

Factual Ground Investigation Report

Sandown Quarry, Aldridge, Walsall

Byrne Looby

June 2022





Factual Ground Investigation Report

Sandown Quarry, Aldridge, Walsall

Contract: C10259

Reference: C10259-FGIR

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Issue:	Date:	Description:					
P01	30/06/22	First issue					



EXECUTIVE SUMMARY

Site Address	175 Stubbers Green Rd, Aldridge, Walsall WS9 8BL.
Current Site Use	The site comprises of an active quarry.
Published Geology	The published geology for the site, based on records provided by the British Geological Society, indicates the west of the site to be underlain by Glacial Till. No superficial deposits are noted to the east of the site. The whole site is underlain by bedrock strata of the Etruria Formation - Mudstone, Sandstone and Conglomerate.
Intrusive Works	Intrusive works comprised of seven rotary boreholes by open hole and cored drilling, with in situ permeability testing in one location and the installation of six groundwater monitoring wells.
Sampling and Testing	Chemical and geotechnical laboratory testing was carried out on selected samples as scheduled by Byrne Looby.

Disclaimer. This Executive Summary should be read in conjunction with Exploration & Testing Associates Limited's Ground Investigation Report, reference C10259-FGIR, of which it forms part.



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1.0 INTRODUCTION

1.1 Introduction

Exploration & Testing Associates Limited (Exploration) was instructed by Byrne Looby, on behalf of Booth Ventures (the Client), to undertake an investigation to establish ground and groundwater conditions at the site.

This report has been prepared for the sole use of the Client for the purposes set out above. No third-party duty of care or reliance on this document is offered and the use of information within this report by any third party is at their own risk. This document shall not be reproduced in any form without the prior written permission of Exploration.

The information contained within this report is based on conditions at the time of investigation and there may be site factors which have not been disclosed within this document. It should be noted that groundwater levels may vary due to seasonal or other conditions.

1.2 Scope of Work

The scope of work was set out by the Client at tender stage and comprised the following:

- Seven rotary boreholes with associated sampling and in situ testing;
- The installation of groundwater monitoring wells;
- Geotechnical and chemical laboratory testing.

This document is intended to provide a factual account of the work undertaken and present the data obtained during the ground investigation.



2.0 SITE DESCRIPTION

2.1 Site Location

The site is located approximately 1.5km to the northwest of the town of Aldridge, near Walsall in the West Midlands and may be located by National Grid Reference 404416 301939.

A Site Location Plan is presented in Appendix 1 as drawing reference C10259-SLP_P01.

2.2 Site Description

The site is irregular in shape comprising of an area of approximately 30 hectares.

At the time of the investigation the site comprised an active quarry. Topogrpahy was variable, with the centre of the quarry at 94mAOD, rising to 140mAOD in the east, 134mAOD in the north and approximately 130mAOD in the west and south.

The site was bounded by Stubbers Green Road to the west and southwest, the Daw End Branch canal to the east and an industrial access road to the north.

2.3 Published Geology

The published geology for the site, based on records provided by the British Geological Society (BGS), indicates the west of the site to be underlain by Glacial Till. No superficial deposits are noted to the east of the site. The whole site is underlain by bedrock strata of the Etruria Formation - Mudstone, Sandstone and Conglomerate.



3.0 GROUND INVESTIGATION

3.1 Intrusive Investigation

The intrusive investigation was carried out between 24th March and 27th April 2022 and was undertaken in general accordance with published guidance BS 5930:2015+A1:2020 and BS 10175:2011+A2:2017.

The work undertaken comprised the following:

- Service clearance of all locations;
- Seven (7 No.) rotary boreholes by coring or open hole;
- Variable (rising) head testing in one location;
- The installation of six (6 No.) groundwater monitoring wells; and
- Representative sampling for laboratory testing.

The exploratory hole locations were set out based on an indicative plan issued in advance by the Client. Dual boreholes were drilled at two locations to install shallow (S) and deep (D) standpipes. An Exploratory Hole Location Plan is provided in Appendix 1 as drawing reference C10259-EHLP_P01.

The depths of the exploratory holes, descriptions of strata encountered and comments on groundwater conditions are provided in Appendix 2, together with photographic records of the core obtained.

Representative undisturbed and disturbed samples were taken at the depths shown on the exploratory hole records with selected samples dispatched to the laboratory for testing.

3.2 Sampling Strategy

Representative samples were obtained in order provide suitable material for laboratory testing to establish:

• The geotechnical properties of the underlying soils/rock.



4.0 LABORATORY TESTING

4.1 Testing Strategy

The geotechnical laboratory testing was scheduled by the Client.

4.2 Geotechnical Laboratory Testing

All samples were prepared in accordance with BS 1377-1:2016 by a UKAS accredited laboratory, with representative sub-samples taken for testing as necessary.

The following tests carried out were:

- One (1 No.) water contents
- One (1 No.) Atterberg Limits;
- Two (2 No.) particle size distributions by wet sieve;
- One (1 No.) particle density;
- One (1 No.) BRE suite brownfield without pyrite.

Samples from the bedrock were also examined as to their suitability for laboratory permeability testing but were found to be unsuitable.

The results are provided in Appendix 3 as Test Report 59763.



5.0 REFERENCES

British Geological Survey. Geology of Britain Viewer (http://mapapps.bgs.ac.uk/geologyofbritain/home.html), accessed 28th June 2022.

British Geological Survey, Sheet No. 154, 'Lichfield', solid, 1:63,360 scale, published 1964.

British Geological Survey, Sheet No. 154, 'Lichfield', drift, 1:63,360 scale, published 1971.

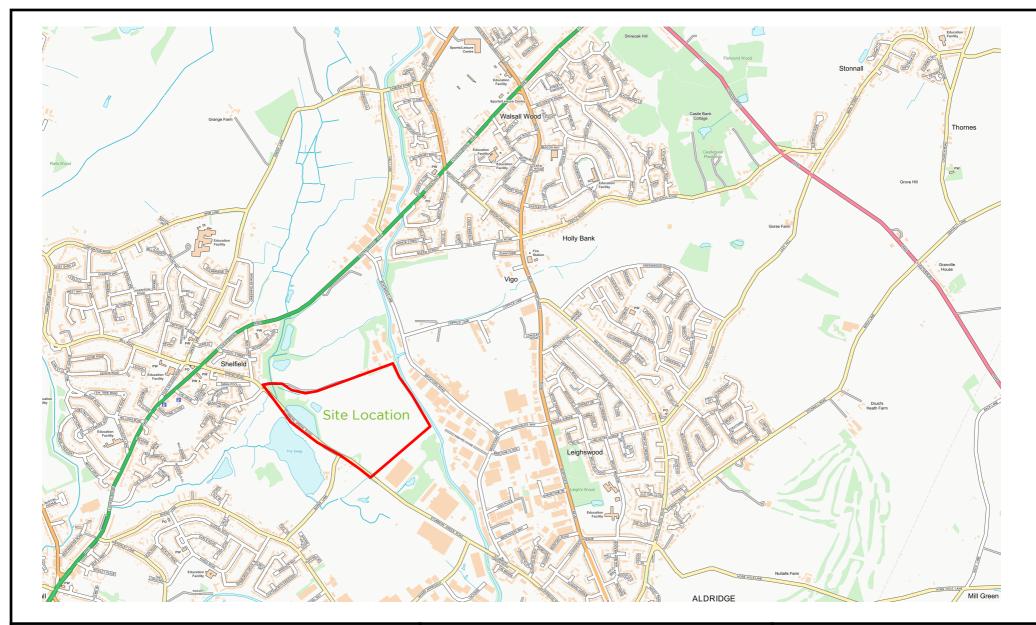
BS 1377-1:2016, 'Methods of test for soils for civil engineering purposes — Part 1: General requirements and sample preparation', British Standards Institute, 2016.

BS 5930:2015+A1:2020 'Code of practice for ground investigations.' British Standards Institute, 2020.

BS 10175:2011+A2:2017 'Investigation of potentially contaminated sites. Code of practice', British Standards Institute, 2017.



APPENDIX 1: DRAWINGS



Client: Byrne Looby

Contract: Sandown Quarry

Contract No.: C10259

Title: Site Location Plan

Drawing: C10259.SLP_1

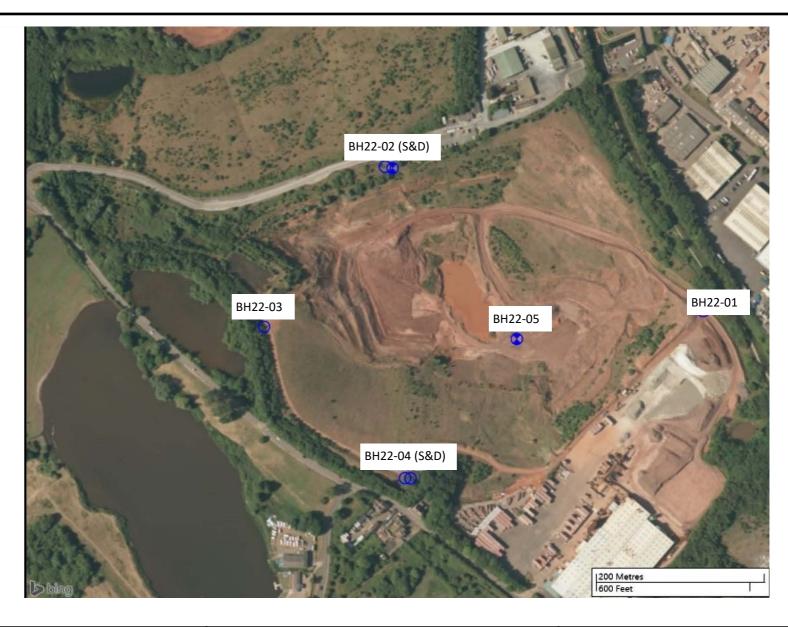
Date: 28/06/2022





Locations By Type - RC

Locations By Type - RO



Client: Byrne Looby

Contract: Sandown Quarry

Contract No.: C10259

Title: Exploratory Hole Location Plan

Drawing: C10259.EHLP_1

Date: 28/06/2022





APPENDIX 2: ENGINEERING RECORDS

G:	EXPLO EXPLO	RATION						Rot	ary	/ C	ore	Lo	g				
Proje	ct Name	e: Sandow	n Quarry	/		Client:	Byrne	Looby				Date: 2	9/03/20	22 - 30/	03/202	22	
Locat	ion: Wa	Isall				Contra	ctor: E	xploratio	n & Tes	ting		Co-ord	s: E4040	638.99	N3019	72.32	
Proje	ct No. :	C10259				Crew N	lame:	ACE Dril	ling			Drilling	Equipm	nent: Be	retta G	T-54	
Во	rehole N BH22-		Н	ole Type RO			Leve 0.85m	AoD		Logged JS	Ву		Scale 1:40			Status FINAL	
Well	Water	Depth (m)	Туре	FI FI	TCR	oring SCR RQD	Diameter Recovery (SPT)	Depth (m)	Level (m)	Legen d			ratum D				
Depth Ba		er Depth Base	Diameter	Depth Top	Chi	selling	Tool			and Orient	(Drille	Depth Top	Depth Base	Drillin Type	g Flush		3 3 3 3 3 3 3 3
52.30	140	1.50	140		, 240	_ 0.0001	.301	2 Spui IV				0.00	52.30	Mist	Red	(70)	100
Rem 1. 15		30-Await	ing inst	all instr	uction	ıs.											

Sheet 1 of 7

Project Nam	ne: Sandown	Quarry			Client:	Byrne	Looby				Date: 29/03/2022 - 30/0	3/2022	
Location: W	alsall				Contra	ctor: E	xploratio	n & Tes	ting		Co-ords: E404638.99 N	301972.32	
Project No.	: C10259				Crew N	lame: /	ACE Dril	ling			Drilling Equipment: Bere	etta GT-54	
Borehole BH22	2-01		le Type RO			Level Logged By 140.85m AoD JS		Ву	Scale 1:40	Status FINAL			
Well Water	Depth (m)	Туре	FI	TCR	ring SCR RQD	Diamete Recover (SPT)	Depth (m)	Level (m)	Legen d		Stratum Description	on	
											E GROUND: Overburdeners Description)	/backfill	9 · 10 · 11 · 12 · 13 · 14 · 15 · 15 · 1

Remarks

1. 15:00-15:30-Awaiting install instructions.

Sheet 2 of 7

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Proje	ct Nam	e: Sandowr	Quarry			Client:	Byrne	Looby				Date: 29/03/2022 - 30/0	3/2022	
Locat	ion: Wa	alsall				Contra	ctor: E	xploratio	n & Tes	ting		Co-ords: E404638.99 N	301972.32	
Proje	ct No. :	C10259				Crew I	Name:	ACE Dril	ling			Drilling Equipment: Bere	etta GT-54	
Во	rehole BH22	Number 2-01	Но	le Type RO		Level Logged By 140.85m AoD JS		У	Scale 1:40	Status FINAL				
Well	Water	Depth (m)	Туре	FI	TCR S	oring SCR RQI	Diameter Recovery (SPT)	Depth (m)	Level (m)	Legen d		Stratum Descripti	on	
												E GROUND: Overburdeners Description)	/backfill	17 · 18 · 19 · 20 · 21 · 22 · 23 · 23 · .

24.00 116.85

Remarks

1. 15:00-15:30-Awaiting install instructions.

Sheet 3 of 7

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6		DRATION SSOCIATES						F	Rot	ary	Co	ore	Lo	g				
Projec	ct Nam	ne: Sandow	n Quarr	У		Clie	ent: E	Byrne I	Looby				Date: 2	9/03/202	22 - 30/	03/2022	2	
Locat	ion: W	alsall				Cor	ntrac	ctor: Ex	ploratio	n & Tes	ting		Co-ord	s: E4046	1 99.88	N30197	2.32	
Projec	ct No.	: C10259				Cre	w N	lame: A	ACE Dril	ling			Drilling	Equipm	ent: Be	retta GT	-54	
Воі		Number	Н	ole Typ	е			Level			Logged I	Ву		Scale			Status	
	BH22	2-01 Depth		RO		orina		0.85m		Lovel	JS Legen			1:40			FINAL	
Well	Water	(m)	Туре	e FI	TCR	SCR	RQD	Diameter Recovery (SPT)	(m)	(m)	d		Str	atum D	escript)	tion		
						SCK	מַל					Muds	tone (Dr	illers De	scriptio	n)		25 - 26 - 27 - 30 - 30 - 31 - 31 - 31 - 31 - 31 - 31
																		32 -
Hole	Diamete	er Casing [Diameter		Chi	selling			Ir	nclination a	and Orienta	ation			Drillin	g Flush		
Depth Ba 52.30	se Diam	eter Depth Base		Depth Top				Tool			se Inclination		Depth Top 0.00	Depth Base 52.30	Type Mist	Colour Red	Min (%)	Max (%) 100

Remarks

1. 15:00-15:30-Awaiting install instructions.

Sheet 4 of 7

	ORATION						Rot	ary	/ Co	ore	Lo	g					
Project Na	me: Sandow	n Quarry			Client:	Byrne	Looby				Date: 2	9/03/20:	22 - 30/	03/2022)		
Location: V	Valsall				Contra	ctor: E	xploration	n & Tes	sting		Co-ord	s: E4046	1 99.886	N30197	2.32		
Project No	: C10259				Crew I	Name:	ACE Dri	lling			Drilling	Equipm	ent: Bei	retta GT	-54		
	e Number 22-01	Ho	ole Type RO			Leve 10.85m	AoD		Logged JS	Ву		Scale 1:40			Status FINAL		
Well Wate	Depth (m)	Туре	FI	TCR	oring SCR RQI	Diameter Recovery (SPT)	Depth (m)	Level (m)	Legen d		Str	atum D	escript)	tion			
										Mudst	tone (Dr	illers De	escription	n)		33 34 35 36 37	
Hole Diame	eter Casing D	Diameter		Chi	iselling		-	nclination	and Orienta	ation			Drillin	g Flush		40	-
Depth Base Dia	meter Depth Base 40 1.50		Depth Top [Tool			se Inclination		Depth Top 0.00	Depth Base 52.30	Type Mist	Colour	Min (%)	Max (<u>%)</u>
		1			1				1		1				1	1	

Remarks

1. 15:00-15:30-Awaiting install instructions.

Sheet 5 of 7

Projec	t Nam	e: Sandown	Quarry			Clier	nt: Byrn	e Looby				Date: 2	9/03/202	22 - 30/	03/2022		
	on: Wa							 Exploration	on & Tes	ting		1	s: E4046				
		C10259						: ACE Dri					Equipm				
	ehole	Number	Но	le Type)		Lev	rel		Logged	Ву		Scale			Status	
	BH22	-		RO			140.85i چ چ		11	JS			1:40			FINAL	\top
Well	Water	Depth (m)	Туре	FI	TCR	SCR R	Diameter Recovery	Depth (m)	(m)	Legen d		Str	atum D	escript	ion		
											Muds	tone (Dr	illers De	scription	n)		41 42 43 44 45
																	47
Н.								_									48
	Diamete	r Casing Di							nclination					Drilling			1

Remarks

1. 15:00-15:30-Awaiting install instructions.

Sheet 6 of 7

Project Nan	ne: Sandow	n Quarry			Client:	Byrne	Looby				Date: 29/03/2022 - 30/0	3/2022	
ocation: W	alsall				Contra	ctor: E	xploratio	n & Tes	ting		Co-ords: E404638.99 N	301972.32	
Project No.	: C10259				Crew N	lame: A	ACE Dril	lling			Drilling Equipment: Bere	etta GT-54	
Borehole BH2		Но	le Type RO			Leve 0.85m	AoD		Logged JS	Ву	Scale 1:40	Status FINAL	
Water Water	Depth (m)	Туре	FI	TCR S	ring CR RQD	Diameter Recovery (SPT)	Depth (m)	Level (m)	Legen d		Stratum Descripti		
							52.30	88.55		Muds	End of Borehole at 52.3		50 51 52 54 55

Inclination and Orientation

| Depth Top | Depth Base | Inclination | Orientation | Depth Top | Depth Base | 0.00 | 52.30 |

1. 15:00-15:30-Awaiting install instructions.

Chiselling

Depth Top Depth Base Duration

Tool

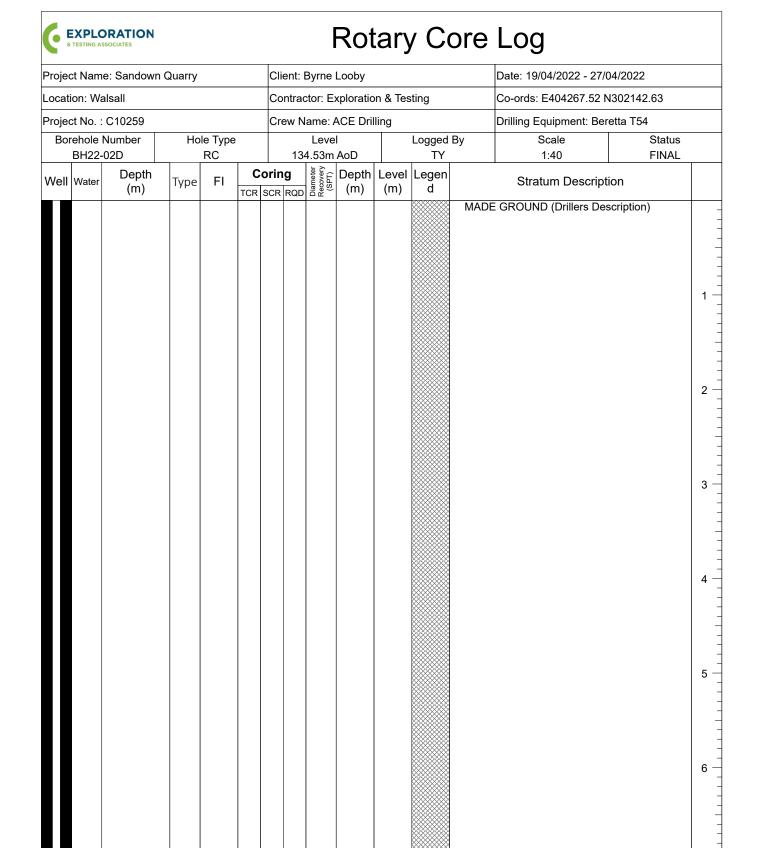
Sheet 7 of 7

Min (%) Max (%)

Drilling Flush
Type Colour
Mist Red

Type Mist

56 -



Hole Diameter Casing Diameter Chiselling Inclination and Orientation Depth Base Diameter Depth Base Diamet

Remarks

1. Low loader unavailable on 14./04/22 - 5 hours standing. 2. Low loader arrives at 12pm on 17/04/22 - 4 hours standing 3. Fill water bowser 4 x 0.5 hours. 4. Collect extra casing 7 hours

Sheet 1 of 9

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Projec	t Nam	e: Sandown	Quarry			Client:	Byrne	Looby			Date: 19/04/2022 - 27/	04/2022	
Location	on: Wa	ılsall				Contrac	ctor: E	xploratio	n & Tes	ting	Co-ords: E404267.52	N302142.63	
		C10259				Crew N	lame: /	ACE Dril			Drilling Equipment: Ber		
	ehole l BH22-	Number	Но	le Type RC		13.	Leve 4.53m			Logged By TY	Scale 1:40	Status FINAL	
	Water	Depth (m)	Туре		Co	ring CR RQD			Level (m)	Legen d	Stratum Descript		
										M	ADE GROUND (Drillers De	scription)	9 10 11 12 13

Hole Diameter Casing Diameter Chiselling Inclination and Orientation Depth Base Diameter Depth Base Diamet

Remarks

1. Low loader unavailable on 14./04/22 - 5 hours standing. 2. Low loader arrives at 12pm on 17/04/22 - 4 hours standing 3. Fill water bowser 4×0.5 hours. 4. Collect extra casing 7 hours

Sheet 2 of 9

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Client: Byrne Looby Date: 19/04/2022 - 27/04/2022 Project Name: Sandown Quarry Location: Walsall Contractor: Exploration & Testing Co-ords: E404267.52 N302142.63 Project No. : C10259 Crew Name: ACE Drilling Drilling Equipment: Beretta T54 Borehole Number Hole Type Level Logged By Scale Status BH22-02D RC134.53m AoD ΤY 1:40 **FINAL** Coring
TCR SCR RQD Diameter (SPT) Depth Depth Level Legen Well Water FΙ Stratum Description Type (m) (m) d Marl (Drillers Description) 18 19 20 21 22 23 24 Chiselling Inclination and Orientation Drilling Flush Hole Diameter Casing Diameter Min (%) Max (%)
100
80
100 Depth Base Diameter Depth Base Diameter 65.30 140 50.10 140 Depth Top Depth Base Duration Tool Depth Top Depth Base Inclination Orientation Depth Top Depth Base Colour 0.00 4.50 48.00 4.50 48.00 65.30 Red Red Red

1. Low loader unavailable on 14./04/22 - 5 hours standing. 2. Low loader arrives at 12pm on 17/04/22 - 4 hours standing 3. Fill water bowser 4 x 0.5 hours. 4. Collect extra casing 7 hours

Sheet 3 of 9



Client: Byrne Looby Date: 19/04/2022 - 27/04/2022 Project Name: Sandown Quarry Location: Walsall Contractor: Exploration & Testing Co-ords: E404267.52 N302142.63 Project No.: C10259 Crew Name: ACE Drilling Drilling Equipment: Beretta T54 Borehole Number Hole Type Level Logged By Scale Status BH22-02D RC134.53m AoD ΤY 1:40 **FINAL** Coring

TCR SCR RQD

Recovery
(SPT) Depth Depth Level Legen Well Water FΙ Stratum Description Type (m) (m) d Marl (Drillers Description) 26 27 28 29 30 31 32 Chiselling Inclination and Orientation Drilling Flush Hole Diameter Casing Diameter Min (%) Max (%)
100
80
100 Depth Base Diameter Depth Base Diameter 65.30 140 50.10 140 Depth Top Depth Base Duration Tool Depth Top Depth Base Inclination Orientation Depth Top Depth Base Colour 0.00 4.50 48.00 4.50 48.00 65.30 Red Red Red

1. Low loader unavailable on 14./04/22 - 5 hours standing. 2. Low loader arrives at 12pm on 17/04/22 - 4 hours standing 3. Fill water bowser 4 x 0.5 hours. 4. Collect extra casing 7 hours

Sheet 4 of 9



Client: Byrne Looby Date: 19/04/2022 - 27/04/2022 Project Name: Sandown Quarry Location: Walsall Contractor: Exploration & Testing Co-ords: E404267.52 N302142.63 Project No.: C10259 Crew Name: ACE Drilling Drilling Equipment: Beretta T54 Borehole Number Hole Type Level Logged By Scale Status BH22-02D RC134.53m AoD ΤY 1:40 **FINAL** Coring

TCR SCR RQD

Recovery
(SPT) Depth Depth Level Legen Well Water FΙ Stratum Description Type (m) (m) d Marl (Drillers Description) 34 35 36 37 38 39 40 Chiselling Inclination and Orientation Drilling Flush Hole Diameter Casing Diameter Min (%) Max (%)
100
80
100 Depth Base Diameter Depth Base Diameter 65.30 140 50.10 140 Depth Top Depth Base Duration Tool Depth Top Depth Base Inclination Orientation Depth Top Depth Base Colour 0.00 4.50 48.00 4.50 48.00 65.30 Red Red Red

1. Low loader unavailable on 14./04/22 - 5 hours standing. 2. Low loader arrives at 12pm on 17/04/22 - 4 hours standing 3. Fill water bowser 4 x 0.5 hours. 4. Collect extra casing 7 hours

Sheet 5 of 9



Project Name: Sandown Quarry	Client: Byrne Looby	Date: 19/04/2022 - 27/04/2022
Location: Walsall	Contractor: Exploration & Testing	Co-ords: E404267.52 N302142.63
Project No. : C10259	Crew Name: ACE Drilling	Drilling Equipment: Beretta T54
Borehole Number Hole Type BH22-02D RC	Level Logged B 134.53m AoD TY	Sy Scale Status 1:40 FINAL
	pring Depth Level Legen (m) d	Stratum Description
(m) TCR S	SCR RQD C C C C C C C C C C C C C C C C C C C	Marl (Drillers Description) 41 — 42 — 43 —
45.00 - 48.00	10 B b, b, B B B	Extremely weak reddish brown MUDSTONE with rare greenish grey pockets up to 20mm in size. Discontinuities are horizontal closely spaced undulating rough with no infill. Polow 45.51m bgl: Occasional light grey and greenish grey pockets up or 70mm in size. Jetween 45.61m and 47.09m bgl: Very closely spaced interbedding ands of firm reddish brown slightly sandy slightly gravelly CLAY. Gravel as angular fine to coarse mudstone. Jelow 45.90m bgl: Occasional light grey and yellowish brown pockets p to 70mm in size. Jelow 46.00m bgl: Discontinuities are medium spaced. Jetween 46.11m and 46.29m bgl: Very weak.
	48.00 86.53 selling Inclination and Orientation	
Depth Base Diameter Depth Base Diameter Depth Top Depth Base 65.30 140 50.10 140 Depth Top Depth Base Diameter Depth Base Diameter Depth Top Depth Base Diameter Depth Top Depth Base Diameter Diameter Depth Base D	Duration Tool Depth Top Depth Base Inclination	Orientation Depth Top Depth Base Type Colour Min (%) Max (%) 0.00 4.50 Mist Red 100 4.50 48.00 Mist Red 80 48.00 65.30 Mist Red 100

1. Low loader unavailable on 14./04/22 - 5 hours standing. 2. Low loader arrives at 12pm on 17/04/22 - 4 hours standing 3. Fill water bowser 4 x 0.5 hours. 4. Collect extra casing 7 hours

Sheet 6 of 9



Project Name:	Sandown C	Quarry			Cli	ent: E	Byrne I	ooby				Date: 1	9/04/202	22 - 27/0	04/2022)	
Location: Wals	all				Со	ntrac	tor: Ex	ploratio	n & Tes	ting		Co-ords	s: E4042	267.52 N	N30214	2.63	
Project No. : C	10259				Cre	ew N	ame: A	CE Dril	ling			Drilling	Equipm	ent: Ber	etta T5	4	
Borehole Nu		Но	le Type			4.0	Level			Logged	Ву		Scale			Status	
BH22-02			RC	_	orin		4.53m		Lovel	TY Legen			1:40			FINAL	
Well Water	Depth (m)	Туре	FI	TCR	SCR	y RQD	Diameter Recovery (SPT)	(m)	(m)	d		Str	atum D	escript)	ion		
			9	98	67	35		48.26	86.27		rare ye in size closely undula occasi Between 473 slightly grave Stiff re yellow to 30m coarse Extren MUDS	ellowish Discory space- ating rou onal cla from and 47	rown gravn and lize. Gravone. (Drak reddiwith rare	cockets are ho dium spa planar r p to 25r im reddish avelly C ight greyel is any illing inc sh brow a light greyel light greyel is any illing inc	up to 40 rizontal aced, ough w mm. brown slight LAY wit y pocke gular finduced).	omm ith ity sandy h rare ts up he to	49 —
50	0.80 - 53.80		2					50.31	84.22		size. [subho planar clay sr Below 48.70r spaced, undu Below 49.17r closely space	Disconting rizontal rough a mear. The ball Discoulating rough to ball Discoulating rough to ball Discoulating rough to ball anar u	h and plana ontinuities ai	1 are h to mediu ulating r 2 are vertice r rough. re horizonta nd planar sn	orizonta um space ough w al, closely to l and sub-vo nooth with co	al to ced ith o medium ertical, very clay smear.	50 -
			AZCL								subho planar	rizontal, smooth	streaks stepped with not e of core	d, close infill.			51 —
			5	51	49	31		52.27 52.27	82.26 82.26		MUDS yellow are ho	STÓNE vish brownizontal d, plana		indant li king. Dis p-horizo h with c	ght grey scontinu ntal, clo lay infill	uities esely up to	53 —
	3.80 - 55.30		4	96	87	80		54.09	80.44		MUDS and su	STONE. ub-verticating rou m bgl: With	ak reddi Discont cal, close igh with	inuities ely spac clay infi	are hori ed, ill up to		54 —
55	5.30 - 58.30 5.85 - 55.99	C2	AZCL					55.85	78.68				.85m bgl:A ak to vel	ry weak	reddish		56
Hole Diameter Depth Base Diameter		ameter D	epth Top D		iselling se Du	g ration	Tool			and Orient se Inclinatio	ation n Orientation			Туре	Flush Colour	Min (%)	Max (%)
65.30 140 Remarks	50.10	140										0.00 4.50 48.00	4.50 48.00 65.30	Mist Mist Mist	Red Red Red		100 80 100

1. Low loader unavailable on 14./04/22 - 5 hours standing. 2. Low loader arrives at 12pm on 17/04/22 - 4 hours standing 3. Fill water bowser 4 x 0.5 hours. 4. Collect extra casing 7 hours

Sheet 7 of 9



Project Name: Sandown C	Quarry			Cli	ent: E	Byrne I	ooby				Date: 1	9/04/202	22 - 27/0	04/2022		
Location: Walsall				Со	ntrac	tor: Ex	ploratio	n & Tes	ting		Co-ords	s: E4042	267.52 N	N302142	2.63	
Project No. : C10259				Cre	ew N	ame: A	CE Dril	ing			Drilling	Equipm	ent: Ber	etta T5	1	
Borehole Number	Hole					Level			Logged	Ву		Scale			Status	
BH22-02D	R					1.53m		Lovel	TY			1:40			FINAL	$\overline{}$
Well Water Depth (m)	Туре	FI	CR	SCR	ROD	Diameter Recovery (SPT)	(m)	(m)	Legen d		Str	atum D	escript	ion		
		10								brown Discor vertica planar Discor	mottled ntinuity s al, close rough v ntinuity s mediur	ak to ver l light groset 1 are ly space with clay set 2 are n space mely weak.	ey MUD horizon d, plana infill up 60-80	OSTONE ntal to s ar smoo to 15m degrees	i. ub- th and m.	57 —
58.30 - 61.30		4	82	66	48		57.11	77.42 76.43		MUDS very cl rough Below 57.51n Below 57.96n Discontinuitie Very w	STÓNE. losely to with cla m bgl: Disco m bgl: Very es are horize veak rec	weak reddis ontal and su Idish bro	inuities spaced p to 40n re no infill. sh brown with b-vertical. bwn MU	are hori d, planar nm. th light grey	streaks.	58
30.30 - 01.30		2								size. C sub-ho	Discontir Orizonta	of light gr nuity set I, closely lay infill	1 are h / space	orizonta d, plana	l and	59 —
		7	93	85	52					Below 59,411 spaced with the Between 59. Between 59. Between 59. Below 59,651 Below 59,651 Below 59,981 fractures. Below 60,241 2,45 degrees staining	clay infill up 49m and 59 65m and 59 m bgl: Redo m bgl: Very m bgl: Extre	to 30mm. 1.59m bgl: Ri 1.81m b	ecovered as ecovered as nd light gre sh brown wit with no light	s gravelly cl s clayey gra y. th light grey	ay. vel. pockets on	60 —
61.30 - 64.30		6 1	100	99	83		61.30	73.23		MUDS and su space infill up Between 62.0 Between 62.0 light grey.	BTONE. ub-vertic d, plana o to 20n 00m and 62 05m and 63		inuities ly space h with o ecovered actremely we	are hori ed to me ccasion s gravelly cl ak, reddish	edium al clay ay. brown and	61 —
Hole Diameter Casing Diam		5		sellinç	_				and Orient	horizo planar	ntal, clo smooth	sely to r	nedium infill.	spaced		64 —
	meter Depth	h Top Dep	th Base	Dui	ration	Tool	Depth To	p Depth Bas	se Inclinatio	n Orientation	0.00	4.50	Type Mist	Colour Red	Min (%)	Max (%) 100
Remarks											4.50 48.00	48.00 65.30	Mist Mist	Red Red		80 100

Remarks

1. Low loader unavailable on 14./04/22 - 5 hours standing. 2. Low loader arrives at 12pm on 17/04/22 - 4 hours standing 3. Fill water bowser 4 x 0.5 hours. 4. Collect extra casing 7 hours

Sheet 8 of 9



Project Name: Sandown Quarry	Client: Byrne Looby	Date: 19/04/2022 - 27/04/2022
Location: Walsall	Contractor: Exploration & Testing	Co-ords: E404267.52 N302142.63
Project No. : C10259	Crew Name: ACE Drilling	Drilling Equipment: Beretta T54
Borehole Number Hole Type BH22-02D RC	Level Logged By 134.53m AoD TY	Scale Status 1:40 FINAL
Well Water (m) Type FI TCR S	SCR RQD E SO (m) (m) d	Stratum Description
64.30 - 64.64 64.30 - 65.30	64.64 69.89 SANDS horizor planar Between 64.1 Which include Between 64.3 Very W	dark purplish grey fine to coarse STONE. Discontinuities are ntal, closely to medium spaced, smooth with no infill.
	65.30 69.23 dark gr	rey streaks. Discontinuities are ntal, very closely spaced, planar n and planar rough with clay infill up
	Between 65.0 with clay Infill	2m and 65.14m bgl: Sub-vertical, planar smooth fracture
		67 —
		- - - - -
		68 —
		69 —
		70 -
		71 –
Hala Diameter Coping Discrete	alling Indianting and Original	72 —
Hole Diameter Casing Diameter Chis Depth Base Diameter Depth Base Diameter Depth Top Depth Base 65.30 140 50.10 140 Depth Top Depth Base	elling Inclination and Orientation Duration Tool Depth Top Depth Base Inclination Orientation	Drilling Flush Depth Top Depth Base Type Colour Min (%) Max (%) 0.00 4.50 Mist Red 100
8emarks		4.50 Mist Red 100 48.00 Mist Red 80 48.00 65.30 Mist Red 100

1. Low loader unavailable on 14./04/22 - 5 hours standing. 2. Low loader arrives at 12pm on 17/04/22 - 4 hours standing 3. Fill water bowser 4 x 0.5 hours. 4. Collect extra casing 7 hours

Sheet 9 of 9



BH22-02D, core run 1: 45.00m—48.00m bgl.



BH22-02D, core run 2: 48.00m-50.80m bgl.

Contract No.: C10259

Client: Byrne Looby

Title: Rotary Core Photographs

Drawing: C10259_SP_01

Date: 22/04/22





BH22-02D, core runs 3 & 4: 50.80m-55.30m bgl.



BH22-02D, core run 5: 55.30m-58.30m bgl.

Contract No.: C10259

Client: Byrne Looby

Title: Rotary Core Photographs

Drawing: C10259_SP_01

Date: 25/04/22





BH22-02D, core run 6: 58.30m-61.30m bgl.



BH22-02D, core run 7: 61.30m-64.30m bgl.

Contract No.: C10259

Client: Byrne Looby

Title: Rotary Core Photographs

Drawing: C10259_SP_01

Date: 26/04/22





BH22-02D, core run 8: 64.30m-65.30m bgl.

Contract No.: C10259

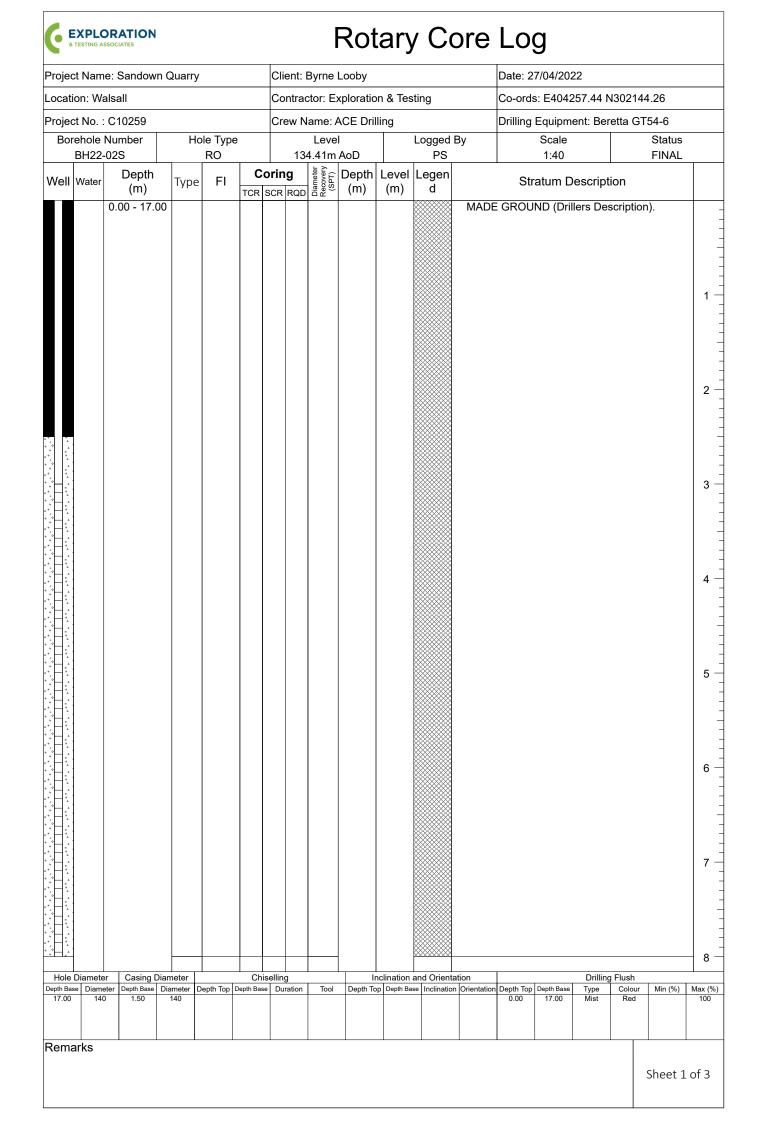
Client: Byrne Looby

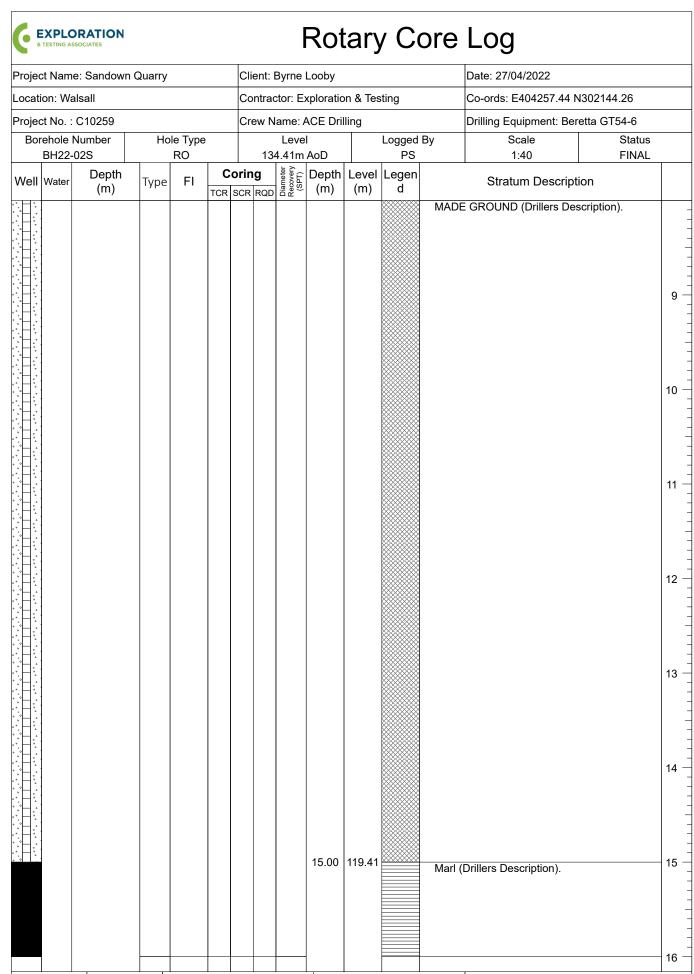
Title: Rotary Core Photographs

Drawing: C10259_SP_01

Date: 26/04/22







Hole Diameter Casing Diameter Chiselling Inclination and Orientation Depth Base Diameter Depth Base Diamet

Remarks

Sheet 2 of 3

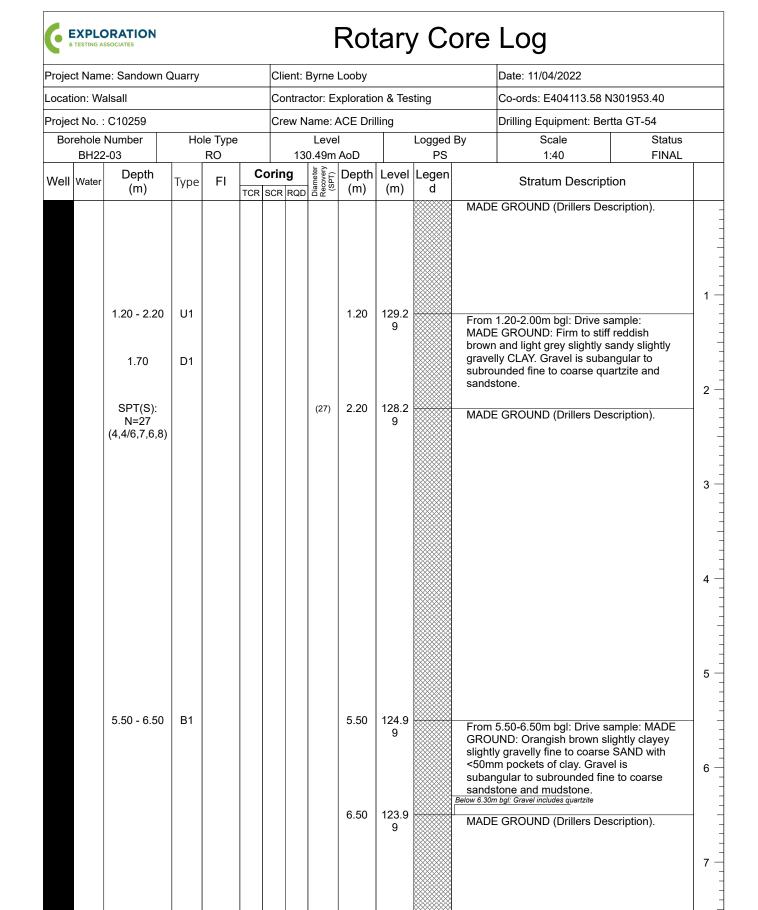
	Project Name: Sandown Quarry								3yrne	Looby			Date: 27/04/2022					
Borehole Number BH2-2/2S Hole Type Level Level Logged By Scale Status FINAL	ocati	ion: Wa	alsall				Coi	ntrac	tor: E	xploratio	n & Tes	ting		Co-ords: E404257.44 N	302144.26			
BH22-02S RO 134.41m AoD PS 1440 FINAL Claver (m) Type FI Coring Reference (m) FINAL RE	roje	ct No. :	C10259				Cre	w N	ame:	ACE Dri	lling			Drilling Equipment: Bere	etta GT54-6			
ell Water Depth (m) Type FI TOR SCR ROO 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2				Но				134					Ву					
17.00 117.41 End of Borehole at 17.00m			Depth	Туре		C	orin				Level (m)	Legen		-				
													Mari		i0m	1 1 2 2		
																2		

Hole Diameter Casing Diameter Chiselling Inclination and Orientation Dirilling Flush

Depth Base Diameter Depth Depth Base Dia

Remarks

Sheet 3 of 3



Chiselling Hole Diameter Casing Diameter Inclination and Orientation Drilling Flush Depth Base Diameter Depth Base Diameter Depth Top Depth Base Duration Depth Top Depth Base Inclination Orientation Depth Top Depth Base Colour Min (%) Max (%) Tool Type 140 15.00 4.50 140 0.00 15.00

Remarks

0.5 hours dayworks for induction

Sheet 1 of 2

Projec	rt Nam	e: Sandown (Juarry			:lient:	Byrne	Looby				Date: 11/04/2022		
	ion: Wa		guarry		-			xploration	n & Tes	stina		Co-ords: E404113.58 N	I301953 40	
		C10259						ACE Dri				Drilling Equipment: Ber		
		Number	Но	le Type RO			Leve 0.49m	l		Logged I	Ву	Scale 1:40	Status FINAL	
Well	Water	Depth (m)	Туре	FI	Cor	i ng	Diameter Recovery (SPT)	Depth (m)	Level (m)	Legen d		Stratum Descript	ion	
		SPT(S): 50 (25 for 75mm/50 for 10mm)						10.60	119.89		Marl	(Driller Description). bgl: Drive sample, refused and contin	ued with open hole	9 10 11 11 12 13

Inclination and Orientation

| Depth Top | Depth Base | Inclination | Orientation | Depth Top | Depth Base | 0.00 | 15.00 |

Tool

0.5 hours dayworks for induction

Sheet 2 of 2

Min (%) Max (%) 90

Drilling Flush
Type Colour
Mist Red

16 -



BH22-03, Drive Samples: 1.20m—2.20m & 5.50m- 6.50 m bgl.

Contract No.: C10259

Client: Byrne Looby

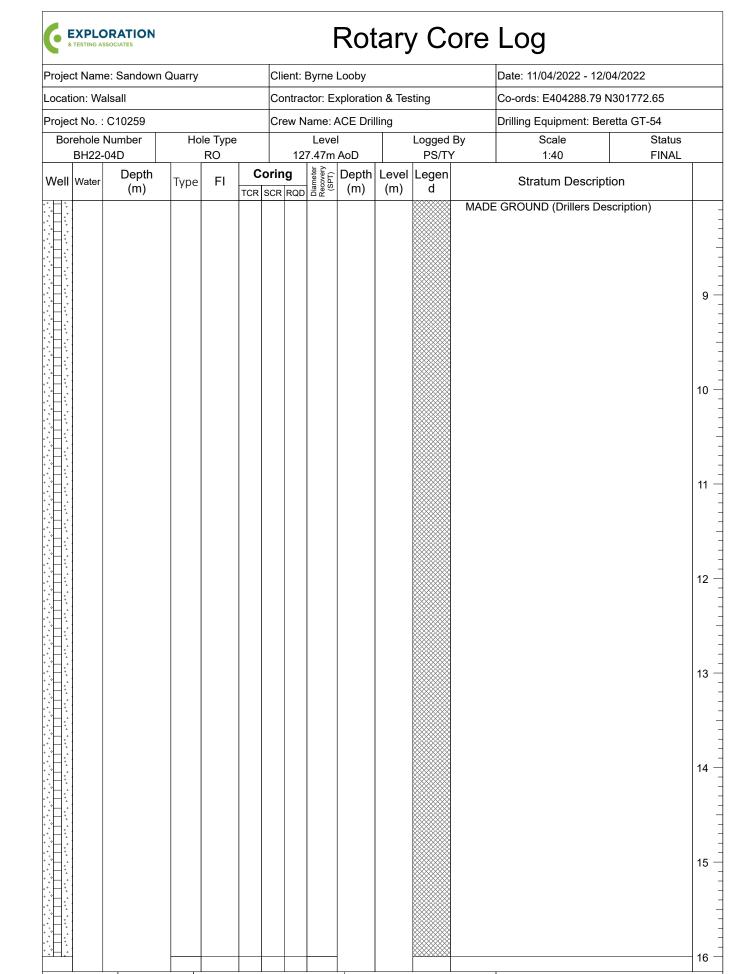
Title: Rotary Core Photographs

Drawing: C10259_SP_01

Date: 13/04/22

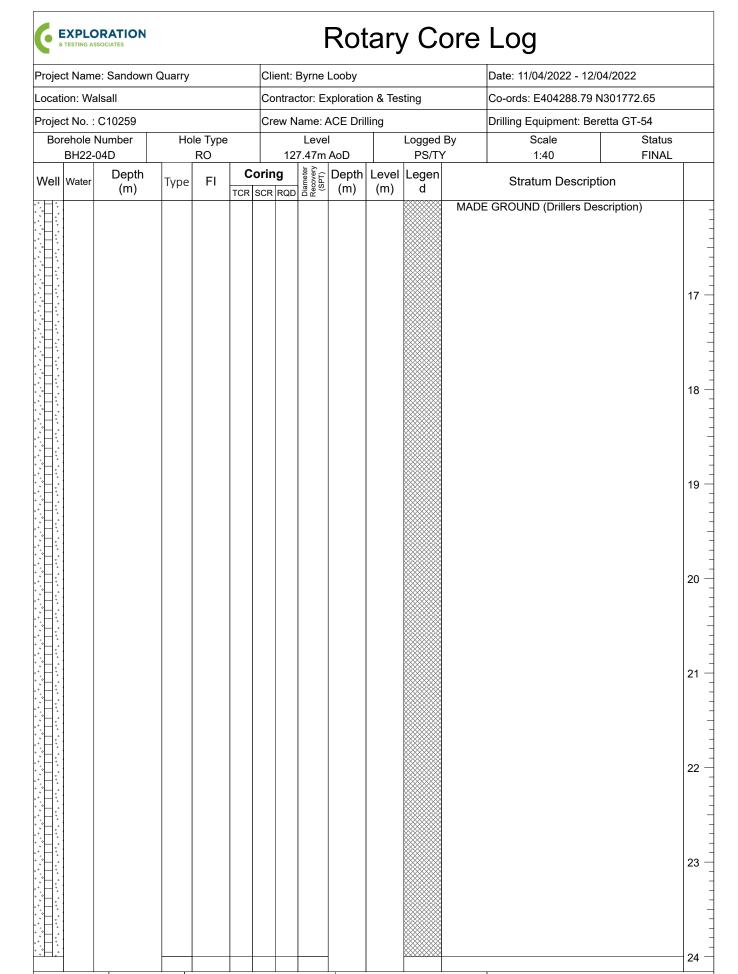


	ne: Sandown	Quarry			Cli	ent:	Byrne	Loobv			Date: 1	1/04/20:	22 - 12/	04/202	22	
cation: W					_			kploratio	n & Tes	sting	1	s: E404				
oject No.	: C10259				Cre	ew N	lame: A	ACE Drill	ling		Drilling	Equipm	ent: Be	retta G	T-54	
Borehole		Но	le Type			10	Leve 7.47m			Logged F		Scale 1:40			Status FINAL	
BH22	Donth	_	RO	С	 orin				Level	Legen	04		.	·	FINAL	
ell Water	(m)	Туре	FI	TCR	SCR	RQD	Diameter Recovery (SPT)	(m)	(m)	ď		atum C				
Idole Diamete	er Casing Dia				iselling				clination	and Orienta	E GROU	ND (Dri		g Flush	on)	



Remarks

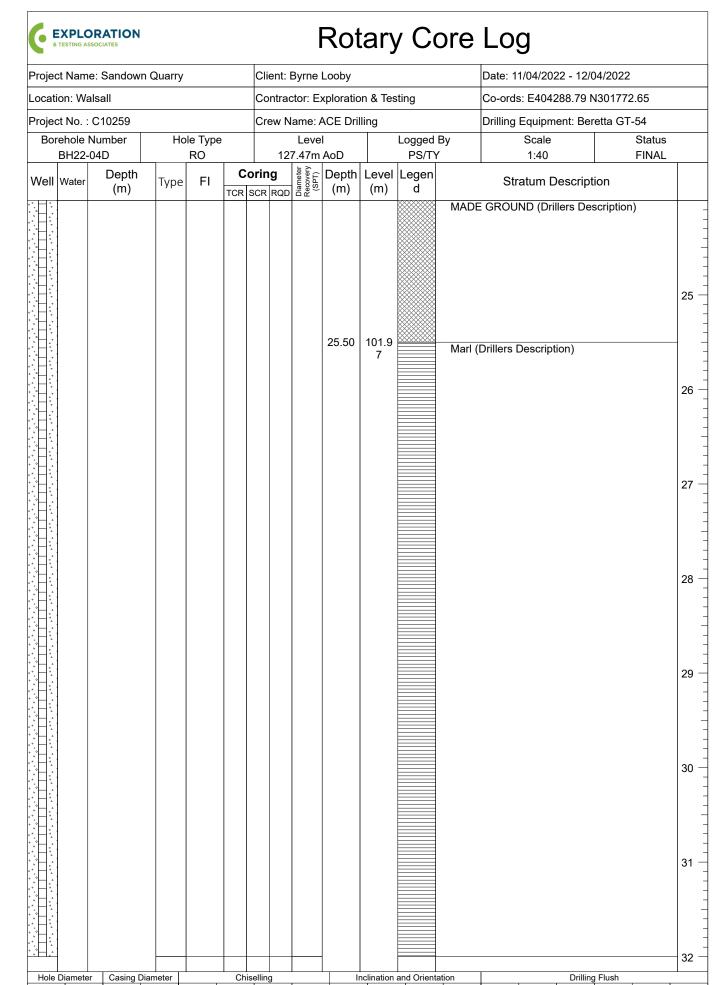
Sheet 2 of 6



Hole Diameter Casing Diameter Chiselling Inclination and Orientation Dorible Base Diameter Depth Base Diam

Remarks

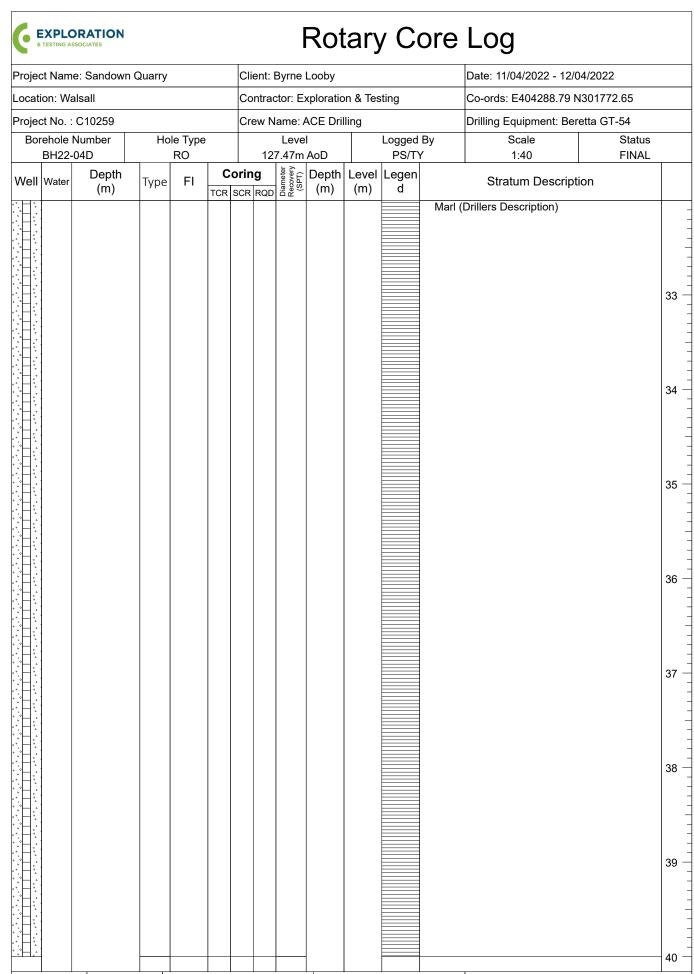
Sheet 3 of 6



Depth Base Diameter Depth Base Diameter A2.00 140 2.00 140 Depth Base Diameter Diamet

Remarks

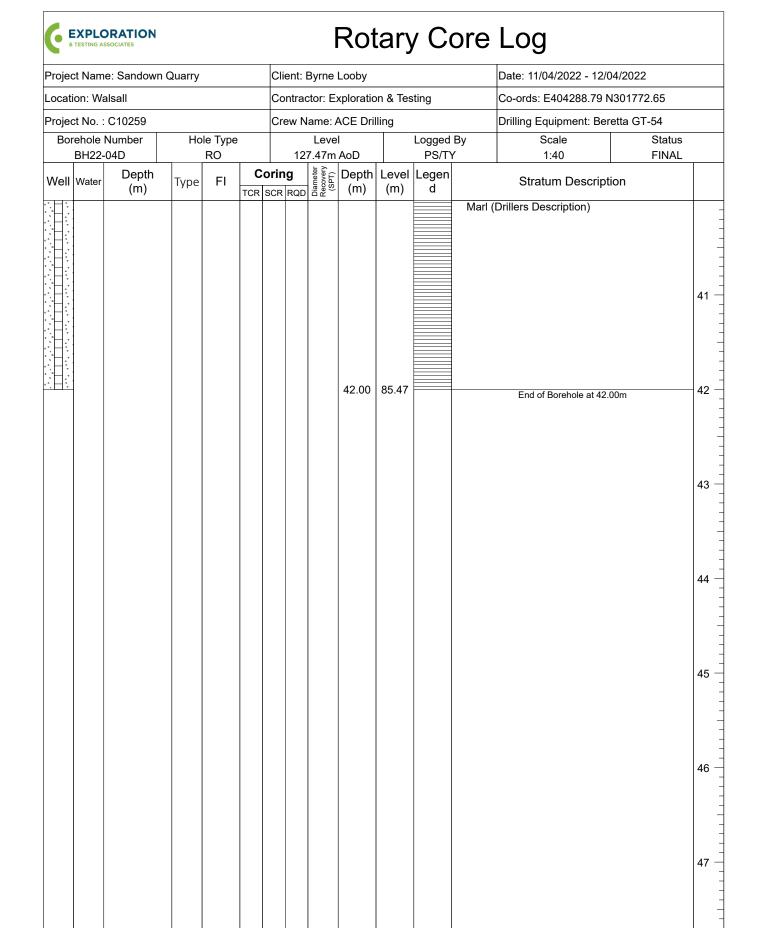
Sheet 4 of 6



Hole Diameter Casing Diameter Chiselling Inclination and Orientation Depth Base Diameter Depth Base Diameter Depth Base Diameter 2.00 140 Depth Top Depth Base Diameter 2.00 140 Depth Top Depth Base Diameter Depth Base Diameter Depth Base Diameter 2.00 140 Depth Base Diameter Depth Base Diameter 2.00 140 Depth Base Diameter 2.00 140 Depth Base Diameter 2.00 140 Depth Base Diameter 2.00 Depth Ba

Remarks

Sheet 5 of 6



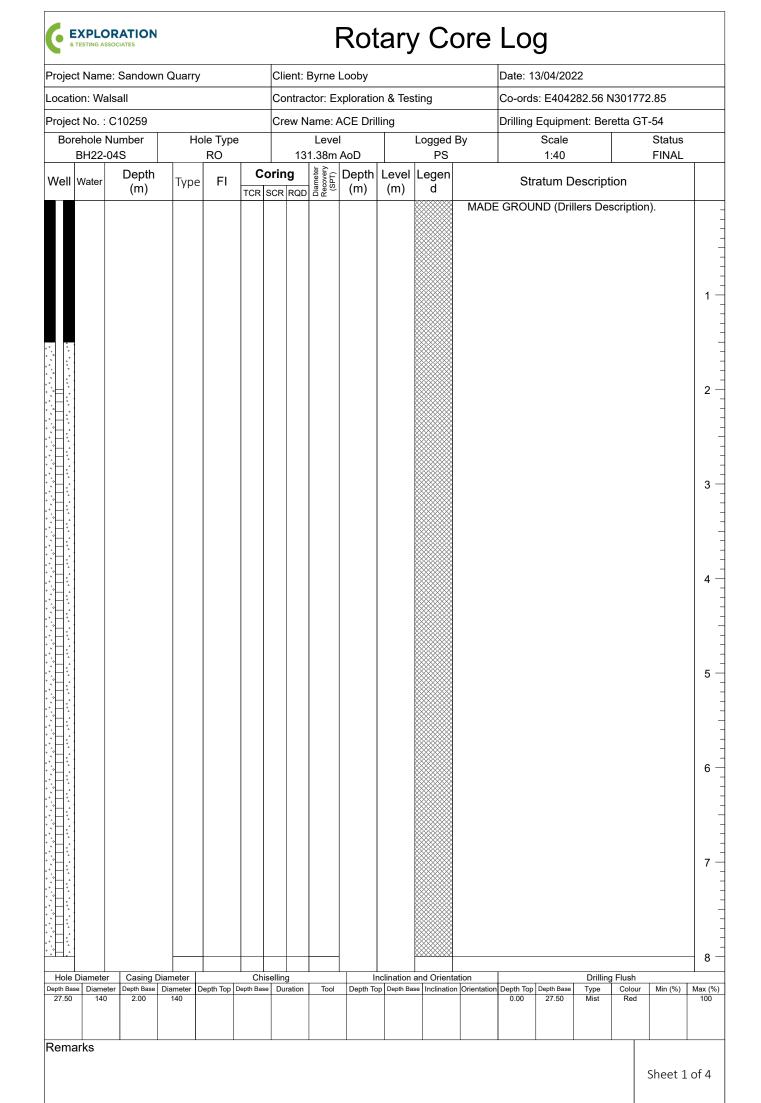
Hole Diameter Casing Diameter Chiselling Inclination and Orientation Drilling Flush

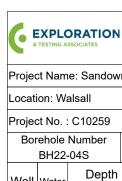
Depth Base Diameter Depth Base Diameter Depth Base Diameter Depth Top Depth Base Duration Tool Depth Top Depth Base Diameter Depth Base Duration Depth Top Depth Base Type Colour Min (%) Max (%)

42.00 140 2.00 140 8.00 Mist Red 100

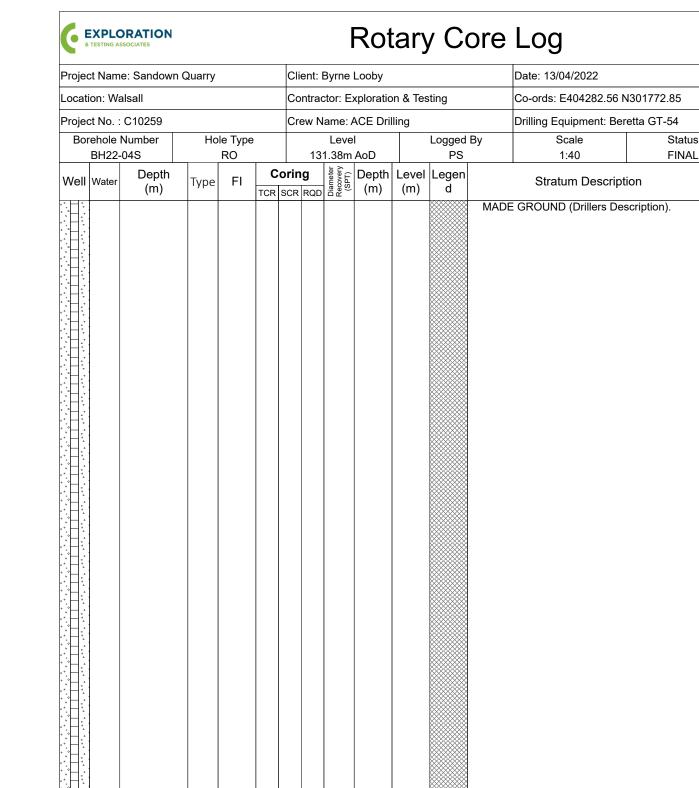
Remarks

Sheet 6 of 6





						•					— • ,	J				
Project Nam	e: Sandowr	n Quarry			Client: I	3yrne	Looby				Date: 1	3/04/20	22			
Location: Wa	alsall				Contrac	tor: E	xploratio	n & Tes	ting		Co-ords	s: E4042	282.56 I	N30177	72.85	
Project No. :	C10259				Crew N	ame: A	ACE Dril	ling			Drilling	Equipm	ent: Be	retta G	T-54	
Borehole I		Н	ole Type	е		Leve			Logged E	Зу		Scale			Status	
BH22-			RO			1.38m		Lavel	PS			1:40			FINAL	
Well Water	Depth (m)	Туре	FI	TCR	oring SCR RQD	Diamet Recove (SPT)	Depth (m)	(m)	d		Str	atum D	escrip [†]	tion		
										MADE	GROU	ND (Dri	llers De	scriptio	n).	_
																-
																_
																9 —
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																_
·H.:									********							16 —
Hole Diamete	ter Depth Base	Diameter [Depth Top		iselling Duration	Tool			and Orienta lnclination				Туре	g Flush Colour	Min (%)	Max (%)
27.50 140	2.00	140									0.00	27.50	Mist	Red		100
Remarks																
															Sheet 2	of 4

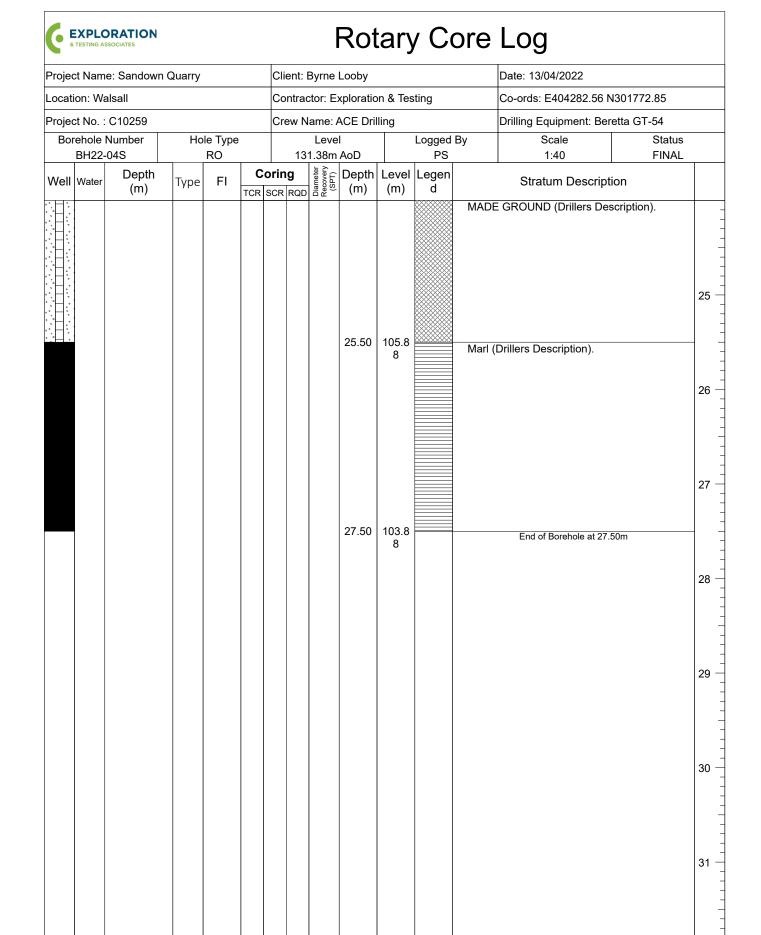


Hole Diameter | Casing Diameter | Casing Diameter | Chiselling | Inclination and Orientation | Drilling Flush

Depth Base | Diameter | Depth Base | Diameter | Depth Base | Diameter | Depth Top | Depth Base | Duration | Depth Top | Depth Base | Diameter | Depth Base | Diameter | Depth Base | Duration | Depth Base | Diameter | Depth Base | Diameter | Depth Base | Duration | Depth Base | Diameter | Depth Base | Di

Remarks

Sheet 3 of 4



Hole Diameter Casing Diameter Chiselling Inclination and Orientation Depth Base Diameter Depth Base Diamet

Remarks



Projec	ct Nam	e: Sandow	n Q	uarry			Cli	ent: E	Byrne I	Looby				Date: 2	4/03/20	22 - 28/	03/2022	2	
_ocati	ion: Wa	alsall					Со	ntrac	tor: Ex	ploratio	n & Tes	ting		Co-ords	s: E404	416.26	N30193	9.01	
		C10259					Cre	ew N		CE Dril				Drilling		ent: Be	retta T5		
Bor	ehole BH22	Number		Но	le Type RC			94	Level .40m A			Logged TY	Ву		Scale 1:40			Status FINAL	
Well	Water	Depth (m)		Туре		C	orin				Level (m)	Legen d		Str	atum C)escrip	tion	111712	
		0.90 - 1.9	90			0	0	0					MADE	E GROU	ND (Dri	llers De	scription	h).	1 —
		1.90 - 2.5 2.50 - 4.0				0	0	0											2
		4.00 - 5.5	50			0	0	0											3
						0	0	0											5 —
		5.50 - 7.0	00		AZCL	8	7	0											6 —
		7.00 - 8.5	50		0 AZCL 10	79	39	8		7.31	87.52 87.10		brown pocke Very v fine gr angula inclusi	nely wea clayey ts up to veak to veak to veak rained S ar fine are ions and m. Disco	MUDST 15mm i weak br ANDST nd medi I rare ba	ONE w n size. own, re ONE wi ium qua ands of	ith light ddish br ith rare irtzite mudstor	grey Town	7
Hole Depth Bas 25.00	140	eter Depth Base	Dian		epth Top D		iselling se Du	g ration	Tool			and Orient	tation on Orientation	Depth Top 0.90 8.50	Depth Base 8.50 25.00		g Flush Colour Red Red	Min (%)	Max (%) 80 75

Remarks

1. 3hr dayworks moving equipment to location. Rig standing for 1hr due to soft ground conditions 2. 2hr dayworks to input rods, blow out water and undertake rising head and pull rods and casing.

Sheet 1 of 4



Project Name: Sandown Quarry		Client: E	Byrne Lool	by		Date: 24/03/2022 - 28/	03/2022	
ocation: Walsall		Contrac	tor: Exploi	ration & Tes	ting	Co-ords: E404416.26	N301939.01	
Project No. : C10259		Crew N	ame: ACE	Drilling		Drilling Equipment: Be	retta T54	
Borehole Number Hole Type			Level		Logged By	Scale	Status	
BH22-05 RC			.40m AoD		TY	1:40	FINAL	$\overline{}$
Well Water Depth Type FI		CR RQD	Diameter Recovery (SPT)		Legen d	Stratum Descrip	tion	
8.50 - 10.00			8.8	56 85.84	fine gi angula inclus <30m closel infill.	weak to weak brown, re rained SANDSTONE war fine and medium quaions and rare bands of m. Discontinuities are hy spaced undulating ro	ith rare artzite mudstone norizontal very ugh with no	- - - - - - -
AZCL	25 2	25 11	9.6	62 84.78	Very v	idm and 7.69m bgl: Clayey gravel. i: Discontinuity is vertical rough and ned zone of core loss weak dark reddish brow trey MUDSTONE with r.	n streaked are yellowish	9
10.00 - 11.50 6			10.	.43 83.98	Disco to clos infill.	n pockets up to 30mm in ntinuities are horizontal sely spaced planar smo	very closely ooth with no	10 -
3	100 9	97 61			Very v coarse bands <30m grave closel	weak to weak reddish be SANDSTONE with ras s < 15mm, rare bands of m, and rare angular fin ls. Discontinuities are s y spaced planar smoot im bgi: Sandstone is fine and med bg: Closely spaced, interbeddin bg: The stands of the	rown fine to re bluish grey mudstone e quartzite ub-horizontal h with no infill. um and dark grey.	111 —
7	93 7	71 49	12.	.30 82.10	conglomeral Below 11.32 Below 11.45	le m bgl: Fine grained sandstone. No m bgl: Discontinuities have clay sn	coarse sandstone bands nears.	12 —
13.00 - 14.50					\$\hat{\hat{\hat{\hat{\hat{\hat{\hat{\hat	locally very weak dark TONE with occasional ms. Discontinuities are y spaced planar rough gt: Vertical discontinuity, rough with	relic rootlet horizontal with no infill.	13 —
6	92 6	62 23	13.	.12 81.28	Extrer MUDS very c rough up to Between 13. Gravel is an Below 13.83	mely weak reddish brow STONE. Discontinuities closely and closely space and undulating rough v 15mm. 35 and 13.83m bgl: Soft reddish bi gular fine to coarse extremely weak im bgl: Extremely weak to very week subhorizontal.	are horizontal, ced, planar with clay infill rown gravelly CLAY.	14 —
14.50 - 16.00			14.	.50 79.90	Assur	ned zone of core loss.		- - - -
AZCL	41 3	36 36	15.	.39 79.02	Futro	mahuwak and yanyua	ak raddish	15 —
16.00 - 17.00 NI					brown horizo	mely weak and very we n MUDSTONE. Disconti ontal closely spaced, pla lay infill up to 20mm.	nuity set 1,	- - - 16 -
Hole Diameter	Chise	elling		Inclination	and Orientation	Drillin	g Flush	
Depth Base Diameter Depth Base Diameter Depth Top Depth		Duration	Tool De		se Inclination Orientation		Colour Min (%) Red Red	Max (%) 80 75

Remarks

1. 3hr dayworks moving equipment to location. Rig standing for 1hr due to soft ground conditions 2. 2hr dayworks to input rods, blow out water and undertake rising head and pull rods and casing.

Sheet 2 of 4



Project Name: Sandown Quarry	Client: Byrne Looby		Date: 24/03/2022 - 28/03/2022
Location: Walsall	Contractor: Exploration	& Testing	Co-ords: E404416.26 N301939.01
Project No. : C10259	Crew Name: ACE Drillin	ng	Drilling Equipment: Beretta T54
Borehole Number Hole Type	Level	Logged By	Scale Status
BH22-05 RC Depth Fig. Co	94.40m AoD	TY Level Legen	1:40 FINAL
Well Water (m) Type FI TCR		(m) d	Stratum Description
17.00 - 18.00		brown horizol with cl Below 16.00r medium spac	nely weak and very weak reddish MUDSTONE. Discontinuity set 1, ntal closely spaced, planar rough ay infill up to 20mm. In bgl: Weak locally very weak. Discontinuity set 1 are led. Discontinuity set 2 are 45 degrees, medium spaced, and planar stepped with no infill.
3 100	84 76		n bgl: Very weak to weak. Discontinuity set 1 are sub osely to medium spaced, smooth with no infill.
18.00 - 19.00 0 NI 100 2		MUDS	reak to weak brown and light grey strone. Discontinuities are sub- ntal, closely spaced, planar rough ndulating rough with no infill.
19.00 - 22.00	19.00 7	75.40 Assum	ned zone of core loss.
AZCL 31	18 10		20 — - - - - - - - - - - - - - - - - - - -
22.00 - 23.00	21.06 7	brown MUDS horizo and ur	veak reddish brown mottled yellowish with occasional light grey streaks iTONE. Discontinuities are sub ntal, closely spaced, planar smooth ndulating rough with clay smear. In bgl: Occasional bands <15mm of gravelly clay 22
84	56 23	occasional ye	m bgl: Extremely weak, reddish brown and light grey with lllowish brown pockets up to 20mm.
23.00 - 24.00	99 99	MUDS subhor smoot Below 23.00r grey. Discort clay infill up to	20m and 23.45m bgl: Very weak with abundant light grey
	elling Incli	lination and Orientation	Drilling Flush
Depth Base Diameter Depth Base Diameter Depth Top Depth Base Diameter Depth Base Diameter Depth Base Diameter Depth Top Depth Base		Depth Base Inclination Orientation	

1. 3hr dayworks moving equipment to location. Rig standing for 1hr due to soft ground conditions 2. 2hr dayworks to input rods, blow out water and undertake rising head and pull rods and casing.

Sheet 3 of 4



Projec	t Nam	ne: Sandown (Quarry			Cli	ent: I	Byrne l	Looby				Date: 2	4/03/20	22 - 28/	03/2022	2	
Locati	on: W	alsall				Co	ntrac	tor: Ex	kploratio	n & Tes	ting		Co-ord:	s: E4044	416.26 I	N30193	9.01	
Projec	t No.	: C10259				Cr	ew N	ame: A	ACE Dril	ling			Drilling	Equipm	ent: Be	retta T5	4	
Bor	ehole BH22	Number	Ho	le Type RC	!		04	Level .40m			Logged TY	Ву		Scale 1:40			Status FINAL	
Well		Depth	Туре		C	orin					Legen		Str	ratum D	escript)	tion	FINAL	
Well		Donth			97	90				Level (m) 69.40	Legen	Weak MUDS subho	, locally STONE. Prizontal th and c Im bgl: Disco	ratum D very we Discont , closely lean	ak, redo inuities spaces	dish bro are s, planaı l up to 15m.	own r	26
Hole	Diamete	er Casing Diar	neter		Ch	isellin	g		li li	nclination	and Orient	tation			Drillin	g Flush		31
Depth Bas 25.00	Diam	eter Depth Base Dia		epth Top [ration	Tool				on Orientation	Depth Top 0.90 8.50	8.50 25.00	Type Mist Mist	Colour Red Red	Min (%)	Max (%) 80 75
Rema 1. 3hr dayw	dayv	works moving o input rods,	g equi _l	pment out wa	to loo ter a	catio	n. R ındeı	ig staı take ı	nding fo	or 1hr o ead an	due to s d pull re	oft groun	nd cond	ditions 2	2. 2hr		Sheet 4	of 4



BH22-05, core runs 5, 6 & 7: 5.50m—10.00m bgl.



BH22-05, core runs 8 & 9: 10.00m—13.00m bgl.

Contract No.: C10259

Client: Byrne Looby

Title: Rotary Core Photographs

Drawing: C10259_SP_01

Date: 24/03/22-28/03/22





BH22-05, core runs 10 & 11: 13.00m—16.00m bgl.



BH22-05, core runs 12, 13 & 14: 16.00m—19.00m bgl.

Contract No.: C10259

Client: Byrne Looby

Title: Rotary Core Photographs

Drawing: C10259_SP_01

Date: 28/03/22





BH22-05, core run 15: 19.00m-22.00m bgl.



BH22-05, core runs 16, 17 & 18: 22.00m-25.00m bgl.

Contract No.: C10259

Client: Byrne Looby

Title: Rotary Core Photographs

Drawing: C10259_SP_01

Date: 29/03/22



VARIABLE HEAD PERMEABILITY TEST Variable Head (Rising) Permeability Test in Borehole SITE Sandown Quarry Borehole: BH22-05 **CONTRACT** C10259 DEPTH 25.00m **INITIAL CONDITIONS** Base of Response Zon 25.00 mBGL Operator 29/03/2022 Top of Reponse Zone 20.00 mBGL Date 140.00 Diameter of borehole mm Test No. 1 140.00 Diameter of standpipe mm Height of casing 0.00 mAGL Weather Elevation of Borehole mAOD Calculated Test Zone 0.00 Initial Head of water 23.00 m 5.00 m **TEST CALCULATION** Elapsed Total Water Head H/Ho (minutes) seconds Depth (m) (metres) 23.130 0.0 0 1.87 0.081 0.087 Intake Factor, F 1.0 60 23.000 2.00 2.0 120 22.890 2.11 0.092 F= 7.36 3.0 180 22.770 2.23 0.097 (i) 22.450 240 2.55 4.0 0.111 D Borehole Case 5.0 300 22.560 2.44 0.106 2.95 BS 5930: 1999 10.0 600 22.050 0.128 15.0 900 21.360 3.64 0.158 20.0 1200 20.530 0.194 4.47 1500 25.0 19.770 5.23 0.227 30.0 1800 19.220 0.251 Permeability, K 5.78 40.0 2400 17.500 7.50 0.326 3000 $K = \underline{a}$.Ln(H1/H2) (ii) 50.0 16.510 8.49 0.369 F * (t2 - t1) 60.0 3600 15.450 9.55 0.415 266.0 15960 3.450 21.55 0.937 or (iii) K= <u>a</u> F.T 1 Where T is the Basic Time Lag Factor corresponding to an H/Ho value of 0.37 2 a is diameter of standpipe 5.00 L= m D= 0.140 m /D= 35.71 t1= 0 S t2= 15960 S H1= 1.87 m H2= 21.55 a= 0.01540 m^2 F= 7.3622 From (i) T= 3000 S K = 3.20E-07 m/sFrom (ii) K = 6.97E-07 m/sFrom (iii) Remarks



APPENDIX 3: GEOTECHNICAL TESTING





Contract Number: 59763

 Client Ref:
 Date Received: 30-05-2022

 Client PO:
 Date Completed: 22-06-2022

 Report Date: 22-06-2022

Client: Exploration & Testing Associates Limited This report has been checked and approved by:

Unit 8b Bowburn South Industrial Estate,

Durham DH6 5AD

Contract Title: C10259

For the attention of: Anthony Owen

B. Evms

Brendan EvansOffice Administrator

Test Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	1
4 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.3 & 5.3 - * UKAS	1
Particle Density (Gas Jar) BS 1377:1990 - Part 2: 8.2 - * UKAS	1
PSD Wet Sieve method BS 1377:1990 - Part 2: 9.2 - * UKAS	2
BRE Suite C Brownfield Site (pyrite absent) includes pH, water soluble sulphate, magnesium, chloride and nitrate Sub-contracted Test - @ Non Accredited Test	1
Disposal of samples for job	1

Notes: Observations and Interpretations are outside the UKAS Accreditation

- * denotes test included in laboratory scope of accreditation
- # denotes test carried out by approved contractor
- @ denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved Signatories:

Brendan Evans (Office Administrator) - Emma Sharp (Business Support Manager) - Paul Evans (Director) Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager) Wayne Honey (Health and Safety Coordinator/ Quality Assistant)

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES		
Contract Number	59763	
Site Name	C10259	
Client Reference		

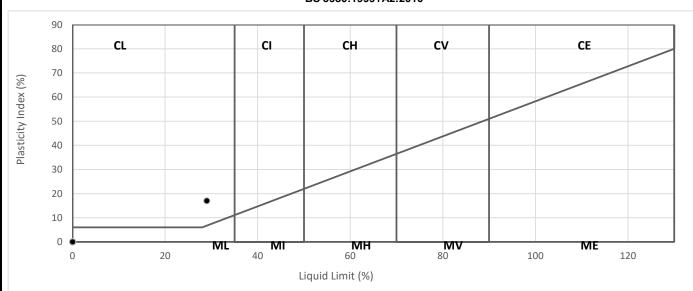
Sample/Hole Reference	Sample Number	Sample Type	D	epth (r	m)	Descriptions
BH22-03		D	1.20	-	1.65	Brown fine to medium gravelly sandy CLAY
BH22-03		U	1.37	-	1.60	Brown fine to coarse gravelly silty CLAY
BH22-03		D	1.70	-	1.80	Red/ brown slightly gravelly fine to coarse sandy SILT/ CLAY
BH22-03		В	5.50	-		Brown slightly gravelly silty/ clayey fine to coarse SAND
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GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.3 & 5.3)	
Contract Number	59763	
Project Location	C10259	
Date Tested	16/06/2022	

Sample/Hole Reference	Sample Number	Sample Type	D	epth (r	n)	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
BH22-03		D	1.25	-	1.65	13	29	12	17	90	CL Low Plasticity
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Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

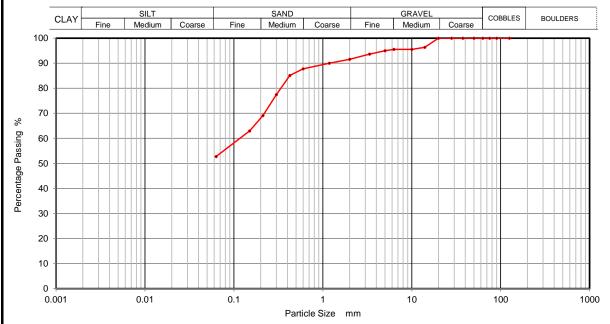
PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION BS 5930:1999+A2:2010



Operators		
Jason Smith		



O GSTL	PARTICLE SIZE DISTRIBUTION	Contract Number	59763
GEOTECHNICAL SITE & TESTING LABORATORIES	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	BH22-03
Site Name	C10259	Sample No.	
Cail Decembring	*See description sheet	Depth Top	1.70
Soil Description	See description street	Depth Base	1.80
Date Tested	17/06/2022	Sample Type	D



Siev	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	96		
10	96		
6.3	96		
5	95		
3.35	94		
2	92		
1.18	90		
0.6	88		
0.425	85		
0.3	77		<u> </u>
0.212	69		
0.15	63		
0.063	53		

Sample Proportions	% dry mass
Cobbles	0
Gravel	8
Sand	39
Silt and Clay	53

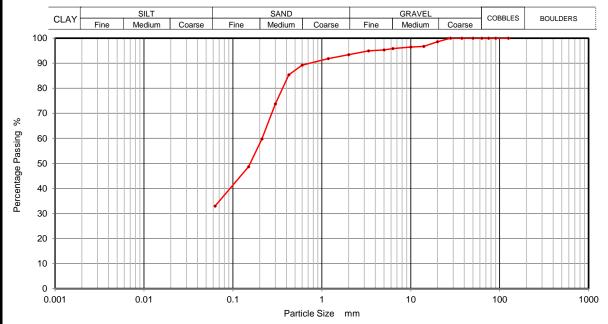
Remarks

Preparation and testing in accordance with BS1377 unless noted below

Operator		
David Edwards		



O GSTL	PARTICLE SIZE DISTRIBUTION	Contract Number	59763
GEOTECHNICAL SITE & TESTING LABORATORIES	BS 1377 Part 2:1990 Wet Sieve, Clause 9.2	Borehole/Pit No.	BH22-03
Site Name	C10259	Sample No.	
Soil Description	*See description sheet	Depth Top	5.50
3011 Description	See description street	Depth Base	
Date Tested	17/06/2022	Sample Type	В



Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	97		
10	96		
6.3	96		
5	95		
3.35	95		
2	93		
1.18	92		
0.6	89		
0.425	85		
0.3	74		
0.212	60		
0.15	49		
0.063	33		

Sample Proportions	% dry mass
Cobbles	0
Gravel	7
Sand	60
Silt and Clay	33

Remarks

Preparation and testing in accordance with BS1377 unless noted below

	Operator		
ĺ	David Edwards		



GESTL GEOTECHNICAL SITE & TESTING LABORATORIES	PARTICLE DENSITY BY GAS JAR (BS 1377 : PART 2 : 8.2 : 1990)	
Contract Number	59763	
Project Location	C10259	
Date Tested	17/06/2022	

Hole Reference	Sample Number	Sample Type		epth (r		 		Particle Density	 Remarks
BH22-03		U	1.37	-	1.60			2.67	
				-					
				-					
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Key	Reported As
Moisture Content	%
Bulk Density	Mg/m ³
Dry Density	Mg/m ³
Particle Density	Mg/m ³
Air Voids	%

Operators		
Christopher Gregory		







ANALYTICAL TEST REPORT

Contract no: 110039

Contract name: C10259

Client reference: -

Clients name: Geo Site & Testing Services

Clients address: Unit 3 and 4 Heol Aur

Dafen Industrial Estate, Dafen Llanelli, Carmarthenshire

SA14 8QN

Samples received: 06 June 2022

Analysis started: 06 June 2022

Analysis completed: 13 June 2022

Report issued: 13 June 2022

Key U UKAS accredited test

M MCERTS & UKAS accredited test

\$ Test carried out by an approved subcontractor

 $I/S \qquad \text{Insufficient sample to carry out test} \\$

N/S Sample not suitable for testing

Approved by:

Megan Harris

Senior Reporting Administrator

Chemtech Environmental Limited

SOILS

Lab number			110039-1
Sample id			BH22-03
Depth (m)	1.60-1.70		
Sample Type	D		
Date sampled			-
Test	Method	Units	
рН	CE004 ^U	units	7.9
Magnesium (2:1 water soluble)	CE061	mg/l Mg	7.1
Chloride (2:1 water soluble)	CE049 ^U	mg/l Cl	11
Nitrate (2:1 water soluble)	CE049 ^U	mg/I NO ₃ <1	
Sulphate (2:1 water soluble)	CE061 ^U	mg/I SO ₄	61

Chemtech Environmental Limited METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE004	рН	Based on BS 1377, pH Meter	As received	U	-	units
CE061	Magnesium (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry		1	mg/l Mg
CE049	Chloride (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/l Cl
CE049	Nitrate (2:1 water soluble)	Aqueous extraction, IC-COND	Dry	U	1	mg/I NO ₃
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/I SO ₄

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments

Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.

For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.

Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N No (not deviating sample)
Y Yes (deviating sample)
NSD Sampling date not provided

NST Sampling time not provided (waters only)

EHT Sample exceeded holding time(s)

IC Sample not received in appropriate containers
HP Headspace present in sample container

NCF Sample not chemically fixed (where appropriate)

OR Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
110039-1	BH22-03	1.60-1.70	Υ	All (NSD)

Chemtech Environmental Limited

ADDITIONAL INFORMATION

Notes

Opinions and interpretations expressed herein are outside the UKAS accreditation scope.

Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.

All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.

Methods, procedures and performance data are available on request.

Results reported herein relate only to the material supplied to the laboratory.

This report shall not be reproduced except in full, without prior written approval.

Samples will be disposed of 4 weeks from initial receipt unless otherwise instructed.

For soils and solids, all results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.

Analytical results are inclusive of stones, where applicable.



DURHAM

T. 0191 3896543 **E.** enquiries@explorationtesting.uk Unit 8B, Bowburn South Industrial Estate, Durham, DH6 5AD.

COVENTRY

T. 02476 880452
E. enquiries@explorationtesting.uk 'number three' Siskin Drive,
Middlemarch Business Park,
Coventry, CV3 4FJ.

explorationtesting.uk