for 135mm)	25 101 105111117	2 -
]				17							fine to coarse fine to coarse		idstone (	GRAVEL.	Sand is		2.14	1	91.35							İ		_
_		_		20		30					Dynamic Pro						(0.23		91.12									-
-											EOH	at 2	2.37m -	- Refusa	al													-
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Obs	ervatio	ns /	Rema	arks							Misc	c.		ent Infori amic Probe Ty		From (m)			ampling F		omarks		Inst	mont Tur-		allations	Donth (m)	Diam
											pa.	lled		DPSH-B	ype.	1.20	1.90	Diam (mi	m) Recover		emarks 50 Blows		instru	ument Type		Resp. Zone	Deptn (m)	Diam
											er Encountered ht Cased	Insta	Fall Heigh		nmer Weight:													
											er Enc et Casa	Point	750mm		64.0kg										round	water Strikes		
											undwater Hole Not C	oring C	one Base D		Rod Diam.							Strike /	m) Casir			es To (m) Time (min)	) Rema	rks
											roun Hc	Mont.	50mm		35mm							mc (1	., casii	J, Jeulet	,3		. Acine	

MOD 02 (65%)



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Log Type

Header

Sheet

Exploratory Hole Number **WS17-08** 

**FINAL** 



Project No:	3043		Location	Details			Methodology & P	Scale:	1:50	
		Easting:	427843.46	Northing:	556944.85	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	96.89mAOD	Final Depth:	2.27m	1.20 - 2.27	Dynamic Sampling (Windowless)		Approved:	BH
Location:	Tyne and Wear	Logger:	RJ	Grid System:	OSGB				Start Date:	21/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	21/04/2018

Hole Diameter							
Depth (m)	Diam (mm)						

**Casing Diameter** Depth (m) Diam (mm

	Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To	Dama da						
(m)	(m)	(m)	(min)	(m)	Remarks						

	Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						
1										

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Sample Summary Environmental Samples 1 Geotechnical Samples

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill									
Depth (m)	Legend Code								
0.00 - 2.27	Bentonite								

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Disturbed

Piston

Undisturbed

				Sta	ndard	Penetrati	on T	Test Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Re

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chise	elling	
Depth (m)	Duration (mins)	Dep

	•						
Water Added							
Depth (m)	Litres						

#### **Applicable to Rotary Only**

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					

Applicable to Dynamic Sampling Uniy									
	Dynamic	Sampling	Runs						
Depth (m)	Diam (mm)	Recovery %	Remarks						

<sup>(</sup>NR) Indicates sample undertaken but with



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Log Type

# Dynamic Sampling

Exploratory Hole Number

WS17-08
FINAL

CENTRAL ALLIANCE

Sheet 1 of 1 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Plant Used Hand Tools Method Inspection Pit Dynamic Sampling (Windowless) Depth (m) 0.00 - 1.20 1.20 - 2.27 Easting: 427843.46 556944.85 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Final Depth: 2.27m 96.89mAOD Approved By: ВН Location: Tyne and Wear

	•	Logged by.	NJ	dilu syste										Start Date:	21/04/	
Clier	nt: SUV	Orientation:	N/A	Inclination	n: <b>90°</b>	, 1		Ш,						Finish Date:	21/04,	2018
	Strata Description				Legend	Depth ( (Stratu	Redu	ced Level	Casing Ø (mm)	Water	Installation / Backfill			Samples & Testir	ıg	
	Strata Description				Legenu	Thickne	ss) (m	nAOD)	Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test I	Results	
	MADE GROUND: Brown very sandy slightly clayey	angular to s	ubangula	r fine to	******	8						0.00 - 0.50	1 B			
1	coarse sandstone and roadstone GRAVEL. Sand is t	fine to coars	se.		<b></b>	(0.50	)									-
-						8										-
	MADE GROUND: Stiff medium strength brown gra-	velly CLAY. G	ravel is a	ngular to		0.50	9	6.39								_
]	subrounded fine to coarse sandstone.					\$						0.80 - 1.20	2 B			
-						3						0.90	3 ES			-
1 -					<b></b>	(1.20	)									1 -
						8						1.20 - 1.65	4 D			-
-						3						1.40	5 D			-
1						8										-
	Weathered brown SANDSTONE bedrock.					1.70	9:	5.19				1.70 - 2.20	6 D			_
2 -					:::::	(0.57	)									2 -
-							<b>'</b>									۷ -
}	EOH at 2.27m - Rei	fueal				2.27	94	4.62								-
	20114(2.27111 100	ladai														_
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Obse	ervations / Remarks	Mis	sc.	Backfill		Dyna	mic Sam	npling R	luns				Insta	allations		
			Depth (i	m) Material	From (m)					emarks	Inst	rument Detail		Resp. Zone	Depth (m)	Diam
		nterec	0.00 - 2.:	27 Bentonite												
		ncon	nt/s lr													
		rter E Vot Co	g Poir							Ī		0	iroundv	water Strikes		
		undwi Hole n	itorin							5	Strike (m) Ca	sing (m) Seale	d (m) Rise	es To (m) Time (mir	) Remar	ks
		o Groi	Hammer	Ref & Energy Ratio (%)												
i .		<b>5</b>	21					1	1		1	1	1	1		



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Sheet

Log Type Exploratory Hole Number

Header

WS17-09

FINAL



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
Name:	A1 Birtley to Coellague	Easting:	427901.34	Northing:	556916.64	From (m)	Method	Plant Used	Checked:	RPH
ivallie:	A1 Birtley to Coalhouse	Elevation:	99.52mAOD	Final Depth:	3.28m	0.00 - 1.20 1.20 - 2.90 2.90 - 3.28	Inspection Pit Dynamic Sampling (Windowless) Dynamic Probing	Hand Tools Modular Window Sampler Modular Window Sampler	Approved:	ВН
Location:	Tyne and Wear	Logger:	RJ	Grid System:	OSGB				Start Date:	24/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	24/04/2018

Hole Diameter						
Diam (mm)						

iameter
Diam (mm)
116

Environmental Samples

2 Water

Geotechnical Samples

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)	Remarks					
ł										

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 3.28	Bentonite						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	2

PID	0	(NR) Indicates sample undertaken but with
Hand Vane*	0	0% Recovery

Disturbed

Piston

Undisturbed

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	2.00	2.00	DRY	9	27	450	27	N=27 (4,5/7,7,6,7)	MOD 02
Split Spoon	2.60	2.00	DRY	16	50	420		N=50 (6,10/50 for 270mm)	MOD 02

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

#### \* One count indicates an average reported result of 3 tests carried out at one depth where available.

#### **Applicable to Cable Percussion Only**

Chise	elling		Water	Added
Depth (m)	Duration (mins)		Depth (m)	Litres
		]		

## **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %
1	1		1

	Dynamic Sampling Runs									
Depth (m	n) Diam (mm)	Recovery %	Remarks							
1.20 - 2.0	0 101	88	113 Blows							
2.00 - 2.6	60 86	92	150 Blows							



Observations / Remarks

Misc

Equipment Information

DPSH-B Fall Height: Ha

MOD 02 (65%)

750mm

Cone Base Diar

50mm

Hammer Weight

64.0kg

Rod Diam

Dynamic Sampling Runs

 From (m)
 Depth Base
 Diam (mm)
 Recovery (%)

 1.20
 2.00
 101
 88

 2.00
 2.60
 86
 92

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Dynamic
Sampling
& Probe

Exploratory Hole Number

WS17-09



10

Resp. Zone Depth (m) Diam

Remarks

Installations

Groundwater Strikes

Instrument Type

Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min)

**FINAL** Web: www.central-alliance.co.uk GEO Sheet 1 of 1 Methodology & Plant Location Details Scale: 1:50 Project No: Depth (m) 0.00 - 1.20 1.20 - 2.90 2.90 - 3.28 Plant Used
Hand Tools
Modular Window Sampler
Modular Window Sampler Method RPH Easting: 427901.34 Northing: 556916.64 Inspection Pit
Dynamic Sampling (Windo Checked By: A1 Birtley to Coalhouse Name: Elevation: 99.52mAOD Final Depth: 3.28m Approved By: BH Tyne and Wear Location: Logger RJ Grid System: OSGB Start Date: 24/04/2018 Client SLJV Orientation: N/A Inclination: 90° Finish Date: 24/04/2018 Depth (m) (Stratum Thickness) Blows / 100mm Casing Ø Samples & Testing Reduced Lev (mAOD) Water Level (m) Installation / Backfill Strata Description Legend (mm) Depth (m) Depth (m) MADE GROUND: Dark greyish brown clayey subangular to subrounded fine to (0.60) coarse brick, concrete and sandstone 0.40 2 ES GRAVEL. 0.60 98.92 MADE GROUND: Soft to stiff dark grey 0.70 - 1.20 0.80 very gravelly CLAY. Gravel is subangular to subrounded fine to coarse brick and sandstone. (2.00) 7 D 116 2.00 SPT(S) 2.00m, N=27 (4,5/7,7,6,7) 2 12 D SPT(S) 2.60m, N=50 (6,10/50 for 270mm) 2.60 96.92 SANDSTONE bedrock. (0.30) 96.62 Dynamic Probing. 21 3.28 96.24 EOH at 3.28m - Refusal



Header Sheet Web: www.central-alliance.co.uk

Log Type

Exploratory Hole Number

**WS17-12** 

**FINAL** 



Project No:	3043	Location Details				Methodology & P	Scale:	1:50		
	44 81 11 1 1 1 1	Easting:	427995.56	Northing:	556852.92	From (m)	Method	Plant Used	Checked:	RPH
Name:	At Birtley to Coalnouse			Ü		0.00 - 1.00	Inspection Pit	Hand Tools		
		Elevation:	102.67mAOD	Final Depth:	1.00m				Approved:	BH
Location:	Tyne and Wear	Logger:	RJ	Grid System:	OSGB				Start Date:	24/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	24/04/2018

Hole Diameter								
Depth (m) Diam (mm)								

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes								
				Rose To	Remarks				
(m)	(m)	(m)	(min)	(m)	nemano				

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 1.00	Arisings						

In-Situ Tests					
PID	0				
Hand Vane*	0				
Standard Penetration Tests	0				

\* One count indicates an average reported result of 3 tests carried out at

Disturbed

Piston

Undisturbed

Sample Summary Environmental Samples 1 Geotechnical Samples

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

one depth where available.

Applicable t	to Cable	Percussi	ion Only
--------------	----------	----------	----------

Chise	elling		Water	Added
Depth (m)	Duration (mins)		Depth (m)	Litres
	•	•	,	•

#### **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					

	Dynamic	Sampling	Runs	
Depth (m)	Diam (mm)			

<sup>(</sup>NR) Indicates sample undertaken but with



Project No:

Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Northing:

556852.92

Location Details

427995.56

Easting:

**Dynamic** Sampling

Log Type

Exploratory Hole Number

WS17-12 **FINAL** 



Sheet 1 of 1 Methodology & Plant Scale: Depth (m) 0.00 - 1.00 Method Inspection Pit Plant Used Hand Tools

RPH Checked By: BH

1:50

Elevation: 102.67mAOD Final Depth: 1.00m Approved By: Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 24/04/2018 24/04/2018 Client: SLJV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Samples & Testing Reduced Lev (mAOD) Water Level (m) Installation , Backfill Strata Description Legend Depth (m) MADE GROUND: Dark brown very clayey subangular to subrounded fine to coarse sandstone, mudstone and brick GRAVEL. (0.90)0.50 2 ES 0.70 - 1.20 3 B Strong grey SANDSTONE bedrock. EOH at 1.00m - Refusal 0.90 (0.10) 1.00 101.77 101.67 0.90 - 1.00 4 D 10 Observations / Remarks Misc. Dynamic Sampling Runs Installations | Depth (m) | Material | From (m) | To (m) | Diam (mm) | Recovery (%) | | Instrument Details Resp. Zone Depth (m) Diam Groundwater Strikes Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks



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Header

Sheet

Exploratory Hole Number

WS17-13

FINAL



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50	
		Easting:	425150.06	Northing:	558440.02	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	15.16mAOD	Final Depth:	4.45m	1.20 - 4.45	Dynamic Sampling (Windowless)	Premier 110	Approved:	BH
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB				Start Date:	22/01/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	22/01/2018

Hole Di	ameter
Depth (m)	Diam (mm)
4.45	101

Casing Diameter								
Depth (m)	Diam (mm)							
3.00	101							
l								
l								
I								

	Groundwater Strikes							
Strike	Casing	Sealed	Time	ne Rose To				
(m)	(m)	(m)	(min)	(m)	Remarks			

	Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					
22/01/2018	Standpipe	4.00	0.40 - 4.00						

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill						
Depth (m) Legend Code						
0.00 - 0.20	Concrete					
0.20 - 0.40	Bentonite					
0.40 - 4.45	Gravel					

In-Situ Tests	
PID	0
Hand Vane*	5
Standard Penetration Tests	4

<sup>(</sup>NR) Indicates sample undertaken but with 0% Recovery

10

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed

Piston

Undisturbed

Environmental Samples

3 Water

Geotechnical Samples

Large Bulk

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

Test Type										
Split Spoon   1.20   Con   Con   Split Spoon   1.20   Con		Standard Penetration Test Summary								
(m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)   (m)	Tost Type	Depth	Casing	Water	Seating	Main	Penetration		Papartad Pasult	Hammor Pof
Split Spoon         2.00         2.00         -         5         10         450         10         N=10 (2,3/3,2,2,3)         110.92           Split Spoon         3.00         2.00         -         2         10         450         10         N=10 (1,1/1,3,3,3)         110.92	iest Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	N	Reported Result	nammer ker
Split Spoon         3.00         2.00         -         2         10         450         10         N=10 (1,1/1,3,3,3)         110.92	Split Spoon	1.20	-	-	2	4	450	4	N=4 (1,1/1,1,1,1)	110.92
	Split Spoon	2.00	2.00	-	5	10	450	10	N=10 (2,3/3,2,2,3)	110.92
Split Spoon   4.00   3.00   -   2   12   450   12   N=12 (1,1/2,3,3,4)   110.92	Split Spoon	3.00	2.00	-	2	10	450	10	N=10 (1,1/1,3,3,3)	110.92
	Split Spoon	4.00	3.00	-	2	12	450	12	N=12 (1,1/2,3,3,4)	110.92
	ł									

SPT Hammer Ref.	Energy Ratio (%)				
110.92	65				

## **Applicable to Cable Percussion Only**

Chise	elling		Water Added					
Depth (m)	Duration (mins)		Depth (m)	Litres				
		Chiselling Depth (m) Duration (mins)						

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %
			1

Dynamic Sampling Runs								
Depth (m)	Diam (mm)	Recovery %	Remarks					
1.20 - 2.00	101	100	50 Blows					
2.00 - 3.00	101	100	140 Blows					
3.00 - 4.00	101	100	67 Blows					
	1							



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**Dynamic** Sampling

Log Type

Exploratory Hole Number

WS17-13 FINAL

CENTRAL ALLIANCE

Sheet 1 of 1

GEO Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Depth (m) Method

0.00 - 1.20 Inspection Pit
1.20 - 4.45 Dynamic Sampling (Windowless) Plant Used Hand Tools Premier 110 Easting: 425150.06 558440.02 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: Approved By: Final Depth: 4.45m 15.16mAOD ВН

Locat	ion: Tyne and Wear	Elevation:	15.16mAOD	Final Dep			1.20 - 4.45	Dynamic Samp	ling (Windowie	iss)	Premier 110		Approved By:	BH
		Logged By:	JH	Grid Syst										22/01/2018
Client	t: SLIV	Orientation:	N/A	Inclinatio	n: <b>90°</b>	I		1			1			22/01/2018
	Strata Description				Legend	Depth (r (Stratur	n Reduced I	, (mm)	Water Level (m)	Installation / Backfill		T	Samples & Testing	
	TOPSOIL.				\(\lambda\)\(\lambda\)\(\lambda\)	Thicknes (0.10)	is)	Depth (m	,	50 1 18 B	Depth (m)	Ref	Test Results	
	Firm dark brown gravelly sandy CLAY. Gravel is ang	ular to sub	rounded fine	to coarse		0.10								-
1	sandstone coal and mudstone. Sand is fine to coar	se.				(0.70)					0.30 0.30 - 0.80 0.40	1 ES 2 B 3 D		-
1						(0)					0.40	4 ES		-
1	Light brown fine to coarse SAND.					0.80	14.36				0.80 - 1.20	5 B		
1	Light brown line to coarse SAND.										1.00	6 ES		1 -
1						(0.60)					1.20 - 1.65	7 D	SPT(S) 1.20m, N=4 (1,1/1,1	1,1)
1	Firm deal, are in horacon are allocated CLAV Con-	-1:		C +-		1.40	13.76							-
	Firm dark greyish brown gravelly sandy CLAY. Grave coarse sandstone coal and mudstone. Sand is fine		r to subround	eu iiie to	× × ×	(0.20) 1.60	13.56	;			1		HV 1.50m, (p)= kPa (r)= kPa Failed: Too Gravelly.	Test -
1	Light orangish brown gravelly silty fine to coarse SA		l is subangula	r to	×××	(0.20) 1.80	13.36	;		∵甘∴	1.80	8 D		-
	subrounded fine to coarse sandstone.  Dark grey gravelly fine to coarse SAND with low co	hhla santa	nt Cravalia a	,bangular	9 . 9 0	(0.40)					2.00	10 D	SPT(S) 2.00m, N=10 (2,3/3,	2,2,3) 2 -
	to subrounded fine to coarse sandstone coal and li					2.20	12.96				2.00 - 2.45 2.00 - 2.90	9 D 11 D		-
- 7\	limestone.										]			-
	Firm to stiff thinly laminated slightly gravelly CLAY	with occasi	ional dark gre	y fine						::∄::	1			-
1	sandy partings. Gravel is rounded fine mudstone.					1					1		HV 2.80m, (p)=68 kPa (r)=2	0 kPa -
3 -								101 3.00	-	:: <b>甘</b> :	3.00 - 3.45	12 D	HV 2.90m, (p)=80 kPa (r)=1 SPT(S) 3.00m, N=10 (1,1/1,	8 kPa - 3,3,3) 3 —
7					<u> </u>			3.00						-
7						(2.25)				·: 目:				-
7											3.60	13 D	HV 3.60m, (p)=41 kPa (r)=1	0 kPa -
-											3.90	14 D	UN 2 00 (-) 20 l/b- (-) 4	-
4											4.00 - 4.45	15 D	HV 3.90m, (p)=38 kPa (r)=1 SPT(S) 4.00m, N=12 (1,1/2,	3,3,4) 4 —
}											1			
-	FOU at 4.45m. Sahadul	lad danth				4.45	10.71				:			-
-	EOH at 4.45m - Schedul	ieu uepiii												-
1														-
5 –														5 -
-														-
-														_
-														-
-														-
6														6 -
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9 -														- 9 —
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4														-
1														-
10 +											-			10
Obse	rvations / Remarks	Mi	Depth (m)	ckfill Material	From (m)		mic Sampli iam (mm) Rec		Remarks	lo-*	rument Deta		tallations  Resp. Zone   Depth	m) Diam
		ered		Concrete Bentonite	1.20 2.00	2.00 3.00	101 101	100	50 Blows 140 Blows	IIIST	Standpipe	3	0.40 - 4.00 4.00	
		ncount	0.40 - 4.45	Gravel	3.00	4.00	101		67 Blows					
		vater Enci	Point,										dwater Strikes	
		oundw	Monitoring Point Hammer Ref &							Strike (m) Ca	sing (m) Seal	ed (m) Ri	ses To (m) Time (min)	Remarks
		No Gr	Hammer Ref &	Energy Ratio (%)	-									
			110.9	2 (65%)										



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Log Type

Exploratory Hole Number

WS17-14

**FINAL** 



									_									
Project No:	3043	Location Details					Methodology & I	Scale:	1:50									
		Easting: 425185.94 Northing: 558420.9		425185.94 Northing:		25185 94 Northing		425185 94 Northing: 5		425185 94 Northing: 55		425185 94 Northing: 55		From (m)	Method	Plant Used	Checked:	RPH
Name:	: A1 Birtley to Coalhouse	Edsting.	g123103.34	reor criming.	330-120.37	0.00 - 1.20	Inspection Pit	Hand Tools	onconcu.									
		Elevation:	15.24mAOD	Final Depth:	4.45m	1.20 - 4.45	Dynamic Sampling (Windowless)	Premier 110	Approved:	BH								
Location:	Tyne and Wear	Logger:	H	Grid System:	OSGB				Start Date:	22/01/2018								
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	22/01/2018								

Hole Di	ameter
Depth (m)	Diam (mm)
4.45	101

Casing Diameter										
Depth (m)	Diam (mm)									
3.00	101									
l										

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Dl					
(m)	(m)	(m)	(min)	(m)	Remarks					

Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							
22/01/2018	Standpipe	4.00	0.40 - 4.00								

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill									
Depth (m)	Legend Code								
0.00 - 0.20	Concrete								
0.20 - 0.40	Bentonite								
0.40 - 4.45	Gravel								

In-Situ Tests	
PID	0
Hand Vane*	3
Standard Penetration Tests	4

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
Soil <b>3</b> Water								
Geotechnical Samples								
Bulk	2	Large Bulk	0					
Disturbed	10	Disturbed (NR)	1					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undistu	irbed '	Thin Wall	0					
Undisturbed Thin Wall (NR)								
Co	re San	nple	0					

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary										
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main	Penetration Total (mm)	N	Reported Result	Hammer Ref		
Split Spoon	1.20	-	-	2	7	450	7	N=7 (1,1/1,2,2,2)	110.92		
Split Spoon	2.00	2.00	-	2	4	450	4	N=4 (1,1/1,1,1,1)	110.92		
Split Spoon	3.00	3.00	-	2	7	450	7	N=7 (1,1/1,2,2,2)	110.92		
Split Spoon	4.00	3.00	-	2	9	450	9	N=9 (1,1/2,2,2,3)	110.92		

SPT Hammer Ref.	Energy Ratio (%)
110.92	65

#### **Applicable to Cable Percussion Only**

Chise	Wate	
Depth (m)	Duration (mins)	Depth (m)

Water Added									
Depth (m)	Litres								

### **Applicable to Rotary Only**

Drilling Flush										
Depth (m)	Flush Type	Flush Colour	Return %							

	Dynamic Sampling Runs										
Depth (m)	Diam (mm)	Recovery %	Remarks								
1.20 - 2.00	101	100	55 Blows								
2.00 - 3.00	101	80	64 Blows								
3.00 - 4.00	101	90	68 Blows								



**Dynamic** Sampling

Log Type

Exploratory Hole Number

WS17-14 FINAL

CENTRAL ALLIANCE

Sheet 1 of 1

Web: www.central-alliance.co.uk GEO Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Depth (m) Method

0.00 - 1.20 Inspection Pit
1.20 - 4.45 Dynamic Sampling (Windowless) Plant Used Hand Tools Premier 110 Easting: 425185.94 558420.97 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: 15.24mAOD Final Depth: 4.45m Approved By: ВН

Loca	tion: Tyne and Wear		.5.24mAOD H	Grid Syste				-,			´			Start Date:	22/01/	
Clien	nt: SUV		 I/A	Inclinatio		•								Finish Date:	22/01/	
						Depth			asing Ø	Water I	nstallation /			Samples & Testing		
	Strata Description				Legend	(Strat Thickn	um ess) (mA	AOD) De	(mm) pth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Res	sults	
	Grass over TOPSOIL.  Soft to firm dark brown gravelly sandy CLAY. Grave	l is angular to	subrounder	d fine to		(0.1		.14								-
	coarse sandstone coal and mudstone. Sand is fine		3ubi ounace	a fille to								0.30 0.40	1 ES 2 D			-
-						(0.8	0)					0.40 - 0.90 0.50 0.60	3 B 4 ES 5 D			-
1						0.9	0 14	.34				0.60	35			=
1 -	Light brown gravelly fine to coarse SAND. Gravel is coarse sandstone.	subangular t	o subrounde	d fine to			14	.54				1.00	6 ES			1 -
	coarse samustone.											1.20 - 1.65 1.20 - 2.00	7 D 8 B	SPT(S) 1.20m, N=7 (1	1,1/1,2,2,2)	-
-																_
]						(1.6	0)					1.70	9 D			
2 -												2.00 - 2.45	10 D-NF	R SPT(S) 2.00m, N=4 (1	1,1/1,1,1,1)	2 -
=																-
1						2.5	12	.74								
-	Dark grey gravelly fine to coarse SAND. Gravel is succease sandstone coal and limestone.	ubangular to s	ubrounded	fine to		(0.2)	0)	.54				2.60	11 D			-
=	Stiff dark grey mottled orangish brown slightly grav		avel is subro	unded		(0.3	0)		101			2.90	12 D	HV 2.90m, (p)=70 kP	'a (r)=10 kPa	-
3 —	to rounded fine to coarse coal sandstone and mud Stiff thinly laminated dark grey occasionally light b	Istone.	gravelly CLA	V Graval		3.0	0 12		3.00		: 目::	3.00	13 D	SPT(S) 3.00m, N=7 (1	1,1/1,2,2,2)	3 -
	is subangular to subrounded fine to coarse coal an	nd sandstone.	61 avelly CLA	ii. Graver		딐					目:	1				
												3.60	14 D	HV 3.60m, (p)=66 kP	'a (r)=18 kPa	-
-						(1.4	5)									-
4 -						-				ŀ.	· <b>日</b> . · ·	3.90 4.00 - 4.45	15 D 16 D	HV 3.90m, (p)=64 kP SPT(S) 4.00m, N=9 (1	a (r)=10 kPa 1,1/2,2,2,3)	4 -
]						=										-
4	EOH at 4.45m - Schedul	led depth				4.4	5 10	.79								-
5 -																5 -
-																-
-																-
]																=
6 -																6 -
-																
-																=
-																-
7 -																7 -
-																-
=																_
=																-
-																-
8 -																8 -
=																-
																-
]																
9 -																9 -
=																-
=																-
10					-	4										10
Ohar	anyations / Remarks	Misc	Bacl	kfill	-	D	amic Can-	nling Buc	c				In-	stallations		
ODSE	ervations / Remarks		Depth (m)	Material	From (m)	To (m)	Diam (mm)	Recovery (%	6) Re	emarks	Inst	rument Deta		Resp. Zone D		Diam
		unterec	0.00 - 0.20 0.20 - 0.40 0.40 - 4.45	Concrete Bentonite Gravel	1.20 2.00 3.00	2.00 3.00 4.00	101 101 101	100 80 90	64	5 Blows 4 Blows 8 Blows		Standpipe		0.40 - 4.00	4.00	
		rdwater Encounterec Casing Used ing Point/s Installed	0.40 - 4.43	Graver	3.00	4.00	101	90	08	Jiows			Group	dwater Strikes		
		undwat Casing vring Po								St	rike (m) Ca			ises To (m) Time (min)	Remar	rks
		No Grou Monita	Hammer Ref & E													
l .			110.92	(65%)	1		1		1		1					



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Sheet

Log Type Exploratory Hole Number

Header

WS17-15

FINAL



Project No:	3043	Location Details					Met	Scale:	1:50				
		Easting:	425224.05	Northing:	558454.03	From (m)	Met	hod	Plant Used	Checked:	RPH		
Name:	A1 Birtley to Coalhouse			1101thing. 330434.03		0.00 - 1.20	Inspection Pit		Hand Tools	CITCCRCG.			
		Elevation:	16.16mAOD	Final Depth:	4.45m	1.20 - 4.45	Dynamic Samplin	ng (Windowless)	Premier 110	Approved:	BH		
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB					Start Date:	23/01/2018		
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	23/01/2018		

Hole Di	ameter
Depth (m)	Diam (mm)
4.45	86

Casing D	iameter
Depth (m)	Diam (mm)
2.00	86
l	

	Groundwater Strikes								
Strike	trike Casing Sealed Time Rose To								
(m)	(m)	(m)	(min)	(m)	Remarks				
ł									

	Installation / Instrume	ent Deta	ils	
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)
23/01/2018	Standpipe	4.00	0.40 - 4.00	

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill					
Depth (m)	Legend Code				
0.00 - 0.20	Concrete				
0.20 - 0.40	Bentonite				
0.40 - 4.00	Gravel				
4.00 - 4.45	Arisings				
1					

In-Situ Tests	
PID	0
Hand Vane*	6
Standard Penetration Tests	4

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary					
nmer	ntal Samples				
3	Water	0			
echnic	cal Samples				
1	Large Bulk	0			
10	Disturbed (NR)	0			
Piston <b>0</b> Piston					
Undisturbed 0 Undisturbed (NR)					
Undisturbed Thin Wall					
Undisturbed Thin Wall (NR)					
Core Sample					
	3 echnic 1 10 0 ourbed	with a supple su			

(NR) Indicates sample undertaken but with
0% Recovery

	Standard Penetration Test Summary								
Tost Tuno	Depth	Casing	Water	Seating	Main	Penetration	N	Reported Result	Hammer Ref
Test Type	(m)	(m)	(m)	Blows	Blows	Total (mm)	IN	Reported Result	nammer kei
Split Spoon	1.20	-	-	2	8	450	8	N=8 (1,1/2,2,2,2)	110.92
Split Spoon	2.00	2.00	-	2	10	450	10	N=10 (1,1/2,3,3,2)	110.92
Split Spoon	3.00	2.00	-	4	6	450	6	N=6 (2,2/1,1,2,2)	110.92
Split Spoon	4.00	2.00	-	2	7	450	7	N=7 (1,1/1,2,2,2)	110.92
ł									

SPT Hammer Ref.	Energy Ratio (%)
110.92	65

#### **Applicable to Cable Percussion Only**

Chise	elling	Water Added		
Depth (m)	Duration (mins)	Depth (m)	Litres	

Applicable to I	Rotary Only
Drilling F	luch

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				

1	Dynamic Sampling Runs												
H	D = + + + / \			Remarks									
ŀ	Depth (m)		Recovery %										
	1.20 - 2.00	101	100	56 Blows									
	2.00 - 3.00	101	100	84 Blows									
	3.00 - 4.00	86	100	84 Blows									
Į		l	l										



Observations / Remarks

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Log Type **Dynamic** 

Sampling

Sheet 1 of 1

Exploratory Hole Number

WS17-15 **FINAL** 

CENTRAL ALLIANCE GEO

10

Installations

Methodology & Plant Location Details Scale: Project No: 3043 1:50 Depth (m) 0.00 - 1.20 1.20 - 4.45 Plant Used Hand Tools Premier 110 Method Easting: 425224.05 Northing: 558454.03 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 16.16mAOD Final Depth: 4.45m Approved By: BH Location: Tyne and Wear Logged By: Grid System: OSGB Start Date: 23/01/2018 Client SLIV Orientation N/A Inclination: 90° Finish Date: 23/01/2018 Depth (m) Casing Ø Samples & Testing Water Level (m) Installation , Backfill Strata Description Legend (Stratum Thickness) (mm) Depth (m (mAOD) Depth (m) (0.10) 0.10 16.06 Grass over TOPSOIL. Firm dark brown and black slightly gravelly sandy CLAY. Gravel is subangular to \_\_\_ subrounded fine to coarse sandstone coal and mudstone. Sand is fine to coarse. 0.40 0.40 - 0.70 0.50 2 D 3 B 4 ES (0.60)0.70 15.46 0.70 5 D Firm to stiff dark brown mottled grey CLAY. HV 0.80m, (p)=60 kPa (r)=10 kPa (0.30) 1.00 15.16 1.00 6 ES Firm to stiff thinly laminated dark brown mottled grey slightly gravelly CLAY. Gravel is SPT(S) 1.20m, N=8 (1,1/2,2,2,2) subrounded to rounded fine to medium mudstone. 1.70 HV 1.70m, (p)=70 kPa (r)=20 kPa (1.50) HV 1.90m, (p)=68 kPa (r)=12 kPa SPT(S) 2.00m, N=10 (1,1/2,3,3,2) 2.00 2.50 13.66 Firm thinly laminated dark brown occasionally mottled grey slightly sandy SILT. Sand HV 2.60m, (p)=58 kPa (r)=10 kPa is fine to coarse. (0.70) HV 2.90m, (p)=60 kPa (r)=8 kPa SPT(S) 3.00m, N=6 (2,2/1,1,2,2) 2.90 3.00 - 3.45 12 D From 3.00m to 3.10m band of dark brown fine to coarse sand. 3.20 12.96 Firm to stiff thinly laminated dark brownish grey silty CLAY. (1.25) 13 D 14 D HV 3.90m, (p)=50 kPa (r)=10 kPa SPT(S) 4.00m, N=7 (1,1/1,2,2,2) 4.45 11.71 EOH at 4.45m - Scheduled depth

l L	Dept ()	· · · · · · · · · · · · · · · · · · ·		(,	Diam (iiiii)		ricinarito		isti dilicite	D C COM S	1100	. Lone	Dept ()	D.0
pa pa	0.00 - 0.20	Concrete	1.20	2.00	101	100	56 Blows		Standpi	e	0.40	0 - 4.00	4.00	
all tie	0.20 - 0.40	Bentonite	2.00	3.00	101	100	84 Blows							
_ <u>                                   </u>	0.40 - 4.00	Gravel	3.00	4.00	86	100	84 Blows							
in 15/	4.00 - 4.45	Arisings												
voter i sing U								Groundwater Strikes						
ng Cg Cg Cg Cg Cg Cg Cg Cg Cg Cg Cg Cg Cg								Strike (m)	Casing (m)	Sealed (m) F	Rises To (m)	Time (min	) Rem	arks
o Grou	Hammer Re	f & Energy Ratio (%)												
N N	110	.92 (65%)												

Dynamic Sampling Runs

From (m) To (m) Diam (mm) Posovory (%)

Misc.

Backfill

Material



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Header

Sheet

Exploratory Hole Number

WS17-16

FINAL



Project No:	3043	Location Details					Methodolo	logy & Plant		Scale:	1:50			
		Easting:	425271.97	Northing: <b>558439.03</b> Fro		425271.97 Northing: 55		Northing: 558439 03		From (m) Method Plant		lsed	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting. 4232/1:37	Northing.	330433.03	0.00 - 1.20	Inspection Pit			CITCCRCG.	10111				
		Elevation:	15.64mAOD	Final Depth:	4.45m	1.20 - 4.45	Dynamic Sampling (Windo	dowless) Premier	110	Approved:	BH			
Location:	Tyne and Wear	Logger:	JH	Grid System:	OSGB					Start Date:	23/01/2018			
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	23/01/2018			

Hole Di	ameter
Depth (m)	Diam (mm)
4.45	86

Casing D	iameter
Depth (m)	Diam (mm)
2.00	86

	Groundwater Strikes											
Strike	Casing	Sealed	Time Rose To									
(m)	(m)	(m)	(min)	(m)	Remarks							
ł												

	Installation / Instrume	ent Deta	ils	
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)
23/01/2018	Standpipe	4.00	0.40 - 4.00	

If Methodology includes Dynamic Sampling refer to Runs table for info.

No Groundwater Encountered

Backfill								
Depth (m)	Legend Code							
0.00 - 0.20	Concrete							
0.20 - 0.40	Bentonite							
0.40 - 4.00	Gravel							
4.00 - 4.45	Arisings							
1								

In-Situ Tests						
PID	3					
Hand Vane*	2					
Standard Penetration Tests	4					

<sup>\*</sup> One count indicates an average reported result of 3 tests carried out at

one depth where available.

Sample Summary									
Environmental Samples									
Soil	6	Water	0						
Geotechnical Samples									
Bulk	1	Large Bulk	0						
Disturbed	9	Disturbed (NR)	0						
Piston	0	Piston (NR)	0						
Undisturbed	0	Undisturbed (NR)	0						
Undisturbe	ed 1	hin Wall	0						
Undisturbed Thin Wall (NR)									
Core S	San	nple	0						

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary												
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref				
Split Spoon	1.20	-	-	2	4	450	4	N=4 (1,1/1,1,1,1)	110.92				
Split Spoon	2.00	2.00	-	9	7	450	7	N=7 (4,5/4,1,1,1)	110.92				
Split Spoon	3.00	2.00	-	2	6	450	6	N=6 (1,1/1,2,2,1)	110.92				
Split Spoon	4.00	2.00	-	4	6	450	6	N=6 (2,2/2,1,2,1)	110.92				

SPT Hammer Ref.	Energy Ratio (%)
110.92	65

#### **Applicable to Cable Percussion Only**

Chise		Water	
Depth (m)	Duration (mins)		Depth (m)
		J	

Water Added						
Depth (m)	Litres					

### **Applicable to Rotary Only**

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				

Dynamic Sampling Runs						
Depth (m)	Diam (mm)	Recovery %	Remarks			
1.20 - 2.00	101	100	46 Blows			
2.00 - 3.00	101	100	128 Blows			
3.00 - 4.00	86	60	64 Blows			



Log Type

# Dynamic Sampling

Exploratory Hole Number

**WS17-16** 



**FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Depth (m) 0.00 - 1.20 1.20 - 4.45 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used Hand Tools Premier 110 Easting: 425271.97 558439.03 RPH Northing: Checked By: A1 Birtley to Coalhouse Name: ВН Elevation: 15.64mAOD Final Depth: 4.45m Approved By: Location: Tyne and Wear Logged By: JH Grid System: OSGB Start Date: 23/01/2018 SLJV 23/01/2018 Client: Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Samples & Testing Reduced Lev (mAOD) Water Level (m) Installation / Backfill Strata Description Legend Depth (m) (0.10) 0.10 MADE GROUND: Grass over TOPSOIL. 15.54 MADE GROUND: Firm dark brownish grey slightly sandy gravelly CLAY. Gravel is (0.40) subangular to subrounded fine to coarse coal sandstone and plastic fragments. 0.50 15.14 MADE GROUND: Light orangish brown gravelly fine to coarse SAND. Gravel is (0.10) 0.60 15.04 \angular to subrounded fine to coarse sandstone and mudstone.

MADE GROUND: Firm dark brown mottled orangish brown sligh 5 D

	Deptn (m				(mm) Recove			Standpipe	113	0.40 - 4.00	4.00	ridili
2005	rervations / Remarks Misc. Depth (m		From (m)		(mm) Recove		Inct	rument Deta			Depth (m) D	Diam
Obs	lervations / Remarks Misc.	Backfill		Dynami	Sampling	Runs			Inct	allations		-
10 -												10 -
9 -												9 -
8 -												8 —
7 -												7 —
6 -												6 -
5 -	EOH at 4.45m - Scheduled depth			5	11.13							5 —
4 -				(1.95) 4.45	11.19			3.90 4.00 - 4.45	15 D 16 D	HV 3.90m, (p)=60 k SPT(S) 4.00m, N=6 (	Pa (r)=10 kPa 2,2/2,1,2,1)	4-
3 -	Firm to stiff thinly laminated dark grey and brown slightly gravelly CLAY. ( subrounded to rounded fine to medium coal and mudstone.	Gravel is						2.90 3.00 3.00 - 3.45	12 D 13 ES 14 D	HV 2.90m, (p)=56 kl SPT(S) 3.00m, N=6 ( PID 3.00m = 30.0pp	Pa (r)=10 kPa 1,1/1,2,2,1)	3 -
2 -				(1.10)	13.14	86 2.00		2.00 - 2.45	10 D	SPT(S) 2.00m, N=7 (		2 -
-	MADE GROUND: Light orangish brown sandy angular to subangular fine sandstone coal limestone and brick GRAVEL.	to medium		1.40	14.24			1.40 - 2.00	8 B 9 ES	PID 1.60m = 16.0pp	m	-
1 -	sandy CLAY. Gravel is subangular to subrounded fine to medium coal and	d mudstone.		(0.80)				1.20 - 1.65	6 ES 7 D	SPT(S) 1.20m, N=4 (	1,1/1,1,1,1)	1 -
-	MADE GROUND: Firm dark brown mottled orangish brown slightly grave			(0.00)				0.80	50			_

Obs	ervations / Remarks	Misc.	Ва	ckfill		Dyr	namic San	npling Runs	5			Instal	lations		
			Depth (m)	Material	From (m)	To (m)	Diam (mm)	Recovery (%	) Remarks	Inst	rument Deta	ils	Resp. Zone	Depth (m)	Diam
		pa eq	0.00 - 0.20	Concrete	1.20	2.00	101	100	46 Blows		Standpipe		0.40 - 4.00	4.00	
		rte tall	0.20 - 0.40	Bentonite	2.00	3.00	101	100	128 Blows						
		un _ isu	0.40 - 4.00	Gravel	3.00	4.00	86	60	64 Blows						
		Sed Sed	4.00 - 4.45	Arisings											
		vater I sing U. I Point									(	Groundw	ater Strikes		
		Pi Q E								Strike (m) Ca	sing (m) Seale	ed (m) Rises	To (m) Time (m	n) Rem	narks

110.92 (65%)



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Sheet

Exploratory Hole Number

Log Type

Header

WS17-18

FINAL



3043	Location Details				Methodology & P	Scale:	1:50		
	Fasting:	424839.46 Northing: 55854		558544.99	From (m)	Method	Plant Used	Checked:	RPH
A1 Birtley to Coalhouse			Horamig.		0.00 - 0.80	Inspection Pit	Hand Tools		
	Elevation:	17.69mAOD	Final Depth:	1.27m	0.80 - 1.27	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	BH
Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	26/04/2018
SLIV	Orientation:	N/A	Inclination:	90°				End Date:	26/04/2018
	A1 Birtley to Coalhouse  Tyne and Wear	A1 Birtley to Coalhouse Easting: Tyne and Wear Logger:	A1 Birtley to Coalhouse         Easting:         424839.46           Elevation:         17.69mAOD           Logger:         GS	A1 Birtley to Coalhouse Easting: 424839.46 Northing: Elevation: 17.69mAOD Final Depth: Logger: GS Grid System:	A1 Birtley to Coalhouse         Easting:         424839.46         Northing:         558544.99           Elevation:         17.69mAOD         Final Depth:         1.27m           Tyne and Wear         Logger:         GS         Grid System:         OSGB	A1 Birtley to Coalhouse         Easting:         424839.46         Northing:         558544.99         From (m)           Elevation:         17.69mAOD         Final Depth:         1.27m           Tyne and Wear         Logger:         GS         Grid System:         OSGB	A1 Birtley to Coalhouse	A1 Birtley to Coalhouse  Easting: 424839.46 Northing: 558544.99 Elevation: 17.69mAOD Final Depth: 1.27m  Logger: GS Grid System: OSGB  From (m) Method Plant Used  0.00 - 0.80 Inspection Pit Hand Tools  0.80 - 1.27 Dynamic Sampling (Windowless) Modular Window Sampler	A1 Birtley to Coalhouse  Easting: 424839.46 Northing: 558544.99 Elevation: 17.69mAOD Final Depth: 1.27m  Logger: GS Grid System: OSGB  From (m) Method Plant Used 0.00 - 0.80 Inspection Pit Hand Tools Nodular Windowless) Modular Window Sampler Approved: Start Date:

Hole Diameter						
Depth (m)	Diam (mm)					

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes								
Strike	Casing	Sealed	Time	Rose To	Damania.				
(m)	(m)	(m)	(min)	(m)	Remarks				

	Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

4 Water

Geotechnical Samples

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 1.27	Arisings						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

PID	0	, ,
Hand Vane*	0	0% Recovery

Disturbed

Piston

Undisturbed

	Standard Penetration Test Summary								
Test Type	Depth (m)	Casing (m)	Water (m)		Main	Penetration Total (mm)		Reported Result	Hammer Ref
	()	()	()	5.5W3	5.5W3	rotal (IIIII)			

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

## Applicable to Cable Percussion Only

Chise	Chiselling									
Depth (m)	Duration (mins)		Depti							

Water Added									
Depth (m)	Litres								
	l								

#### **Applicable to Rotary Only**

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					

		Sampling	Runs	
Depth (m)	Diam (mm)	Recovery %	Remarks	
0.80 - 1.00	101	100	100 Blows	
		l		



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Dynamic
Sampling
& Probe
Sheet 1 of 1

Exploratory Hole Number

**WS17-18**FINAL



Location Details Methodology & Plant Project No: 3043 Scale: 1:50 
 Depth (m)
 Method
 Plant Used

 0.00 - 0.80
 Inspection Pit
 Hand Tools

 0.80 - 1.27
 Dynamic Sampling (Windowless)
 Modular Window Sampler
 Easting: 424839.46 558544.99 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Final Depth: 1.27m ВН 17.69mAOD

Location:	Tyne	and '	Wear						Logge	er:	GS	,,,	Grid Syste	m: OSG	в									Start Date:	26/04/2018
Client:	SLJV	,								itation:			Inclination											Finish Date:	26/04/2018
			lows / 10	00mm	1				- 1						Depth	(m)		Cas	sing Ø					Samples & Testing	
5	10 1					5 40	0 4	5		St	rata Descript	tion		Legend	(Stra	um	Reduced Le (mAOD)	evei (r	mm) oth (m)	Water Level (m)	Installation , Backfill	Depth (m)	Ref	Test Re	
				_	_						: Firm brov			******	×										
									gravelly	slightly Gravel in	sandy CLA' s subangula	Y. Sand	is fine to									0.20 0.20 - 1.00	1 D 7 B		
									subroun	ded fin	e to coarse	sandst	one.		(0.8	0)						0.30 0.50	2 ES 3 D		
									(EMBAN	IKMENT	FILL).											0.70	4 ES		
											: Brownish				0.8		16.89								
1		2:	27	1				$\overline{}$	slightly o	clayey s coarse sa	ubangular i andstone, b	to subro brick an	ounded id rare	******	1.0	0	16.69					1.00 1.00	5 D 6 ES		1
				30				ľ	coal GR	AVEL. Sa	ind is fine t				1.2		16.42				<i>4/124//</i>	1.20	8 ES		
								ľ	Dynamic	c Probin EOH at	g. :1.27m -	Refusa	/ al												
1 1																									
2 -																									2
] ]																									
] ]																									
3																									3
																									3
4																									4
] ]																									
1 1																									
5																									5
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6																									6
																									_
7																									7
8																									8
] ]																									
9 ]				-	$\dashv$			_																	9
10	-1																					1			10
Observations	/ Rema	ırks								Misc.	Equipme						Samplin			_		·		tallations	
							_			pa,		nic Probe T DPSH-B	Type:	From (m) 0.80	Depth Base 1.00	Diam (		overy (% 100		emarks 0 Blows	lı	strument Type	=	Resp. Zone D	epth (m) Diam
										o Groundwater Encountered Hole Not Cased O Monitoring Point Installed	Fall Height:	: Har	mmer Weight:												
										ver En Vot Cas ig Poin	<b>750mm</b> Cone Base Dia		64.0kg Rod Diam.									(	Ground	lwater Strikes	
										Hole I	50mm	urll.	35mm								Strike (m)			ses To (m) Time (min)	Remarks
										No Mo	Hammer Refere	ence & Ene	ergy Ratio (%)												



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Sheet

Exploratory Hole Number

WS17-18A

FINAL



Project No:	3043		Location [	Details			Methodology & P	lant	Scale:	1:50
Name:	A1 Birtley to Coalhouse	Easting:	424838.46	Northing:	558545.11	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	RPH
	•	Elevation:	17.69mAOD	Final Depth:	6.70m	1.20 - 5.00 5.00 - 6.70	Dynamic Sampling (Windowless)  Dynamic Probing	Madular Window Campler	Approved:	ВН
Location:	Tyne and Wear	Logger:	ALB	Grid System:	OSGB				Start Date:	28/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	28/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)

If Methodology includes Dynamic Sampling refer to Runs table for info.

Casing D	iameter
Depth (m)	Diam (mm)

Hole Not Cased

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Remarks					
(m)	(m)	(m)	(min)	(m)	Remarks					

No Groundwater Encountered

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 5.00	Bentonite				
5.00 - 6.70	Arisings				

In-Situ Tests					
PID	0				
Hand Vane*	0				
Standard Penetration Tests	0				

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary							
Enviror	Environmental Samples						
Soil	4	Water	0				
Geote	chnic	cal Samples					
Bulk 1 Large Bulk							
Disturbed	Disturbed 8 Disturbed (NR)						
Piston	Piston <b>0</b>						
Undisturbed	Undisturbed <b>0</b> Undisturbed (NR)						
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Cor	re San	nple	0				

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary									
Test Type						Penetration	N	Reported Result	Hammer Ref	
	(m)	(m)	(m)	Blows	Blows	Total (mm)				

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	elling		
Depth (m)	Duration (mins)		De
		j	

Water Added						
Depth (m)	Litres					

#### **Applicable to Rotary Only**

Drilling Flush								
Depth (m)	Flush Type	Flush Colour	Return %					

Dynamic Sampling Runs									
Depth (m)	Diam (mm)	Recovery %	Remarks						
1.20 - 2.00	76	100							
2.00 - 3.00	76	100							
3.00 - 4.00	66	90							
4.00 - 5.00	66	80							
	1								
	1								
	1.20 - 2.00 2.00 - 3.00 3.00 - 4.00	Depth (m) Diam (mm) 1.20 - 2.00 76 2.00 - 3.00 76 3.00 - 4.00 66	Depth (m)         Diam (mm)         Recovery %           1.20 - 2.00         76         100           2.00 - 3.00         76         100           3.00 - 4.00         66         90						



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Dynamic Sampling & Probe Sheet 1 of 1

Log Type

Exploratory Hole Number WS17-18A

FINAL



Methodology & Plant Location Details Scale: Project No: 3043 1:50 Depth (m) 0.00 - 1.20 1.20 - 5.00 5.00 - 6.70 Plant Used
Hand Tools
Modular Window Sampler
Modular Window Sampler Method 558545.11 RPH Easting: 424838.46 Northing: Checked By: Inspection Pit
Dynamic Sampling (Wind A1 Birtley to Coalhouse Name: Elevation: 17.69mAOD Final Depth: 6.70m Approved By: BH Tyne and Wear Location: Logger ALB Grid System: OSGB Start Date: 28/04/2018 Client SLJV Orientation: N/A Inclination: 90° Finish Date: 28/04/2018 Blows / 100mm Depth (m) Casing Ø Samples & Testing Reduced Lev Strata Description (Stratum Thickness) (mm) Depth (m) Level (m (mAOD) Depth (m) (0.10) 0.10 MADE GROUND: TOPSOIL. 17.59 MADE GROUND: Firm brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to (0.70)subrounded fine to coarse sandstone. (EMBANKMENT FILL). 0.80 16.89 MADE GROUND: Brownish red sandy slightly clayey subangular to subrounded (0.40) fine to coarse sandstone, brick and rare 1.20 16.49 coal GRAVEL. Sand is fine to coarse. MADE GROUND: Reddish brown silty very 1.50 1 D gravelly fine to coarse SAND. Gravel Is angular to subangular fine to coarse brick and sandstone. 2.00 2.00 - 2.45 2.00 - 2.90 (2.20) 6 ES 7 D 8 D 3.30 14.29 3.40 Possible MADE GROUND: Dark grey 9 D 3.50 slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone and siltstone. 4.00 4.00 - 4.45 10 ES (1.60)4.50 12 D 5.00 12.69 5.00 13 ES Dynamic Probing. (1.70) 10.99 EOH at 6.70m - Refusal 10 Observations / Remarks Misc Equipment Information Dynamic Sampling Runs Installations Diam (mm) Recovery (%)

76 100

76 100

66 90

66 80 Resp. Zone Depth (m) Diam Instrument Type DPSH-B Hammer Weight Fall Height: 750mm 64.0kg Groundwater Strikes Cone Base Diam Rod Diam Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks 50mm



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Header

Sheet

WS17-19

FINAL

Exploratory Hole Number



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50	
Name:	ame: A1 Birtley to Coalhouse	Easting:	425046.88	Northing:	558534.87	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	RPH
		Elevation:	20.39mAOD	Final Depth:	5.00m	1.20 - 5.00	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	ВН
Location:	Tyne and Wear	Logger:	RJ	Grid System:	OSGB				Start Date:	26/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	26/04/2018

Hole Diameter			
Depth (m)	Diam (mm)		

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes							
Strike	Strike Casing Sealed Time Rose To							
(m)	(m)	(m)	(min)	(m)	Remarks			

Installation / Instrument Details						
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)		

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill			
Depth (m)	Legend Code		
0.00 - 5.00	Bentonite		

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	4

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Standard Penetration Tests 4

Sample Summany						
	Sample Summary					
Enviroi	nmer	ntal Samples				
Soil	2	Water	0			
Geote	chnic	cal Samples				
Bulk 2 Large Bulk 0						
Disturbed	12	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Cor	re San	nple	0			

(NR) Indicates sample undertaken but with
0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type				Seating		Penetration	N	Reported Result	Hammer Ref
	(m)	(m)	(m)		Blows	Total (mm)		•	
Split Spoon	1.20	-	-	16	34	450	34	N=34 (7,9/7,10,9,8)	MOD 02
Split Spoon	2.00	-	-	11	24	450	24	N=24 (5,6/4,7,6,7)	MOD 02
Split Spoon	3.00	-	-	12	29	450	29	N=29 (6,6/8,8,7,6)	MOD 02
Split Spoon	4.00	-	-	16	32	450	32	N=32 (5,11/8,9,7,8)	MOD 02
ĺ									
l									
l									
				1					

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

#### **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	D

Water Added			
Depth (m)	Litres		

#### **Applicable to Rotary Only**

Drilling Flush					
Depth (m)	Flush Type	Flush Colour	Return %		
Depar (m)	Trush Type	i iusii coloui	Neturn 70		

Dynamic Sampling Runs							
Depth (m)	Diam (mm)	Recovery %	Remarks				
1.20 - 2.00	101	100					
2.00 - 3.00	76	70					
3.00 - 4.00	66	100					
4.00 - 5.00	66	100					



Name:

Location:

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**Dynamic** Sampling Exploratory Hole Number

**WS17-19 FINAL** 



Sheet 1 of 1

Log Type

GEO Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Plant Used Hand Tools Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 5.00 Method Inspection Pit Dynamic Sampling (Windowless) Easting: 425046.88 558534.87 Checked By: RPH Northing: A1 Birtley to Coalhouse Elevation: Final Depth: 5.00m Approved By: ВН 20.39mAOD Tyne and Wear Start Date: Grid System: OSGB 26/04/2018 Logged By: RJ

Loca	Tion: Tyne and Wear	Logged By:	RJ	Grid Syste	em: OSGB								Start Date: 26/04	1/2018
Clier	t: SLIV	Orientation:	N/A	Inclination	n: <b>90°</b>								Finish Date: 26/04	1/2018
						Depth (m)	Reduced Level	Casing Ø	Water	Installation /			Samples & Testing	
	Strata Description				Legend	(Stratum Thickness)	(mAOD)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	
	MADE GROUND: Medium dense brown sandy slig	htly clayey	angular to subro	ounded							0.00 - 0.60	1 B		
	fine to coarse brick, concrete, sandstone, siltstone	, mudstone	and coal GRAV	/EL.										
1 1	Sand is fine to coarse.										0.50	2 ES		-
	From 0.60m no clay.										0.70 - 1.20	3 B		-
-											0.70 - 1.20	3.0		
1 -														1 -
											1.20 - 1.65	4 D	SPT(S) 1.20m, N=34 (7,9/7,10,9,8)	
											1.30	5 D		-
-											1.50	6 ES		-
-											1.80	7 D		
]														
2 -											2.00 - 2.45	8 D	SPT(S) 2.00m, N=24 (5,6/4,7,6,7)	2 -
1											2.30	9 D		
_						(5.00)								-
1						(===,					2.70	10 D		
-											2.70	100		
3 -											3.00 - 3.45	11 D	SPT(S) 3.00m, N=29 (6,6/8,8,7,6)	3 -
	From 3.20m to 4.00m becomes clayey.					1								
1	om 5.2om to 4.0om becomes dayey.										3.40	12 D		
-														-
											3.80	13 D		-
]											4.00 - 4.45	13 D	CDT/C) 4 00m N 22 /F 44 /0 2 7 2	
4 -	From 4.00m becomes dense										4.00 - 4.45	14 D	SPT(S) 4.00m, N=32 (5,11/8,9,7,8)	4 -
											4.30	15 D		
														-
-														-
1											4.80	16 D		-
5 —	EOH at 5.00m - Schedu	led denth			********	5.00	15.39							5 -
]	EOTT at 0.00m - Ocheda	ica acptii												
4														-
1														
_ {														
6 -														6 -
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10		<del></del>	-											10 -
Obse	rvations / Remarks	М	isc. Back	fill		Dynami	c Sampling	Runs				Inst	tallations	-
		-	Depth (m)	Material		To (m) Diam	(mm) Recove	ry (%) R	emarks	Inst	rument Detai		Resp. Zone Depth (m)	Diam
		mtere	0.00 - 5.00	Bentonite	1.20 2.00	3.00	01 10 76 70	)						
		Encou	int/s )		3.00 4.00		56 10 56 10							
		water	Depth (m) 0.00 - 5.00  Hammer Ref & En										water Strikes	
iı		Apuno	mitori		]				-	Strike (m) Ca	sing (m) Seale	d (m) Ris	ses To (m) Time (min) Rema	rks
		No Gr	Hammer Ref & En											
			MOD 02	(65%)										



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Header

Sheet

Exploratory Hole Number

WS17-20

FINAL



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
Name	A4 Bintley to Coolley you	Easting:	425111.65	Northing:	558534.28	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Elevation:	20.94mAOD	Final Depth:	5.00m	0.00 - 1.20 1.20 - 5.00	Inspection Pit Dynamic Sampling (Windowless)	Hand Tools Modular Window Sampler	Approved:	ВН
Location:	Tyne and Wear	Logger:	RJ	Grid System:	OSGB				Start Date:	19/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°				End Date:	19/04/2018

Hole Diameter								
Depth (m)	Diam (mm)							

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Dama da					
(m)	(m)	(m)	(min)	(m)	Remarks					

	Installation / Instrument Details								
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

5 Water

Geotechnical Samples

11

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed

Piston

Undisturbed

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 5.00	Bentonite					

In-Situ Tests	
PID	5
Hand Vane*	3
Standard Penetration Tests	4

PID 5 (NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary								
Test Type				Seating		Penetration	N	Reported Result	Hammer Ref
	(m)	(m)	(m)	Blows		Total (mm)		·	
Split Spoon	1.20	-	-	10	22	450	22	N=22 (4,6/7,5,5,5)	MOD 02
Split Spoon	2.00	-	-	9	20	450	20	N=20 (4,5/4,6,4,6)	MOD 02
Split Spoon	3.00	-	-	9	11	450	11	N=11 (5,4/3,3,2,3)	MOD 02
Split Spoon	4.00	-	-	6	13	450	13	N=13 (3,3/3,4,3,3)	MOD 02

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

#### \* One count indicates an average reported result of 3 tests carried out at one depth where available.

#### **Applicable to Cable Percussion Only**

Chise	elling	V
Depth (m)	Duration (mins)	Depti

Water Added								
Depth (m) Litres								

# Applicable to Rotary Only Drilling Flush

Depth (m)	Flush Type	Flush Colour	Return %

			<u> </u>	<u>-</u>								
	Dynamic Sampling Runs											
Depth (m)	Diam (mm)	Recovery %	Remarks									
1.20 - 2.00	101	88	267 Blows									
2.00 - 3.00	86	75	91 Blows									
3.00 - 4.00	86	80	78 Blows									
4.00 - 5.00	76	80	59 Blows									



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Log Type **Dynamic** 

Sampling

WS17-20 **FINAL** 

Exploratory Hole Number

CENTRAL ALLIANCE GEO

Sheet 1 of 1

Scale: 1:50 Checked By: RPH ВН

Location Details Methodology & Plant Project No: 3043 Plant Used Hand Tools Modular Window Sampler Method Inspection Pit Dynamic Sampling (Windowless) Depth (m) 0.00 - 1.20 1.20 - 5.00 Easting: 425111.65 558534.28 Northing: Name: A1 Birtley to Coalhouse Final Depth: 5.00m Elevation: 20.94mAOD Approved By: Location: Tyne and Wear Start Date: 19/04/2018 Grid System: OSGB

Loca	ation: Tyne and Wear	Logged By:	RJ	Grid Syste	m: OSG	В							Start Date: 19/04	4/2018
Clier	nt: SLIV	Orientation:	N/A	Inclination	n: <b>90°</b>								Finish Date: 19/04	4/2018
	Charles Describing					Depth (m	Reduced Lev	Casing Ø	Water I	nstallation /			Samples & Testing	
	Strata Description	1			Legend	(Stratum Thickness	(m (OD)	(mm) Depth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Results	
-	MADE GROUND: Dark greyish brown very clayey			to							0.00 - 0.60	1 B		-
4	coarse brick, sandstone, concrete, siltstone, slag	and coal GRA	WEL.			(0.60)								-
4											0.40	2 ES	PID 0.40m = 9.2ppm	-
1	MADE GROUND: Medium dense brown sandy slig					0.60	20.34							-
1	fine to coarse brick, coal, sandstone, concrete an	d slag GRAVE	L. Sand is fine t	0							0.80 - 1.20 0.90	3 B 4 ES	PID 0.90m = 8.5ppm	-
1 -	coarse.													1 -
1						8					1.20 - 1.65	5 D	SPT(S) 1.20m, N=22 (4,6/7,5,5,5)	-
-						(1.90)					1.40 1.50	6 D 7 ES	PID 1.50m = 6.2ppm	_
1					<b></b>	(1.90)								-
						8					1.80	8 D		-
2											2.00 - 2.45	9 D	SPT(S) 2.00m, N=20 (4,5/4,6,4,6)	2 -
1					<b>*****</b>						2.30	10 D		
1						2.50	18.44				2.40	11 ES	PID 2.40m = 35.0ppm	_
1	MADE GROUND: Stiff medium strength dark grey CLAY. Gravel is subangular to subrounded fine to					×					2.70	12 D		-
-	slag and brick.	coarse muus	ione, siitstone,	coai,									HV 2.80m, (p)=32 kPa (r)=12 kPa	-
3 -	_										3.00 - 3.45	13 D	SPT(S) 3.00m, N=11 (5,4/3,3,2,3)	3 -
}											3.30	14 D		
]											3.50	15 ES	HV 3.50m, (p)=38 kPa (r)=10 kPa	-
-											3.70	16 D	PID 3.50m = 4.2ppm HV 3.70m, (p)=36 kPa (r)=10 kPa	=
}						(2.50)					3.70	130	5.70m, (p)-30 kra (1)-10 kra	
4 -											4.00 - 4.45	17 D	SPT(S) 4.00m, N=13 (3,3/3,4,3,3)	4 -
1											4.20	18 D		-
														-
7						8								-
-														-
5	EOH at 5.00m - Sched	uled denth			×××××	5.00	15.94				1			5 -
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Obs	ervations / Remarks	Mis		ill Material	From (m)		nic Sampling am (mm) Recov		Remarks	Inct	rument Deta		allations  Resp. Zone   Depth (m)	Diam
		ered		Bentonite	1.20 2.00	2.00 3.00	101 8	88 2	67 Blows 91 Blows	inst	rument Deta	113	nesp. zone   Deptn (m)	PIGITI
		ncount	t/s Ins		3.00 4.00	4.00 5.00	86 8	80	91 Blows 78 Blows 59 Blows					
		ater Enc Not Case			4.00	5.00	~   *	-			(	Ground	water Strikes	
		undwa Hole N	itorin						St	rike (m) Ca	sing (m) Seale	ed (m) Ris	es To (m) Time (min) Rema	arks
		2	8							1		1	1 1	

MOD 02 (65%)



Tel: +44 (0)1924 229889 Web: www.central-alliance.co.uk Log Type **Header** 

Sheet

Exploratory Hole Number

WS17-21

FINAL



Project No:	3043	Location Details					Methodology & P	Scale:	1:50	
Name:	A1 Birtley to Coalhouse	Easting:	424911.09	Northing:	558623.43	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	RPH
	•	Elevation:	12.08mAOD	Final Depth:	4.45m	1.20 - 4.45	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	08/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	08/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)
4.45	86

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes										
				Rose To	Remarks						
(m)	(m)	(m)	(min)	(m)							

	Installation / Instrument Details											
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)								
08/05/2018	Standpipe	4.00	1.00 - 4.00									

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

Backfill							
Depth (m)	Legend Code						
0.00 - 0.20	Concrete						
0.20 - 1.00	Bentonite						
1.00 - 4.00	Gravel						
4.00 - 4.45	Arisings						

	_					
In-Situ Tests						
PID	0					
Hand Vane*	8					
Standard Penetration Tests	4					

Hand Vane*	8					
Standard Penetration Tests						
* One count indicates an avo	_					

one depth where available.

Sample Summary								
Enviror	Environmental Samples							
Soil	5	Water	0					
Geote	chnic	cal Samples						
Bulk	5	Large Bulk	0					
Disturbed	9	Disturbed (NR)	1					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undistu	rbed 1	Thin Wall	0					
Undisturbe	ed Thi	n Wall (NR)	0					
Cor	e San	nple	0					

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary												
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref				
Split Spoon	1.20	-	Dry	2	5	450	5	N=5 (1,1/1,1,1,2)	MOD 02				
Split Spoon	2.00	-	Dry	0	3	450	3	N=3 (0,0/1,0,1,1)	MOD 02				
Split Spoon	3.00	-	Dry	0	0	450	0	N=0 (0,0/0,0,0,0)	MOD 02				
Split Spoon	4.00	-	Dry	2	2	450	2	N=2 (1,1/0,1,0,1)	MOD 02				

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

#### **Applicable to Cable Percussion Only**

Chise	elling
Depth (m)	Duration (mins)

Water	Added
Depth (m)	Litres

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %
Deptil (III)	Trush Type	i iusii coloui	NCturri 70

	Dynamic Sampling Runs									
Depth (m)	Diam (mm)	Recovery %	Remarks							
1.20 - 2.00	101	100	35 Blows							
2.00 - 3.00	86	50	25 Blows							
3.00 - 4.00	86	90	25 Blows							



Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Dynamic Sampling

Log Type

Exploratory Hole Number

**WS17-21** FINAL

CENTRAL ALLIANCE

Sheet 1 of 1 Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used Hand Tools Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 4.45 Easting: 424911.09 558623.43 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Elevation: 12.08mAOD Final Depth: 4.45m Approved By: ВН Location: Tyne and Wear Start Date: Grid System: OSGB 08/05/2018 Logged By: GS

Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Section   Sect		etion: Tyne and Wear	Logged By:	GS	Grid Syste		В								8/05/2018
MADE GROUNDS park brows growing sightly clavery fire to corese SAND with more core.  MADE GROUNDS park brows growing sightly clavery fire to corese SAND with more core.  MADE GROUNDS park brows growing with the core of the	Clien	nt: SLJV	Orientation:	N/A	Inclinatio	n: <b>90°</b>			_	1 1				1	8/05/2018
MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SECURITY  MMC CRICIANE TO SE		Strata	Description			Legend	(Stratu	m Keduced Lev	(mm)	Water Level (m)	Installation / Backfill	Do-sti ( )	_		
MADE CROUNDS Late Storm growing signify cape, the to coarse AND with reservoir coarse mediate and brisk. Colbes are substrained and sections.  1.25 FT. No. Resourcery  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 4.45m. Schedulined despth  E.OH and 6.45m. Schedulined despth  E.OH and 6.45m. Schedulined despth  E.OH and 6.45m. Schedulined despth  E.OH and 6.45m. Schedulined despth  E.OH and 6.45m. Schedulined despth  E.OH and 6.45m. Schedulined despth  E.OH and 6.45m. Schedulined despth  E.OH and 6.45m. Schedulined despth  E.OH and 6.45m. Schedulined despth  E.OH and 6.45m. Schedulined despth  E.OH a	1	MADE GROUND: TOPSOII				X//XX//		SS)	Depth (m)		91 193	Depth (m)	Ref	Test Results	
Television	]	MADE GROUND: Dark brown gravelly slig					0.10					0.20			-
MAGE GROUND: Soft transmit dark grey slightly sandy sity CLAY with rare ceal.  MAGE GROUND: Soft transmit dark grey slightly sandy sity CLAY with rare ceal.  SSFT-No Recovery  ASS T-NO Recovery  ASS T-NO Recovery  ASS T-NO Recovery  ASS T-NO Recovery  ASS T-NO Recovery  ASS T-NO Recovery  ASS T-NO Recovery  ASS T-NO Recovery  ASS T-NO Recovery  ASS T-NO	1				e ,							0.40 - 1.20	7 B		:
SARDO GROUND: Soft trouveled dark grey slightly sandy sity CLAY with rare coal.    1,0)	4				o medium										
MAE GROUND: Soil brownish dark grey slightly sandy sity CLAV with rare coul.     18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.0   18.	-	SAND. Gravel is subangular to subrounde													
SPT - No Recovery	4	coal and brick.					(1.40	)				1.00	6 ES		
SPT - No Recovery	1											1.20 - 1.65 1.20 - 1.80		SPT(S) 1.20m, N=5 (1,1/1,1,1	,2)
SPT - No Recovery	1											1.50	9 D		-
SPT - No Recovery	-						×	40.20							
## FOR Recovery   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,			y slightly sandy silty (	CLAY with rare	e coal.		1.80	10.28				2.00	12 55	SDT/S) 2.00m N=2 /0.0/1.0.1	1) 2 -
## FOR Recovery   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,	-	Sand is fine to coarse.									: 目:	2.00 - 2.45		HV 2.00m, (p)=2 kPa (r)=3 kP	'a
SPT - No Recovery	1														
### FOR Recovery   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10,450   10	1											2.50 - 3.00	14 B		-
### FOR Recovery   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10	1						<b>X</b>					2.60 - 3.00	14 B		
### Fig. 1	1						(2.20	)				3.00		SPT(S) 3.00m, N=0 (0,0/0,0,0	,0) 3 -
SPT - No Recovery	=											5.UU - 3.45	12 D	HV 3.00m, (p)=3 kPa (r)=0 kP	a .
SPT - No Recovery   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000   10,000	1											3.50	17 D	7 (9)	
SPT - No Recovery	=														-
SPT - No Recovery	=										: 昌:				
EOH at 4.45m - Scheduled depth  4.45 7.63  4.45 7.63  6.  7.  8.  9.  9.  9.  9.  9.  9.  9.  9.  9	†	SPT - No Recovery				XXXXXXX	4.00	8.08				4.00 - 4.45	19 D-NR	HV 4.00m, (p)=18 kPa (r)=3 k	Pa -
Secretarions / Remarks	1						(0.45	)						HV 4.00m, (p)=3 kPa (r)=0 kP HV 4.00m, (p)=6 kPa (r)=6 kP	a -
Servations / Remarks	}	EOH at 4.45m	- Scheduled depth				4.45	7.63			///XV//X				-
Servations / Remarks	1														
Servations / Remarks   Misc.   Blackfill   Dynamic Sampling Runs   Installations   Installat	1														5 <del>-</del>
Servations / Remarks   Misc.   Backfill   Dynamic Sampling Runs   Installations	1														-
Servations / Remarks   Misc.   Backfill   Dynamic Sampling Runs   Installations	1														
Servations / Remarks   Misc.   Backfill   Dynamic Sampling Runs   Installations	7														-
Servations / Remarks	1														
Servations / Remarks	1														6 -
Servations / Remarks	1														
Servations / Remarks	1														-
Servations / Remarks	-														
Servations / Remarks	]														7 -
Misc.   Backfill   Dynamic Sampling Runs   Installations   Instrument Details   Resp. Zone   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Done   Depth (m)   Diam   Done   Depth (m)   Done   Depth (m)   Done   Depth (m)   Done   Depth (m)   Done   Depth (m)   Done   Done   Depth (m)   Done   Done   Depth (m)   Done   Done   Depth (m)   Done   Done   Depth (m)   Done   Don	1														,
Misc.   Backfill   Dynamic Sampling Runs   Installations   Instrument Details   Resp. Zone   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Done   Depth (m)   Done   Depth (m)   Diam   Done   Depth (m)   Done   Done   Depth (m)   Done   Do	-														
Misc.   Backfill   Dynamic Sampling Runs   Installations   Instrument Details   Resp. Zone   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Done   Depth (m)   Diam   Done   Depth (m)   Done   Depth (m)   Done   Depth (m)   Done   Depth (m)   Done   Depth (m)   Done   Done   Depth (m)   Done   Done   Depth (m)   Done   Done   Depth (m)   Done   Done   Depth (m)   Done   Don	1														-
Misc.   Backfill   Dynamic Sampling Runs   Installations   Instrument Details   Resp. Zone   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Diam   Done   Depth (m)   Done   Depth (m)   Diam   Done   Depth (m)   Done   Depth (m)   Done   Depth (m)   Done   Depth (m)   Done   Depth (m)   Done   Done   Depth (m)   Done   Done   Depth (m)   Done   Done   Depth (m)   Done   Done   Depth (m)   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Done   Don	1														
Misc.   Backfil   Dynamic Sampling Runs   Installations	-														8 -
Misc.   Backfil   Dynamic Sampling Runs   Installations	]														
Misc.   Backfil   Dynamic Sampling Runs   Installations	1														-
Depth (m)   Material   From (m)   To (m)   Diam (mm)   Recovery (%)   Remarks   Installations   Strike (m)   Casing (m)   Saled (m)   Rises To (m)   Time (min)   Remarks   Remarks   Remarks   Remarks   Remarks   Remarks   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Resp. Zone   Depth (m)   Diam (mm)   Remarks   Depth (m)   Diam (mm)   Remarks   Depth (m)   Diam (mm)   Remarks   Depth (m)   Diam (mm)   Remarks   Depth (m)   Diam (mm)   Remarks   Depth (m)   Diam (mm)   Remarks   Depth (m)   Diam (mm)   Remarks   Depth (m)   Diam (mm)   Remarks   Depth (m)   Diam (mm)   Diam (mm)   Remarks   Depth (m)   Diam (mm)   Remarks   Depth (m)   Diam (mm)	-														
Misc.   Backfill   Dynamic Sampling Runs   Installations	=														
Misc.   Backfill   Dynamic Sampling Runs   Installations   Dynamic Sampling Runs   Installations   Depth (m)   Depth (m)   Donamic Sampling Runs   Instrument Details   Resp. Zone   Depth (m)   Diam (m)   Recovery (%)   Remarks   Strike (m) Casing (m) Sealed (m)   Resp. Zone   Depth (m)   Diam (m)   Recovery (%)   Remarks   Strike (m) Casing (m)   Sealed (m)   Resp. Zone   Depth (m)   Diam (m)   Diam (m)   Recovery (%)   Remarks   Strike (m) Casing (m)   Sealed (m)   Resp. Zone   Depth (m)   Diam (m)   Diam (m)   Remarks   Depth (m)   Diam (m)   Remarks   Depth (m)   Diam (m)   Diam (m)   Remarks   Depth (m)   Diam (m)	7														9 -
Misc.   Backfill   Dynamic Sampling Runs   Installations   Dynamic Sampling Runs   Installations   Depth (m)   Depth (m)   Donamic Sampling Runs   Instrument Details   Resp. Zone   Depth (m)   Diam (m)   Recovery (%)   Remarks   Strike (m) Casing (m) Sealed (m)   Resp. Zone   Depth (m)   Diam (m)   Recovery (%)   Remarks   Strike (m) Casing (m)   Sealed (m)   Resp. Zone   Depth (m)   Diam (m)   Diam (m)   Recovery (%)   Remarks   Strike (m) Casing (m)   Sealed (m)   Resp. Zone   Depth (m)   Diam (m)   Diam (m)   Remarks   Depth (m)   Diam (m)   Remarks   Depth (m)   Diam (m)   Diam (m)   Remarks   Depth (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)   Diam (m)	}														
Misc.   Backfill   Dynamic Sampling Runs   Installations	=														-
Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Dept	=														
Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Depth (m)   Dept	#														10 -
Depth (m)   Material   From (m)   To (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Recovery (%)   Remarks   Instrument Details   Resp. Zone   Depth (m)   Diam (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)   Depth (mm)	$\perp$	· /0 /	1		Leu								<u> </u>		-
No.   Concrete   1.20   Conc	bse	ervations / Remarks	M			From (m)				Remarks	Inst	rument Deta			n) Diam
1.00 - 4.00   Gravel   3.00   4.00   86   90   25 Blows			itered	0.00 - 0.20 0.20 - 1.00	Concrete Bentonite	1.20 2.00	2.00 3.00	101 1 86	00	35 Blows 25 Blows	50				
Groundwater Strikes  Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks  Hammer Ref. & Energy Ratio (%)			Encoun	1.00 - 4.00 4.00 - 4.45		3.00	4.00								
O W Hammer Ref & Energy Ratio (%)			ater	Poi							triko /\la				lomark-
			Ground		& Energy Ratio (%)						ытке (т) Са	sing (m) Seal	ea (m) Ris	es 10 (m) 1 me (min) R	vernarks
			No	<b>~</b>											



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Sheet

Exploratory Hole Number

WS17-22

**FINAL** 



Project No:	3043		Location I	Details			Meth	hodology & P	lant	Scale:	1:50
		Easting:	424920.01	Northing:	558572.01	From (m)	Meth	nod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	424520102	rior crimig.	550572.01	0.00 - 1.20	Inspection	on Pit	Hand Tools	Circoncu.	
		Elevation:	12.04mAOD	Final Depth:	4.00m	1.20 - 4.00	Dynamic Sampling	g (Windowless)	Handheld Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	RJ	Grid System:	OSGB					Start Date:	18/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°					End Date:	18/04/2018

Hole Di	ameter
Depth (m)	Diam (mm)
4.00	76

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes								
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks				
	, ,		,	, ,					

	Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)							
18/04/2018	Standpipe	4.00	1.00 - 4.00								

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

Backfill							
Depth (m)	Legend Code						
0.00 - 0.20	Concrete						
0.20 - 1.00	Bentonite						
1.00 - 4.00	Gravel						

In-Situ Tests	
PID	5
Hand Vane*	0
Standard Penetration Tests	3

one depth where available.

	Standard Perietration lests	3		
	* One count indicates an av	erage	2	
rep	orted result of 3 tests carrie	ed ou	t at	

Sample Summary								
Environmental Samples								
Soil 5 Water 0								
Geotechnical Samples								
Bulk	0	Large Bulk	0					
Disturbed	Disturbed 11 Disturbed (NR)							
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undistu	rbed 1	Thin Wall	0					
Undisturbed Thin Wall (NR) 0								
Co	re San	nple	0					

(NR) Indicates sample undertaken but with 0% Recovery

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows	Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	1.20	-	Dry	3	8	450	8	N=8 (1,2/2,1,3,2)	MOD 02
Split Spoon	2.00	-	Dry	4	10	450	10	N=10 (2,2/3,2,3,2)	MOD 02
Split Spoon	3.00	-	Dry	2	4	450	4	N=4 (1,1/1,1,1,1)	MOD 02

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

#### **Applicable to Cable Percussion Only**

Chise	elling	
Depth (m)	Duration (mins)	
		$ldsymbol{ld}}}}}}$

Water Added							
Depth (m)	Litres						

#### **Applicable to Rotary Only**

	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	Return %

П	Dynamic Sampling Runs								
li	Depth (m)		Recovery %	Remarks					
li	1.20 - 2.00	101	100	112 Blows					
П	2.00 - 3.00	86	70	53 Blows					
	3.00 - 4.00	76	90	30 Blows					
Н									
Н									
l									



Log Type

#### **Dynamic WS17-22**

Exploratory Hole Number



Sampling Tel +44(0)1924 229889 **FINAL** CENTRAL ALLIANCE Web: www.central-alliance.co.uk Sheet 1 of 1 GEO Location Details Methodology & Plant Scale: Project No: 3043 1:50 Depth (m) 0.00 - 1.20 1.20 - 4.00 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used Hand Tools Handheld Window Sampler Easting: 424920.01 558572.01 RPH Northing: Checked By: Name: A1 Birtley to Coalhouse Elevation: 12.04mAOD Final Depth: 4.00m Approved By: ВН Location: Tyne and Wear Logged By: RJ Grid System: OSGB Start Date: 18/04/2018 Client: 18/04/2018 SLJV Orientation: N/A Inclination: 90° Finish Date: Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Samples & Testing Reduced Lev (mAOD) Water Level (m) Installation / Backfill Strata Description Legend Depth (m) Test Results (0.10) 0.10 MADE GROUND: TOPSOIL. 11.94 0.20 0.20 PID 0.20m = 0.3ppm MADE GROUND: Orangish brown slightly sandy gravelly CLAY with medium cobble content. Gravel is subangular to subrounded fine to coarse of sandstone brick and concrete. Sand is fine to coarse. Cobbles are angular to subrounded fine to coarse of 0.50 3 D (1.10)sandstone.4 ES PID 0.70m = 0.2ppm

	Swater In Point						Strike (m) -			water Strikes	D	-l
	Page 1 0.00 - 0.20 Concrete 0.20 - 1.00 Bentonite 1.00 - 4.00 Gravel	2.00 3.00	3.00 4.00	86 76	70 90	53 Blows 30 Blows						
	Depth (m) Material	1.20	2.00	101	Recovery (%)	Remarks 112 Blows	Inst	rument Detai Standpipe	ls	Resp. Zone De 1.00 - 4.00	epth (m) 4.00	Diam
Ol	oservations / Remarks Misc. Backfill				npling Runs			,		tallations		
10												10 -
10	-											10
	1											1
	1											-
	1											-
9	1											9
	1											9 -
	]											]
	-											1
	1											1
8	<del>-</del>											8 -
	1											
	1											1
	1											-
												-
7	-											7 -
	]											]
	]											=
	1											1
	1 -											
6												6 -
	]											]
	1											-
												-
5												5 -
												]
	1											-
	- - -											-
4	EOH at 4.00m - Scheduled depth		4.0	8	,.04							4
4	-	<u> </u>	4.0	,   .	3.04			3.80	16 D			
	1	<u> </u>						2.00	16.5			=
	1	<u> </u>										1
	1	<u> </u>	(1.7	D)			I. → H. →	3.20	15 D	PID 3.00m = 4.2ppm		]
3	<u>-</u>		-1					3.00 - 3.45	14 D	SPT(S) 3.00m, N=4 (1 PID 3.00m = 4.2ppm	,1/1,1,1,1)	3 -
			-					2.70	13 ES			]
	very soft thinly laminated greyish brown CLAt.		-1					2.60	12 D			-
	- Very soft thinly laminated greyish brown CLAY.		2.3	0 9	).74			2.20	11 D			-
2	-							2.00 - 2.45	10 D	SPT(S) 2.00m, N=10 ( PID 2.00m = 3.0ppm	[2,2/3,2,3,2]	2 -
	-		(1.1	0)				1.70 1.80	8 D 9 ES			-
	subrounded fine to coarse sandstone, brick and dolomite GRAVEL. Sand is fine to coarse.							1.50	7 D			
	- MADE GROUND: Brownish black slightly sandy very clayey subangular to		1.2	0 10	0.84					SPT(S) 1.20m, N=8 (1	,2/2,1,3,2)	-
1								1.00 1.00	5 D 6 ES	PID 1.00m = 0.6ppm		1 -
	7		XXI					l	l			-

Observations / Remarks	Misc.	Ва	nckfill		Dynamic Sampling Runs Installations									
		Depth (m)	Material	From (m)	To (m)	Diam (mm)	Recovery (%)	Remarks	Ins	trument D	etails	Resp. Zone	Depth (m)	Diam
	pa.	0.00 - 0.20	Concrete	1.20	2.00	101	100	112 Blows		Standpipe	9	1.00 - 4.00	4.00	
	nte tall	0.20 - 1.00	Bentonite	2.00	3.00	86	70	53 Blows						
	pa lus	1.00 - 4.00	Gravel	3.00	4.00	76	90	30 Blows						
	₹ g E													
	Not Poin										Groundw	ater Strikes		
	ndw tole ring								Strike (m) C	asing (m)	Sealed (m) Rises	To (m) Time (r	nin) Ren	marks
	5 2 5	1	l	I	l	I								

MOD 02 (65%)



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Log Type Header

Sheet

Exploratory Hole Number

WS17-23 FINAL

										•	
Project No:	3043		Location [	Details			Met	thodology & P	lant	Scale:	1:50
		Easting:	<b>424917.00</b> Northing:	Northing:	thing: <b>558535.54</b>	From (m)	Met	hod	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	121327100	reor crimig.	330333.3-1	0.00 - 1.20	Inspect	tion Pit	Hand Tools	circoncu.	
		Elevation:	11.96mAOD	Final Depth:	1.20m					Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB					Start Date:	16/04/2018
Client:	SUV	Orientation:	N/A	Inclination:	90°					End Date:	16/04/2018

Hole Diameter								
Depth (m)	Diam (mm)							

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes								
				Rose To	Remarks				
(m)	(m)	(m)	(min)	(m)					

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 1.20	Arisings						

In-Situ Tests	
PID	3
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary							
Environmental Samples							
3	Water	0					
Geotechnical Samples							
1	Large Bulk	0					
2	Disturbed (NR)	0					
0	Piston (NR)	0					
0	Undisturbed (NR)						
urbed '	Thin Wall	0					
Undisturbed Thin Wall (NR) 0							
re San	nple	0					
	3 echnic 1 2 0 ourbed	3 Water echnical Samples  1 Large Bulk 2 Disturbed (NR) 0 Piston (NR) 0 Undisturbed (NR) urbed Thin Wall					

(NR) Indicates sample undertaken but with

	Standard Penetration Test Summary								
Test Type						Penetration	N	Reported Result	Hammer Ref
71.	(m)	(m)	(m)	Blows	Blows	Total (mm)	_	.,	

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chise	elling		Water Added			
Depth (m)	Duration (mins)		Depth (m)	Litr		
		, ,				

Ш	Drilling Flush						
П	Depth (m)	Flush Type	Flush Colour	Return %	ı		
Ш					ı		
Ш					ı		
Ш					ı		
Ш					ı		
Ш					ı		
Ш					ı		
Ш					ı		
Ш					ı		
Ш					ı		
Ш					ı		
Ш					ı		
Ш					ı		
Ш					ı		
Ш					ı		
					1		
					1		
					1		

**Applicable to Rotary Only** 

Applicable to Dynamic Sampling Only									
	Dynamic Sampling Runs								
Depth (m)	Diam (mm)	Recovery %	Remarks	П					
				П					
				П					
				П					



Project No:

Name:

Location:

3043

A1 Birtley to Coalhouse

Tyne and Wear

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Northing:

Final Depth:

Location Details

424917.00

11.96mAOD

Easting:

Elevation:

Web: www.central-alliance.co.uk

558535.54

1.20m

**Dynamic** Sampling

Depth (m) 0.00 - 1.20

Log Type

Exploratory Hole Number

WS17-23



Sheet 1 of 1

**FINAL** GEO Methodology & Plant Scale: 1:50 Method Plant Used RPH Checked By: Approved By: BH

Logged By: GS Grid System: OSGB Start Date: 16/04/2018 Client: SLIV Orientation: N/A Inclination: 90° Finish Date: 16/04/2018 Depth (m) (Stratum Thickness) Casing Ø (mm) Depth (m) Samples & Testing educed Lev (mAOD) Installation , Backfill Strata Description Depth (m) (0.10) 0.10 MADE GROUND: TOPSOIL. 11.86 0.20 1 ES PID 0.20m = 0.4ppm MADE GROUND: Soft dark brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, limestone and brick. (0.60)0.50 0.70 11.26 PID 0.70m = 0.2ppm 0.70 0.70 - 1.20 MADE GROUND: Brown slightly sandy slightly clayey subangular to subrounded fine to coarse sandstone and siltstone GRAVEL. Sand is fine to coarse. (0.50) PID 1.00m = 0.2ppm 1.20 10.76 EOH at 1.20m - Service Encountered 10 Observations / Remarks Misc Dynamic Sampling Runs Installations | Depth (m) | Material | From (m) | To (m) | Diam (mm) | Recovery (%) | | Remarks Instrument Details Resp. Zone Depth (m) Diam Groundwater Strikes Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks



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Header

Sheet

Exploratory Hole Number

WS17-23A

**FINAL** 



Project No:	3043		Location I	Details			Methodology & P	lant	Scale:	1:50
Name:	A1 Birtley to Coalhouse	Easting:	424916.09	Northing:	558535.86	From (m) 0.00 - 1.20	Method Inspection Pit	Plant Used Hand Tools	Checked:	RPH
	•	Elevation:	11.96mAOD	Final Depth:	4.00m	1.20 - 4.45	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	ВН
Location:	Tyne and Wear	Logger:	GS+RJ	Grid System:	OSGB				Start Date:	16/04/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	16/04/2018

Hole Diameter						
Depth (m)	Diam (mm)					

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes								
Strike	Casing	Sealed	Time	Rose To	Damania.				
(m)	(m)	(m)	(min)	(m)	Remarks				

Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						
16/04/2018	Standpipe	4.00	1.00 - 4.00							

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Disturbed

Piston

Undisturbed

Environmental Samples

4 Water

Geotechnical Samples

0

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

Backfill					
Depth (m)	Legend Code				
0.00 - 1.00	Bentonite				
1.00 - 4.00	Gravel				

In-Situ Tests	
PID	4
Hand Vane*	0
Standard Penetration Tests	3

Hand Vane*	0	0% Recovery
	_	

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	1.20	-	-	3	10	450	10	N=10 (1,2/2,3,3,2)	MOD 02
Split Spoon	2.00	-	-	3	4	450	4	N=4 (2,1/1,1,1,1)	MOD 02
Split Spoon	3.00	-	-	2	4	450	4	N=4 (1,1/1,1,1,1)	MOD 02

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

#### \* One count indicates an average reported result of 3 tests carried out at one depth where available.

Applicable	to Cable	Percussi	on On	ly
------------	----------	----------	-------	----

Chise	elling		Water Added					
Depth (m)	Duration (mins)		Depth (m)	Litres				
		•						

#### **Applicable to Rotary Only**

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				

-				
		Dynamic	Sampling	Runs
	Depth (m)	Diam (mm)	Recovery %	Remarks
	1.20 - 2.00	101	75	83 Blows
	2.00 - 3.00	86	95	49 Blows
	3.00 - 4.00	76	80	33 Blows
L				



Project No:

Name:

3043

A1 Birtley to Coalhouse

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889 Web: www.central-alliance.co.uk

Northing:

558535.86

Location Details

424916.09

Easting:

**Dynamic** Sampling

Log Type

Exploratory Hole Number

**WS17-23A FINAL** 

CENTRAL ALLIANCE

Sheet 1 of 1

GEO Methodology & Plant Scale: 1:50 
 Depth (m)
 Method
 Plant Used

 0.00 - 1.20
 Inspection Pit
 Hand Tools

 1.20 - 4.45
 Dynamic Sampling (Windowless)
 Modular Window Sampler
 Checked By: RPH

Location	: Tyne and Wear		11.96mAOD	Final Dept			1.20 - 4.45		mic Samplir	ng (Windowle	ss) Modu	ular Window Sa	mpler		ВН
	•		GS+RJ	Grid Syste		3									4/2018
Client:	SLIV	Orientation: N	N/A	Inclination	n: <b>90°</b>	Depth	(m)	1	Casing Ø					Finish Date: 16/04 Samples & Testing	4/2018
	Strata Description				Legend	(Strat Thickn	um Kedud	AOD)	(mm) Depth (m)	Water Level (m)	Installation / Backfill	Depth (m)	Ref	Test Results	
M	ADE GROUND: TOPSOIL.					(0.10	0) 1:	1.86				Depair (iii)	1161		
M	ADE GROUND: Soft brown slightly gravelly slight arse. Gravel is subangular to subrounded fine to	ly sandy CLAY	. Sand is fine	to		0.10	,					0.20 0.20	1 D 2 ES	PID 0.20m = 0.4ppm	-
-	arse. Graver is subangular to subrounded fille to	Codise salius	storie ariu brit	LK.								0.50	3 D		-
-						(1.10	0)					0.70 0.70 - 1.20	4 ES 7 B	PID 0.70m = 0.6ppm	
1												1.00	5 D	PID 1.00m = 0.4ppm	1 -
M	ADE GROUND: Brown sandy clayey subangular t	o rounded fin	e to coarse			1.20		0.76				1.00	6 ES	SPT(S) 1.20m, N=10 (1,2/2,3,3,2)	-
saı	ndstone and roadstone GRAVEL. Sand is fine to	coarse.		/		(0.20		0.56				1.30	7 D		_
- So	ft extremely low strength thinly laminated brow	nish grey CLA	AY.									1.70	8 D		-
1												1.80	14 ES	PID 1.80m = 2.0ppm	
2 =						_						2.00 - 2.45	9 D	SPT(S) 2.00m, N=4 (2,1/1,1,1,1)	2 -
-						-						2.40	10 D		
-						7									-
1						(2.60	0)								-
3 -					<u> </u>	=						3.00 - 3.45	11 D	SPT(S) 3.00m, N=4 (1,1/1,1,1,1)	3 -
]					<u> </u>	=									
4					<u> </u>	=									_
‡					<u> </u>	=									-
. 1					<u></u>	4.00	,   ,	.96				3.90 - 4.45	13 D		-
4	EOH at 4.00m - Schedu	led depth				4.00	)   <i>'</i>	.96							4 -
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10						1									10 -
Observat	tions / Remarks	Misc.	. Back	fill		Dyn	amic Sam	pling Ru	ıns				Inst	tallations	
		pa.	Depth (m) 0.00 - 1.00	Material Bentonite	From (m) 1.20	2.00	Diam (mm) 101	75	8:	emarks 3 Blows	Insti	rument Detai Standpipe	ils	Resp. Zone Depth (m) 1.00 - 4.00 4.00	Diam
		water Encountered e Not Cased a Point/s Installed	1.00 - 4.00	Gravel	2.00 3.00	3.00 4.00	86 76	95 80	49	9 Blows 3 Blows					
		ater En Vot Cas Point/s								}		(	Ground	water Strikes	
		Vo Groundwe Hole N Monitoring I								ļ	Strike (m) Ca	sing (m) Seale	ed (m) Ris	ses To (m) Time (min) Rema	arks
		No Gr Mani	Hammer Ref & En												
			14100 02	(00/0)											



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Header

Sheet

Exploratory Hole Number

WS17-24

**FINAL** 



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50	
Name:	A1 Birtley to Coalhouse	Easting:	<b>424428.22</b> Northing:	Northing:	558606.47	From (m)	Method	Plant Used	Checked:	RPH
						0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	17.82mAOD	Final Depth:	3.00m	1.20 - 3.00	Dynamic Sampling (Windowless)		Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	18/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/05/2018

Hole Diameter							
Depth (m)	Diam (mm)						

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes							
Strike	Casing	Sealed	Time	Rose To	Dama da			
(m)	(m)	(m)	(min)	(m)	Remarks			

Installation / Instrument Details									
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)					

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill						
Depth (m)	Legend Code					
0.00 - 3.00	Bentonite					
1						

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Standard Penetration Tests 0

Samula Summanu								
	Sample Summary							
Enviror	nmer	ntal Samples						
Soil	5	Water	0					
Geotechnical Samples								
Bulk	2	Large Bulk	0					
Disturbed 6 Disturbed (NR)								
Piston	Piston <b>0</b> Piston (NR)							
Undisturbed 0 Undisturbed (NR)								
Undisturbed Thin Wall								
Undisturbed Thin Wall (NR)								
Cor	e San	nple	0					

(NR) Indicates sample undertaken but with 0% Recovery

Added Litres

	Standard Penetration Test Summary									
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref	

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

#### **Applicable to Cable Percussion Only**

Chiselling		Water
Depth (m) Duration	(mins)	Depth (m)

Ар	plicable to	Rotary Only	/
	Drilling	Flush	

Drilling Flush						
Depth (m)	Flush Type	Flush Colour	Return %			

	Applicable to Dynamic Sampling Only						
	Dynamic Sampling Runs						
-	Depth (m)	Diam (mm)	Recovery %	Remarks			



Project No:

3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

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Location Details

Log Type

# Dynamic Sampling

Sheet 1 of 1

Exploratory Hole Number

WS17-24

Methodology & Plant

CENTRAL ALLIANCE

GEO

1:50

FINAL CEN

Scale:

Depth (m) 0.00 - 1.20 1.20 - 3.00 Method Plant Used Easting: 424428.22 Northing: 558606.47 Checked By: RPH A1 Birtley to Coalhouse Name: Elevation: 17.82mAOD Final Depth: 3.00m Approved By: BH Location: Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 18/05/2018 Client SLIV Orientation N/A Inclination: 90° Finish Date: 18/05/2018 Depth (m) (Stratum Thickness) Casing Ø Samples & Testing Reduced Lev (mAOD) Water Level (m) Installation , Backfill Strata Description (mm) Depth (m Depth (m) MADE GROUND: Firm brown slightly sandy gravelly CLAY. Sand is fine to coarse. 0.10 - 1.20 (0.35) 0.20 1 D 2 ES Gravel is angular to subangular fine to coarse sandstone, concrete, siltstone and 0.35 (0.15) 0.50 17.47 brick. MADE GROUND: Brownish yellow sandy slightly clayey subangular to subrounded 17.32 0.50 3 D fine to coarse sandstone GRAVEL and COBBLES. Sand is fine to coarse. 4 ES  $\label{eq:made_ground} \textbf{MADE GROUND: Soft to firm reddish brown sandy very gravelly CLAY. Sand is fine to} \\$ coarse. Gravel is angular to subangular fine to coarse sandstone, brick and siltstone. (1.40) 1.50 8 D 1.90 15.92 MADE GROUND: Firm to stiff greyish brown gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone, brick and coal. (1.10) 2.50 12 D 13 ES 3.00 14.82 EOH at 3.00m - Scheduled Depth 10 Observations / Remarks Misc Dynamic Sampling Runs Installations Depth (m) Material From (m) To (m) Diam (mm) Recovery (%) Instrument Details Resp. Zone Depth (m) Diam Groundwater Strikes Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks



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Log Type

Header

Exploratory Hole Number

WS17-25 **FINAL** 

			web. www	.central-allia	nice.co.uk				0	EO
Project No:	3043	Location Details				Methodology & Plant			1:50	
Name: A1 Bi		Easting:	424411.17	Northing:	558610.86 F	From (m)	Method	Plant Used	Checked:	RPH
	A1 Birtley to Coalhouse	Lusting. 424411.17	Northing.	330010.00	0.00 - 1.20	Inspection Pit	Hand Tools	CITCORCU.	14111	
		Elevation:	18.16mAOD	Final Depth:	1.70m	1.20 - 1.70	Dynamic Sampling (Windowless)	Handheld Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	31/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	31/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)

Casing Diameter Depth (m) Diam (mm

	Groundwater Strikes						
Strike	Casing	Sealed	Time	Rose To	Remarks		
(m)	(m)	(m)	(min)	(m)	Remarks		

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill					
Depth (m)	Legend Code				
0.00 - 1.70	Bentonite				

In-Situ Tests	
PID	3
Hand Vane*	0
Standard Penetration Tests	0

reported result of 3 tests carried out at

Standard Penetration Tests	0
* One count indicator an ave	

Sample Summary						
Environ	Environmental Samples					
Soil	3	Water	0			
Geote	chnic	cal Samples				
Bulk	2	Large Bulk	0			
Disturbed	4	Disturbed (NR)	0			
Piston	0	Piston (NR)	0			
Undisturbed	0	Undisturbed (NR)	0			
Undisturbed Thin Wall						
Undisturbed Thin Wall (NR)						
Con	e San	nple	0			

(NR) Indicates sample undertaken but with

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chise	elling	Water	Added
Depth (m)	Duration (mins)	Depth (m)	Litres

Ap	plicable to	Rotary Onl	y
	Drilling	Flush	
Depth (m)	Flush Type	Flush Colour	R

Drilling Flush									
Depth (m)	Flush Type	Flush Colour	Return %						

Applicable to Dynamic Sampling Only											
Dynamic Sampling Runs											
Depth (m)	Diam (mm)	Recovery %	Remarks								
1.20 - 1.70		100									



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Sheet 1 of 1

Log Type

Dynamic

Sampling

Exploratory Hole Number WS17-25

FINAL



Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used Hand Tools Handheld Window Sampler Depth (m) 0.00 - 1.20 1.20 - 1.70 Easting: 424411.17 558610.86 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Elevation: 18.16mAOD Final Depth: 1.70m Approved By: ВН Location: Tyne and Wear Start Date: Grid System: OSGB 31/05/2018 Logged By: GS

Loca	tion: Tyne and Wear	Logged By:	GS	Grid Syste	m: OSGB								Start Date:	31/05/2018
Clier	nt: SLJV	Orientation:	N/A	Inclinatio	n: <b>90°</b>								Finish Date:	31/05/2018
		•				Depth (m)		Casing Ø					Samples & Testing	
	Strata Description				Legend	(Stratum Thickness)	Reduced Level (mAOD)	(mm) Depth (m)	Water Level (m)	Installation / Backfill	Depth (m)	Ref	Test Resul	rs
	MADE GROUND: Soft brown gravelly sandy CLAY. S	and is fine t	o coarco Grav	ol ic	******	1						-	TEST NESON	
1 7	subangular to subrounded fine to medium of sand				<b>*******</b>	(0.25) 0.25	17.91				0.10 - 1.20 0.20	7 B 1 D		1
[	MADE GROUND: Brownish yellow gravelly slightly					(0.15)	17.76				0.30	2 ES	PID 0.30m = 208.0ppm	-
1 1	\is subangular to subrounded fine to coarse of sand			/		0.40	17.70				0.50	3 D		-
1 1	MADE GROUND: Soft yellowish brown gravelly ver		Y with mediur	n cobble	<b>******</b>	(0.70)					0.70	4 ES	PID 0.70m = 112.0ppm	1
	content. Gravel is subangular to subrounded fine t				<b>******</b>	(0.70)								
1 -	and sandstone. Cobbles are subangular to subrour					8					1.00	5 D	PID 1.00m = 158.0ppm	1 -
1 1	Sand is fine to coarse.			/		1.10	17.06				1.00 1.20 - 1.70	6 ES 9 B		1
-	MADE GROUND: Brownish red very sandy clayey s	ubangular f	ine to coarse b	orick,	<b>*******</b>	(0.50)						*-		-
1 7	sandstone mudstone and coal GRAVEL. Sand is fine	e to coarse.				(0.60)					1.50	8 D		4
1 1					**************************************	1.70	16.46							
-	EOH at 1.70m - Ref	fusal				1.70	20.10							-
2 -														2 -
1 1														
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_	ervations / Remarks	Mis					ic Sampling						tallations	
	ting undertaken in confined environment potentially near exhaust fur advised the Engineer that these results can not be relied upon.	mes. CA	Depth (m) 0.00 - 1.70	Material Bentonite	1.20	To (m) Dia	m (mm) Recove		emarks	Inst	rument Deta	IIS	Resp. Zone Dep	oth (m) Diam
iiave	advised the Engineer that these results can not be relied upon.	unter	Insta											
		Enco	int/s											
		undwater Encountered	ng Po									Ground	dwater Strikes	
		undw Hole	itori							strike (m) Ca	sing (m) Seale	ed (m) Ri	ses To (m) Time (min)	Remarks
		Gro	Hammer Ref & E	nergy Ratio (%)										
		No	No											
		I												



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Header

Sheet

Exploratory Hole Number

WS17-26

**FINAL** 



Project No:	3043	Location Details					Methodology & P	Scale:	1:50	
		Easting:	424381.17	Northing: <b>558619.13</b>		From (m)	Method	Plant Used	Checked:	RPH
Name: A1 Birtley to Coalhouse						0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	19.04mAOD	Final Depth:	1.80m	1.20 - 1.80	Dynamic Sampling (Windowless)	Handheld Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	18/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)
1.80	76

If Methodology includes Dynamic Sampling refer to Runs table for info.

Casing Diameter								
Depth (m)	Diam (mm)							

**Hole Not Cased** 

	Groundwater Strikes											
Strike	Casing	Sealed	Time	Rose To	Domorka							
(m)	(m)	(m)	(min)	(m)	Remarks							

No Groundwater Encountered

Installation / Instrument Details											
Date	Instrument Details	To (m)	To (m) Resp. Zone (m)								

No Monitoring Point/s Installed

Backfill								
Depth (m)	Legend Code							
0.00 - 1.80	Bentonite							

In-Situ Tests					
PID	0				
Hand Vane*	0				
Standard Penetration Tests	0				

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Sample Summary								
Environmental Samples								
Soil <b>3</b> Water								
Geotechnical Samples								
Bulk	1	Large Bulk	0					
Disturbed	5	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undisturbed Thin Wall								
Undisturbed Thin Wall (NR)								
Core Sample								

(NR) Indicates sample undertaken but with 0% Recovery

	Standard Penetration Test Summary												
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref				
	(111)	(111)	(111)	biows	biows	iotai (iiiiii)							

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chise			
Depth (m)	Duration (mins)		De
	I	1	

Water Added							
Depth (m) Litres							

# **Applicable to Rotary Only**

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				

# **Applicable to Dynamic Sampling Only**

Dynamic Sampling Runs									
Depth (m)	Diam (mm)	Recovery %	Remarks						
1.20 - 1.80	76	100							



Project No:

Name:

3043

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

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Location Details

Log Type

# **Dynamic** Sampling

Sheet 1 of 1

Exploratory Hole Number

WS17-26

FINAL

Methodology & Plant



1:50

Scale:

Nan	ne: A1 Birtley to Coalhouse	Easting: Elevation:	424381.17 19.04mAOD	Northing: Final Dept	55861: h: <b>1.80m</b>		Depth ( 0.00 - 1 1.20 - 1	.20	Met	tion Pit		Plant Used Hand Tools neld Window Sa	mpler	Checked By: Approved By:	RPH BH	
Loca	ation: Tyne and Wear	Logged By:	GS	Grid Syste										Start Date:	18/05/20	)18
Clie	nt: SLJV	Orientation:	N/A	Inclination	n: <b>90°</b>									Finish Date:	18/05/20	
	Strata Description				Legend	Depth (Stratu	ım Red	duced Level (mAOD)	Casing Ø (mm)	Water Level (m)	Installation / Backfill			Samples & Testing		_
	MADE GROUND: Soft to firm black brown slightly s	sandy grave	Ilv CI AV Sand is	fine to	********	Thickne	:55)	(IIIAOD)	Depth (m)	Level (III)	DdCKIIII	Depth (m) 0.10 - 1.20	Ref 7 B	Test Resul	s	L
-	coarse. Gravel is subangular to angular fine to coa					0.25		18.79				0.10 - 1.20 0.20 0.30	1 D 2 ES			-
-	\and rare coal.  MADE GROUND: Brownish yellow sandy slightly cla	avev subana	gular to subrour	nded		(0.15 0.40	)	18.64				0.50	3 D			-
-	fine to coarse sandstone GRAVEL with medium col	bble conten										0.70	4 ES			-
1 -	coarse. Cobbles are angular to rounded sandstone MADE GROUND: Soft to firm reddish brown gravel		AY with mediun	n								1.00	5 D			1 -
-	cobble content. Gravel is subangular to angular fin	e to coarse	sandstone brick	k		(1.40	))					1.00	6 ES			-
-	concrete and rare siltstone. Sand is fine to coarse. sandstone and brick.	Copples are	e angular to rou	nueu								1.50	8 D			-
-												1.70	9 D			-
-	EOH at 1.80m - Ref	fusal			^^^	1.80	'	17.24								-
2 -																2 -
-																-
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Obs	ervations / Remarks	Mi		ill Material	From (m)			ampling   m) Recove		emarks	Inst	rument Detai		allations  Resp. Zone Dep	oth (m) Di	am
		ntered		Bentonite	1.20	1.80	76	10						20, 1000	` / "	
		r Encoui	oint/s li											1		
		ndwatei ole Not	toring P							į	Strike (m) Ca			water Strikes es To (m) Time (min)	Remarks	
		Vo Grou	Hammer Ref & End	ergy Ratio (%)												



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Log Type

Header

Sheet

WS17-27

**FINAL** 

Exploratory Hole Number



Project No:	3043		Location [	Details			Methodology & P	lant	Scale:	1:50
		Easting:	424356.68	Northing:	558627.04	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	42.1550.00	reorening.	330027104	0.00 - 1.20	Inspection Pit	Hand Tools	onconcu.	
		Elevation:	19.80mAOD	Final Depth:	3.00m	1.20 - 3.00	Dynamic Sampling (Windowless)		Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	18/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/05/2018

Hole Diameter							
Depth (m)	Diam (mm)						

**Casing Diameter** Depth (m) Diam (mm

	Groundwater Strikes										
Strike (m)	Casing (m)	Sealed (m)	Time (min)	Rose To (m)	Remarks						
(111)	(111)	(111)	()	(111)							

Installation / Instrument Details										
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)						

If Methodology includes Dynamic Sampling refer to Runs table for info.

**Hole Not Cased** 

Sample Summary Environmental Samples 4 Geotechnical Samples

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Large Bulk Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill								
Depth (m) Legend Code								
0.00 - 3.00	Bentonite							

In-Situ Tests					
PID	0				
Hand Vane*	0				
Standard Penetration Tests	0				

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

Disturbed

Piston

Undisturbed

Standard Penetration Test Summary									
Test Type	Depth (m)	Casing (m)	Water (m)		Main Blows	Penetration Total (mm)	N	Reported Result	Hammer Ref

SPT Hammer Ref.	Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chiselling						
Depth (m)	Duration (mins)					

Water Added									
Depth (m)	Litres								

# **Applicable to Rotary Only**

Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %				

Applicable to Dynamic Sampling Only											
	Dynamic Sampling Runs										
Depth (m)	Diam (mm)	Recovery %	Remarks								

<sup>(</sup>NR) Indicates sample undertaken but with



Project No:

Name:

Location:

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Log Type

# Dynamic Sampling

WS17-27

Exploratory Hole Number



Sheet 1 of 1 Methodology & Plant Location Details 3043 Scale: 1:50 Depth (m) 0.00 - 1.20 1.20 - 3.00 Method Plant Used Easting: 424356.68 Northing: 558627.04 Checked By: RPH A1 Birtley to Coalhouse Elevation: 19.80mAOD Final Depth: 3.00m Approved By: BH Tyne and Wear Logged By: GS Grid System: OSGB Start Date: 18/05/2018

Client SLIV Orientation N/A Inclination: 90° Finish Date: 18/05/2018 Depth (m) (Stratum Thickness) Casing Ø Samples & Testing educed Lev (mAOD) Water Level (m) Installation , Backfill Strata Description Legend (mm) Depth (m Depth (m) MADE GROUND: Soft to firm brownish black slightly sandy gravelly CLAY. Sand is fine 0.10 - 1.20 (0.30) 0.20 to coarse. Gravel is angular to subangular fine to coarse sandstone, brick, concrete 0.30 (0.15) 19.50 2 ES and rare coal 19.35 0.50 3 D MADE GROUND: Brownish yellow sandy clayey subangular to subrounded fine to 0.45 coarse sandstone GRAVEL and COBBLES. Sand is fine to coarse. 4 ES  $\label{eq:made_ground} \textbf{MADE GROUND: Soft to firm reddish brown gravelly sandy CLAY with low cobble}$ (1.05) content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone, brick, concrete and rare siltstone. Cobbles are subangular sandstone. 1.50 8 D MADE GROUND: Firm laminated greyish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse sandstone and 2.10 17.70 Firm to stiff laminated orangish grey CLAY. 2.50 12 D (0.90) 13 D 2.90 3.00 16.80 EOH at 3.00m - Scheduled Depth 10 Observations / Remarks Misc Dynamic Sampling Runs Installations From (m) To (m) Diam (mm) Recovery (%) Instrument Details Resp. Zone Depth (m) Diam Groundwater Strikes Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks



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Log Type

Header

Exploratory Hole Number

**WS17-28** 

**FINAL** 



Project No:	3043	Location Details			Methodology & Plant			Scale:	1:50	
Name	A4 Distance Coally area	Easting:	424339.89	Northing:	558633.29	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse					0.00 - 1.20 1.20 - 2.00	Inspection Pit Dynamic Sampling (Windowless)	Hand Tools Handheld Window Sampler		
		Elevation:	20.28mAOD	Final Depth:	2.00m	1.20 - 2.00	Dynamic Sampling (Windowless)	nationelo willow sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	GS	Grid System:	OSGB				Start Date:	31/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	31/05/2018

Hole Diameter								
Depth (m) Diam (mm)								

**Casing Diameter** Depth (m) Diam (mm

	Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Damania.					
(m)	(m) (m) (mi) (min) (m) Remarks									

Installation / Instrument Details								
Date	Instrument Details	To (m) Resp. Zone (m)		Diam (mm)				
				, ,				

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Sample Summary Environmental Samples 3 Geotechnical Samples

0

0

Undisturbed Thin Wall Undisturbed Thin Wall (NR) Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 2.00	Bentonite						

In-Situ Tests	
PID	3
Hand Vane*	0
Standard Penetration Tests	0

\* One count indicates an average reported result of 3 tests carried out at one depth where available.

PID	3	(NR) Indicates sample undertaken but with
Hand Vane*	0	0% Recovery

Disturbed

Piston

Undisturbed

	Standard Penetration Test Summary												
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref				

SPT Hammer Ref. | Energy Ratio (%)

No Standard Penetration Tests Undertaken

# **Applicable to Cable Percussion Only**

Chise	elling	Water	Adde		
Depth (m)	Duration (mins)	Depth (m)			

Appl	licable 1	to Ro	tary	Only

	Drilling Flush										
Depth (m) Flush Type Flush Colour Return %											

# **Applicable to Dynamic Sampling Only** Dynamic Sampling Runs Diam (mm) Recovery % 100



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**Dynamic** Sampling

Log Type

Exploratory Hole Number

WS17-28 **FINAL** 

CENTRAL ALLIANCE GEO

Sheet 1 of 1

Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used Hand Tools Handheld Window Sampler Depth (m) 0.00 - 1.20 1.20 - 2.00 Easting: 424339.89 558633.29 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Elevation: 20.28mAOD Final Depth: 2.00m Approved By: ВН Tyne and Wear Location:

Loc	ation:	Tyne and Wear	Logged By:	GS	Grid Syste	m: <b>OSG</b>	В								Start Date:	31/05/2018
Clie	ent:	SLIV	Orientation:	N/A	Inclinatio	n: <b>90°</b>									Finish Date:	31/05/2018
							Depth			Casing Ø	Water I	nstallation /			Samples & Testing	
		Strata Description				Legend	(Strat Thickn	um (m)	1001	(mm) epth (m)	Level (m)	Backfill	Depth (m)	Ref	Test Result:	s
-		GROUND: Soft brown gravelly sandy CLAY. G					(0.1 0.1		.13				0.10 - 1.20	7 B		-
-	11	ided fine to medium of sandstone mudstor	ne and brick	c. Sand is fine t	:0		(0.3	-					0.20 0.30	1 D 2 ES	PID 0.30m = 288.0ppm	1
-	\coarse.	GROUND: Brownish yellow slightly gravelly	slightly clay	ev fine to coar	se		0.4	5 19	.83				0.50	3 D		
-		Gravel is subangular to subrounded fine to					(0.5	5)					0.70	4 ES	PID 0.70m = 57.1ppm	1
-		GROUND: Soft yellowish brown gravelly ver														1
1 -		. Gravel is subangular to subrounded fine t					1.0	0 19	.28				1.00 1.00	5 D 6 ES	PID 1.00m = 89.8ppm	1 -
-		dstone. Cobbles are subangular to subrour fine to coarse.	idea iirie to	coarse or same	ustone.		(0.5	D)					1.30	8 D		1
-		GROUND: Brownish red very sandy clayey s	ubangular f	ine to coarse b	rick		1.5	n 18	.78				1.50	9 D		_
-		ne mudstone and coal GRAVEL. Sand is fine			/		$\otimes$		.,,				1.60 - 2.00	10 B		
-		GROUND: Firm grey laminated slightly silty			oangular		(0.5	D)								-
2 -	to subic	ounded fine to coarse of sandstone mudsto EOH at 2.00m - Ref		I DITICK.		******	2.0	0 18	.28							2 -
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-	servations /		Mi:	Depth (m)	Material	From (m)		Diam (mm)			marks	Inst	rument Deta		tallations  Resp. Zone Dep	th (m) Diam
		ken in confined environment potentially near exhaust fur Engineer that these results can not be relied upon.	nes. CA	0.00 - 2.00	Bentonite	1.20	2.00	(11111)	100	, INCI		11130	ciit Deta		nesp. zone Dep	()
			undwater Encountered	t/s ms												
			rter Er Iot Ca:	g Poin										Ground	water Strikes	
			undwa Hole N								St	rike (m) Ca			ses To (m) Time (min)	Remarks
			o Grot	Hammer Ref & E	nergy Ratio (%)											
			Ň	No												



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Sheet

Log Type Exploratory Hole Number

Header

WS17-29
FINAL

CENTRAL ALLIANO

Project No:	3043		Location	Details			Methodology & P	lant	Scale:	1:50
		Easting:	424325.21	Northing:	558639.45	From (m)	Method	Plant Used	Checked:	RPH
Name:	A1 Birtley to Coalhouse	Lusting.	42.020.22	rior crimig.	330033113	0.00 - 1.20	Inspection Pit	Hand Tools	Circoncu.	
		Elevation:	20.56mAOD	Final Depth:	1.46m	1.20 - 1.46	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	тс	Grid System:	OSGB				Start Date:	18/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/05/2018

Hole Diameter									
Depth (m) Diam (mm)									

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes										
Strike	Casing	Sealed	Time	Rose To	Remarks						
(m)	(m)	(m)	(min)	(m)	Remarks						

	Installation / Instrument Details													
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)										

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

Environmental Samples

0 Water

Geotechnical Samples

0

0

Undisturbed Thin Wall
Undisturbed Thin Wall (NR)
Core Sample

Disturbed (NR)

Piston (NR)

Undisturbed (NR)

0

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill									
Depth (m)	Legend Code								
0.00 - 1.46	Bentonite								

In-Situ Tests	
PID	0
Hand Vane*	0
Standard Penetration Tests	1

PID	0	
Hand Vane*	0	0% Recovery

Disturbed

Piston

Undisturbed

				Sta	ndard	Penetrati	on T	est Summary	
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref
Split Spoon	1.20	-	- (111)	25	50	255		50 (25 for 140mm/50 for 115mm)	MOD 02

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

# \* One count indicates an average reported result of 3 tests carried out at one depth where available.

## **Applicable to Cable Percussion Only**

	Chise	elling	Water Added			
	Depth (m)	Duration (mins)	Depth (m)	Litres		
Į						

# **Applicable to Rotary Only**

	Drilling Flush							
Depth (m)	Flush Type	Flush Colour	Return %					

# **Applicable to Dynamic Sampling Only**

Depth (m)	Diam (mm)	D 0/	
		Recovery %	Remarks



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Log Type

Dynamic

Sampling

Exploratory Hole Number

WS17-29

CENTRAL ALLIANCE

Sheet 1 of 1

FINAL

Location Details Methodology & Plant Project No: 3043 Scale: 1:50 Method Inspection Pit Dynamic Sampling (Windowless) Plant Used Hand Tools Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 1.46 Easting: 424325.21 558639.45 Checked By: RPH A1 Birtley to Coalhouse Northing: Name: Elevation: Final Depth: 1.46m Approved By: 20.56mAOD ВН Tyne and Wear Location:

Loca	Tylic and vical	Logged By:	TC	Grid Syste									Start Date:	18/05/20	
Clier	nt: SLJV	Orientation:	N/A	Inclination	n: <b>90°</b>								Finish Date:	18/05/20	)18
						Depth (m	Reduced Lev	Casing Ø	Water	Installation /			Samples & Testing		
	Strata Description				Legend	(Stratum Thickness	(m (OD)	(mm) Depth (m	Lough (m)	Backfill	Depth (m)	Ref	Test Resi	ults	
	MADE GROUND: Soft brown slightly gravelly slightly	ly sandy CI	ΔY Sand is	fine to	*******	<del>                                     </del>					0.00 - 1.20	4 B			
-	coarse. Gravel is angular to subangular fine to coar	rse sandsto	ne. brick a	ind rare coal.		(0.30)					0.20	1 D			-
	MADE GROUND: Firm yellowish brown gravelly sar	ndy CLAY. Sa	and is fine	to coarse.		0.30	20.26								-
1 1	Gravel is angular to subangular fine to coarse sand	stone and i	rare brick	and coal.							0.50	2 D			-
-															-
						(1.16)									
1 -											1.00	3 D			1 -
]											1.20 - 1.46	5 D	SPT(S) 1.20m, 50 (25 for 115mm)	for 140mm/50	-
													for 115mm)		
-	EOH at 1.46m - Ref	usal			XXXXXXXXX	1.46	19.10				1				-
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Obse	ervations / Remarks	Mi		Backfill			nic Sampling						tallations		
		· ·	Depth (1	m) Material 46 Bentonite	From (m)	To (m) Di	am (mm) Recov	ery (%)	Remarks	Inst	trument Detai	ils	Resp. Zone De	epth (m) Di	iam
		ıntere	0.00 - 1.4	bentonite											
		Encou	mt/s A												
		rater	ng Poi								(	Ground	water Strikes		
		wpun	itorii							Strike (m) Ca	sing (m) Seale	ed (m) Ris	ses To (m) Time (min)	Remarks	
		o Gro	^	Ref & Energy Ratio (%)											
ì		Ž	<b>&gt;</b>	OD 03 (6E%)	1	- 1	1			1	1		1		



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Log Type **Header** 

Sheet

Exploratory Hole Number WS17-29A

FINAL



Project No:	3043	Location Details					Methodology & P	Scale:	1:50	
	44 81 11 1 1 1 1	Easting:	424319.93	Northing:	558637.30	From (m)	Method	Plant Used	Checked:	RPH
Name:	At Birtley to Coalnouse	Elevation:	14.48mAOD	Final Depth:	1.55m	0.00 - 1.20 1.20 - 1.55	Inspection Pit Dynamic Sampling (Windowless)	Hand Tools Modular Window Sampler	Approved:	ВН
		Elevation.	14.46IIIAUD	гінаі рерін:	1.55111			•	Approved:	ВΠ
Location:	Tyne and Wear	Logger:	TC	Grid System:	OSGB				Start Date:	18/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/05/2018

Hole Diameter							
Depth (m)	Diam (mm)						

Casing Diameter
Depth (m) Diam (mm)

	Groundwater Strikes								
Strike	Casing	Sealed	Time	Rose To	Damania.				
(m)	(m)	(m)	(min)	(m)	Remarks				

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info. **Hole Not Cased** 

No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 1.55	Bentonite						

In-Situ Tests						
PID	0					
Hand Vane*	0					
Standard Penetration Tests	1					

one depth where available.

Standard Penetration Tests	1	
•		
* One count indicates an av	erage	
reported result of 3 tests carrie	ed out	at

Sample Summary								
Environmental Samples								
Soil <b>0</b> Water								
Geotechnical Samples								
Bulk	Bulk 1 Large Bulk							
Disturbed	4	Disturbed (NR)	0					
Piston	0	Piston (NR)	0					
Undisturbed	0	Undisturbed (NR)	0					
Undisturbed Thin Wall								
Undisturbed Thin Wall (NR)								
Cor	e San	nple	0					

(NR) Indicates sample undertaken but with
0% Recovery

	Standard Penetration Test Summary												
Test Type	Depth (m)	Casing (m)	Water (m)	Seating Blows		Penetration Total (mm)	N	Reported Result	Hammer Ref				
Split Spoon		-	-	10	50	345		50 (4,6/50 for 195mm)	MOD 02				

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

# **Applicable to Cable Percussion Only**

Chise		
Depth (m)	Duration (mins)	Dep

Water Added							
Litres							

# **Applicable to Rotary Only**

Drilling Flush											
Depth (m)	Flush Type	Flush Colour	Return %								
I	I		1								

# **Applicable to Dynamic Sampling Only**

			<u> </u>								
Dynamic Sampling Runs											
Depth (m) Diam (mm) Recovery % Remarks											



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Log Type **Dynamic** 

Exploratory Hole Number

**FINAL** 

WS17-29A



Methodology & Plant Project No: 3043 Location Details Scale: 1:50 Plant Used Hand Tools Modular Window Sampler Depth (m) 0.00 - 1.20 1.20 - 1.55 Method Inspection Pit Dynamic Sampling (Windowless) Easting: 424319.93 558637.30 Checked By: RPH Northing: A1 Birtley to Coalhouse Name: Elevation: 14.48mAOD Final Depth: 1.55m Approved By: ВН Location: Tyne and Wear Start Date: TC Grid System: OSGB 18/05/2018 Logged By:

Clier	nt: SUV	Orientation: N	/A Inclination	on: <b>90°</b>								Finish Date: 18/05/2018
	Strata Description			Legend	Depth (m) (Stratum	Reduced Level (mAOD)	Casing Ø (mm)	Water I Level (m)	nstallation / Backfill			Samples & Testing
_	MADE GROUND: Soft brown slightly gravelly slightly	v sandv CI AV	Sand is fine to	********	Thickness)	(	Depth (m)	-cvc. (III)	20cm/III	Depth (m) 0.10 - 1.20	Ref 4 B	Test Results
	coarse. Gravel is angular to subangular fine to coar	se sandstone	, brick and rare coal.		(0.35)					0.10 - 1.20	1 D	
4	MADE GROUND: Firm yellowish brown gravelly san				0.35	14.14				0.50	2 D	-
=	Sand is fine to coarse. Gravel is angular to subangu rare brick and coal. Cobbles are subangular sandsto	ilar fine to coa one.	arse sandstone and									
. ]					(1.20)					1.00	3 D	1 -
٠										1.20 - 1.55	5 D	1 = SPT(S) 1.20m, 50 (4,6/50 for
-												195mm)
-	EOH at 1.55m - Refi	usal			1.55	12.94						
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Obs	servations / Remarks	Misc.	Backfill Depth (m) Material	From (m)		c Sampling I		emarks	Jack-	ument Detai		allations    Resp. Zone   Depth (m)   Diam
		ntered stalled	Depth (m) Material 0.00 - 1.55 Bentonite	Troin (III)	io (iii)   Diam	mini necove	y (/0) K	LITIGI NO	mstr	ument Detal	13	Resp. Zone Depth (m) Diam
		· Encoun Cased vint/s In:										
		ndwater ole Not oring Po						St	rike (m) Cas			water Strikes es To (m) Time (min) Remarks
		o Groun He Monite	Hammer Ref & Energy Ratio (%	)					, ,	J. 4		
		ž Ņ	MOD 02 (65%)	1				1				



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Sheet

Exploratory Hole Number

WS17-29B

FINAL



Project No:	3043	Location Details					Methodology & P	Scale:	1:50	
Name: A1 Birtley to Coalhouse	Easting:	424321.30	Northing:	558639.87	From (m)	Method	Plant Used	Checked:	RPH	
	1 Birtley to Coalhouse			reorening.	330033.07	0.00 - 1.20	Inspection Pit	Hand Tools		
		Elevation:	21.24mAOD	Final Depth:	5.45m	1.20 - 5.45	Dynamic Sampling (Windowless)	Modular Window Sampler	Approved:	BH
Location:	Tyne and Wear	Logger:	тс	Grid System:	OSGB				Start Date:	18/05/2018
Client:	SLIV	Orientation:	N/A	Inclination:	90°				End Date:	18/05/2018

Hole Di	ameter
Depth (m)	Diam (mm)

iameter
Diam (mm)
116

Groundwater Strikes									
Strike	Casing	Sealed	Time	Rose To	Dl				
(m)	(m)	(m)	(min)	(m)	Remarks				

	Installation / Instrument Details							
Date	Instrument Details	To (m)	Resp. Zone (m)	Diam (mm)				

If Methodology includes Dynamic Sampling refer to Runs table for info. No Groundwater Encountered

No Monitoring Point/s Installed

Backfill							
Depth (m)	Legend Code						
0.00 - 5.45	Bentonite						

In-Situ Tests					
PID	0				
Hand Vane*	0				
Standard Penetration Tests	5				

	Standard Penetration Tests	5	
	* One count indicates an av	erage	· <u>-</u>
ren	orted result of 3 tests carrie	no be	t at

one depth where available.

Sample Summary							
Enviro	nmer	ntal Samples					
Soil	5	Water	0				
Geotechnical Samples							
Bulk	5	Large Bulk	0				
Disturbed	12	Disturbed (NR)	0				
Piston	0	Piston (NR)	0				
Undisturbed 0 Undisturbed (NR)							
Undisturbed Thin Wall							
Undisturbed Thin Wall (NR)							
Core Sample							

(NR) Indicates sample undertaken but with 0% Recovery

Standard Penetration Test Summary								
Depth	Casing	Water	Seating	Main	Penetration	N	Papartad Pagult	Hammer Ref
(m)	(m)	(m)	Blows	Blows	Total (mm)	N	Reported Result	nammer ker
1.20	-	-	8	17	450	17	N=17 (4,4/4,5,4,4)	MOD 02
2.00	2.00	-	6	14	450	14	N=14 (3,3/2,3,4,5)	MOD 02
3.00	2.00	-	4	13	450	13	N=13 (2,2/3,3,3,4)	MOD 02
4.00	2.00	-	4	10	450	10	N=10 (2,2/2,2,3,3)	MOD 02
5.00	2.00	-	3	9	450	9	N=9 (2,1/2,2,2,3)	MOD 02
	(m) 1.20 2.00 3.00 4.00	(m) (m) 1.20 - 2.00 2.00 3.00 2.00 4.00 2.00	(m) (m) (m) 1.20 2.00 2.00 - 3.00 2.00 - 4.00 2.00 -	Depth (m)         Casing (m)         Water (m)         Seating Blows           1.20         -         -         8           2.00         2.00         -         6           3.00         2.00         -         4           4.00         2.00         -         4	Depth (m)         Casing (m)         Water (m)         Seating Blows (m)         Main Blows (m)           1.20         -         -         8         17           2.00         2.00         -         6         14           3.00         2.00         -         4         13           4.00         2.00         -         4         10	Depth (m)         Casing (m)         Water (m)         Seating Blows (m)         Main (m)         Penetration (m)           1.20         -         -         8         17         450           2.00         2.00         -         6         14         450           3.00         2.00         -         4         13         450           4.00         2.00         -         4         10         450	Depth (m)         Casing (m)         Water (m)         Seating Blows (m)         Main (m)         Penetration (Total (mm))         N           1.20         -         -         -         8         17         450         17           2.00         2.00         -         6         14         450         14           3.00         2.00         -         4         13         450         13           4.00         2.00         -         4         10         450         10	Depth (m)         Casing (m)         Water (m)         Seating Blows Blows Blows Total (mm)         Penetration Total (mm)         N         Reported Result           1.20         -         8         17         450         17         N=17 (4,4/4,5,4)           2.00         2.00         -         6         14         450         14         N=14 (3,3/2,3,4,5)           3.00         2.00         -         4         13         450         13         N=13 (2,2/3,3,3,4)           4.00         2.00         -         4         10         450         10         N=10 (2,2/2,2,3,3)

SPT Hammer Ref.	Energy Ratio (%)
MOD 02	65

# **Applicable to Cable Percussion Only**

Chiselling							
Depth (m)	Duration (mins)						

Water Added							
Depth (m)	Litres						

# **Applicable to Rotary Only**

Drilling Flush					
Depth (m)	Flush Type	Flush Colour	Return %		

# **Applicable to Dynamic Sampling Only**

	Dynamic Sampling Runs					
ſ	Depth (m)	Diam (mm)	Recovery %	Remarks		
	1.20 - 2.00	101	50	260 Blows		
	2.00 - 3.00	101	90	157 Blows		
	3.00 - 4.00	86	95	91 Blows		
	4.00 - 5.00	76	80	38 Blows		
L						



Project No:

Name:

Location:

3043

A1 Birtley to Coalhouse

Tyne and Wear

Alliance House, South Park Way Wakefield 41 Business Park Wakefield WF2 0XJ Tel +44(0)1924 229889

Northing:

Final Depth:

558639.87

5.45m

Location Details

424321.30

21.24mAOD

Easting:

Elevation:

**Dynamic** Sampling

Log Type

Exploratory Hole Number

WS17-29B **FINAL** 



Sheet 1 of 1

Depth (m) 0.00 - 1.20 1.20 - 5.45

GEO Methodology & Plant Scale: 1:50 Plant Used
Hand Tools
Modular Window Sampler Method Checked By: RPH Approved By: BH

Logged By: TC Grid System: OSGB Start Date: 18/05/2018 Client SLIV Orientation N/A Inclination: 90° Finish Date: 18/05/2018 Depth (m) (Stratum Thickness) Casing Ø Samples & Testing Reduced Lev (mAOD) Water Level (m) Installation , Backfill Strata Description Legend (mm) Depth (m Depth (m) MADE GROUND: Soft to firm brown gravelly sandy CLAY. Sand is fine to coarse. 1 D 2 ES 0.20 Gravel is subangular to subrounded fine to coarse sandstone, mudstone and brick. 3 D 0.70 4 ES (1.90) 6 ES 8 D 10 B SPT(S) 1.20m, N=17 (4,4/4,5,4,4) 1.20 - 1.65 1.20 - 2.00 1.50 9 D 1.90 MADE GROUND: Firm to stiff laminated brownish grey slightly gravelly CLAY. Gravel 116 2.00 2.00 2.00 - 2.45 2.00 - 3.00 SPT(S) 2.00m, N=14 (3,3/2,3,4,5) is subangular to subrounded fine to coarse sandstone, mudstone and brick. (1.10) 2.50 13 D 3.00 18.24 3.00 3.00 - 3.45 3.00 - 4.00 SPT(S) 3.00m, N=13 (2,2/3,3,3,4) Stiff laminated grey slightly silty CLAY. 17 D 3.50 4.00 - 4.45 4.00 - 5.00 19 D 21 B SPT(S) 4.00m, N=10 (2,2/2,2,3,3) 4.50 20 D 5.00 - 5.45 22 D SPT(S) 5.00m, N=9 (2,1/2,2,2,3) 5.45 15.79 EOH at 5.45m - Scheduled Depth 10 Observations / Remarks Misc Backfill Dynamic Sampling Runs Installations From (m) 1.20 2.00 3.00 4.00 Instrument Details Resp. Zone Depth (m) Diam To (m) Diam (mm) Re Groundwater Strikes Strike (m) Casing (m) Sealed (m) Rises To (m) Time (min) Remarks MOD 02 (65%)

# **Hammer Energy Test Report**

in accordance with BSEN ISO 22476-3:2005



Dynamic sampling uk Itd 5-8 victory parkway victory road

Derby **DE24 8ZF**  Hammer Ref:

AR1134

Test Date:

24/07/2018

Report Date:

24/07/2018

File Name:

AR1134.spt

Test Operator:

A.PARKER.

#### **Instrumented Rod Data**

Diameter dr (mm):

54 6.9

Wall Thickness t<sub>r</sub> (mm):

Assumed Modulus Ea (GPa): 208

Accelerometer No.1: Accelerometer No.2: 6455

6457

# **Hammer Information**

Hammer Mass m (kg): 63.5

Falling Height h (mm): 760

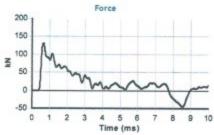
15.0

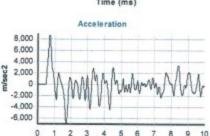
String Length L (m):

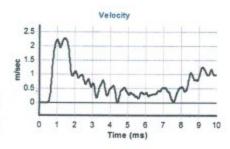
#### Comments / Location

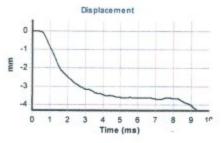
Central alliance hammer tested at

Dynamic samplings vard.









#### Calculations

Area of Rod A (mm2):

1021

Time (ms)

Theoretical Energy Etheor (J):

473

Measured Energy E<sub>meas</sub> (3):

263

Energy Ratio E, (%):

56



# **Hammer Energy Test Report**

in accordance with BSEN ISO 22476-3:2005

Dynamic sampling uk Itd 5-8 victory parkway

victory road Derby DE24 8ZF

Hammer Ref:

0001

Test Date:

10/07/2018

Report Date:

11/07/2018

File Name: Test Operator: D001.spt A.PARKER.

Instrumented Rod Data

Diameter dr (mm):

54

Wall Thickness tr (mm):

6.9 Assumed Modulus Ea (GPa): 208

Accelerometer No.1:

6455

Accelerometer No.2:

6457

#### Hammer Information

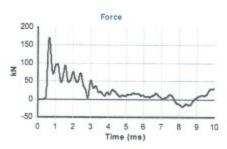
Hammer Mass m (kg): 63.5

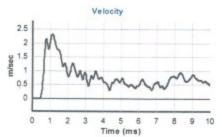
Falling Height h (mm): String Length L (m):

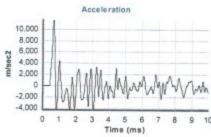
760 15.0

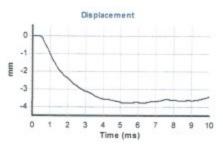
## Comments / Location

Central alliance hammer tested at dynamic samplings yard.









#### Calculations

Area of Rod A (mm2):

1021

Theoretical Energy Etheor (J):

473

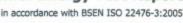
Measured Energy E<sub>meas</sub> (J):

287

Energy Ratio Er (%):

61







Dynamic sampling uk ltd 5-8 victory parkway victory road Derby DE24 8ZF

Hammer Ref:

AR1175

Test Date:

24/07/2018

Report Date:

24/07/2018

File Name:

AR1175.spt

Test Operator:

A.PARKER.

#### Instrumented Rod Data

Diameter d<sub>r</sub> (mm):

54

Wall Thickness tr (mm): 6.9 Assumed Modulus Ea (GPa): 208

Accelerometer No.1: Accelerometer No.2: 6455 6457

#### **Hammer Information**

Hammer Mass m (kg): 63.5

Falling Height h (mm): 760

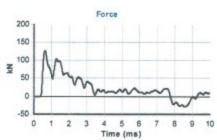
String Length L (m):

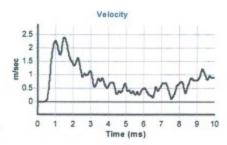
15.0

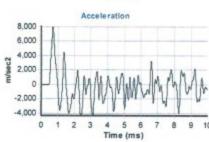
#### Comments / Location

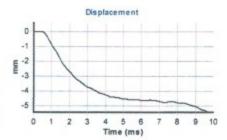
Central alliance hammer tested at

Dynamic samplings yard.









#### Calculations

Area of Rod A (mm2):

1021

267

Theoretical Energy Etheor (J): Measured Energy Emeas (J):

473

Energy Ratio E, (%):

56



in accordance with BSEN ISO 22476-3:2005



Dynamic sampling uk Itd 6-8 victory parkway victory road Derby DE24 8ZF Hammer Ref:

AR1710

Test Date:

17/08/2017

Report Date:

21/08/2017

File Name:

AR1710.spt

Test Operator:

TP

#### Instrumented Rod Data

Diameter  $d_r$  (mm): 54 Wall Thickness  $t_r$  (mm): 6.9 Assumed Modulus  $E_a$  (GPa): 208

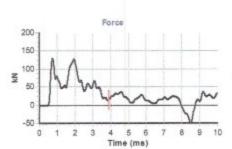
Accelerometer No.1: Accelerometer No.2: 6455 6457

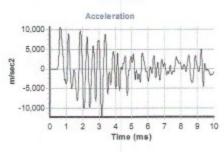
# Hammer Information

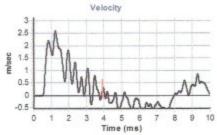
Hammer Mass m (kg): 63.5 Falling Height h (mm): 760 String Length L (m): 15.0

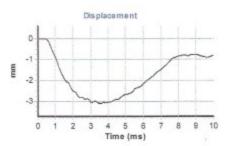
#### Comments / Location

Boreholes solutions hammer tested at Dynamic samplings yard.









#### Calculations

Area of Rod A (mm2): 1021
Theoretical Energy E<sub>theor</sub> (J): 473
Measured Energy E<sub>meas</sub> (J): 290

Energy Ratio E, (%):

61







Dynamic sampling uk ltd 6-8 victory parkway victory road

Derby DE24 8ZF Hammer Ref:

BS07

Test Date:

17/08/2017

Report Date:

21/08/2017

File Name:

BS07.spt

Test Operator:

TP

#### Instrumented Rod Data

Accelerometer No.2:

Diameter  $d_r$  (mm): 54 Wall Thickness  $t_r$  (mm): 6.9 Assumed Modulus  $E_8$  (GPa): 208 Accelerometer No.1: 6455 Hammer Information

Hammer Mass m (kg): 63.5 Falling Height h (mm): 760

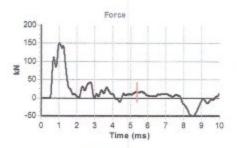
String Length L (m):

15.0

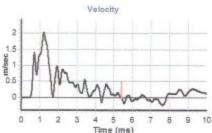
## Comments / Location

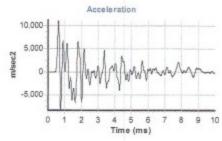
Borehole solutions hammer tested at

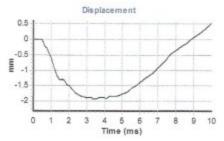
Dynamic samplings yard.



6457







#### Calculations

Area of Rod A (mm2): 1021
Theoretical Energy E<sub>theor</sub> (J): 473
Measured Energy E<sub>meas</sub> (J): 303

Energy Ratio E r (%):

64

# **Hammer Energy Test Report**

in accordance with BSEN ISO 22476-3:2005



Dynamic sampling uk Itd 5-8 victory parkway

victory road

Derby DE24 8ZF Hammer Ref:

MOD.01

Test Date:

31/05/2018

Report Date:

31/05/2018

File Name:

MOD.01.spt

Test Operator:

A.PARKER.

#### **Instrumented Rod Data**

Diameter dr (mm):

54

Wall Thickness tr (mm):

6.9

Assumed Modulus Ea (GPa): 208 Accelerometer No.1:

6455

Accelerometer No.2:

6457

# **Hammer Information**

Hammer Mass m (kg): 63.5

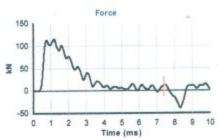
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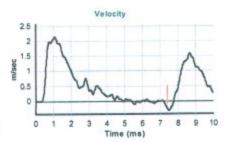
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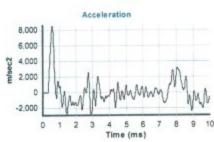
#### Comments / Location

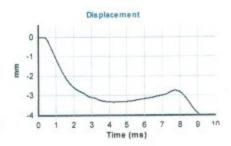
Central alliance modular rig tested at

Dynamic samplings yard.









#### Calculations

Area of Rod A (mm2):

1021

Theoretical Energy Etheor (J):

473

Measured Energy Emeas (J):

315

Energy Ratio E, (%):

67

# **Hammer Energy Test Report**

in accordance with BSEN ISO 22476-3:2005



Dynamic sampling uk Itd 5-8 victory parkway

victory road Derby DE24 8ZF

Hammer Ref:

MOD.02

Test Date:

11/05/2018

Report Date:

11/05/2018

File Name:

MOD.02.spt

Test Operator:

TP

#### Instrumented Rod Data

Diameter dr (mm):

54

Wall Thickness tr (mm):

6.9 Assumed Modulus Ea (GPa): 208

Accelerometer No.1:

6455

Accelerometer No.2:

6457

#### Hammer Information

Hammer Mass m (kg): 63.5

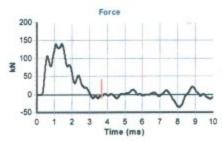
Falling Height h (mm): String Length L (m):

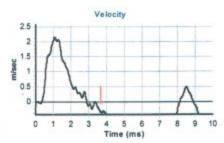
760 15.0

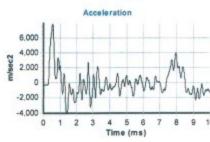
#### Comments / Location

Central Alliance rig tested at Dynamic

samplings yard.









#### Calculations

Area of Rod A (mm2):

1021

Theoretical Energy Etheor (J):

473

Measured Energy E<sub>meas</sub> (J):

308

Energy Ratio E, (%):

65

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