

SITE PLAN

Project	Global Centre of Rail Excellence
Client	Walters UK Limited
Project Number	G22069
Drawing Number	G22069-JGS-001
Scale	1:2000
Printed	17/01/2023 17:10



Legend Key

-  Locations By Type - DS
-  Locations By Type - DS+RO
-  Locations By Type - RO
-  Locations By Type - SLSW
-  Locations By Type - TP

Appendix II

Exploratory Hole Logs and In-situ Testing

SPT Hammer Calibration Certificate**Certificate Numbers: TECH1,****AR1327 (JD01), AR2349 (JD04),****AR2724 (JD06), AR3829 (JD07)****Dynamic Sampling and Rotary****S1-BH101 to S1-BH103, S1-BH105****Coring Borehole Logs****to S1-BH110, S1-BH112 to****S1-BH114, S1-BH114B, S1-BH116,****S1-BH121 and S1-BH122****Rotary Open Hole Logs****SOP1.1 to SOP1.20, SOP2.1 to****SOP2.25 and SOP3.1 to SOP3.16****Trial Pits Logs****Emb 2 Soakaway, S1-TP101 to****S1-TP106, S1-TP109 to S1-TP115****and Trial Emb Cut****Soakaway Test Results****Emb 2 Soakaway Test 1 to Test 3****S1-TP111 Test 1****Trial Emb Cut Test 1 to Test 3**



Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Dynamic Sampling
Unit 8
Victory Park
Victory Road
Derby
DE248ZF

Hammer Ref: TECH1
Test Date: 28/01/2022
Report Date: 28/01/22
File Name: TECH1.spt
Test Operator: B HUNTER

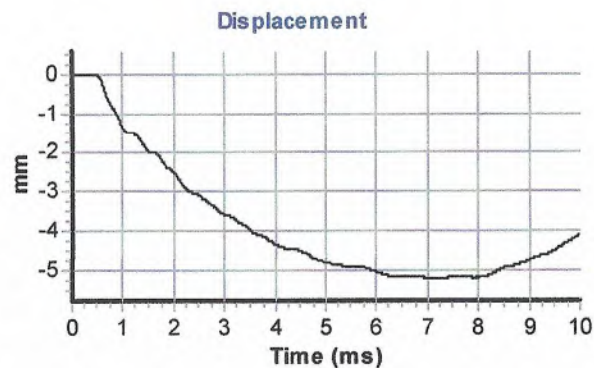
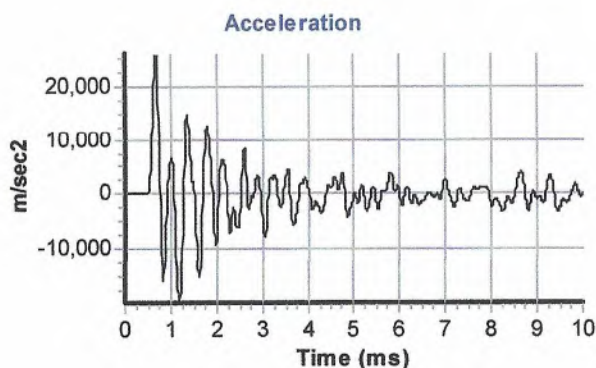
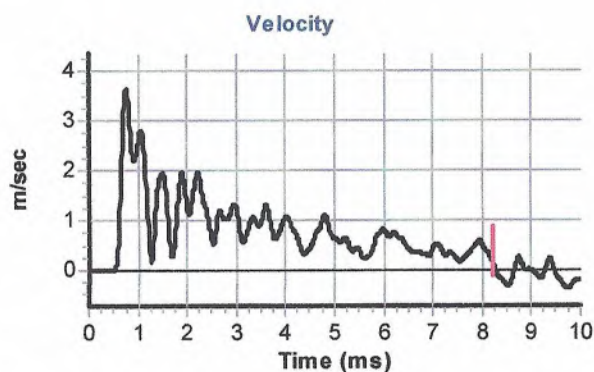
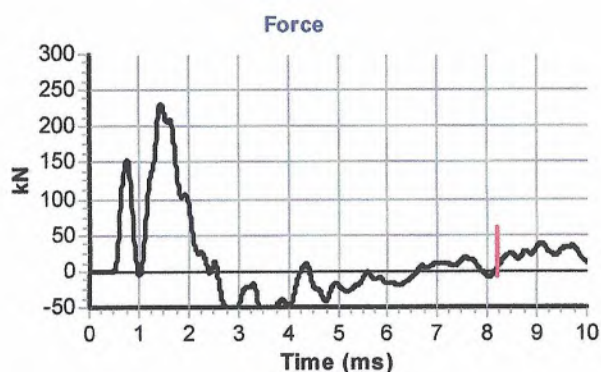
Instrumented Rod Data

Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.0
Assumed Modulus E_a (GPa): 208
Accelerometer No.1: 62901
Accelerometer No.2: 62902

Hammer Information

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

Comments / Location



Calculations

Area of Rod A (mm^2): 905
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 312

Energy Ratio E_r (%)

66

Signed: B Hunter
Title: Operations Manager

The recommended calibration interval is 12 months

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

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

SPT Hammer Ref: AR1327
Test Date: 10/01/2022
Report Date: 10/01/2022
File Name: AR1327.spt
Test Operator: MT

JD01

Instrumented Rod Data

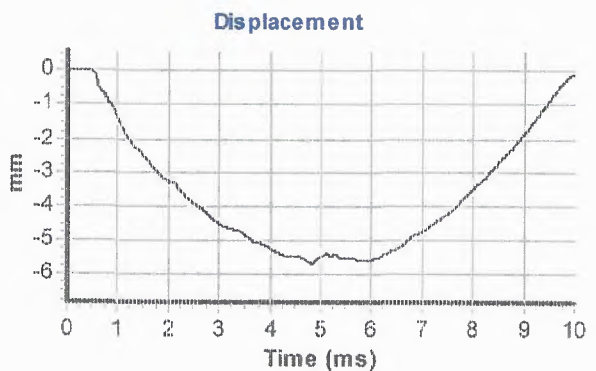
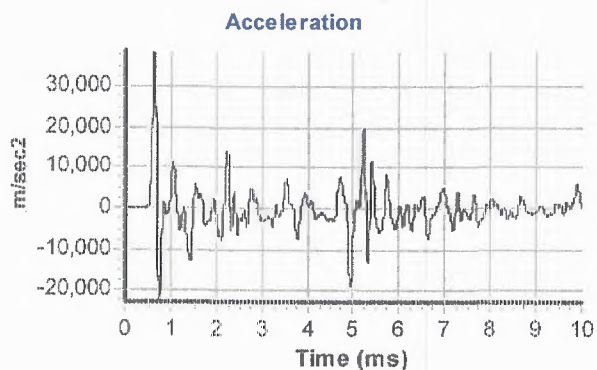
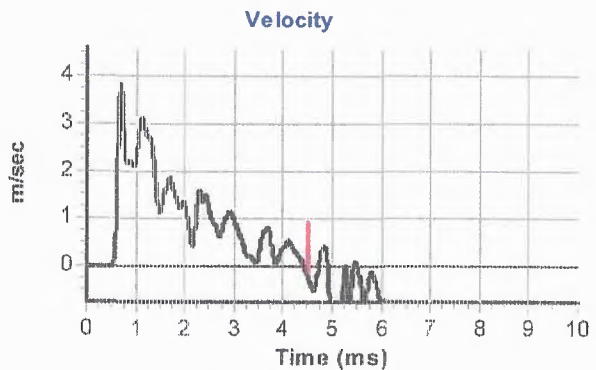
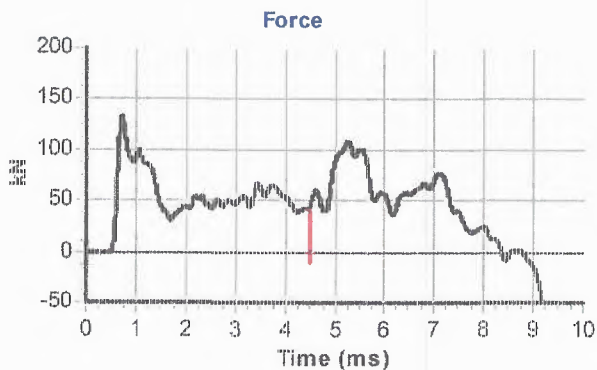
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.0
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

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

Comments / Location

JACKSON DRILLINGS HOLDINGS LTD - 78642



Calculations

Area of Rod A (mm²): 905
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 332

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

Signed: M. TONER
Title: FITTER

The recommended calibration interval is 12 months

J. Lock Fitter

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Hammer
JD04

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

SPT Hammer Ref: AR2394
Test Date: 10/01/2022
Report Date: 10/01/2022
File Name: AR2394.spt
Test Operator: MT

Instrumented Rod Data

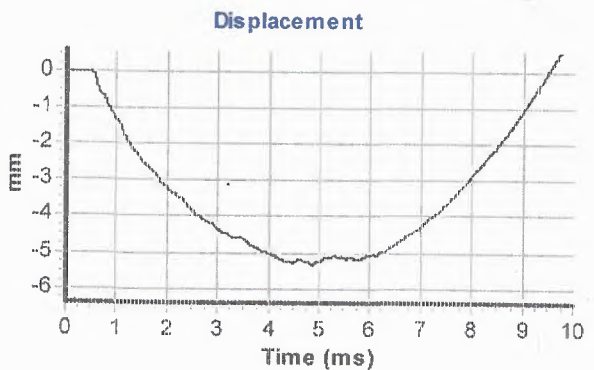
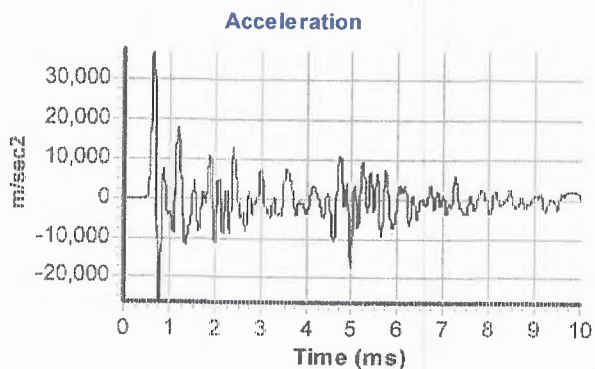
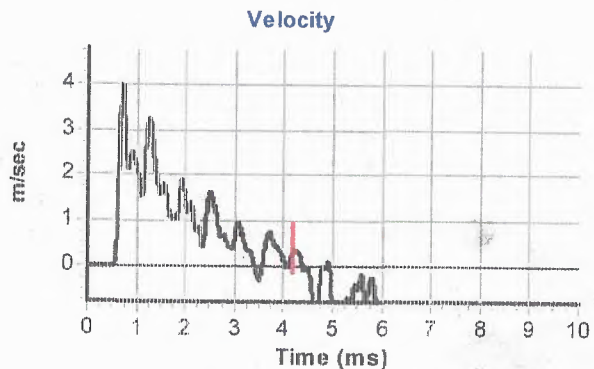
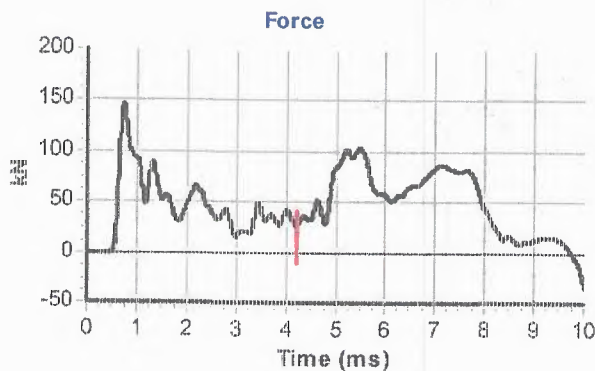
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.0
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

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

Comments / Location

JACKSON DRILLING HOLDINGS LTD - 78642



Calculations

Area of Rod A (mm²): 905
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 318

Energy Ratio E_r (%): **67**

Signed: M.TONER
Title: *TRAINER*
FITTER

The recommended calibration interval is 12 months

J. Lock *FITTER*

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

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

SPT Hammer Ref: AR2724
Test Date: 10/01/2022
Report Date: 10/01/2022
File Name: AR2724.spt
Test Operator: MT

JDO6

Instrumented Rod Data

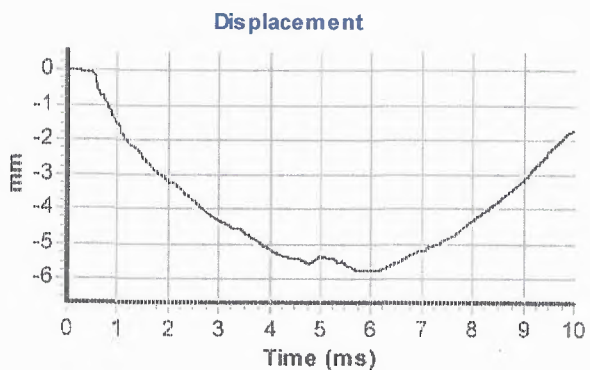
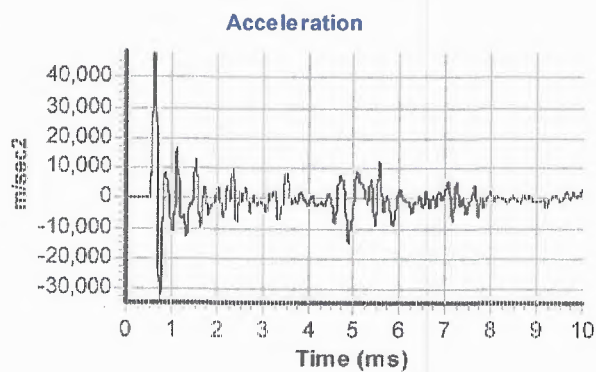
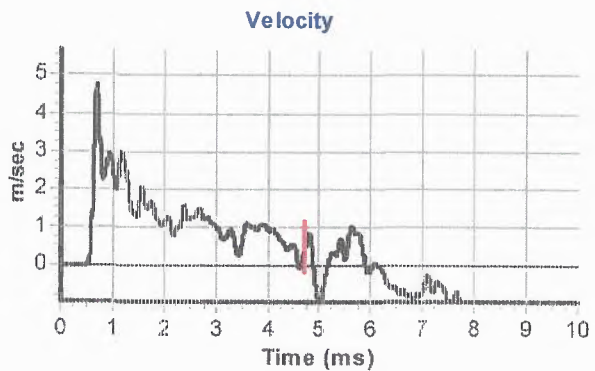
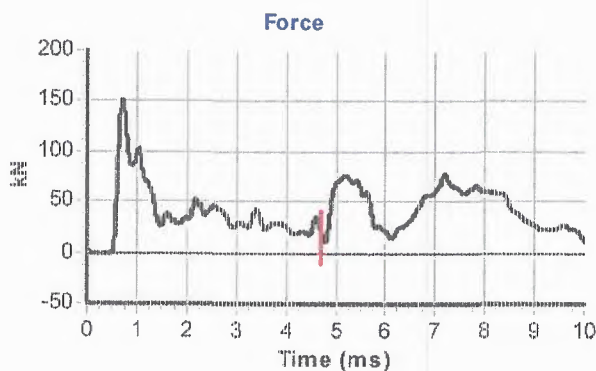
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.0
Assumed Modulus E_a (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

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

Comments / Location

JACKSON DRILLING HOLDINGS LTD - 78642



Calculations

Area of Rod A (mm²): 905
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 326

Energy Ratio E_r (%): **69**

Signed: M.TONER
Title: ^{TRANCE} FITTER

The recommended calibration interval is 12 months

J. Lock Atter JOK

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

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

SPT Hammer Ref: AR3829
Test Date: 22/12/2021
Report Date: 22/12/2021
File Name: AR3829.spt
Test Operator: JL

JDO7

Instrumented Rod Data

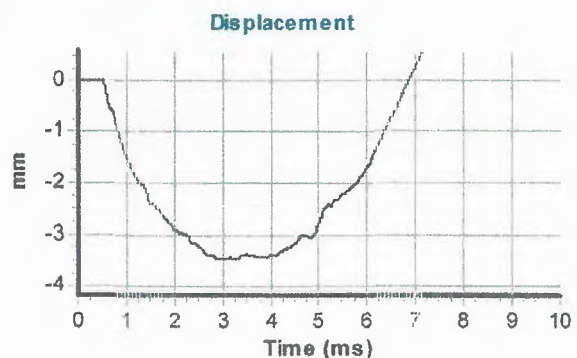
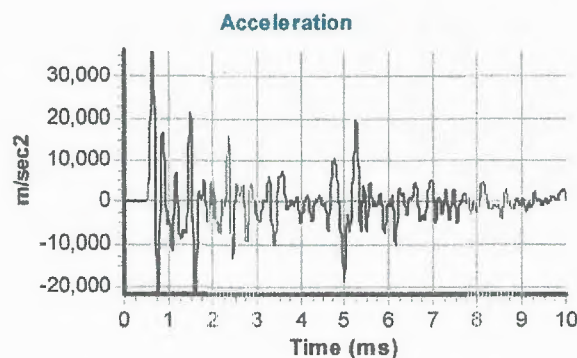
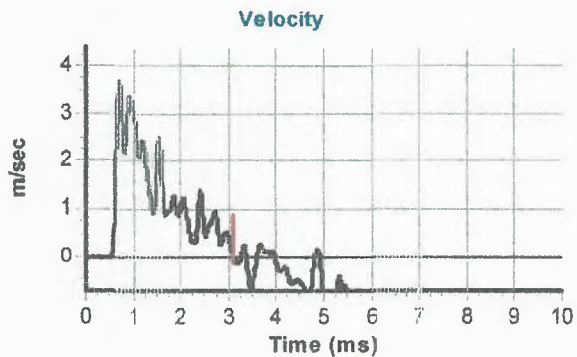
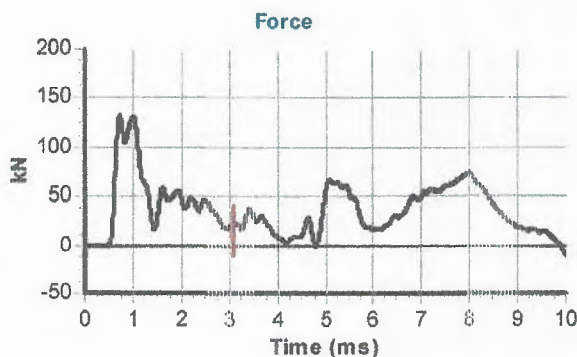
Diameter d_r (mm): 54
Wall Thickness t_r (mm): 6.0
Assumed Modulus E_s (GPa): 200
Accelerometer No.1: 7080
Accelerometer No.2: 11609

SPT Hammer Information

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

Comments / Location

JACKSON DRILLING HOLDINGS LTD - 78579



Calculations

Area of Rod A (mm²): 905
Theoretical Energy E_{theor} (J): 473
Measured Energy E_{meas} (J): 286

Energy Ratio E_r (%): **61**

Signed: J. LOCK
Title: FITTER

The recommended calibration interval is 12 months



Exploratory Hole Progress by Time				Exploratory Hole	
Date and Time	Depth	Casing Depth	Water Depth	S1-BH101	
09/12/2022 07:30	0.00				
09/12/2022 16:36	11.00	11.00	11.20	Sheet 1 of 5	
10/12/2022 07:30	11.50	11.00	11.00	Scale	1:25
10/12/2022 16:27	20.00	11.00	11.60	Drilled	KO
14/12/2022 07:30	20.00	11.00	11.30	Logged	AF/JP
14/12/2022 16:58	20.00	20.00	11.00	Checked	
16/12/2022 07:30	22.00	20.00	Wet		
16/12/2022 15:00	24.60	20.00	11.00		

Drilling Flush					Hole Diameter		Casing Diameter		Water Added		Water Strikes						
Depth Top	Depth Base	Type	Colour	Returns	Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Date and Time	Casing	Strike	Sealed	Rising to	Time	Remarks
0.00	26.40	Air/Mist	Black	100%	17.00 24.60	140mm 121mm	11.00 20.00	150mm 128mm			09/12/2022 16:33	11.00	11.30	0.00	11.20	20mins	
Drill Bit Type		PCD		Drill Bit Condition		Good		Core Barrel Type		Wireline Triple Tube		Core Barrel Length		1.50			

Printed 16/01/2023 11:58

Drilling Flush					Hole Diameter		Casing Diameter		Water Added	
Depth Top	Depth Base	Type	Colour	Returns	Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base
0.00	26.40	Air/Mist	Black	100%	17.00 24.60	140mm 121mm	11.00 20.00	150mm 128mm		
Drill Bit Type		PCD			Drill Bit Condition		Good		Core Barrel	

Water Strikes						
Date and Time	Casing	Strike	Sealed	Rising to	Time	Remarks
09/12/2022 16:33	11.00	11.30	0.00	11.20	20mins	
Type	Wireline Triple Tube	Core Barrel Length			1.50	

Printed 16/01/2023 11:58

Samples	Sampling and Testing Depths	Insitu Testing and Depth Related Remarks	Drill Runs	TCR SCR RQD	Depth (Thickness)	Level (mAOD)	Legend
15 D	10.00 - 11.50 10.00	SPT(S) N=22 (4,6/7.8,,7) Casing: 10.00 Water: 0 DS recovered as B sample.					
115 ES	10.50 - 10.70 10.50	PID: 0.0ppmv	DS 10.00 - 11.50	67% 0% 0%			
116 D 16 D	11.50 - 11.95 11.50 - 12.50 11.50	SPT(S) N=28 (6,8/6,8,7,7) Casing: 10.00 Water: 11.3 DS recovered as D sample.	DS 11.50 - 12.50	10% 0% 0%	11.50 (1.00)	229.66	
					12.50 (0.50)	228.66	
17 D	13.00 - 13.45 13.00	SPT(S) N=50 (3,5/50 for 265mm) Casing: 11.00 Water: 11	RO 12.50 - 13.50	0% 0% 0%	13.00 (0.50)	228.16	
117 B	13.50 - 14.50				13.50	227.66	
118 ES	13.80 - 14.00 13.80	PID: 0.0ppmv	DS 13.00 - 14.50	67% 0% 0%			
119 B 18 D	14.50 - 14.95 14.50 - 16.00 14.50	SPT(S) N=30 (6,7/7,9,7,7) Casing: 11.00 Water: 11 DS recovered as B sample.					
121 ES	15.00 - 15.10	PID: 0.0ppmv					

Remarks Hand excavated inspection pit from GL to 1.20m. Dynamic sampling from 1.20m to 17.00m. Rotary open holing from 17.00m to 21.60m. Rotary coring from 21.60m to 24.60m.

Date and Time	Depth	Casing Depth	Water Depth	S1-BH101	
				Sheet 4 of 5	
				Scale	1:25
				Drilled	KO
				Logged	AF/JP
				Checked	

Drilling Flush					Hole Diameter		Casing Diameter		Water Added		Water Strikes						
Depth Top	Depth Base	Type	Colour	Returns	Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Date and Time	Casing	Strike	Sealed	Rising to	Time	Remarks
0.00	26.40	Air/Mist	Black	100%	17.00 24.60	140mm 121mm	11.00 20.00	150mm 128mm			09/12/2022 16:33	11.00	11.30	0.00	11.20	20mins	
Drill Bit Type		PCD		Drill Bit Condition		Good		Core Barrel Type		Wireline Triple Tube		Core Barrel Length		1.50			

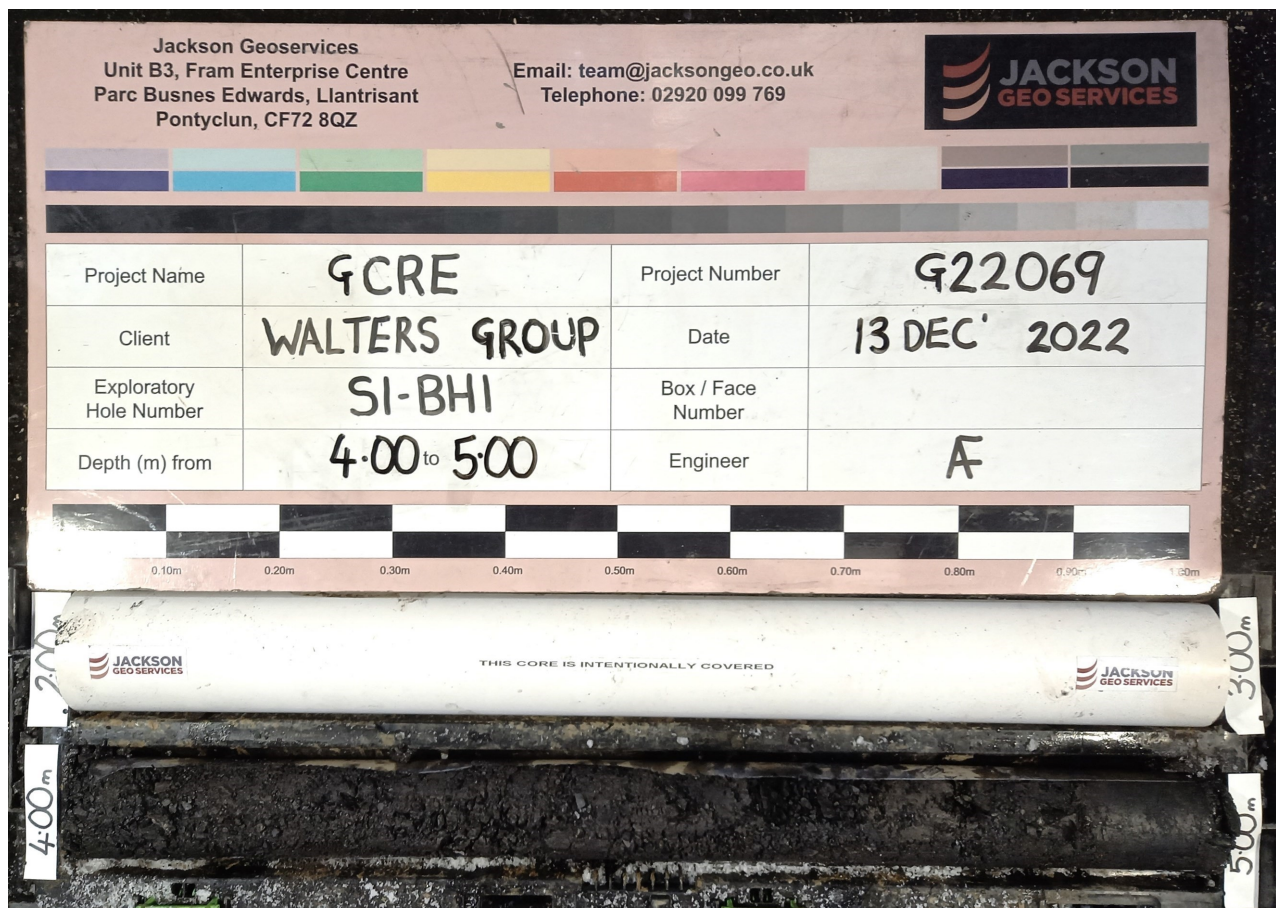
Printed 16/01/2023 11:58

Printed 16/01/2023 11:58

		EXPLORATORY HOLE PHOTOGRAPHS		Remarks Hand excavated inspection pit from GL to 1.20m. Dynamic sampling from 1.20m to 17.00m. Rotary open holing from 17.00m to 21.60m. Rotary coring from 21.60m to 24.60m.		Exploratory Hole S1-BH101
Project	Global Centre of Rail Excellence	Easting	284925.38	Equipment	Beretta T44/Hand tools	Sheet 1 of 4
Client	Walters UK Limited	Northing	210692.01	Method	RC/IP/RO/DS	
Project No	G22069	Level	241.16 mAOD	Termination Reason	Scheduled depth	



S1-BH101 2.00 m to 3.00 m



S1-BH101 4.00 m to 5.00 m

Project	Global Centre of Rail Excellence	Easting	284925.38	Equipment	Beretta T44/Hand tools	Sheet 2 of 4
Client	Walters UK Limited	Northing	210692.01	Method	RC/IP/RO/DS	
Project No	G22069	Level	241.16 mAOD	Termination Reason	Scheduled depth	

Jackson Geoservices

Unit B3, Fram Enterprise Centre
Parc Busnes Edwards, Llantrisant
Pontyclun, CF72 8QZ

Email: team@jacksongeo.co.uk
Telephone: 02920 099 769

Project Name	GCRE	Project Number	G22069
Client	WALTERS GROUP	Date	13 DEC' 2022
Exploratory Hole Number	SI-BH101	Box / Face Number	
Depth (m) from	6.00 to 7.00	Engineer	A

0.10m 0.12m 0.20m 0.30m 0.40m 0.50m 0.60m 0.70m 0.80m 1.00m

S1-BH101 6.00 m to 7.00 m

Jackson Geoservices
Unit B3, Fram Enterprise Centre
Parc Busnes Edwards, Llantrisant
Pontyclun, CF72 8QZ

Email: team@jacksonge.co.uk
Telephone: 02920 099 769



Project Name: **GCRE**

Client: **WALTERS GROUP**

Exploratory Hole Number: **SI-BH101**

Depth (m) from: **7.00 to 8.00**

Project Number: **G22069**

Date: **13 DEC' 2022**

Box / Face Number: **A**

Engineer: **A**





THIS CORE IS INTENTIONALLY COVERED



7.00m



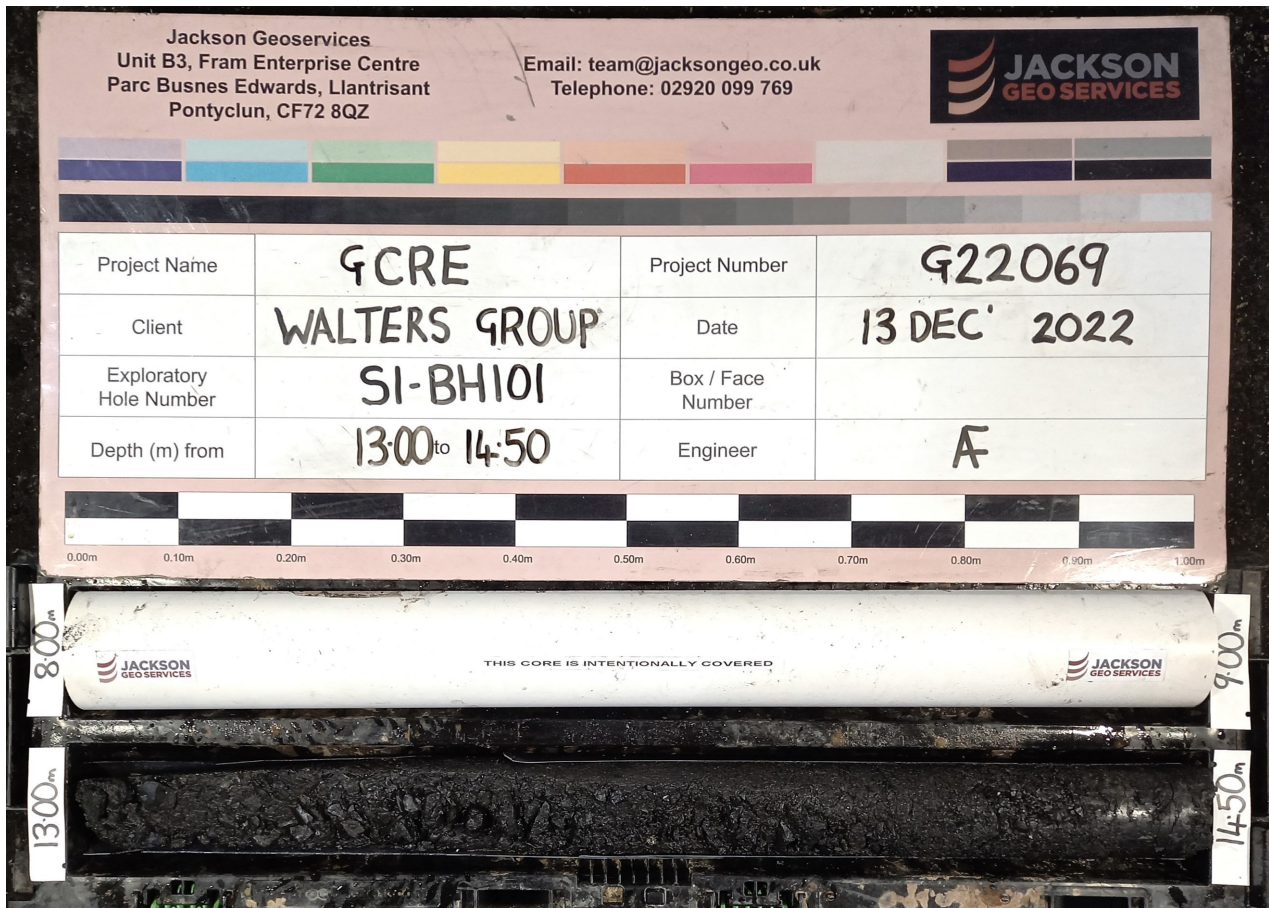
8.00m

S1-BH101 7.00 m to 8.00 m

		EXPLORATORY HOLE PHOTOGRAPHS		Remarks Hand excavated inspection pit from GL to 1.20m. Dynamic sampling from 1.20m to 17.00m. Rotary open holing from 17.00m to 21.60m. Rotary coring from 21.60m to 24.60m.		Exploratory Hole S1-BH101
Project	Global Centre of Rail Excellence	Easting	284925.38	Equipment	Beretta T44/Hand tools	Sheet 3 of 4
Client	Walters UK Limited	Northing	210692.01	Method	RC/IP/RO/DS	
Project No	G22069	Level	241.16 mAOD	Termination Reason	Scheduled depth	



S1-BH101 8.00 m to 9.00 m



S1-BH101 13.00 m to 14.50 m

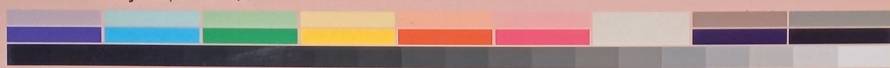
		EXPLORATORY HOLE PHOTOGRAPHS		Remarks Hand excavated inspection pit from GL to 1.20m. Dynamic sampling from 1.20m to 17.00m. Rotary open holing from 17.00m to 21.60m. Rotary coring from 21.60m to 24.60m.		Exploratory Hole S1-BH101
Project	Global Centre of Rail Excellence	Easting	284925.38	Equipment	Beretta T44/Hand tools	Sheet 4 of 4
Client	Walters UK Limited	Northing	210692.01	Method	RC/IP/RO/DS	
Project No	G22069	Level	241.16 mAOD	Termination Reason	Scheduled depth	

Jackson Geoservices
Unit B3, Fram Enterprise Centre
Parc Busnes Edwards, Llantrisant
Pontyclun, CF72 8QZ

Email: team@jacksongeo.co.uk
Telephone: 02920 099 769



Project Name	GCRE	Project Number	G22069
Client	WALTERS GROUP	Date	20 DEC' 2022
Exploratory Hole Number	S1-BH101	Box / Face Number	
Depth (m) from	21.60 to 23.10	Engineer	A





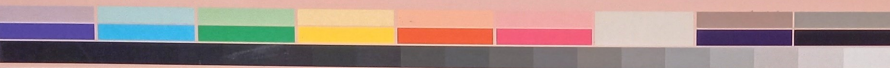
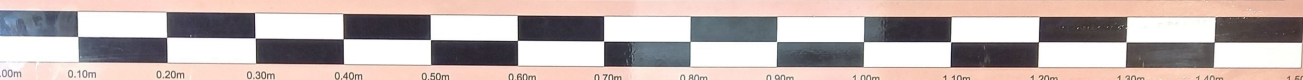

S1-BH101 21.60 m to 23.10 m

Jackson Geoservices
Unit B3, Fram Enterprise Centre
Parc Busnes Edwards, Llantrisant
Pontyclun, CF72 8QZ

Email: team@jacksongeo.co.uk
Telephone: 02920 099 769



Project Name	GCRE	Project Number	G22069
Client	WALTERS GROUP	Date	20 DEC' 2022
Exploratory Hole Number	S1-BH101	Box / Face Number	
Depth (m) from	23.10 to 24.60	Engineer	A

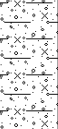
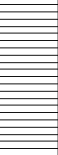


S1-BH101 23.10 m to 24.60 m

DYNAMIC SAMPLING AND ROTARY DRILLING EXPLORATORY HOLE LOG

Project	Global Centre of Rail Excellence		Equipment	Insulated Hand Tools/Beretta T44	
Client	Walters UK Limited		Method	IP/RC/WLS	
Project No	G22069	Level	230.73 mAOD	Inclination	
Easting	284544.49	Northing	210695.40	SPT Hammer Serial Number	
Termination Reason	Scheduled depth		SPT Hammer Energy Ratio		TECH1
					66 %

Exploratory Hole Progress by Time				Exploratory Hole
Date and Time	Depth	Casing Depth	Water Depth	S1-BH102
17/11/2022 08:00 17/11/2022 10:00	27.00 30.00	14.00 14.00	0.90 0.90	
				Sheet 2 of 6
				Scale 1:25
				Drilled KO
				Logged JP/AF
				Checked

Samples	Sampling and Testing Depths	Insitu Testing and Depth Related Remarks	Drill Runs	TCR SCR RQD	Depth (Thickness)	Level (mAOD)	Legend	Description	If (min ave max)	Scale	Backfill
11 D	5.00 - 6.00 5.00 5.00	SPT(S) N=41 (3.5/9.9,11,12) Casing: 5.00 Water: 0.90 PID: 0.0ppmv Recovered as D from DS 5.00-6.00m.	DS 5.00 - 6.00	10% 0% 0%	(0.65) 5.45	225.28		Dense grey sandy very clayey very angular to angular fine to coarse GRAVEL of mudstone and siltstone. Sand is fine to coarse. (Possible Residual Soil - LOWER SOUTH WALES COAL MEASURES FORMATION) Geology Code: SWCM 2nd Geology Code: GR		5.50	
12 D 13 D	6.00 - 6.45 6.00 - 7.00 6.00 6.00	SPT(S) N=50 (25 for 95mm/50 for 275mm) Casing: 6.00 Water: 0.90 PID: 0.1ppmv Recovered as D from DS 6.00-7.00m.	DS 6.00 - 7.00	0% 0% 0%	(1.55)			Minimal recovery. Core loss presumed to be weaker/ more weathered material. Recovered core comprises dense and very dense clayey sandy very angular fine to coarse GRAVEL of predominantly siltstone with occasional fine sandstone. Sand is fine to coarse. (Possible Weathered - LOWER SOUTH WALES COAL MEASURES FORMATION) Geology Code: SWCM 2nd Geology Code: SZT		6.00 6.50	
	7.00	SPT(S) N=38 (3.6/8.8,11,11) Casing: 7.00 Water: 0.90	RC 7.00 - 7.50	0% 0% 0%	7.00 (0.50)	223.73		NO RECOVERY. Grey silty CLAY with mudstone gravel. Possible completely weathered mudstone. (Driller's description). (Possible Weathered LOWER SOUTH WALES COAL MEASURES FORMATION) Geology Code: SWCM 2nd Geology Code: CL	Set 1 NA NA NA	7.00	
	8.00	SPT(C) N=44 (5.8/9.12,11,12) Casing: 8.00 Water: 0.90	RC 7.50 - 8.00	40% 0% 0%	7.50	223.23		Minimal recovery. Core loss presumed to be weaker/ more weathered material. Recovered core comprises slightly clayey slightly sandy very angular to subangular fine to coarse GRAVEL very weak to weak mudstone and locally moderately weak siltstone. Possible extremely closely to very closely spaced discontinuities. (Weathered LOWER SOUTH WALES COAL MEASURES FORMATION) Geology Code: SWCM 2nd Geology Code: MST <i>8.00m - 8.50m No core recovery.</i>	Set 1 NI NI 50	7.50	
	9.00	SPT(C) N=50 (7.9/50 for 245mm) Casing: 9.00 Water: 0.90	RC 8.00 - 8.50	0% 0% 0%						8.00	
			RC 8.50 - 9.00	20% 0% 0%						8.50	
			RC 9.00 - 9.50	20% 0% 0%	(3.00)					9.00	
	10.00		RC 9.50 - 10.00	90% 10% 0%						9.50	
										10.00	
								Continued on next Sheet			

Drilling Flush					Hole Diameter		Casing Diameter		Water Added		Water Strikes						
Depth Top	Depth Base	Type	Colour	Returns	Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Date and Time	Casing	Strike	Sealed	Rising to	Time	Remark
7.00	30.00	Air/Mist	Black	100%	30.00	104mm	14.00	168mm			11/11/2022 13:48 14/11/2022 13:38	0.00 7.00	0.60 7.00		0.45 0.90	20mins 20mins	
Drill Bit Type		PCD			Drill Bit Condition		Good		Core Barrel Type		Conventional Triple Tube		Core Barrel Length			1.50	

Remarks

Hand excavated inspection pit from GL to 1.20m depth. Dynamic sampling from 1.20m to 7.00m depth. Rotary coring from 7.00m to 30.00m depth.

Printed 16/01/2023 11:59



Exploratory Hole Progress by Time				Exploratory Hole									
Date and Time	Depth	Casing Depth	Water Depth	S1-BH102 Sheet 5 of 6 <table><tr><td>Scale</td><td>1:25</td></tr><tr><td>Drilled</td><td>KO</td></tr><tr><td>Logged</td><td>JP/AF</td></tr><tr><td>Checked</td><td></td></tr></table>		Scale	1:25	Drilled	KO	Logged	JP/AF	Checked	
Scale	1:25												
Drilled	KO												
Logged	JP/AF												
Checked													

Drilling Flush					Hole Diameter		Casing Diameter		Water Added		Water Strikes						
Depth Top	Depth Base	Type	Colour	Returns	Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Date and Time	Casing	Strike	Sealed	Rising to	Time	Remarks
7.00	30.00	Air/Mist	Black	100%	30.00	104mm	14.00	168mm			11/11/2022 13:48 14/11/2022 13:38	0.00 7.00	0.60 7.00		0.45 0.90	20mins 20mins	
Drill Bit Type		PCD			Drill Bit Condition		Good		Core Barrel Type		Conventional Triple Tube		Core Barrel Length			1.50	

Printed 16/01/2023 11:59

Printed 16/01/2023 11:59