A303 Amesbury to Berwick Down

Applicant's provision of technical reports supporting the Environmental Information Review

Ground Investigation - Phase 7a Countess Factual Report

Document reference: Redetermination 2.15

Planning Act 2008

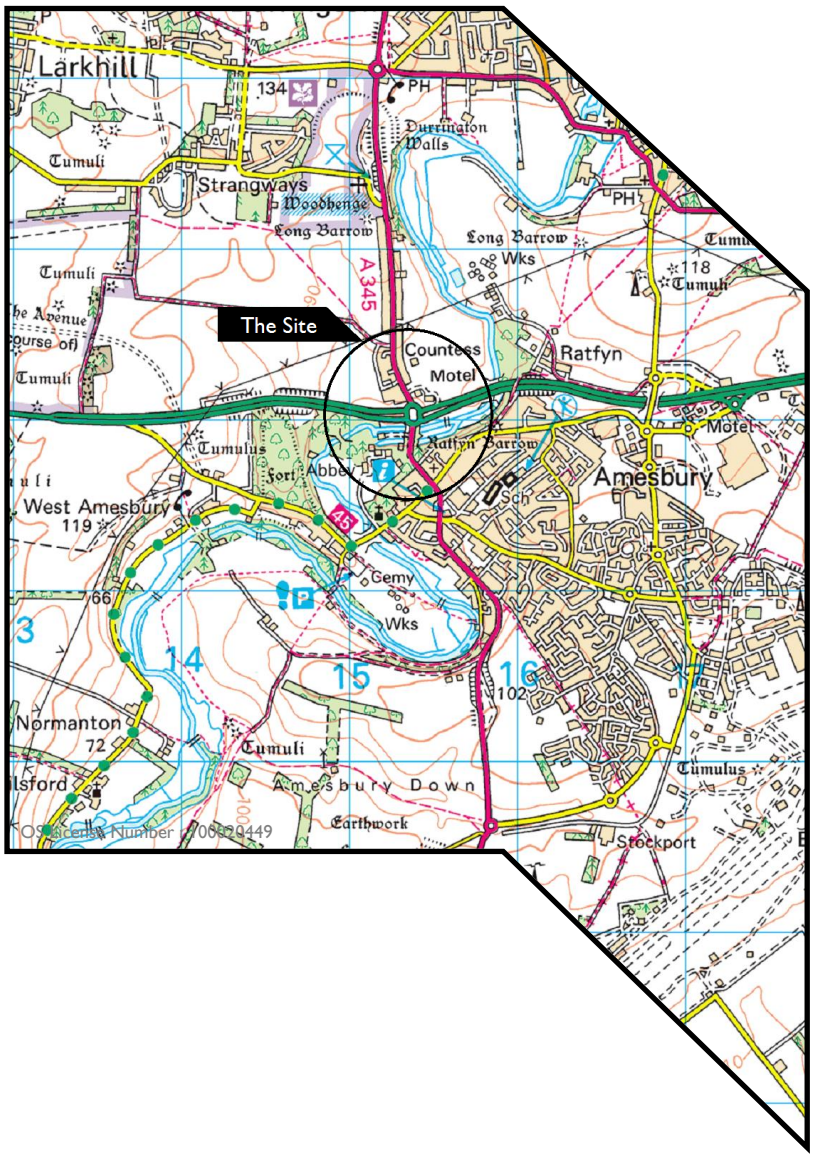
The Infrastructure Planning (Examination Procedure) Rules 2010

February 2022

GEOTECHNICS

geotechnical and geoenvironmental specialists

Ground Investigation



A303 Amesbury to Berwick Down - Phase 7a Countess

Factual Report

for

Highways England

Engineer : AECOM

Project Number PC197708

January 2020

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Ground Investigation
at

Factual Report

A303 Amesbury to Berwick Down - Phase 7a Countess

for
Highways England

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Ground Investigation Factual Report

at

A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS ROUNDABOUT

Project No: PC197708

January 2020

1.0 INTRODUCTION

A geotechnical and geoenvironmental investigation was undertaken by Geotechnics Limited for a proposed upgrade of the A303 to a dual carriageway at the Countess Roundabout in Amesbury, Wiltshire. The investigation was carried out to the instructions of the Engineer, AECOM, who acted as the Investigation Supervisor on behalf of the Client, Highways England. This report describes the work undertaken and presents the data obtained.

2.0 OBJECT AND SCOPE OF THE INVESTIGATION

The object of the investigation was to obtain information on the ground and groundwater conditions relating to the design of the proposed works within the limitations posed by trial hole numbers, locations, depths, methods adopted and the scope of approved in situ and laboratory testing. The Brief for the project is included in Appendix 1. One borehole (BH72503) was cancelled by the Investigation Supervisor due to the presence of buried services at the borehole loctaion. The investigation comprised cable percussion, rotary and dynamic sample boreholes, trial pits, in situ and laboratory testing and factual reporting.

3.0 PRESENTATION

The report is presented in electronic PDF format. A description of the site and a summary of the procedures followed during the investigation process are presented in Sections 4 to 6. The factual data obtained is presented in Appendices 2 to 11. Attention is drawn to the General Notes and Investigation Procedures presented in Appendix 12 to aid an understanding of the procedures followed and the context in which the report should be read.

The data obtained during the investigation is presented in electronic format separately, in accordance with "The Electronic Transfer of Geotechnical Data from Ground Investigations" published by the AGS (the AGS Format).

4.0 THE SITE

4.1 Location

The site is located in the vicinity of a 500m section of the A303 to the north west of Amesbury on and adjacent to the Countess Roundabout. The approximate Ordnance Survey National Grid Reference for the roundabout is SU 153 420. An extract from the relevant 1:50,000 Scale O.S. Map (Sheet No.184) is included as Appendix 2.

4.2 Description

The site is linear and aligned in an approximate east to west direction (Bearing 080/260°). It comprised the verges of the A303 approach roads leading in towards, and around, the Countess Roundabout which forms the junction between the A303 and the A345 that runs southwards into Amesbury and northwards towards Durrington. The topography was generally flat. The ground conditions during the first week of the fieldwork were typically frozen and firm but, due to rain, became soft and firm during the remaining fieldwork period.

Photographs of the site taken during the fieldwork are presented in Appendix 3.

4.3 Site Geology

The 1:50,000 scale map published by the British Geological Survey, Sheet 298 dated 2005, shows the site to be underlain by the Seaford Chalk Formation of Upper Cretaceous period. The superficial strata overlying the solid geology is shown to include Alluvium, Peat, River Terrace and Head deposits of Quaternary age.

4.4 Hydrogeology

The Department for Environment, Food and Rural Affairs (Defra) website, http://magic.defra.gov.uk/MagicMap.aspx, accessed on the 17th December 2019, shows the Seaford chalk to be a Principal Aquifer. The superficial Alluvium, Peat and River Terrace deposits are classified as Secondary A Aquifers while the Head deposits are Secondary (undifferentiated) Aquifers.

5.0 PROCEDURE

5.1 Commissioning

The work was awarded following submission of a tender for work designed by the Investigation Supervisor for ground investigation of the site in accordance with the Client's requirements (see Appendix 1).

5.2 General

The procedures followed in this site investigation are based on *BS 5930: 2015 – Code of Practice for Site Investigations* and *BS 10175:2011+A2:2017 - Investigation of Potentially Contaminated Sites*. The soils and rocks encountered have been described in accordance with BS5930:2015, BS EN ISO 14688-1:2018 and BS EN ISO 14689:2018. The Chalk has been described in accordance with CIRIA Report C574, 2002 with the flints encountered in the chalk described in accordance with "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). The Intact Dry Density was determined using hand pressure as in Table 3.7 of the CIRIA Report C574, 2002. The Borehole, Dynamic Sample Borehole and Trial Pit Records are included in Appendices 4 to 6 and their approximate positions are shown on the Exploratory Hole Location Plan in Appendix 7.

The exploratory holes locations were specified by the Investigation Supervisor. The co-ordinates and levels shown on the Exploratory Hole Records were measured using a Leica Smart Rover GPS survey device and relate to Ordnance Survey data. The depths quoted are in metres below ground level (bgl).

At each exploratory hole location, with the exception of the trial pits, an inspection pit was excavated using hand tools to a maximum depth of 2.00m bgl to check for the presence of underground services. Prior to and on completion of the excavation, the location was scanned using a cable avoidance tool (CAT). Due to the archaeological significance of the area, Wessex Archaeology either excavated part or all of the inspection pits or maintained a watching brief, that they considered appropriate, as Geotechnics excavated the inspection pits as detailed on the individual records.

5.3 Boreholes

Eight (8 No.), 200mm and 150mm diameter boreholes (numbered BH72402 to BH72406, BH72501, BH72502 and BH72504) were sunk by Cable Percussion Tool techniques to depths varying between 12.60m and 21.32m bgl. The work was carried out between the 14th November and 2nd December 2019.

Representative disturbed (D and B) and driven open-tube thin-walled (UT) samples of the soils encountered were obtained at regular intervals. Standard Penetration Tests (SPTs) were undertaken at the depths indicated on the borehole records in accordance with BS EN ISO 22476-3:2005+A1:2011 to obtain a measure of the engineering properties of the proved strata. In addition, environmental soil samples (ES) were recovered at the depths indicated on the Borehole Records.

Six (6 No.) of the boreholes (numbered BH72402, BH72403, BH72405, BH72501, BH72502 and BH72504) were continued utilising 120mm diameter rotary coring techniques to depths varying between 16.00m and 30.73m bgl. The rotary coring commenced at depths of between 12.60m and 16.00m bgl through the base of the Cable Percussion Boreholes which had been left open and cased to facilitate coring as instructed by the Investigation Supervisor. Where necessary 150mm diameter casing was installed, as detailed on the individual borehole records, to aid the drilling process. The work was carried out during the period between the 19th November and 4th December 2019.

The drilling equipment on this particular contract utilised air-mist as the flushing medium. The rock cores, 100mm in diameter, were extruded horizontally in transparent liners and placed into suitable core boxes. Photographs of the individual core boxes are included in Appendix 4.

Where rotary coring was not possible due to the strata encountered, the hole was progressed utilising open hole drilling techniques as detailed on the individual drilling records. The strata descriptions on the Borehole Records in the open hole sections of the boreholes, or where no core recovery was possible, are the Drilling Foreman's estimate based on sediment and chipping returns in the flushing medium. The rate of penetration is also used as an indicator of the type of material being drilled, particularly where there is a loss of flush returns.

Within Borehole BH72402 rotary drilling was undertaken to a depth of 16.00m but, due to the problems with downhole tooling and time constraints in respect of completing the fieldwork within the agreed period, the Investigation Supervisor instructed that the borehole be continued with cable percussion boring.

Standard Penetration Tests (SPTs) were undertaken in each of the boreholes at the depths indicated on the borehole records in accordance with BS EN ISO 22476-3:2005+A1:2011 to obtain a measure of the engineering properties of the proved strata.

On encountering groundwater, boring operations were suspended for 20 minutes in order to record any rise in water level. Full details of groundwater observations during site work are included on the Borehole Records. It should be noted that the addition of water to the rotary sections of the boreholes, as part of the drilling process, may have masked the presence of groundwater in the borehole.

On completion, each borehole was backfilled with a bentonite as detailed on the individual records.

5.4 Dynamic Sample Boreholes

Three (3 No.) Dynamic Sample Boreholes (numbered WS72402 to WS72404) were undertaken at the site to a depth of 6.00m bgl. The work was carried out on the 2nd December 2019.

The Dynamic Samples were taken using the super-heavy Dynamic Probe apparatus which drives lined steel tubes into the ground in 1m lengths. Samples are retrieved in plastic liners. The retrieved liners were split and the recovered soils described before being sub-sampled into ES, D and B samples as shown on the Borehole Records. The holes were not cased and progress depended on the nature of the strata penetrated.

No groundwater was observed during sampling although damp strata was noted as detailed on the individual Borehole Records. On completion, each borehole was backfilled with bentonite.

5.5 Trial Pits

Six (6 No.) Trial Pits (numbered STP72401 to STP72404, STP72501 and STP72502) were excavated to a depth of 1.20m. Four pits (STP72401 to STP72404) were excavated using a JCB 3CX and the remaining two pits using hand tools only. This work was undertaken on the 25th and 26th November 2019 and was supervised on site by a geotechnical engineer.

The profiles of strata or other features were recorded as excavation proceeded and measurements taken from ground level. Representative samples, including Environmental samples (ES), were taken for laboratory examination and analysis at the depths indicated on the Trial Pit Records. Samples were taken directly from excavated materials deposited at the surface.

Groundwater observations and trench stability notes are included on the Trial Pit Records. Photographs of the pits are presented in Appendix 6.

5.6 In Situ Permeability Tests

Two (2 No.) in situ Falling Head Permeability tests were undertaken during a pause in the drilling operations in accordance with *BS EN ISO 22282-2:2012* within BH72402 between 4.50m and 4.70m and in BH72405 from 4.50m to 4.80m as specified by the Investigation Supervisor. The test data is presented in Appendix 8.

5.7 PID Meter Readings

Photo-ionisation detection (PID) tests were undertaken by testing the headspace of each of the ES soil samples taken. The tests were carried out using a suitably calibrated MiniRAE 2000 PID Meter fitted with a 10.6eV UV lamp. The results of the PID tests are presented on the individual exploratory hole records with the readings reported as Volatile Organic Compounds (VOCs) recorded in parts per million.

5.8 Plate Load Tests

Six (6 No.) Plate Load Tests were carried out by Hixtra Ltd within each of the Trial Pits (see Section 5.5) at 0.30m or 0.50m bgl. The incremental loading tests were carried out in accordance with *BS 1377-9:1990, Test 4.1* using a 300mm diameter plate. The reaction for the test was provided by an 8 Tonne excavator. The test loads were specified by the Investigation Supervisor and the results are presented in Appendix 9.

6.0 LABORATORY TESTING

6.1 Geotechnical

The laboratory testing schedule was specified by the Investigation Supervisor in order to relate to the proposed development. Most of the tests were carried out in Geotechnics Limited's UKAS accredited Laboratory (Testing No. 1365) and were undertaken in accordance with the appropriate Standards as indicated below and on the Laboratory Test Certificate in Appendix 10. Any descriptions, opinions and interpretations are outside the scope of UKAS accreditation.

The tests undertaken can be summarised as follows:-

BS EN ISO 17892-1:2014

48 No. Water Content Determination

BS EN ISO 17892-4:2016

5.2 39 No. Particle Size Distribution Determination – Sieving Method

5.4 31 No. Particle Size Distribution Determination – Pipette Method

BS EN ISO 17892-5:2017

5 No. Incremental Loading Oedometer Test

BS EN ISO 17892-12:2018

15 No. Liquid Limit and Plastic Limit

BS 1377:1990

Test No.		**Test Description**
Part 2		
3.3	44 No.	Saturation Moisture Content of Chalk
Part 7		
9	6 No.	Shear Strength Measurement - 100mm diameter (Multi-Stage) Quick Undrained Triaxial Compression Test.

ISRM Testing Methods

6 No. Point Load Determination

The following testing was carried out at the laboratories of GEOLABS Limited (UKAS Accredited Laboratory, Number 1982).

ISRM Testing Methods

8 No. Unconfined Compressive Strength Determination

2 No. Unconfined Compressive Strength Determination with Young's Modulus and Poisson's Ratio

The following testing was carried out at the laboratories of Derwentside Environmental Testing Services Limited (UKAS Accredited Laboratory, Number 2139).

1 No. Water Content Determination

1 No. Loss on ignition

BRE Special Digest 1 Suite

7 No. Soil Suites comprising Soluble Sulphate and pH

9 No. Water Suites comprising Sulphate and pH

The results of the geotechnical testing are presented in Appendix 10.

6.2 Contamination

Selected soil samples were tested at the laboratories of Derwentside Environmental Testing Services for a number of determinands in order to check on potential site contamination. The samples and determinands were specified by the Investigation Supervisor and are detailed on the results sheets in Appendix 11 together with the test result, test method, accreditation and detection limit.

Signed for and on behalf of Geotechnics Limited.

Prepared by:

Clive Lange
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Senior Engineer

Reviewed by:

Trevor N Hardie
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Chief Geotechnical Engineer

APPENDIX I

The Brief

Project Manager Early Warning Notification

Project Title: **A303 Stonehenge Phase 7 GI** Employer: AECOM Ltd Contract Reference: **Ground Investigation A303 Amesbury to Berwick Down**	Project Number: 60547200

Project Manager Early Warning Notification	**Reference number:** **Early Warning Notification 4**
Notifying Party: AECOM	**Date of notification:** **29/8/19**

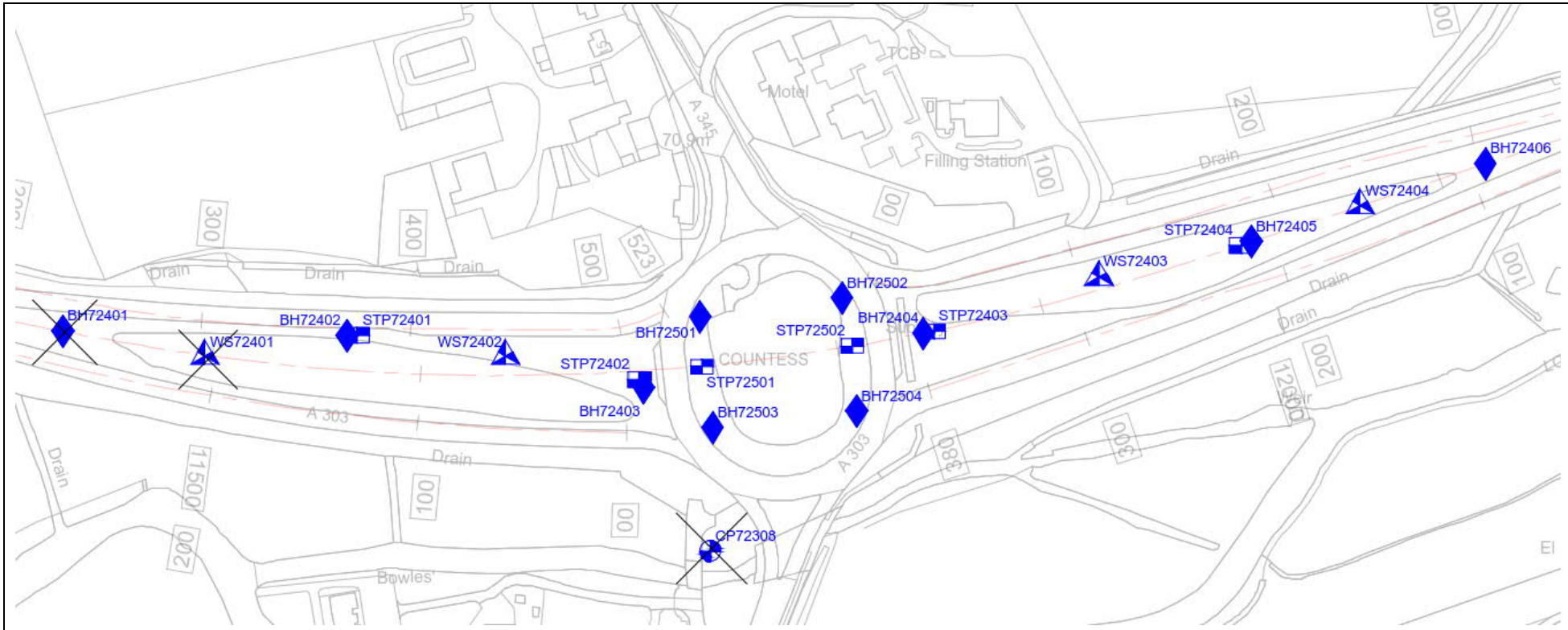
Description of matters:

We are looking at bringing forward the following boreholes forward to be completed as soon as possible after 7th October. The works will involve procuring TM and road spacings as well and vegetation clearance. It would be worth having discussion on the type of rig most suitable to do the works prior to AECOM issuing the BOQ for quotation.

Please note HE have previously contacted Wessex Tree Care (veg clearance) and CD Fencing to undertake works on the A303, although we understand these may not fit into your approved lists so you not obliged to use them if you do not wish to.

24	Countess Approach Embankment	BH72402	415185	142047	CP+RC	20	To investigate the depth, nature and properties of the underlying made/fill ground in associated with the historical filling, remaining underlying natural superficial deposits and structureless chalk and their compressibility for proposed new road	N	SPT FHP	Compressibility and strength testing	Traffic management required. SPT in fill ground and natural superficial deposits. FHP for linear pond (drainage) design.
		BH72403	415327	142022		20		Y	SPT		
		BH72404	415461	142048		20		Y	SPT		
		BH72405	415618	142092		20		N	SPT FHP		
		BH72406	415730	142129		20		N	SPT		
		WS72402	415261	142037	DS	6		N			

		WS72403	415545	142075		6	embankment foundation and ground improvement designs.	Y			
		WS72404	415670	142109		6		N			
		STP72401	415190	142047	TP	1.2		N	PLT		PLT in fill ground.
		STP72402	415325	142026		1.2		N			
		STP72403	415466	142049		1.2		N			
		STP72404	415613	142090		1.2		N			
25	Countess Bridge	BH72501	415354	142056	CP+RC	30	To acquire local ground and groundwater conditions and parameters to greater depths for bridge foundation design.	Y (Soil & GW)	SPT	Compressibility and strength testing	SPT in fill ground and natural superficial deposits.
		BH72502	415422	142065		30					SPT in fill ground, natural deposits incl chalk.
		BH72503	415360	142003		30		N			SPT in fill ground and natural superficial deposits.
		BH72504	415429	142011		30					
		STP72501	415355	142032	TP	1.2		Y	PLT		PLT in fill ground.
		STP72502	415427	142042		1.2					



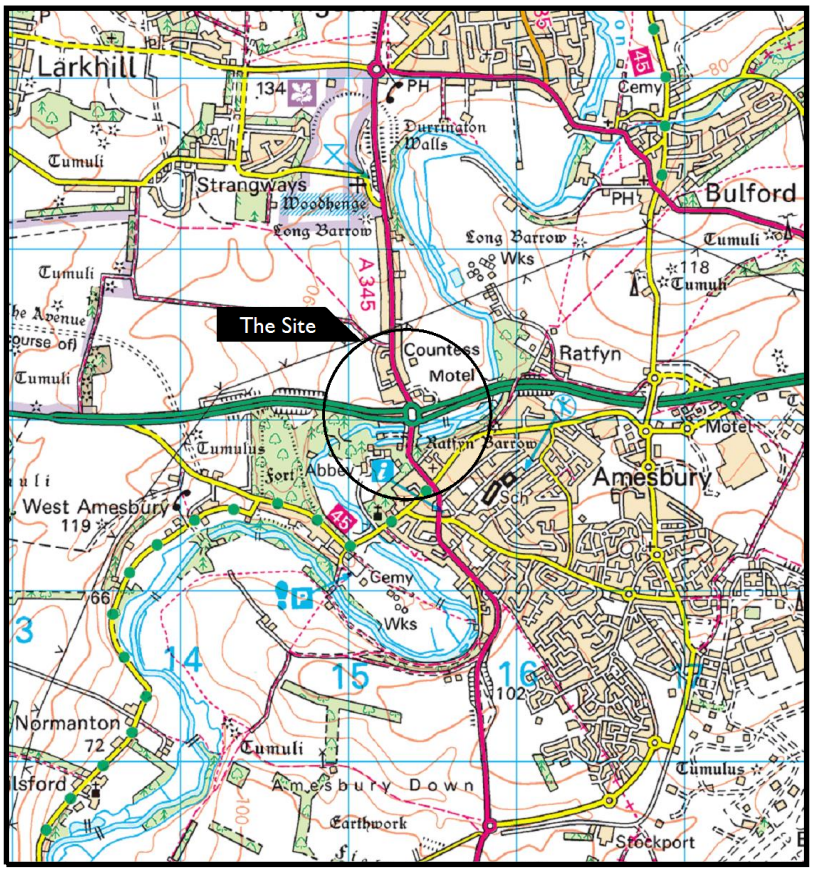
Signature: [redacted]

ACTION REQUIRED:		
I. Please enter in the Risk Register	Yes x	No
II. Please attend a risk reduction meeting	Yes x	No

APPENDIX 2

Site Location Plan

SITE LOCATION PLAN



Ground Investigation
at
A303 Amesbury to Berwick Down - Phase 7a Countess
for
Highways England

GEOTECHNICS
geotechnical and geoenvironmental specialists

APPENDIX 3

Site Photographs

PHOTOGRAPHS

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

View from BH72403 looking north-east

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

View from BH72404 looking east

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

View from BH72404 looking west

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

View from BH72406 looking east

PHOTOGRAPHS

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

View from BH72501 looking south-west

PHOTOGRAPHS

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

View looking east toward the Countess Roundabout and BH72501

PHOTOGRAPHS

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

View of devegetation in preparation for drilling BH72405

APPENDIX 4

Borehole Records

DATA SHEET - Symbols and Abbreviations used on Records

Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecone Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content

(All other strengths from undrained triaxial testing)

S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration
( )	Extrapolated value

Groundwater

Water Strike

Depth Water Rose To

Instrumentation

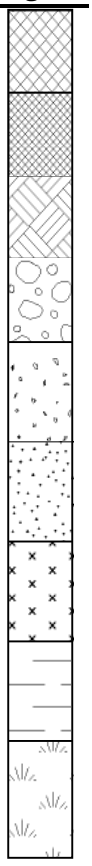
Seal

Filter

Seal

Strata

Legend



Made Ground Granular

Made Ground Cohesive

Topsoil

Cobbles and Boulders

Gravel

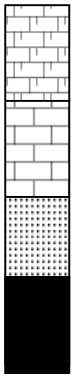
Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols



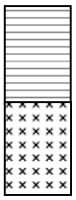
Chalk

Limestone

Sandstone

Coal

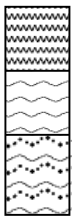
Strata, Continued



Mudstone

Siltstone

Metamorphic Rock

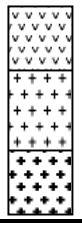


Fine Grained

Medium Grained

Coarse Grained

Igneous Rock



Fine Grained

Medium Grained

Coarse Grained

Backfill Materials

Arisings

Bentonite Seal

Concrete

Fine Gravel Filter

General Fill

Gravel Filter

Grout

Sand Filter

Tarmacadam

Rotary Core

RQD	Rock Quality Designation (% of intact core >100mm)
FRACTURE INDEX	Fractures/metre
FRACTURE SPACING (m)	Maximum Minimum
NI	Non-intact core
NR	No core recovery
AZCL	Assumed zone of core loss

(where core recovery is unknown it is assumed to be at the base of the run)

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** Engineer **AECOM** Borehole **BH72402** Project No **PC197708**

Client **HIGHWAYS ENGLAND** Ground Level **70.95** m OD

Scale 1:25

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
							G.L.		70.95
0.00- 0.20	B					PROBABLE MADE GROUND: Soft brown slightly sandy slightly gravelly silt with occasional rootlets. Gravel is angular to subrounded fine to coarse chalk and flint.	0.20		70.75
0.00- 0.20	D								
0.50- 0.60	B					PROBABLE MADE GROUND: Brownish cream gravelly silty sand with occasional pockets (up to 100mm in size) of white slightly sandy silt. Gravel is angular to subrounded fine to coarse chalk and flint.			
0.50- 0.60	D								
1.00- 1.10	B								
1.00- 1.10	D								
							1.20		69.75
1.20- 1.65	B					PROBABLE MADE GROUND: Dense cream slightly sandy silty gravel with rare pockets (up to 9mm in size) of brown sandy clay. Gravel is subangular to subrounded fine to coarse chalk with rare subangular flint (up to 10mm in size).			
1.20- 1.65	D	1.15 (DRY)			S35				
2.00	D					Below 2.00m, clasts with occasional yellowish brown staining. With a low cobble content of subangular to subrounded flint.			
2.20- 2.65	D	1.50 (DRY)			S23				
2.20	W								
2.40- 2.80	B					Medium dense greyish green gravelly slightly clayey SAND. Gravel is subangular to subrounded fine to coarse chalk, quartzite and flint. Below 2.70m, grading to firm greyish green clay.	2.40		68.55
2.80- 3.20	B					Soft brownish green slightly sandy slightly gravelly to gravelly CLAY with a low cobble content of chalk and flint. Gravel is subangular to subrounded fine to coarse chalk, flint and quartzite.	2.80		68.15
3.00	D			25					
3.20- 3.65		3.15 (DRY)			S6	Below 3.30m, becoming light brown.			
3.30- 3.70	B								
							3.90		67.05
4.00	D			17		Loose light brown very sandy slightly clayey GRAVEL with a low cobble content of subangular flint. Gravel is subangular to subrounded fine to coarse chalk and flint.			
4.30- 4.70	B								
4.30- 4.75		4.25 (2.20)			C9				
							5.00		65.95

Boring

Depth	Hole Dia	Technique	Crew
0.85	0.40	Inspection Pit	Arch
1.20	0.30	Inspection Pit	DE/SG
7.50	0.20	Cable Percussion	CR/BB
12.40	0.15	Cable Percussion	CR/BB
12.60	0.12	Rotary Open Hole	SP/PB
15.60	0.12	Geobor S	SP/PB

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			11/11/19	08:00
0.85	NIL	0.80	11/11/19	18:00
0.85	NIL	0.80	14/11/19	08:00
1.20	NIL	1.10	14/11/19	18:00
1.20	NIL	DRY	20/11/19	08:00
2.65	1.50	DRY	20/11/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.85	NIL	0.80	120		Slow seepage
3.90	3.70	2.20	20	NS	Fast seepage

Remarks

Inspection pit hand excavated to 0.85m by archeologist and extended to 1.20m depth by Geotechnics. No services were found.
Falling Head Permeability test carried out during drilling at a depth of 4.70m.
Rotary drilling SPT rods stuck in hole at 16.05m; attempted to recover on 27th and 28th November, 2nd and 3rd December including advancing 150mm casing to 16.00m. Gravel added to hole back to 15.00m to assist tool recovery. Engineer agreed to continue hole with cable percussion boring. Backfilled gravel drilled out from 15.00m to 17.50m.
At 17.50m, UT shoe damaged during driving of sampler.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/SI**
Checked by **CPL**
Figure **1 of 5**
12/05/2020

geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** Engineer **AECOM**

Borehole **BH72402**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**

Ground Level **70.95** m OD

Scale 1:25

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
						CHALK, recovered as slightly sandy silty angular to subangular fine to coarse GRAVEL with a low subangular cobble content. Clasts are weak, low density, white with occasional black specks and rare orangish brown staining. Matrix is cream.	**5.00**		**65.95**
5.15	**D**								
						Between 5.55-8.55m, becoming very loose.			
5.55- 6.00	**B**								
5.55- 6.00		**5.50 (2.70)**			**S2**				
						Below 6.20m, becoming slightly silty.			
6.20	**D**					**At 6.20m, with occasional angular small flint fragments (up to 50mm in size).**			
7.00	**D**								
7.05- 7.50	**B**					**At 7.00m, with occasional angular and subangular small and medium flint fragments (up to 70mm in size).**			
7.05- 7.50		**7.00 (3.90)**			**S4**				
8.00	**D**								
						Below 8.55m, clasts are medium density.			
8.55- 9.00	**B**								
8.55- 9.00	**D**	**8.50 (4.10)**			**S9**				
						Below 9.00m, with occasional pockets (up to 200mm in size) of silty chalk. With a medium cobble content of chalk.			
9.50	**D**					**At 9.50m, with occasional angular small flint fragments (up to 40mm in size)**			

Boring

Depth	Hole Dia	Technique	Crew
20.50	**0.15**	**Cable Percussion**	**DC/LC**

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
2.65	**1.50**	**DRY**	**21/11/19**	**08:00**
12.15	**11.50**	**4.70**	**21/11/19**	**18:00**
12.15	**11.50**	**3.20**	**25/11/19**	**08:00**
12.40	**12.30**	**3.50**	**25/11/19**	**18:00**
12.40	**12.30**		**26/11/19**	**08:00**
14.10	**14.10**	**3.40**	**26/11/19**	**18:00**

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Additional detail added by Client's consultant, Rory Mortimore.
Backfill details from base of hole: bentonite up to ground level.
Flush: 12.60-15.60m, Air/Mist, 0% return.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/SI**
Checked by **CPL**
Figure **2 of 5**
12/05/2020

geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** Engineer **AECOM**

Borehole **BH72402**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**

Ground Level **70.95** m OD

Scale 1:25

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N (FI)	Description	Depth	Legend	Level m OD
10.10-11.10 10.10-10.55	B D	10.00 (4.50)			S10	Between 10.00-11.00m, with occasional to many angular and subangular small flint fragments (up to 50mm in size).			
11.40	D								
11.70-12.40 11.70-12.15	B D	11.50 (4.70)			S25	Between 11.70-12.15m, with occasional angular small flint fragments (10mm in size).			
12.40-12.85	D	12.30 (3.50)			S16				
Core Run/Depth (Core Dia/Time)	Depth Cased	TCR/SCR / Type	Length Max/Min	RQD %	SPT (FI)	Continued by Rotary techniques General	Detail	12.60		58.35
12.60-14.10	12.60	33 4	- -	-	(NI)	CHALK, recovered as silty angular to subangular fine to coarse GRAVEL with a low subangular cobble content. Clasts are extremely weak, to very weak, low to medium density, white with occasional black specks. Matrix is light brown, locally cream. With occasional angular to subangular small to medium flint fragments (up to 60mm in size). [GRADE A ##]	Between 13.90-13.97m, solid core.			
14.10-15.60 14.10-14.55	14.10 14.10	0 D			S54	No Recovery		14.10		56.85

Boring

Depth	Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
14.10	14.10	3.40	27/11/19	08:00
15.60	15.60		27/11/19	18:00
15.60	15.60		02/12/19	08:00
16.00	16.00		02/12/19	18:00
16.00	16.00	3.80	05/12/19	08:00
20.50	19.00	8.30	05/12/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/SI**
Checked by **CPL**
Figure **3 of 5**
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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** Engineer **AECOM**

Borehole **BH72402**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**

Ground Level **70.95** m OD

Drilling		Properties/Sampling				Strata				Scale 1:25
Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
					(NR)					
15.60-16.05	15.60				S82					
						See Remarks		16.05		54.90
17.50-17.95	17.50 (7.00)	UT100 Strength,kPa=		417		CHALK, recovered as silty angular to subangular fine to coarse GRAVEL with a low subangular cobble content. Clasts are extremely weak, to very weak, low to medium density, white with occasional black specks. Matrix is light brown, locally cream. With occasional angular to subangular small to medium flint fragments (up to 60mm in size).		17.50		53.45
17.95-18.00		D								
18.00-19.00		B								
18.00-18.45	17.50 (7.00)	D			S56					
18.50-18.95	18.00 (7.00)	UT115								
18.95-19.00		D								
19.00-19.45	19.00 (8.00)	D			S54					
19.50-19.95	19.00 (8.30)	UT130 Strength,kPa=		196						
19.95-20.00		D								
20.00-20.45		D			S45					

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/SI**
Checked by **CPL**
Figure **4 of 5**
12/05/2020

geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** Engineer **AECOM**

Borehole **BH72402**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**

Ground Level **70.95** m OD

Scale 1:25

Drilling		Properties/Sampling				Strata				
Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description General	Description Detail	Depth	Legend	Level m OD
	19.00 (8.30)									
						End of Borehole		**20.50**		**50.45**

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/SI**
Checked by **CPL**
Figure **5 of 5**
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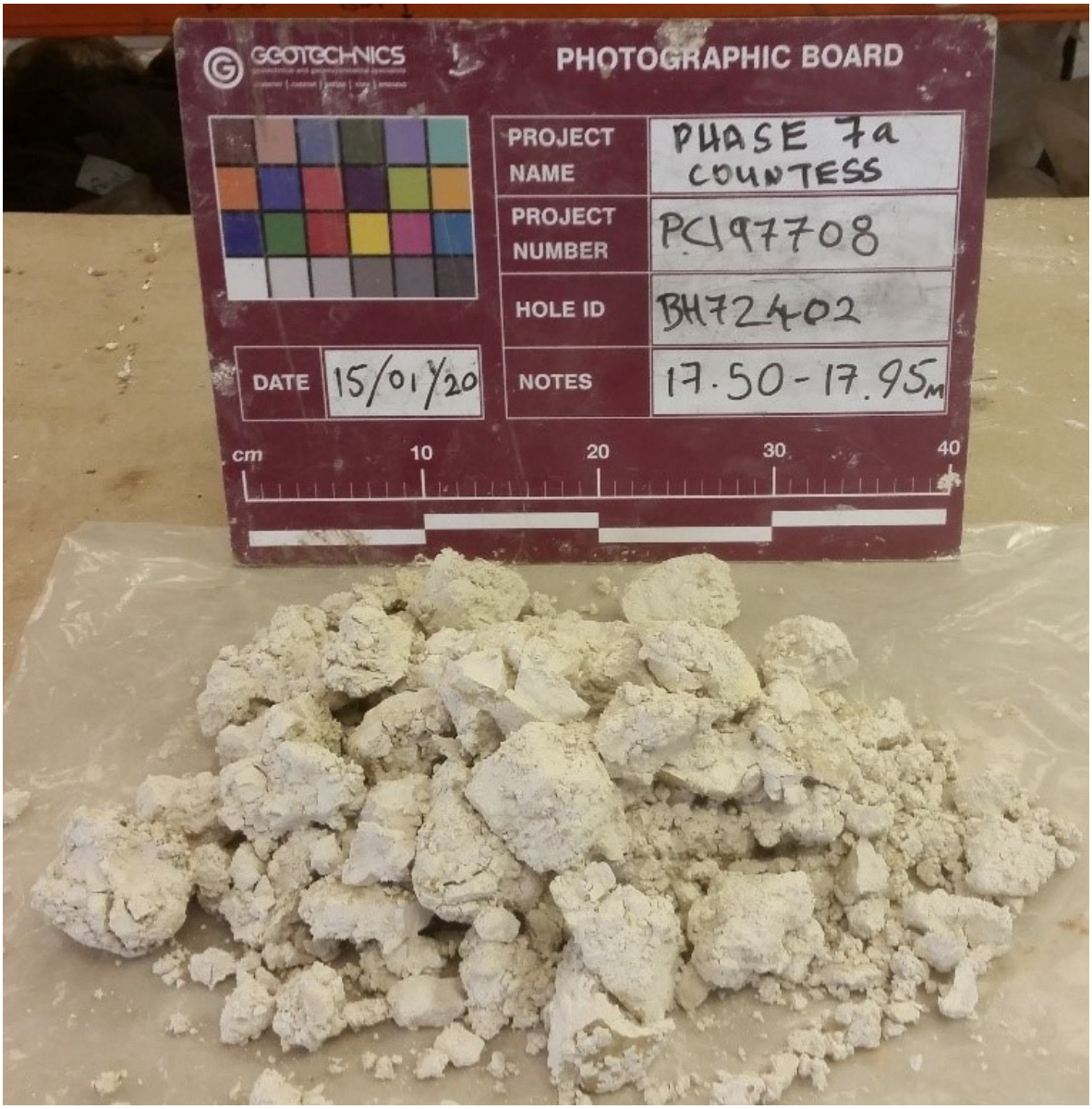
Detailed Sample Description Sheet

Project: A303Amesbury to Berwick Down, Phase 7A Countess Roundabout

Project No: PC197708

Location: BH72402
Depth: 17.50-17.95m



Description (after triaxial test):
CHALK, recovered as slightly sandy slightly silty, subangular to subrounded GRAVEL. Clasts are very weak, low density, white with rare light orangish brown staining. Matrix is white. With rare subangular flints (up to 4mm by 2mm).

Detailed Sample Description Sheet

Project: A303Amesbury to Berwick Down, Phase 7A Countess Roundabout

Project No: PC197708

Location: BH72402
Depth: 18.50-18.95m

Description:
CHALK recovered as slightly sandy slightly silty, subangular to subrounded GRAVEL. Clasts are very weak, low density, white with rare black specks occasional light orangish brown staining. Matrix is white.

Detailed Sample Description Sheet

Project: A303Amesbury to Berwick Down, Phase 7A Countess Roundabout

Project No: PC197708

Location: BH72402
Depth: 19.50-19.95m

Description (after triaxial test):
CHALK, recovered as slightly silty slightly sandy, subangular to subrounded GRAVEL. Clasts are very weak, low density, white with rare black specks and occasional orangish brown staining. Matrix is white. With rare subangular flint (up to 25mm by 15mm).

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole / Project No	BH72403 / PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415324.9 E, 142026.4 N	Ground Level	71.29 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
							G.L.		
0.00- 0.10		B					(71.29)		
0.00- 0.10		D				PROBABLE MADE GROUND: Soft brown slightly sandy slightly gravelly silt with occasional rootlets. Gravel is angular to subrounded fine to coarse chalk and flint.	0.10		
0.00- 0.10		ES					(71.19)		
0.00- 0.10			PID=3.4ppm				0.25		
0.10- 0.25		B					(71.04)		
0.10- 0.25		D							
0.10- 0.25		ES				PROBABLE MADE GROUND: Firm brown slightly sandy slightly gravelly silt with occasional pockets (up to 15mm in size) of white slightly sandy silt and rare rootlets. Gravel is angular to subrounded fine to coarse chalk and flint.			
0.10- 0.25			PID=3.0ppm				0.50		
0.40- 0.50		B					(70.79)		
0.40- 0.50		D							
0.40- 0.50		ES							
0.40- 0.50			PID=3.1ppm						
						PROBABLE MADE GROUND: Greyish white gravelly silty sand with a low cobble content of angular to subangular flint. Gravel is angular to subrounded fine to coarse chalk and flint			
1.00- 1.10		B							
1.00- 1.10		D							
1.00- 1.10		ES				PROBABLE MADE GROUND: White very gravelly silty sand with a low cobble content of angular to subrounded flint. Gravel is angular to subrounded fine to coarse chalk and flint.			
1.00- 1.10			PID=2.9ppm				1.20		
1.20- 1.65		B					(70.09)		
1.20- 1.65	1.15 (NIL)	D			S32				
						PROBABLE MADE GROUND: Dense cream slightly sandy silty gravel with a medium cobble content of subangular and subrounded flint and chalk with occasional pockets (<7mm size) of soft brown slightly sandy clay. Gravel is subangular to subrounded fine to coarse chalk and flint.			
1.70		ES							
1.70			PID=3.2ppm						
2.00		D							
						Below 2.20m, medium dense.			
2.20- 2.65		B							
2.20- 2.65	2.15 (NIL)	D			S17				
2.54		W							
2.60		D					2.60		
						Loose brown sandy slightly clayey GRAVEL. Gravel is subangular to subrounded fine to coarse flint, quartzite and limestone. Below 2.90m, becoming light creamish brown.	(68.69)		
2.70		ES							
2.70			PID=3.1ppm						
3.00		D							
3.30- 3.75		B							
3.30- 3.75	3.20 (2.54)				C8				
3.80		ES							
3.80			PID=3.1ppm						
4.00		D				Below 4.00m, becoming light grey.			
						Below 4.30m, medium dense.			
4.30- 4.75		B							
4.30- 4.75	4.20 (2.70)				C13				
4.80		ES							
4.80			PID=3.1ppm						

Drilling / Progress / Groundwater

Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.25	0.40	Inspection Pit	Arch	G.L.			11/11/19	08:00	2.95	2.80	2.54	20	NS	Moderate flow.
1.20	0.30	Inspection Pit	DE/SG	0.25	NIL	DRY	11/11/19	18:00						
7.50	0.20	Cable Percussion	CR/BB	0.25	NIL	DRY	14/11/19	08:00						
15.75	0.15	Cable Percussion	CR/BB	1.20	NIL	DRY	14/11/19	18:00						
16.00	0.12	Rotary Open Hole	SP/PB	1.20	NIL	DRY	19/11/19	08:00						
20.40	0.12	Geobor S	SP/PB	6.50	6.00	2.50	19/11/19	18:00						

Remarks

Inspection pit hand excavated to 0.25m by archeologist and extended to 1.20m depth by Geotechnics. No services were found.
ES sample = 2 x vial, 2 x plastic jar and 2 x amber jar
** Drillers description.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged by JD/SI
Checked by CPL
Figure 1 of 5
12/05/2020

geotechnics

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72403
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415324.9 E, 142026.4 N	Ground Level	71.29 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
							5.20 (66.09)		
5.20		D				CHALK recovered as slightly sandy silty GRAVEL with a low cobble content of flint and chalk. Clasts are weak, low and medium density and white with occasional black specks and orangish brown staining.			
5.30		ES							
5.30			PID=3.1ppm						
5.55- 6.00		B							
5.55- 6.00	5.50 (2.50)				C9				
6.30		D							
7.00		D							
7.05- 8.30		B							
7.05- 7.50	7.00 (3.10)				S7				
						Below 7.50m, pushing flint cobble**			
8.40		D							
8.60-10.00		B							
8.60- 9.05	8.50 (4.20)	D			S6				

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
6.50	6.00	2.50	20/11/19	08:00
16.00	16.00	3.40	20/11/19	18:00
16.00	16.00		21/11/19	08:00
19.00	19.00		21/11/19	18:00
19.00	19.00	2.90	25/11/19	08:00
20.40	20.00		25/11/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

AGS ## Additional detail added by Client's consultant, Rory Mortimore.
Backfill details from base of hole: bentonite up to ground level.
Flush: 16.00-20.00m, Air/Mist, 100% return.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged by JD/SI
Checked by CPL
Figure 2 of 5
12/05/2020

geotechnics

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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72403
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415324.9 E 142026.4 N	Ground Level	71.29 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
10.10-11.50		B							
10.10-10.55	10.05 (4.70)	D			S9				
						Below 11.55m, clasts with occasional yellowish brown staining.			
11.55-13.00		B							
11.55-12.00	11.50 (4.40)	D			S7				
13.05-14.30		B							
13.05-13.50	13.00 (5.40)				S29				
						CHALK, recovered as white slightly sandy slightly gravelly SILT. Clasts are weak, low density and white with occasional black specks and orangish brown staining. With occasional subangular to subrounded flints (up to 45mm in size).	14.00 (57.29)		
14.40		D							
14.65-15.30		D							
14.65-15.10	14.60 (4.90)	D			S20				

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

Logged by JD/SI
Checked by CPL
Figure 3 of 5
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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72403
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415324.9 E, 142026.4 N	Ground Level	71.29 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
15.30-15.75	15.25 (3.40)	D			S33				
						Weathered chalk/ flint. **	15.75 (55.54)		
16.00-17.50	16.00	40 0				Between 16.00-17.00m, assumed zone of core loss.			
16.00-16.45	16.00	D			S38 (AZCL)				
					(NI)	CHALK, recovered as angular to subangular fine to coarse GRAVEL. Clasts are very weak, low density and white. Matrix is white. With occasional angular to subangular small and medium flint fragments (up to 90mm in size).	17.00 (54.29)		
17.50-19.00	17.50	67 27	0.20 0.05	27		Very weak, low to medium density, white with occasional black specks CHALK. Discontinuities are: Between 18.23-18.80m, Set 1 are inclined 75-85 degrees, clean (0/0/0), undulating and smooth, rarely stepped and rough with many black specks. [PROBABLY GRADE A4 ##] Between 17.50-18.00m, assumed zone of core loss. Between 18.00-18.23m, non intact, recovered as silty angular to subangular fine to coarse gravel.	17.50 (53.79)		1
17.50-17.95	19.00				S66 (AZCL)				
18.42-18.49		C			(7)	Between 18.50-18.60m, discontinuity inclined 50 degrees, clean, stepped and rough with many black specks.			1
						Between 18.80-19.00m, non intact, recovered as angular to subangular fine to coarse gravel. With occasional angular to subangular small flint fragments (up to 30mm in size).	19.00 (52.29)		1
19.00-20.00	19.00	100 9	0.09 0.09	0		CHALK, recovered as a very silty angular to subangular fine to coarse GRAVEL. Clasts are extremely weak to very weak, low density and white with occasional orangish brown relic sponge traces (up to 30mm in size). Matrix is white. [GRADE A ##] At 19.00m, with angular to subangular flint fragments (up to 25mm in size). Between 19.34-19.43m, intact section of core. Between 19.60-20.00m, orange iron stained and pale green glauconitic nodular sponge bed. ##			
19.00-19.40	19.00	D			S99/ 245				
19.34-19.43		C			(NI)				
20.00-20.40		D							

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

Logged by JD/SI
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Figure 4 of 5
12/05/2020

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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72403
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415324.9 E 142026.4 N	Ground Level	71.29 m OD

Drilling | Properties/Sampling | Strata — Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
	20.00				S110/ 250				
						End of Borehole	20.40 (50.89)		

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

Logged by JD/SI
Checked by CPL
Figure 5 of 5
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geotechnics

BOREHOLE RECORD – Cable Percussion

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72404
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415459.0 E, 142046.6 N	Ground Level	71.24 m OD

Scale 1:25

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		71.24
0.10- 0.20	B					MADE GROUND: Soft and firm dark brown slightly sandy slightly gravelly silt with occasional rootlets and roots (up to 4mm thick) and a low cobble content of angular to subangular concrete and flint. Gravel is angular to subrounded fine to coarse chalk, flint and rare concrete.			
0.10- 0.20	D								
0.10- 0.20	ES								
0.10- 0.20			PID=3.1ppm						
							0.50		70.74
0.60- 0.70	B					MADE GROUND: Greyish white very gravelly silty sand with a low cobble content of angular to subangular concrete and flint. Gravel is angular to subrounded fine to coarse chalk, flint and rare concrete. Below 0.90m, with occasional pockets (up to 80mm in size) of soft brown slightly sandy clay.			
0.60- 0.70	D								
0.60- 0.70	ES								
0.60- 0.70			PID=2.9ppm						
1.00- 1.10	B								
1.00- 1.10	D								
1.00- 1.10	ES								
1.00- 1.10			PID=2.8ppm						
							1.20		70.04
1.20- 1.65	B					PROBABLE MADE GROUND: Greyish brown slightly sandy slightly gravelly clay with a medium cobble content. Gravel is subangular to subrounded fine to coarse flint, chalk and quartzite. Below 1.50m, with occasional pockets (up to 15mm by 4mm in size) of brown slightly sandy clay.			
1.20- 1.65	D	NIL (DRY)		14	S11				
1.80	D								
2.00	ES								
2.00			PID=2.8ppm						
2.20- 2.65	D	2.15 (DRY)			S5				
2.40- 2.80	B					Soft greyish green slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint, chalk and quartzite.	2.40		68.84
2.80	D			20					
3.00	ES								
3.00			PID=3.0ppm			Below 3.10m, grading to a very sandy gravel.			
3.20- 3.50	B								
3.20	W							▼	
3.20- 3.65		3.10 (DRY)			S18				
							3.50	▽	67.74
3.80	D			16		Medium dense light brownish green sandy slightly clayey GRAVEL with a medium cobble content of subangular flint and subrounded chalk. Gravel is subangular to subrounded fine to coarse flint, chalk and quartzite.			
4.30- 4.75	B								
4.30- 4.75		4.20 (3.20)			C14				
5.00	D					Below 5.00m, becoming very gravelly.			

Boring

Depth	Hole Dia	Technique	Crew
0.80	0.40	Inspection Pit	Arch
1.20	0.30	Inspection Pit	DE/SG
6.00	0.20	Cable Percussion	CR/BB
21.32	0.15	Cable Percussion	CR/BB

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			13/11/19	08:00
0.80	NIL	DRY	13/11/19	18:00
0.80	NIL	DRY	14/11/19	08:00
1.20	NIL	DRY	14/11/19	18:00
1.20	NIL	DRY	27/11/19	08:00
3.00	3.00	DRY	27/11/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
3.50	3.20	3.20	20	NS	Moderate flow

Remarks

Inspection pit hand excavated to 0.80m by archeologist and extended to 1.20m depth by Geotechnics. No services were found.
ES sample = 2 x vial, 1 x plastic jar and 1 amber jar
At 18.80m and 20.40m, UT shoes damaged during driving of sampler.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by JR/JD
Checked by CPL
Figure 1 of 5
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geotechnics

BOREHOLE RECORD – Cable Percussion

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS
Engineer: AECOM
Borehole: BH72404
Project No: PC197708
Client: HIGHWAYS ENGLAND
National Grid Coordinates: 415459.0 E, 142046.6 N
Ground Level: 71.24 m OD
Scale: 1:25

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							5.20		66.04
5.30	D					CHALK, recovered as slightly sandy silty subangular to subrounded GRAVEL with a low cobble content. Clasts are very weak, low and medium density, white with occasional black specks. Matrix is white. At 5.30m, with rare angular small flint fragments (up to 20mm in size).			
5.55- 6.00	B								
5.55- 6.00		5.50 (3.20)			S4	Between 5.50-6.00m, with occasional angular and subangular small flint fragments (up to 60mm in size).			
6.00	D					Below 6.00m, with rare orangish brown staining on clasts. Between 6.00-8.50m, with rare angular small flint fragments (up to 30mm in size).			
7.00	D								
7.05- 8.50	B								
7.05- 7.50		7.00 (3.30)			S5				
8.50-10.00	B								
8.50- 8.95	D	8.45 (3.50)			S6				
						Between 10.05-11.50m, with occasional angular small and medium flint fragments (up to 60mm in size).			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
				3.00	3.00	DRY	28/11/19	08:00						
				16.50	16.50	3.20	28/11/19	18:00						
				16.50	16.50	3.20	02/12/19	08:00						
				21.32	21.30	3.80	02/12/19	18:00						

Remarks: Backfill details from base of hole: bentonite up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by JR/JD
Checked by CPL
Figure 2 of 5
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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS**
Engineer **AECOM**
Borehole Project No **BH72404** **PC197708**

Client **HIGHWAYS ENGLAND**
National Grid Coordinates **415459.0** E **142046.6** N
Ground Level **71.24** m OD

Scale 1:25

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
10.05-11.00	**B**								
10.05-10.50	**D**	**10.00 (3.20)**			**S8**				
11.00-11.50	**D**								
11.55-13.00	**B**					**Between 11.55-13.95m, with rare angular and subangular small to medium flint fragments (up to 80mm in size).**			
11.55-12.00	**D**	**11.50 (5.80)**			**S10**				
13.20-14.00	**B**								
13.20-13.65	**D**	**13.15 (6.20)**			**S12**				
14.05-14.50	**UT37**	**14.00 (4.90)**							
14.50-14.60	**D**					**Between 14.50-15.55m, with occasional angular and subangular small to medium flint fragments (up to 80mm in size).**			
14.60-15.55	**B**								
14.60-15.05	**D**	**14.50 (4.20)**			**S14**				

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/JD**
Checked by **CPL**
Figure **3 of 5**
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BOREHOLE RECORD – Cable Percussion

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS**
Engineer **AECOM**
Borehole **BH72404**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**
National Grid Coordinates **415459.0** E **142046.6** N
Ground Level **71.24** m OD

Scale 1:25

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
15.55-16.00	UT80	15.50 (3.90)	298	30					
16.00-16.10	D								
16.10-16.80	B								
16.10-16.55	D	15.50 (3.70)			S29				
17.00	D								
17.05-17.50	UT31	17.00 (3.50)							
17.50-17.60	D								
17.60-18.80	B								
17.60-18.05	D	17.00 (3.50)			S41				
18.80-19.25	UT53	18.75 (3.70)	165	27					
19.25-19.40	D								
19.40-20.40	B								
19.40-19.85	D	19.00 (3.70)			S45				
						Below 20.00m, rare pockets (up to 25mm) of light orangish grey silt.			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/JD**
Checked by **CPL**
Figure **4 of 5**
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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS**
Engineer **AECOM**
Borehole **BH72404**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**
National Grid Coordinates **415459.0** E **142046.6** N
Ground Level **71.24** m OD

Scale 1:25

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
20.40-20.85	**UT58**	**20.30 (3.80)**	**417**	**27**					
20.85-20.95	**D**								
20.95-21.32	**D**	**20.30 (3.80)**			**S50/ 220**				
						End of Borehole	**21.32**		**49.92**

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/JD**
Checked by **CPL**
Figure **5 of 5**
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Detailed Sample Description Sheet

Project: A303Amesbury to Berwick Down, Phase 7A Countess Roundabout

Project No: PC197708

Location: BH72404
Depth: 14.05-14.50m

Description:
Weak, medium density, white with frequent black specks, CHALK. Discontinuities are subhorizontal to subvertical, very closely spaced (10/40/60), clean with frequent black specks and occasional light orangish brown staining, undulating and smooth. (POSSIBLE GRADE A4)

Detailed Sample Description Sheet

Project: A303Amesbury to Berwick Down, Phase 7A Countess Roundabout

Project No: PC197708

Location: BH72404
Depth: 15.55-16.00m

Description (after triaxial test):
CHALK, recovered as silty subangular to subrounded fine to coarse GRAVEL. Clasts are very weak, low density, white with rare black specks and occasional orangish brown surface staining. Matrix is white and locally orangish brown. With occasional angular to subangular small nodular flint fragments (up to 20 mm in size).

Detailed Sample Description Sheet

Project: A303Amesbury to Berwick Down, Phase 7A Countess Roundabout

Project No: PC197708

Location: BH72404
Depth: 17.05-17.50m

Description:
Weak, medium density, white with occasional black specks, CHALK.
At 17.43m subhorizontal discontinuity, clean with frequent black specks and occasional light orangish brown staining, undulating and smooth.

Detailed Sample Description Sheet

Project: A303Amesbury to Berwick Down, Phase 7A Countess Roundabout

Project No: PC197708

Location: BH72404
Depth: 18.80-19.25m

Description (after triaxial test):
Very weak, low to medium density, white with rare black specks, CHALK.
At 18.85m, with occasional light orangish brown staining.

Detailed Sample Description Sheet

Project: A303Amesbury to Berwick Down, Phase 7A Countess Roundabout

Project No: PC197708

Location: BH72404
Depth: 20.40-20.85m

Description (after triaxial test):
CHALK, recovered as very silty subangular fine to coarse GRAVEL. Clasts are extremely to very weak, low to density, white with rare black specks. Matrix is white.
Below 20.65m, recovered as, white slightly gravelly SILT. Gravel is very weak, low density, white with rare black specks.

NB. UT shoe damaged during sampling.

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72405
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415625.7 E, 142095.6 N	Ground Level	72.30 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
							G.L. (72.30)		
0.00- 0.10		B							
0.00- 0.10		D				MADE GROUND: Soft greyish brown slightly sandy gravelly clay with many rootlets and some roots (up to 15mm in diameter). Gravel is angular to subangular fine to coarse chalk and flint.	0.10 (72.20)		
0.10- 0.30		B							
0.10- 0.20		D							
0.55- 0.70		B				MADE GROUND: Chalk, recovered as cream slightly sandy gravelly silt. Clasts are very weak, low density, white, angular to subangular and fine to coarse. With some angular fine to coarse flint gravel and a low subangular cobble content of flint.	0.55 (71.75)		
0.55- 0.65		D							
1.00- 1.20		B				MADE GROUND: Firm greyish brown mottled white slightly sandy slightly gravelly clay with a low subangular to subrounded cobble content of slag and brick. Gravel is angular fine to coarse flint, brick and chalk.	1.00 (71.30)		
1.10- 1.20		D							
1.20- 1.70		B				PROBABLE MADE GROUND: Firm cream slightly sandy gravelly silt with a low subangular chalk cobble content. Gravel is angular to subangular fine to coarse chalk with some flint.			
1.20- 1.65	1.20 (DRY)	D			S10				
1.90- 2.00		D							
						Below 2.20m, becoming very stiff.			
2.20- 2.70		B							
2.20- 2.65	1.50 (DRY)				S34				
2.90- 3.00		D					2.90 (69.40)		
3.00- 3.50		B				PROBABLE MADE GROUND: Medium dense cream sandy clayey gravel with a low cobble content of angular to subrounded flint and rare pockets (up to 50mm in size) of soft dark brown slightly sandy clay. Gravel is angular to subangular fine to coarse chalk and flint.			
3.00- 3.45	3.00 (DRY)				S18				
3.30		W							
3.50- 3.60		D					3.50 (68.80)		
3.60- 4.00		B				Firm greenish grey mottled brown slightly gravelly sandy CLAY with pockets (up to 60mm in size) of plastic pseudofibrous peat. Gravel is angular to subangular fine to coarse flint.			
4.00- 4.45	4.00 (DRY)	D			S15		4.20 (68.10)		
						Medium dense brown and grey sandy slightly silty GRAVEL with a low cobble content. Gravel is angular to subrounded fine to coarse flint.			
4.80- 5.30		B							
4.80- 4.90		D							
4.80- 5.25	4.50				C10				

Drilling

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	DC/LC
6.00	0.20	Cable Percussion	DC/LC
15.50	0.15	Cable Percussion	DC/LC
16.50	0.12	Rotary Open Hole	SP/PB
20.23	0.12	Geobor S	SP/PB

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			27/11/19	08:00
6.00	6.00	5.00	27/11/19	18:00
6.00	6.00	3.30	28/11/19	08:00
15.50	15.00	8.00	28/11/19	18:00
15.00	15.00	3.60	04/12/19	08:00
20.23	20.00	2.10	29/11/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
4.20	4.00	3.30	20	NS	Fast flow.

Remarks

Inspection pit hand excavated to 1.20m depth, under an archaeologists supervision, and no services were found.
Falling Head Permeability test carried out during drilling at a depth of 4.80m, water added up to ground level.
UT at 14.50-14.95m, 0.20m recovery.
SPT at 20.00-20.23m, trip hammer sub broke off during test.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged by JD/SI
Checked by CPL
Figure 1 of 5
12/05/2020

geotechnics

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72405
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415625.7 E, 142095.6 N	Ground Level	72.30 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
6.00- 6.70		B							
6.00- 6.10		D				**CHALK, recovered as slightly sandy silty angular to subangular fine to coarse GRAVEL with a low cobble content of subangular chalk. Clasts are very weak, low density and white. With rare brown staining. Matrix is white.**	6.00 (66.30)		
6.00- 6.45	6.00 (3.30)				C6	**Between 6.00-6.70m, clasts are high density. Between 6.00-6.70m, with rare to occasional angular small flint fragments (up to 50mm in size).**			
						Above 6.70m, with rare pockets (up to 50mm in size) of brown clay.			
7.00- 7.10		D							
7.50- 8.00		B							
7.50- 7.95	7.50 (5.50)	D			S4	**Between 7.50-8.00m, with occasional small and medium flint fragments (up to 70mm in size).**			
8.50- 8.60		D							
9.00- 9.45	9.00 (5.60)	D			S5				
10.00-10.10		D							

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

AGS **Undetermined from hand pressure on standard size samples or, where undertaken, from laboratory test results.**
Additional detail added by Client's consultant, Rory Mortimore.
Backfill details from base of hole: bentonite up to ground level.
Flush: 16.50-20.00m, Air/Mist, 0% return.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged by JD/SI
Checked by CPL
Figure 2 of 5
12/05/2020

geotechnics

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BOREHOLE RECORD – Cable Percussion and Rotary

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS
Engineer: AECOM
Borehole: BH72405
Project No: PC197708
Client: HIGHWAYS ENGLAND
National Grid Coordinates: 415625.7 E, 142095.6 N
Ground Level: 72.30 m OD
Scale: 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
						Between 10.00-10.10m, with rare angular small flint fragments (up to 20mm in size).			
10.50-11.00		B				At 10.50m, chalk clasts locally stained brown.			
10.50-10.95	10.50 (6.00)	D			S5	Between 10.50-11.00m, with occasional small and medium flint fragments (up to 60mm in size).			
11.50-11.60		D				Between 11.50-11.60m, with rare angular and subrounded small and medium flint fragments (up to 70mm in size).			
12.00-12.45	12.00 (6.60)	D			S15				
13.00-13.50		D				Between 13.00-13.50m, cobble of rinded flint with a 3mm thick cortex.			
13.00-13.45	13.00 (7.00)	UTF60				Between 13.00-13.10m, with occasional angular small and medium flint fragments (up to 80mm in size).			
13.50-13.95	13.50 (7.00)	D			S20	Between 13.50-13.95m, with rare angular small flint fragments (up to 20mm in size).			
14.10-14.20		D				Between 14.10-14.20m, with occasional angular small and medium flint fragments (up to 60mm in size).			
14.50-14.95	14.50 (7.40)	UT80				Between 14.50-14.95m, with many angular and subangular small and medium flints (up to 70mm x 110mm in size).			
14.95-15.00		D				Between 15.00-15.45m, chalk clasts locally stained brown.			
15.00-15.45		D			S46				

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

Logged by JD/SI
Checked by CPL
Figure 3 of 5
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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS
Engineer: AECOM
Borehole: BH72405
Project No: PC197708
Client: HIGHWAYS ENGLAND
National Grid Coordinates: 415625.7 E, 142095.6 N
Ground Level: 72.30 m OD
Scale: 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
	15.00 (8.00)								
						No recovery.	15.45 (56.85)		
16.50-17.50	16.50	40 0		0		CHALK, recovered as a very silty angular to subangular fine to coarse GRAVEL. Clasts are very weak, low density, white. Matrix is light brown locally cream. Between 16.50-17.10m, assumed zone of core loss.	16.50 (55.80)		
16.50-16.95	16.50	D			S59 (AZCL)				
					(NI)	Between 17.10-17.50m, clasts with occasional orangish brown relic sponge traces (up to 20mm in size). Between 17.10-17.20m, with occasional angular and subangular flint fragments (up to 90mm in size). Between 17.30-17.50m, orange iron stained sponge bed? Structured chalk with joints; fragmented by drilling [Possibly Grade A]. ##			
17.50-19.00	17.50	67 10	0.15 0.15	10		Between 17.50-18.00m, assumed zone of core loss.			
17.50-17.95	17.50	D			S61 (AZCL)				
					(NI)				
18.30-18.45		C			(0)	Between 18.30-18.45m, solid core. [Possibly Grade A ##]			
						Between 18.45-20.00m, with occasional angular to subangular small to medium flint fragments (up to 90mm in size). Between 18.45-20.00m, drilling fragmented structured chalk. ##			
19.00-20.00	19.00	40 0		0		Between 19.00-19.33m, with rare angular small and medium flint fragments (up to 10mm in size).			
19.00-19.33	19.00	D			(NI) S92/ 178				

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

Logged by JD/SI
Checked by CPL
Figure 4 of 5
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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72405
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415625.7 E 142095.6 N	Ground Level	72.30 m OD

Drilling | Properties/Sampling | Strata — Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
20.00-20.30	20.00				S60/ 150				
						End of Borehole	20.23 (52.07)		

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

Logged by JD/SI
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Figure 5 of 5
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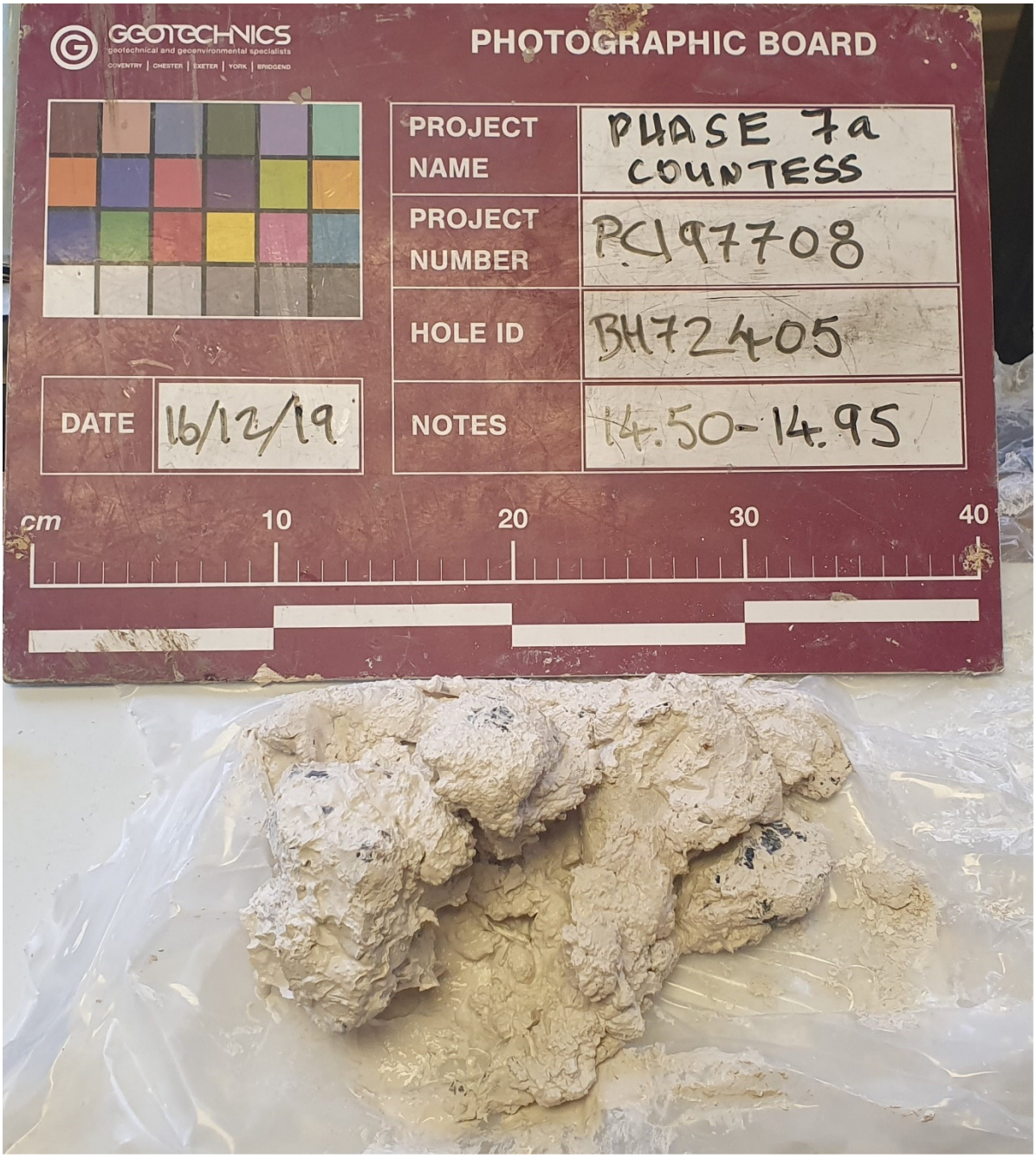
Detailed Sample Description Sheet

Project: A303Amesbury to Berwick Down, Phase 7A Countess Roundabout

Project No: PC197708

Location: BH72405
Depth: 14.50-14.95m



Description:
CHALK, recovered as creamish white with occasional orangish brown staining, slightly sandy gravelly SILT. Clasts are very weak, low density, white with rare black specks. With many angular and subangular small and medium flints (up to 70mm x 110mm).

BOREHOLE RECORD – Cable Percussion

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72406
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415742.4 E, 142134.1 N	Ground Level	72.66 m OD

Scale 1:25

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
							G.L.		72.66
0.00- 0.15	B					MADE GROUND: Soft brown slightly sandy slightly gravelly silt with occasional rootlets and roots (up to 5mm thick). Gravel is angular to subrounded fine to coarse chalk and flint.			
0.00- 0.15	D						0.15		72.51
0.20- 0.30	B								
0.20- 0.30	D								
						MADE GROUND: Cream and brown gravelly silty sand with occasional pockets (up to 100mm in size) of white slightly sandy slightly gravelly silt. Gravel is angular to subrounded fine to coarse chalk and flint.			
0.50- 0.60	B						0.50		72.16
0.50- 0.60	D								
						MADE GROUND: White gravelly silty sand with a low cobble content of angular to subangular flint. Gravel is angular to subrounded fine to coarse chalk and flint.			
1.00- 1.10	B								
1.00- 1.10	D								
							1.20		71.46
1.30- 1.80	B					MADE GROUND: Very stiff and stiff cream slightly sandy slightly gravelly silt with a low cobble content of flint. Gravel is angular to subangular fine to coarse chalk with some rinded flint.			
1.30- 1.75	D	1.30 (1.00)			S40				
						At 1.70m, subangular medium gravel sized fragment of concrete.			
1.80- 1.90	D			29					
2.30- 2.80	B								
2.30- 2.75	D	1.50 (DRY)			S29				
2.90- 3.00	D								
3.30- 3.80	B								
3.30- 3.75	D	1.50 (DRY)			S14				
3.70	W								
3.84	W								
3.90- 4.00	D								
4.30- 4.80	B						4.30		68.36
4.30- 4.75	D	1.50 (3.84)			S5	POSSIBLE MADE GROUND: Soft greyish brown mottled grey slightly sandy gravelly CLAY. Gravel is angular to subangular fine to coarse flint and chalk.			
						Soft greyish brown slightly sandy slightly gravelly CLAY with occasional pockets (up to 5mm in size) of grey pseudofibrous peat. Gravel is angular to surrounded fine to medium flint.			
4.90- 5.00	D			37			4.90		67.76

Boring

Depth	Hole Dia	Technique	Crew
0.40	0.40	Inspection Pit	Arch
1.20	0.30	Inspection Pit	DE/SG
9.00	0.20	Cable Percussion	DC/LC
20.50	0.15	Cable Percussion	DC/LC

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			12/11/19	08:00
0.40	NIL	0.35	12/11/19	18:00
0.40	NIL	G.L.	14/11/19	08:00
1.20	NIL	DRY	14/11/19	18:00
1.20	NIL	0.50	25/11/19	08:00
7.50	7.50	7.00	25/11/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
0.40		0.35	120	NS	Slow seepage
4.30	1.50	3.85	20	4.50	Slow seepage
5.10	4.50	3.70	20	NS	Fast seepage

Remarks AGS

Inspection pit hand excavated to 0.40m by archeologist and extended to 1.20m depth by Geotechnics. No services were found.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Backfill details from base of hole: bentonite up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by JR/JD
Checked by CPL
Figure 1 of 5
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BOREHOLE RECORD – Cable Percussion

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** | Engineer **AECOM** | **Borehole** Project No **BH72406** **PC197708**

Client **HIGHWAYS ENGLAND** | National Grid Coordinates **415742.4** E **142134.1** N | Ground Level **72.66** m OD

Scale 1:25

Sampling Depth	Sample Type	Depth Cased & (to Water)	Properties Strength kPa	w %	SPT N	Strata Description	Depth	Legend	Level m OD
							5.20		67.46
5.20- 6.00 5.20- 5.30 5.20- 5.65	B D	5.20 (3.70)			C9	Loose grey and brown sandy slightly silty GRAVEL of angular to subrounded fine to coarse black rinded flint.			
6.30- 6.40	D			6.3					
							6.70		65.96
6.70- 7.20 6.70- 7.15	B	6.70 (6.00)			C14	Medium dense grey and brown sandy slightly silty GRAVEL of angular to subrounded fine to coarse flint and limestone.			
							7.90		64.76
7.90- 8.00 8.00- 8.50 8.00- 8.45	D B D	8.00 (4.00)			S5	CHALK, recovered as slightly sandy silty subangular fine to coarse GRAVEL. Clasts are very weak, low to medium density, white with rare black specks and brown staining. Between 7.90-9.10m, with rare angular small flint fragments (up to 30mm in size). Between 7.90-8.00m, with rare angular and subangular medium flint fragments (up to 90mm in size)			
9.00- 9.10	D								
9.50- 9.95	D	9.00 (6.00)			S8				
10.00-10.10	D					between 10.00-10.60m, with rare angular flint fragments (up to 30mm in size).			

Boring

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
7.50	7.50	3.80	26/11/19	08:00
20.50	20.00	10.70	26/11/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/JD**
Checked by **CPL**
Figure **2 of 5**
12/05/2020

geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS**
Engineer **AECOM**
Borehole Project No **BH72406** **PC197708**

Client **HIGHWAYS ENGLAND**
National Grid Coordinates **415742.4** E **142134.1** N
Ground Level **72.66** m OD

Scale 1:25

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
10.50-12.00	B								
10.50-10.60	D								
10.50-10.95		10.50 (6.40)			S4				
11.50-11.60	D								
12.00-12.45	D	12.00 (7.80)			S6				
13.00-13.10	D					Between 13.00-13.10m, chalk clasts are weak. Between 13.00-13.95m, with occasional small to medium flint fragments (up to 80mm in size).			
13.50-15.00	B								
13.50-13.95	D	13.50 (8.60)			S10				
14.50-14.60	D								
15.00-15.45	D	15.00 (9.00)			S7	Between 15.00-15.45m, occasional brown staining on chalk clasts.			

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/JD**
Checked by **CPL**
Figure **3 of 5**
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geotechnics

BOREHOLE RECORD – Cable Percussion

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** | Engineer **AECOM** | Borehole **BH72406** | Project No **PC197708**

Client **HIGHWAYS ENGLAND** | National Grid Coordinates **415742.4** E **142134.1** N | Ground Level **72.66** m OD

Scale 1:25

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
16.00-16.10	D					Between 16.00-16.10m, with rare angular small flint fragments (up to 30mm in size).			
16.50-16.95	D	16.50 (9.60)			S14				
17.50-17.60	D					Between 17.50-17.60m, with occasional angular small and medium flint fragments (up to 70mm in size).			
18.00-18.45	D	18.00 (10.00)			S24	CHALK, recovered as creamish white gravelly SILT. Clasts are very weak, low density, white with rare black specks, angular to subangular and fine to medium. Between 18.00-18.45m, with rare angular small flint fragments (up to 20mm in size).	18.00		54.66
18.50-18.95	UT90	18.00 (10.00)				At 18.61m and 18.87m, with angular and subangular small and medium flint fragments (up to 60mm in size).			
18.95-19.00	D								
19.00-19.45	D	19.00 (10.50)			S33				
19.50-19.95	UT70	19.00 (10.50)	125	30		At 19.90m, with subrounded medium nodular flint (100mm in size) with 5mm thick cortex.			
19.95-20.00	D								

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/JD**
Checked by **CPL**
Figure **4 of 5**
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BOREHOLE RECORD – Cable Percussion

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS
Engineer: AECOM
Borehole: BH72406
Project No: PC197708
Client: HIGHWAYS ENGLAND
National Grid Coordinates: 415742.4 E, 142134.1 N
Ground Level: 72.66 m OD
Scale: 1:25

Sampling			Properties			Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	SPT N	Description	Depth	Legend	Level m OD
20.00-20.45	D	20.00 (10.70)			S42				
						End of Borehole	20.50		52.16

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by JR/JD
Checked by CPL
Figure 5 of 5
12/05/2020

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Detailed Sample Description Sheet

Project: A303Amesbury to Berwick Down, Phase 7A Countess Roundabout

Project No: PC197708

Location: BH72406
Depth: 18.50-18.95m

Description:
CHALK, recovered as slightly sandy slightly silty subangular and subrounded GRAVEL. Clasts are very weak, low density, white with rare black specks. Matrix is white and with occasional orangish brown staining.

At 18.61m and 18.87m, with angular and subangular small and medium flint fragments (up to 60mm in size).

Detailed Sample Description Sheet

Project: A303Amesbury to Berwick Down, Phase 7A Countess Roundabout

Project No: PC197708

Location: BH72406
Depth: 19.50-19.95m

Description (after triaxial test):
CHALK, recovered as silty angular and subangular fine to coarse GRAVEL. Clasts are very weak, low density, white with rare black specks and orangish brown surface staining. Matrix is white and with rare orangish brown staining.

At 19.90m, with subrounded medium nodular flint (100mm in size) with 5mm thick cortex.

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72501
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415374.1 E, 142073.0 N	Ground Level	71.29 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
							G.L. (71.29)		
0.00- 0.25		B				MADE GROUND: Soft brown gravelly slightly clayey sand with occasional rootlets. Gravel is subangular to subrounded fine to coarse chalk and flint.			
0.15		D							
0.25- 0.50		B					0.25 (71.04)		
0.30		ES							
0.30			PID=3.4ppm			MADE GROUND: Firm brownish white sandy gravelly clay with a low cobble content of subangular to subrounded chalk and flint. Gravel is subangular to subrounded fine to coarse chalk and flint.			
0.40		D							
0.50- 0.70		B					0.50 (70.79)		
0.50		ES							
0.50			PID=3.3ppm			MADE GROUND: Light brown grey concrete.			
0.80- 1.20		B				PROBABLE MADE GROUND: Dense creamish white sandy silty gravel with occasional pockets (up to 40mm in size) of orangish brown sandy clay, grading in parts to a slightly sandy slightly gravelly silt. Gravel is subangular to subrounded fine to coarse chalk and flint.	0.80 (70.49)		
1.00		ES							
1.00			PID=3.3ppm						
1.10		D							
1.20- 1.65		B							
1.20- 1.65	NIL (DRY)	D			S37				
1.34		W							
2.00		D							
						Below 2.20m, becoming medium dense.			
2.20- 2.65		B							
2.20- 2.65	2.15 (1.34)	D			S13				
2.20		ES							
2.20			PID=3.1ppm						
						Stiff brownish green slightly gravelly sandy CLAY, recovered as soft. Gravel is subangular to subrounded fine to coarse chalk and flint.	2.60 (68.69)		
3.00		D							
3.20- 3.65		B							
3.20- 3.65	3.10 (2.80)	D			S17				
3.20		ES							
3.20			PID=3.5ppm						
						Loose brownish green very sandy very clayey GRAVEL. Gravel is subangular to subrounded fine to coarse chalk and flint. Below 3.80m, becoming creamish brown.	3.50 (67.79)		
4.00		D							
4.30- 4.60		B							
4.30		ES							
4.30- 4.75	4.25 (3.70)				C6				
4.30			PID=3.4ppm						
						CHALK, recovered as slightly sandy silty to very silty subangular to subrounded fine to coarse GRAVEL with a low cobble content of subangular to subrounded chalk. Clasts are very weak, low and medium density and white. Matrix is cream and white.	4.60 (66.69)		
4.70- 5.30		B							
4.70		D							
4.75		W							
5.00		ES							
5.00			PID=3.0ppm						

Drilling

Depth	Hole Dia	Technique	Crew
1.20	0.50	Inspection Pit	CR/BB
6.00	0.20	Cable Percussion	CR/BB
16.00	0.15	Cable Percussion	CR/BB
18.00	0.12	Rotary Open Hole	AW/PB
30.73	0.12	Geobor S	AW/PB

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			25/11/19	08:00
1.20	NIL	DRY	25/11/19	18:00
1.20	NIL		26/11/19	08:00
16.00	15.30	4.00	26/11/19	18:00
16.00	15.30	5.50	27/11/19	08:00
19.90	19.90	2.00	27/11/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
2.00	1.60	1.34	20	5.00	Slow Seepage
6.30	6.10	4.75	20	NS	Moderate flow, still rising after 20 mins.

Remarks

Inspection pit hand excavated to 1.20m depth, under an archaeologists supervision, and no services were found.
ES sample = 2 x vial, 2 x plastic jar and 2 amber jar
** Drillers description.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged by JD/SI
Checked by CPL
Figure 1 of 7
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Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72501
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415374.1 E, 142073.0 N	Ground Level	71.29 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
						Between 4.70-5.30m, with occasional angular small flint fragments (up to 50mm in size).			
5.35- 5.80		B							
5.35- 5.80	5.30 (5.20)				S1				
6.10		D							
6.90- 7.90		B							
6.90- 7.35	6.85 (5.00)				S3				
8.10		D				At 8.10m, with rare angular small flint fragments (up to 20mm in size).			
8.45- 9.50		B				Below 8.45m, clasts with occasional orangish brown staining.			
8.45- 8.90	8.40 (4.20)	D			S5	Between 8.45-9.50m, with occasional angular small flint fragments (up to 50mm in size).			
9.70		D							

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
19.90	19.90	2.00	28/11/19	08:00
30.40	30.40	2.00	28/11/19	18:00
30.40	30.40	2.00	02/12/19	08:00
30.73	30.40	2.00	02/12/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

AGS

Additional detail added by Client's consultant, Rory Mortimore.
Backfill details from base of hole: bentonite seal up to ground level.
Chiselling: 0.70-0.80m for 60 minutes.
Flush: 18.00-30.40m, Air/Mist, 0% return.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged by JD/SI
Checked by CPL
Figure 2 of 7
12/05/2020

geotechnics

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72501
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415374.1 E 142073.0 N	Ground Level	71.29 m OD

Drilling | Properties/Sampling | Strata | Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
10.05-11.50		B							
10.05-10.50	10.00 (3.90)	D			S3				
11.50-12.50		B							
11.50-11.95	11.45 (3.60)				S4				
13.00		D				Below 13.00m, very silty.			
13.25-14.50		B				Between 13.25-14.70m, with occasional angular small and medium flint fragments (up to 90mm in size).			
13.25-13.70	13.20 (4.10)	D			S19				
14.70		D				Between 14.75-16.00m, recovered as slightly sandy silt.			
14.75-15.55		B							
14.75-15.20	14.70 (4.00)	D			S31				

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

Logged by JD/SI
Checked by CPL
Figure 3 of 7
12/05/2020

geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72501
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415374.1 E, 142073.0 N	Ground Level	71.29 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
15.55-16.00	15.30 (4.00)	D			S31	Between 15.55-16.00m, with rare subangular fine to coarse flints (up to 25mm in size).			
						No recovery	16.00 (55.29)		
18.00-18.70	18.00	0				Between 18.00-18.45m, CHALK, recovered as very silty angular to subangular fine to coarse GRAVEL. Clasts are extremely weak to very weak, low density, white with rare black specks. Matrix is light brown. [from SPT sample]			
18.00-18.45	18.00	D			S81				
18.70-19.90	18.70	0			(NR)				
19.90-21.40	19.90	0							
19.90-20.35	19.90	D			S74				

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged by JD/SI
Checked by CPL
Figure 4 of 7
12/05/2020

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72501
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415374.1 E 142073.0 N	Ground Level	71.29 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
						Between 19.90-20.35m, CHALK, recovered as very silty angular to subangular fine to coarse GRAVEL. Clasts are extremely weak to very weak, low density, white with rare black specks. Matrix is light brown. With rare angular small flint fragments (up to 20mm in size). [from SPT sample]			
21.40-22.90	21.40	20 0		0		Between 21.40-21.85m, CHALK, recovered as very silty angular to subangular fine to coarse GRAVEL. Clasts are extremely weak to very weak, low density, white with rare black specks. Matrix is light brown. With rare angular small flint fragments (up to 20mm in size). [from SPT sample]			
21.40-21.85	21.40	D			S69				
21.40-22.90		D							
					(AZCL)				
					(NI)	CHALK, recovered as a very silty angular to subangular fine to coarse GRAVEL. Clasts are extremely weak to very weak, low density, white with occasional black specks. Matrix is light brown. With many angular to subangular small to medium flint fragments (up to 70mm in size).	22.60 (48.69)		
22.90-24.40	22.90	97 53	0.26 0.11	49			22.90 (48.39)		
					(NI)	Very weak, low to medium density, white with occasional black specks, CHALK. Discontinuities where seen are: Set 1 are 0-15 degrees, medium spaced (140/350/560) clean or infilled (0/0/1) marl, stepped and rough with many black specks. Set 2 are 30 degrees, clean or infilled (0/1/1) comminuted chalk, stepped and rough with many black specks and occasional orangish brown surface staining. [POSSIBLY GRADE A1 ##] Between 22.90-23.30m, non intact, recovered as angular to subangular fine to coarse gravel. With occasional angular to subangular small flint fragments (up to 30mm in size). Between 23.46-23.50m, non intact, recovered as angular to subangular fine to coarse gravel. With occasional angular to subangular small flint fragments (up to 30mm in size). At 24.03m and 24.25m, with orangish brown relic sponge traces (up to 15mm in size). Between 24.40-24.60m, assumed zone of core loss.			
22.90-23.35	22.90	D			S50				
23.60-23.77		C							
					(2)				
24.40-25.90	24.40	87 65	0.56 0.14	65	(AZCL)				
24.40-24.85	24.40	D			S57	Between 24.60-24.80m, non intact, recovered as silty angular to subangular fine to coarse gravel.			
					(NI)				
						At 24.90m, with a grey marl seam (up to 1mm thick).			

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72501
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415374.1 E 142073.0 N	Ground Level	71.29 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
					(3)	At 25.30m and 25.63m, with orangish brown relic sponge traces (up to 20mm in size).			1
25.48-25.70		C							1
						Between 25.90-26.10m, assumed zone of core loss.			
25.90-27.40	25.90	87 50	0.18 0.06	22	(AZCL)	Between 26.10-26.33m, non intact, recovered as silty angular to subangular fine to coarse gravel. With rare angular to subangular small flint fragments (up to 20mm in size).			
25.90-26.35	25.90	D			S79				
					(NI)				
					(8)	Between 26.45-26.54m, discontinuity inclined 70 degrees, clean, stepped and rough with many black specks. At 26.56m, with a grey marl seam (up to 1mm thick). Between 26.60-26.70m, discontinuity inclined 80 degrees, clean, stepped and rough with many black specks. Between 26.70-26.82m, discontinuity inclined 60 degrees, infilled (1mm thick) with comminuted chalk, stepped and rough with many black specks.			1 1 2
26.97-27.15		C							
					(NI)	Between 27.17-27.40m, non intact, recovered as silty angular to subangular fine to coarse gravel. With occasional angular to subangular small to medium flint fragments (up to 90mm in size). Between 27.30-27.40m, possible large solid full-core flint? ##			1
27.40-28.90	27.40	88 47	0.21 0.10	33	(AZCL)	Between 27.40-27.58m, assumed zone of core loss. Between 27.58-28.00m, non intact, recovered as silty angular to subangular fine to coarse gravel. With rare angular to subangular small flint fragments (up to 20mm in size).			
27.40-27.85	27.40	D			S78				
					(NI)				
					(2)	At 28.32m, with rare angular to subangular small to medium flint fragments (up to 80mm in size).			1
28.44-28.65		C				Between 28.65-29.90m, with much orangish brown relic sponge traces (up to 30mm in size). Between 28.75-28.90m, orange iron-stained nodular sponge bed with pale green glauconite. ## Between 28.90-29.12m, non intact, recovered as angular and subangular fine to coarse gravel.			2
28.90-30.40	28.90	96 71	0.40 0.07	50	(NI)				
28.90-29.35	28.90	D			S81				
					(3)	At 29.20m, a subhorizontal sheet like bivalve fossil (6mm thick). [inoceramid ##] Between 29.20-29.45m, with much orangish brown relic sponge traces (up to 50mm in size). [weakly green glauconitic and orange iron-stained sponge nodular bed. ##] At 29.50m and 29.60m, with grey marl seams (up to 1mm thick). At 29.63m, with rare angular to subangular small flint fragments (up to 25mm in size). Between 29.80-30.40m, with occasional grey wispy marl seams (up to 3mm thick). [thin interwoven grey marl seams. ##]			2 1
29.86-30.26		C							1

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72501
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415374.1 E 142073.0 N	Ground Level	71.29 m OD

Drilling | Properties/Sampling | Strata — Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
30.40-30.73	30.40	D			S100/ 180	End of Borehole	30.73 (40.56)		1

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72502
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415409.2 E, 142074.9 N	Ground Level	71.47 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
							G.L. (71.47)		
0.10- 0.20		B				MADE GROUND: Soft brown slightly sandy slightly gravelly silt with occasional rootlets. Gravel is angular to subrounded fine to coarse chalk and flint.	0.20 (71.27)		
0.10- 0.20		D							
0.10- 0.20		ES							
0.10- 0.20			PID=2.9ppm						
0.50- 0.60		B				MADE GROUND: Greyish white gravelly silty sand with a low cobble content of angular to subangular concrete and flint. Gravel is angular to subangular fine to coarse brick, chalk, concrete and flint.			
0.50- 0.60		D							
0.50- 0.60		ES							
0.50- 0.60			PID=3.5ppm						
						PROBABLE MADE GROUND: Creamish white very gravelly silty sand with a low cobble content of angular to subangular flint. Gravel is angular to subangular fine to coarse chalk and flint.	0.80 (70.67)		
1.00- 1.10		B							
1.00- 1.10		D							
1.00- 1.10		ES							
1.00- 1.10			PID=2.6ppm						
1.20- 1.70		B				PROBABLE MADE GROUND: White, locally light brown, slightly sandy slightly gravelly silt with occasional small nodular flint fragments (up to 45mm in size).	1.20 (70.27)		
1.20- 1.65	1.20 (DRY)	D			S32				
2.00- 2.10		D							
2.00- 2.10		ES							
2.00- 2.10			2.8ppm						
2.20- 2.70		B							
2.20- 2.65	1.50 (DRY)	D			S39				
2.80- 3.20		B							
2.80- 2.90		D							
							2.90		
3.00- 3.10		D				Very stiff greyish brown slightly sandy gravelly CLAY with a low cobble content of flint. Gravel is angular to subrounded fine to coarse flint and chalk. Below 3.20m, stiff with occasional medium flint fragments (up to 70mm in size).	(68.57)		
3.00- 3.10		ES							
3.00- 3.10			2.7ppm						
3.20- 3.70		B							
3.20- 3.65	1.50 (DRY)	D			S28				
3.60		W							
4.00- 4.10		D					4.00		
4.00- 4.10		ES				Medium dense greyish brown sandy GRAVEL with a medium cobble content of subangular flint. Gravel is angular to subangular fine to coarse flint.	(67.47)		
4.00- 4.10			2.8ppm						
4.30- 4.80		B					4.30		
4.30- 4.40		D				Medium dense greyish brown sandy GRAVEL. Gravel is angular to subangular fine to coarse flint.	(67.17)		
4.30- 4.75	4.30 (3.60)				C14				

Drilling

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	Arch
6.00	0.20	Cable Percussion	DC/LC
15.00	0.15	Cable Percussion	DC/LC
30.22	0.12	Geobor S	SW/PB

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			14/11/19	08:00
1.20	NIL	DRY	14/11/19	18:00
1.20	NIL	1.00	02/12/19	08:00
15.00	15.00	7.00	02/12/19	18:00
15.00	15.00		03/12/19	08:00
21.00	21.00	3.50	03/12/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
4.30	4.30	3.60	20	NS	Fast flow

Remarks

Inspection pit hand excavated to 1.20m by archeologist. No services were found.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Additional detail added by Client's consultant, Rory Mortimore.
Backfill details from base of hole: bentonite grout up to ground level.
Flush: 15.00-30.00m, Air/Mist, 0% return.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged by ED/SI
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Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72502
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415409.2 E, 142074.9 N	Ground Level	71.47 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
							5.20 (66.27)		
5.20- 5.30		D				CHALK, recovered as white and cream gravelly SILT. Clasts are very weak, medium density, white with occasional black specks angular, fine to coarse.			
5.20- 5.30		ES							
5.20- 5.30			2.7ppm						
5.30- 6.00		B							
5.30- 5.75	5.30 (4.50)	D			S1				
6.50- 6.60		D							
7.00- 7.45	7.00 (6.00)	D			S9				
8.00- 8.10		D				CHALK, recovered as silty angular to subangular fine to coarse GRAVEL a with medium chalk cobble content. Clasts are very weak to weak, low to medium density, white with rare black specks. Matrix is light brown.	8.00 (63.47)		
8.50- 9.00		B							
8.50- 8.95	8.50 (5.60)	D			S6	Between 8.50-9.00m, with occasional angular small and medium flint fragments (60mm in size).			
9.50- 9.60		D							
10.00-10.45	10.00 (6.00)	D			S7				

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
21.00	21.00	3.00	04/12/19	08:00
30.22	30.00	3.00	04/12/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72502
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415409.2 E 142074.9 N	Ground Level	71.47 m OD

Drilling | Properties/Sampling | Strata — Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
11.00-11.10		D				Between 11.00-11.10m, with occasional angular small flints (up to 50mm in size).			
11.50-12.00		B				Between 11.50-12.00m, with occasional angular small and medium flints (up to 80mm in size).			
11.50-11.95	11.50 (6.30)	D			S5				
12.50-12.60		D				Between 12.50-12.60m, with occasional angular and subrounded small and medium flint fragments (up to 90mm in size).			
13.00-13.45	13.00 (6.60)	D			S25				
14.00-14.10		D							
14.50-14.95	14.50 (7.00)	D			S26				
						CHALK, recovered as a very silty angular to	15.00 (56.47)		

Drilling | Progress | Groundwater

Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72502
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415409.2 E, 142074.9 N	Ground Level	71.47 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
15.00-16.40	15.00	100 4	- -	0	(NI)	subangular fine to coarse GRAVEL with a low cobble content. Clasts are extremely weak to very weak, low density and white. Matrix is white with occasional angular to subangular small to medium flint fragments (up to 60mm in size).	15.00 (56.47)		
16.28-16.34		C				Between 16.26-16.36m, discontinuity inclined 90 degrees, clean, undulating and rough with many black specks. Between 16.28-16.34m, solid core. Between 16.30-16.36m, discontinuity inclined 40 degrees, clean, planar and smooth with many black specks.			
16.40-17.90	16.40	85 31	0.20 0.05	23	(AZCL)	Very weak, locally extremely weak, medium density white with occasional black specks CHALK. Discontinuities where seen: Set 1 are: 0-20 degrees, very closely to medium spaced (40/225/600), clean or infilled (0/1/1) with comminuted chalk or grey marl, stepped or planar and rough with many black specks. Set 2 are: 30-40 degrees, very closely to medium spaced (30/235/580), clean or infilled (0/0/1) with comminuted chalk, stepped or undulating and rough with many black specks. Set 3 are: 60-70 degrees, clean (0/0/0) stepped or undulating and rough with many black specks. [GRADE A2] Between 16.40-16.52m, assumed zone of core loss. Between 16.52-16.90, non intact, recovered as angular to subangular fine to coarse gravel, with occasional small and medium flint fragments (up to 80mm in size). At 16.90m, with orangish brown relic sponge traces (up to 40mm in size). At 17.30m, with orangish brown relic sponge traces (up to 40mm in size). Between 17.40-17.67m, non intact, recovered as angular to subangular fine to coarse gravel, with occasional angular and subangular small and medium flint fragments (up to 80mm in size). At 17.84m, with orangish brown relic sponge traces (up to 20mm in size). Between 17.90-18.10m, non intact, recovered as silty angular to subangular fine to coarse gravel. With occasional angular and subangular small to medium flint fragments (up to 90mm in size). Between 18.64-19.40m, non intact, recovered as angular to subangular fine to coarse gravel. With rare angular to subangular small flint fragments (up to 20mm in size).	16.40 (55.07)		
16.40-16.85	16.40	D			S48 (NI)				
					(10)				
					(NI)				
17.67-17.75		C							
					(0)				
17.90-19.40	17.90	87 25	0.07 0.02	7	(NI)				
17.90-18.35		D							
17.90-18.24	17.90				S100/190				
					(11)				
18.53-18.63		C							
					(NI)				
19.35-20.50		C							
19.40-21.00	19.40	84 58	0.31 0.06	44	(AZCL)	Between 19.40-19.65m, assumed zone of core loss.			
19.40-19.78	19.40				C105/230	Between 19.65-20.00m, non intact, recovered as silty angular to subangular, fine to coarse gravel. With occasional angular to subangular small flint fragments (up to 30mm in size).			
					(NI)				

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72502
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415409.2 E 142074.9 N	Ground Level	71.47 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
					(5)	Between 20.53-20.63m, discontinuity inclined 90 degrees, clean, undulating and smooth with many black specks. Between 20.55-20.63m, discontinuity inclined between 80-90 degrees, clean, stepped and rough with many black specks.			1 1 1 1
21.00-22.50	21.00	92 47	0.37 0.06	25	(AZCL) (NI)	Between 21.00-21.12m, assumed zone of core loss. Between 21.12-24.56m, non intact, recovered as a very silty angular to subangular fine to coarse gravel with a low subangular cobble content.			1 2 1
21.92-22.00		C			(5)				2
22.50-24.00 22.50-22.73	22.50 22.50	80 45	0.40 0.15	37	(AZCL) C100/80 (NI)	Between 22.50-22.80m, assumed zone of core loss. At 22.75m and 22.90m, well developed flint bands and inclined fractures. ## Between 22.80-23.20m, non intact, recovered as silty angular to subangular fine to coarse gravel. With occasional angular to subangular small and medium flint fragments (up to 60mm in size).			
23.30-23.45		C			(3)	Between 23.66-23.83, incipient discontinuity inclined between 80 and 90 degrees, clean, undulating and smooth with many black specks.			2
24.00-25.50 24.00-24.24	24.00 24.00	100 60	0.24 0.04	16	(NI) C100/90 (13) (NI)	At 24.00m, with angular to subangular small and medium flint fragments (up to 100mm in size). [23.90-24.00m, large full core flint.##] Between 24.00-24.20m, non intact, recovered as silty angular to subangular fine to coarse gravel. With occasional angular to subangular small flint fragments (up to 50mm in size). Between 24.36-24.49m, discontinuity inclined 90 degrees, infilled (1mm thick) with grey marl, stepped and rough with many black specks. Between 24.63-24.67m, discontinuity inclined 50 degrees, clean, stepped and rough with many black specks. At 24.72 with rare angular to subangular small flint fragments (up to 30mm in size). Between 24.82-25.00m, non intact, recovered as silty angular to subangular fine to coarse gravel.			1 1 1 2 2 3

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72502
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415409.2 E 142074.9 N	Ground Level	71.47 m OD

Drilling | Properties/Sampling | Strata — Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
					(4)	At 25.05, with orangish brown relic sponge traces (up to 25mm in size). At 25.26m, with angular to subangular small and medium flint fragments (up to 80mm in size). [core fragmented around flints: many drilling induced fractures and some natural inclined fractures. ##]			3 2
25.50-27.00 25.50-25.72 25.70-25.95	25.50 25.50	95 77 C	0.32 0.20	57	(NI) C100/ 70	At 25.41m, with orangish brown relic sponge traces (up to 15mm in size). Between 25.50-25.70m, non intact, recovered as silty fine to coarse gravel. With occasional angular to subangular small flint fragment (up to 30mm in size). Between 25.78-25.90m, with occasional orangish brown relic sponge traces (up to 20mm in size). At 26.10m, with a grey marl seam (up to 1mm thick).			1 2
					(3)	Between 26.23-26.28m, non intact, recovered as angular to subangular fine to coarse gravel. With occasional angular to subangular small flint fragments (up to 40mm in size).			1 2 1
27.00-28.50 27.00-27.26 27.40-27.70	27.00 27.00	86 67 C	0.66 0.29	62	(AZCL) C100/ 105 (NI)	Between 27.00-27.21m, assumed zone of core loss. Between 27.21-27.40m, non intact, recovered as angular to subangular fine to coarse gravel.			
					(2)	At 27.60m, with a subhorizontal sheet-like bivalve fossil (platyceramus) (up to 4mm thick). Between 28.06-28.23m, with much orangish brown relic sponge traces (up to 50mm in size). [well developed orange, iron-stained nodular sponge bed. ##]			2
28.50-30.00 28.50-28.71 29.46-29.77	28.50 28.50	69 59 C	0.33 0.09	43	(AZCL) C100/ 60 (NI) (4)	Between 28.40-28.50m, with much orangish brown relic sponge traces (up to 50mm in size). [well developed orange, iron-stained nodular sponge bed. ##] Between 28.50-28.97m, assumed zone of core loss. Between 28.97-29.10m, non-intact, recovered as angular to subangular fine to coarse gravel. Between 29.79-29.87m, discontinuity inclined 50 degrees, clean, undulating and smooth with occasional black specks.			3 1 1 3

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged by ED/SI
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Figure 6 of 7
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geotechnics

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72502
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415409.2 E 142074.9 N	Ground Level	71.47 m OD

Drilling | Properties/Sampling | Strata — Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
30.00-30.22	30.00				C100/ 70				
						End of Borehole	30.22 (41.25)		

Drilling				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72504
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415426.4 E 142007.1 N	Ground Level	70.76 m OD

Drilling | Properties/Sampling | Strata — Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
							G.L. (70.76)		
0.10- 0.20		B				PROBABLE MADE GROUND: Soft to firm brown slightly sandy slightly gravelly silt with occasional rootlets. Gravel is angular to subrounded fine to coarse chalk and flint.			
0.10- 0.20		D					0.20 (70.56)		
0.50- 0.60		B				PROBABLE MADE GROUND: Creamish white very gravelly silty sand with a low cobble content of angular to subangular flint. Gravel is angular to subrounded fine to coarse chalk and flint.			
0.50- 0.60		D							
1.00- 1.10		B							
1.00- 1.10		D							
							1.30 (69.46)		
1.50- 1.60		B				PROBABLE MADE GROUND: White sandy silty gravel with a low cobble content of angular to subangular flint, grading in parts to a slightly sandy slightly gravelly silt. Gravel is angular to subrounded fine to coarse chalk and flint.			
1.50- 1.60		D							
1.90- 2.00		B							
1.90- 2.00		D							
2.05- 2.50		B					2.00 (68.76)		
2.05- 2.50	2.00 (DRY)	D			S24	PROBABLE MADE GROUND: Medium dense cream slightly sandy silty gravel with occasional pockets (up to 6mm in size) of soft brown clayey sand. Gravel is subangular to subrounded fine to coarse flint and chalk.			
2.26		W							
2.60		D					2.60 (68.16)		
						Brown very sandy clayey GRAVEL. Gravel is subangular to subrounded fine to coarse flint and quartzite.			
							2.90		
3.00		D				Loose light greenish grey sandy slightly clayey GRAVEL with a low cobble content of quartzite, flint and limestone. Gravel is subangular to subrounded fine to coarse quartzite, flint and limestone.	(67.86)		
3.10- 3.60		B							
3.10- 3.55	3.00 (DRY)				C7				
4.00		D					4.00 (66.76)		
4.10- 4.55		B				Medium dense light brownish grey very sandy GRAVEL with a low cobble content of quartzite, flint and limestone. Gravel is subangular to subrounded fine to coarse quartzite, flint and limestone.			
4.10- 4.55	4.05 (2.40)				C12				
5.00		D							

Drilling | Progress | Groundwater

Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
1.40	0.50	Inspection Pit	Arch	G.L.			13/11/19	08:00	1.80	NIL	1.80	20		Slow infill.
2.00	0.50	Inspection Pit	JR	2.00	NIL	1.90	13/11/19	18:00	3.20	3.10	2.26	20		Moderate seepage.
7.10	0.20	Cable Percussion	CR/BB	G.L.			18/11/19	08:00						
13.50	0.15	Cable Percussion	CR/BB	11.50	11.40		18/11/19	18:00						
15.00	0.12	Rotary Open Hole	AW/PB	11.50	11.40	2.20	19/11/19	08:00						
30.38	0.12	Geobor S	AW/PB	13.50	13.00	4.20	19/11/19	18:00						

Remarks

Inspection pit hand excavated to 1.40m by archeologist and extended to 2.00m depth by Geotechnics. No services were found. Pit backfilled and re-excavated prior to start of drilling.

** Drillers description.

Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.

Logged by JD/SI
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Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72504
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415426.4 E, 142007.1 N	Ground Level	70.76 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
5.40- 5.85		B							
5.40		D				**CHALK recovered as cream, slightly gravelly sandy SILT. Clasts are very weak, medium density, white with occasional black specks. Between 5.40-5.85m, with rare angular small flints (up to 30mm in size).**	5.40 (65.36)		
5.40- 5.85	6.00 (5.10)				S6				
6.30		D							
7.00		D							
7.10- 8.00		B				**Between 7.10-8.00m, with occasional angular small and medium flints (up to 60mm in size).**			
7.10- 7.55	6.00 (5.60)	D			S6				
						CHALK recovered as slightly sandy silty to very silty subangular to subrounded GRAVEL with a high cobble content in parts. Clasts are very weak, low to medium density, white with occasional black specks. Matrix is white.	7.55 (63.21)		
8.20		D				**At 8.20m, with rare angular small flints (up to 10mm in size).**			
8.55- 9.20		B				**Between 8.55-9.20m, with rare angular small to medium flint fragments (up to 60mm in size).**			
8.55- 9.00	8.50 (2.50)	D			S11				
9.20		D							
9.80-10.50		B							
9.80-10.25	9.75 (2.60)	D			S4				
9.80		D							

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
13.50	13.00	2.30	20/11/19	08:00
18.20	18.20	2.30	20/11/19	18:00
18.20	18.20	2.00	21/11/19	08:00
25.70	25.70	2.00	21/11/19	18:00
25.70	25.70	2.00	25/11/19	08:00
30.38	30.20	2.00	25/11/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

AGS ## Additional detail added by Client's consultant, Rory Mortimore.
Backfill details from base of hole: bentonite up to ground level.
Flush: 15.00-30.20m, Air/Mist, 0% return.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72504
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415426.4 E, 142007.1 N	Ground Level	70.76 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
11.00		D							
11.55-12.00		B				Below 11.55m, clasts with occasional light orangish brown staining.			
11.55-12.00	12.50 (2.30)	D			S11	Between 11.55-12.00m, with occasional angular small flint fragments (up to 50mm in size).			
12.55		D				At 12.50m, with rare angular small flint fragments (up to 30mm in size).			
13.05-13.50	13.00 (4.20)				S16				
						CHALK**	13.50 (57.26)		
15.00-15.45	15.00	D			S47	Between 15.00-15.60m, no recovery.			

Drilling / Progress / Groundwater

Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged by JD/SI
Checked by CPL
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geotechnics

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

BOREHOLE RECORD – Cable Percussion and Rotary

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS
Engineer: AECOM
Borehole: BH72504
Project No: PC197708
Client: HIGHWAYS ENGLAND
National Grid Coordinates: 415426.4 E, 142007.1 N
Ground Level: 70.76 m OD
Scale: 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
15.00-15.60	15.00	0			(NR)				
15.60-16.70	15.60	27			(AZCL)	CHALK, recovered as very silty angular to subangular fine to coarse GRAVEL with a low subangular cobble content. Clasts are very weak, low to medium density and white. Matrix is white. With occasional angular and subangular fine to coarse flint fragments. Between 15.60-16.40m, assumed zone of core loss.	15.60 (55.16)		
16.70-18.20 16.70-17.15	16.70 16.70	100 19 D	0.11 0.03	7	S48 (NI)	At 16.70m, with occasional small subangular flint fragments (up to 30mm in size).			
17.83-17.92		C			(11)	At 17.45m, with a subangular medium flint (100mm in size). Very weak, low to medium density, white CHALK. Discontinuities where seen are: Set 1 are 0-20 degrees, closely spaced (70/70/140), clean or infilled (0/0/1) with comminuted chalk, stepped or planar and rough with many black specks and occasional orangish brown surface staining. Set 2 are 30-40 degrees, closely and very closely spaced, clean or infilled (0/0/1) with comminuted chalk, stepped or planar and rough with occasional orangish brown surface staining. [GRADE A3]	17.55 (53.21)		2 2 2 1 1 1
18.20-19.70 18.20-18.65	18.20 18.20	40 6 D		0	S44 (AZCL) (NI)	At 17.85m, with rare orangish brown relic sponge traces (up to 5mm in size). Between 17.90-18.20m, discontinuity inclined 90 degrees, clean, undulating and smooth with rare black specks and occasional orangish brown surface staining. CHALK, recovered as silty angular to subangular fine to coarse GRAVEL with a low subangular cobble content. Clasts are very weak, low to medium density, white with many black specks. Matrix is light brown. With occasional angular to subangular small to medium flint fragments (up to 70mm in size). Between 18.20-19.10m, assumed zone of core loss. Below 19.40m, clasts with many orangish brown relic sponge traces (up to 20mm in size). Between 19.61-19.70m, intact section of core.	18.20 (52.56)		
19.70-21.20 19.70-20.15	19.70 19.70	83 55	0.13 0.03	24	(AZCL) S96	Very weak, medium density, white with occasional black specks CHALK. Discontinuities where seen are: Set 1 are 0-20 degrees, closely to medium spaced (60/210/480), clean or infilled (0/0/1) with comminuted chalk or marl, stepped occasionally undulating and rough or smooth with many blacks	19.70 (51.06)		

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

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Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72504
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415426.4 E, 142007.1 N	Ground Level	70.76 m OD

Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
					(NI)	specks and occasional orangish brown surface staining.			
					(7)	Between 20.38-25.32m, Set 2 are 30-40 degrees, closely and very closely spaced, clean or infilled (0/0/1) with comminuted chalk or rare grey marl, stepped or undulating and rough with many black specks and occasional orangish brown surface			1, 2
					(NI)	staining.			
						Between 26.38-28.48m, Set 3 are 50-60 degrees, closely and medium spaced, clean (0/0/0) stepped or undulating and rough with occasional black specks and orangish brown surface staining.			2
20.80-20.97		C			(5)	[POSSIBLY GRADE A2] Between 19.70-19.95m, assumed zone of core loss. Between 19.95-20.15m, non intact, recovered as silty angular to subangular fine to coarse gravel. Between 20.45-20.54m, non intact, recovered as silty angular to subangular fine to coarse gravel. With many small flint fragments (up to 30mm in size).			2, 1
21.20-22.70	21.20	100	0.36	40		Between 20.58-20.65m, with occasional orangish brown relic sponge traces (up to 35mm in size). [possible pale green and orange iron-stained nodular sponge bed. ##]			
		50	0.07			Between 20.70-20.82m, discontinuity inclined 90 degrees, clean, undulating and smooth with many black specks and occasional orangish brown surface staining.			
21.20-21.65	21.20	D			(NI) S92				
21.79-21.96		C				Between 21.00-21.05m, non intact, recovered as angular to subangular fine to coarse gravel. With many angular to subangular small flint fragments (up to 50mm in size).			1
					(4)	Between 21.20-21.60m, non intact, recovered as very silty angular to subangular fine to coarse gravel. With many angular to subangular small flint fragments (up to 40mm in size).			1
						Between 21.25-21.40m and 22.25-22.40m, possible green glauconitic nodular chalks. ##			1
					(NI)	At 21.44m, with much orangish brown relic sponge traces (up to 6mm in size).			2
						At 22.20m, with a circular fossil (10mm diameter).			2
					(15)	Between 22.36-22.57m, non intact, recovered as angular to subangular fine to coarse gravel. With many angular to subangular small to medium flint fragments (up to 90mm in size).			
22.70-24.20	22.70	80	0.22	15		Between 22.70-23.00m, assumed zone of core loss.			
		40	0.02		(AZCL)				
22.70-23.15	22.70	D			S99/295	Between 23.00-23.30m, non intact, recovered as silty angular to subangular fine to coarse gravel.			
					(NI)				
23.30-23.52		C				At 23.30m, with occasional angular to subangular small flint fragment (up to 50mm in size).			
					(5)				1, 2
						Between 23.69-23.89m, non intact, recovered as angular to subangular fine to coarse gravel with a subangular cobble. With many angular to subangular small flint fragments (up to 50mm in size).			
					(NI)				
						At 23.95m, with a subhorizontal grey marl seam (1mm thick).			2
					(6)	Between 24.00-24.09m, non intact, recovered as angular to subangular fine to coarse gravel.			
						Between 24.20-24.40m, non intact, recovered as silty angular to subangular fine to coarse gravel. With many angular to subangular small flint fragments (up to 20mm in size).			1
24.20-25.70	24.20	100	0.36	53		Between 24.20-25.70m, Possibly Grade A1.			
		60	0.20		(NI)				
24.20-24.45	24.20				S100/100	At 24.60m, with a grey marl seam (1mm thick).			
						Between 24.76-24.82m, with some angular and subangular small flint fragments (up to 30mm in size)			
					(1)	At 25.02m, with a subangular grey marl seam (1mm thick).			

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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BOREHOLE RECORD – Cable Percussion and Rotary

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS
Engineer: AECOM
Borehole: BH72504
Project No: PC197708
Client: HIGHWAYS ENGLAND
National Grid Coordinates: 415426.4 E, 142007.1 N
Ground Level: 70.76 m OD
Scale: 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
						At 25.17m, with an orangish brown relic sponge trace (20mm in size).			2
					(NI)	At 25.38m, with angular to subangular small flint fragments (up to 50mm in size). Between 25.38-25.70m, non intact, recovered as angular to subangular fine to coarse gravel with a low subangular cobble content. Between 25.70-26.00m, assumed zone of core loss.			
25.70-27.20	25.70	80 32	0.11 0.05	13	(AZCL)				
					(NI)	Between 26.00-26.38m, non intact, recovered as silty angular to subangular fine to coarse gravel. With many subangular to subrounded small and medium flint fragments (up to 60mm in size). [large nearly full core flints. ##]			
26.38-26.48		C				Below 26.38m, GRADE A2. ##			3
					(8)				3
						Between 26.69-26.81m, discontinuity inclined 80 degrees, clean, stepped and rough with occasional black specks. Between 26.90-27.50m, non intact, recovered as silty angular to subangular fine to coarse gravel.			3
					(NI)				
27.20-28.70	27.20	100 42	0.22 0.03	32					
27.20-27.53	27.20				C100/ 180				
						Between 27.70-28.10m, incipient discontinuity inclined 85 degrees, clean, undulating and rough. (opened during logging).			
					(2)	At 28.10m, with angular to subangular small flint fragments (up to 30mm in size). Between 28.10-28.35m, discontinuity inclined 70 degrees, clean, stepped and rough with many black specks. Between 28.40-28.43m, non intact, recovered as very silty angular to subangular fine to coarse gravel.			
28.48-28.70		C				Between 28.43-28.70m, with many orangish brown relic sponge traces (up to 50mm in size). [well developed orange, iron-stained and possible green glauconitic nodular sponge bed. ##]			3
28.70-30.20	28.70	67 56	0.50 0.05	45		Between 28.70-29.20m, assumed zone of core loss.			
					(AZCL)				
28.70-28.91	28.70				C100/ 60				
					(NI)	Between 29.20-29.36m, non intact, recovered as angular to subangular fine to coarse gravel. Clasts with much orangish brown relic sponge traces (up to 20mm in size). [orange iron stained nodular sponge bed. ##]			
						Between 29.36-29.43m, and 29.53-29.55m, with many orangish brown relic sponge traces (up to 30mm in size). At 29.43m, with a subhorizontal grey marl seam (up to 1mm thick). Between 29.58-29.83m, with many grey marl seams (up to 5mm thick). At 29.88m, with rare angular to subangular small flint fragments (up to 10mm in size).			1
29.58-30.08		C			(4)				1

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

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geotechnics

BOREHOLE RECORD – Cable Percussion and Rotary

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	BH72504
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415426.4 E 142007.1 N	Ground Level	70.76 m OD

Drilling | Properties/Sampling | Strata — Scale 1:25

Core Run/Depth (Core Dia/Time)	Depth Cased & (to Water)	Type TCR/SCR%	Length Max/Min	RQD %	SPT N (FI)	Description	Depth (Level)	Legend	Discontinuity
						Between 29.97-30.10m, with many orangish brown relic sponge traces (up to 20mm in size. [nodular sponge bed. ##] **Between 30.00-30.20m, with many grey marl seems (up to 3mm thick) with wispy grey partings (1mm thick).**			1
30.20-30.38	**30.20**				**C96/95**		**30.38 (40.38)**		
						End of Borehole			

Drilling

Depth	Hole Dia	Technique	Crew

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015 Discontinuity column graphic is illustrative only & does not represent discontinuities as found in the core, refer to Discontinuity Summary Sheet

Logged by JD/SI
Checked by CPL
Figure 7 of 7
12/05/2020

geotechnics

Fieldwork Results - Discontinuity Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No. PC197708

Client HIGHWAYS ENGLAND

Hole No. BH72403

Depth / Length (m)	Discontinuity								Remarks
	Set No.	Type	Dip	Aperture	Infill (mm)	Infill Material Desc.	Roughness (Intermediate)	Roughness (Small)	
18.23-18.35	1	Joint	75		0		Undulating	Smooth	with many black specks
18.45-18.80	1	Joint	80		0		Undulating	Smooth	with many black specks
18.50-18.60		Fracture	50		0		Stepped	Rough	with many black specks
18.70-18.80	1	Joint	85		0		Stepped	Rough	with many black specks

AGS

Dip recorded as measured perpendicular to the core axis.

Stratum boundary

GEOTECHNICS

Fieldwork Results - Discontinuity Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No. PC197708

Client HIGHWAYS ENGLAND

Hole No. BH72501

Depth / Length (m)	Discontinuity								Remarks
	Set No.	Type	Dip	Aperture	Infill (mm)	Infill Material Desc.	Roughness (Intermediate)	Roughness (Small)	
23.77	1	Joint	5				Stepped	Rough	with occasional black specks
23.90-23.94	2	Joint	30		1	Chalk	Stepped	Rough	with many black specks
25.00	1	Joint	0		1	Marl	Stepped	Rough	with many black specks
25.14	1	Joint	0		1	Marl	Stepped	Rough	with many black specks
25.70-25.72	1	Joint	10				Undulating	Rough	with many black specks
26.45-26.54		Joint	70				Stepped	Rough	with many black specks
26.60-26.70		Joint	80				Stepped	Rough	with many black specks
26.60	1	Joint	5				Undulating	Rough	with many black specks
26.70-26.82		Joint	60		1	Chalk	Stepped	Rough	with many black specks
26.90	1	Joint	0				Stepped	Rough	with many black specks
26.94-26.97	2	Joint	30				Stepped	Rough	with many black specks
27.15-27.17	1	Joint	15				Stepped	Rough	with many black specks
28.44	1	Joint	0				Stepped	Rough	with many black specks
28.65-28.69	2	Joint	30		1	Chalk	Stepped	Rough	with many black specks and much orangish brown surface staining, sponges
29.30-29.35	2	Joint	30		1	Chalk	Stepped	Rough	with many black specks and much orangish brown surface staining, sponges
29.42-29.46	1	Joint	10		1	Marl	Stepped	Rough	with many black specks and occasional orangish brown surface staining
29.86	1	Joint	0				Stepped	Rough	with many black specks
30.26	1	Joint	8				Stepped	Rough	with many black specks

AGS

Dip recorded as measured perpendicular to the core axis.

Stratum boundary

GEOTECHNICS

Fieldwork Results - Discontinuity Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No. PC197708

Client HIGHWAYS ENGLAND

Hole No. BH72502

Depth / Length (m)	Discontinuity								Remarks
	Set No.	Type	Dip	Aperture	Infill (mm)	Infill Material Desc.	Roughness (Intermediate)	Roughness (Small)	
16.26-16.36		Joint	90				Undulating	Rough	with many black specks
16.30-16.36		Joint	40				Planar	Smooth	with many black specks
16.90-17.04	3	Joint	70				Stepped	Rough	with many black specks
17.04-17.12	3	Joint	60				Stepped	Rough	with many black specks
17.12-17.15	2	Joint	35		1	Chalk	Stepped	Rough	with many black specks
17.20-17.23	2	Joint	40				Planar	Smooth	with many black specks
17.23-17.25	2	Joint	30				Stepped	Rough	with many black specks
18.25-18.28	1	Joint	20				Stepped	Rough	with many black specks
18.30-18.42	3	Joint	70				Undulating	Rough	with many black specks
18.30-18.43	3	Joint	70				Stepped	Rough	with many black specks
18.40-18.45	2	Joint	40				Stepped	Rough	with many black specks
18.43-18.58	3	Joint	60				Planar	Smooth	with many black specks
18.58-18.64	2	Joint	40		1	Chalk	Stepped	Rough	with many black specks
20.16	1	Joint	0		1	Chalk	Stepped	Rough	with many black specks
20.22	1	Joint	5				Undulating	Smooth	with occasional black specks
20.53-20.63		Joint	90				Undulating	Smooth	with many black specks
20.53	1	Joint	0				Stepped	Rough	with many black specks
20.55-20.63		Joint	85				Stepped	Rough	with many black specks
20.73-20.77	1	Joint	20				Stepped	Rough	with many black specks
21.61	1	Joint	5		1	Marl	Stepped	Rough	with occasional black specks
21.67-21.70	2	Joint	40				Stepped	Rough	with many black specks
21.80	1	Joint	0		1	Chalk	Stepped	Rough	with many black specks
22.15-22.22	2	Joint	35				Stepped	Rough	with many black specks
22.17-22.50		Joint	85				Undulating	Smooth	with many black specks
23.60-23.66	2	Joint	40				Stepped	Rough	with many black specks
23.66-23.83		Joint	85				Undulating	Smooth	with many black specks, Insipient fracture partly opened
24.36-24.49		Joint	90		1	Marl	Stepped	Rough	with many black specks
24.36	1	Joint	5				Planar	Smooth	with many black specks
24.40	1	Joint	0		1	Marl	Planar	Smooth	with many black specks
24.49	1	Joint	5		1	Marl	Stepped	Rough	with many black specks
24.58-24.70	2	Joint	35				Stepped	Rough	with many black specks
24.63-24.67		Joint	50				Stepped	Rough	with many black specks
24.75-24.82	2	Joint	40				Stepped	Rough	with many black specks
25.00-25.26	3	Joint	70				Undulating	Smooth	with many black specks
25.20-25.24	2	Joint	30				Planar	Smooth	with occasional black specks
25.50	1	Joint	0		1	Marl	Stepped	Rough	with many black specks
25.95-26.00	2		35				Stepped	Rough	with occasional black specks
26.20	1		0				Undulating	Smooth	with occasional black specks
26.52-26.60	2		40				Undulating	Rough	with occasional black specks and orangish brown surface staining
26.80	1		0				Stepped	Rough	with many black specks
28.06-28.09	2		30		1	Chalk	Stepped	Rough	with many black specks and much orangish brown surface staining, sponges
28.38-28.50	3		60				Stepped	Rough	with many black specks and

AGS Dip recorded as measured perpendicular to the core axis.
Stratum boundary

GEOTECHNICS

Fieldwork Results - Discontinuity Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No. PC197708

Client HIGHWAYS ENGLAND

Hole No. BH72502

Depth / Length (m)	Discontinuity								Remarks
	Set No.	Type	Dip	Aperture	Infill (mm)	Infill Material Desc.	Roughness (Intermediate)	Roughness (Small)	
									much orangish brown surface staining, sponges
29.33	1		5		1	Marl	Stepped	Rough	with many black specks
29.42-29.46	1		20		1	Chalk	Stepped	Rough	with many black specks
29.79-29.87			50				Undulating	Smooth	with occasional black specks
29.87-30.00	3		70		15	Sheet Flint	Planar	Smooth	sheet flint (up to 15mm thick along discontinuity, closed)

AGS

Dip recorded as measured perpendicular to the core axis.

Stratum boundary

GEOTECHNICS

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No. PC197708

Client HIGHWAYS ENGLAND

Hole No. BH72504

Depth / Length (m)	Discontinuity								Remarks
	Set No.	Type	Dip	Aperture	Infill (mm)	Infill Material Desc.	Roughness (Intermediate)	Roughness (Small)	
17.55-17.90	2	Joint	30				Planar	Smooth	with occasional orangish brown surface staining
17.60-17.65	2	Joint	40		1	Comminuted chalk	Stepped	Rough	with occasional black specks and orangish brown surface staining
17.69-17.72	1	Joint	20				Planar	Smooth	with occasional orangish brown surface staining
17.72-17.50	2	Joint	30				Stepped	Rough	with occasional black specks and orangish brown surface staining
17.83-17.87	1	Joint	20				Stepped	Rough	with many black specks
17.90-18.20		Fracture	90				Undulating	Smooth	with occasional black specks and orangish brown surface staining
17.90	1	Joint	0		1	Comminuted chalk	Stepped	Rough	with occasional black specks and much orangish brown surface staining (possible sponges)
20.25	1	Joint	0				Stepped	Rough	with occasional orangish brown surface staining
20.38-20.45	2	Joint	30				Stepped	Rough	with many black specks and occasional orangish brown surface staining
20.70-20.82	2	Joint	90				Undulating	Smooth	with many black specks and occasional orangish brown surface staining
20.80-20.84	2	Joint	30		1	Comminuted chalk	Planar	Smooth	with many black specks and rare orangish brown surface staining
20.95	1	Joint	0				Undulating	Smooth	with many black specks and occasional orangish brown surface staining
21.96	1	Joint	0				Stepped	Rough	with many black specks
22.03-22.06	1	Joint	10				Undulating	Smooth	with many black specks
22.36	1	Joint	0		1	Comminuted chalk	Stepped	Rough	with many black specks and occasional orangish brown surface staining (possible sponges)
22.42-22.52	2	Joint	40				Stepped	Rough	with many black specks
22.57-22.65	2	Joint	40		1	Comminuted chalk	Stepped	Rough	with rare black specks
23.52-23.57	1	Joint	15		1	Marl	Stepped	Rough	with many black specks
23.59-23.67	2	Joint	30				Undulating	Smooth	with occasional black specks
23.96-24.00	2	Joint	40		1	Marl	Stepped	Rough	with many black specks
24.10	1	Joint	0		1	Marl	Stepped	Rough	with many black specks
25.25-25.32	2	Joint	30				Stepped	Rough	with many black specks
26.38-26.48	3	Joint	50				Undulating	Rough	with many black specks and occasional orangish brown surface staining

AGS Dip recorded as measured perpendicular to the core axis.

Stratum boundary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No. PC197708

Client HIGHWAYS ENGLAND

Hole No. BH72504

Depth / Length (m)	Discontinuity								Remarks
	Set No.	Type	Dip	Aperture	Infill (mm)	Infill Material Desc.	Roughness (Intermediate)	Roughness (Small)	
26.59-26.64	3	Joint	60				Stepped	Rough	with occasional black specks
26.69-26.81		Fracture	80				Stepped	Rough	with occasional black specks
26.81-26.87	3	Joint	60				Stepped	Rough	with occasional black specks
27.70-28.10		Fracture	85				Undulating	Rough	Insipient fracture opened during logging
28.10-20.35		Fracture	70				Stepped	Rough	with many black specks
28.43-28.48	3	Joint	50				Stepped	Rough	with occasional black specks and orangish brown surface staining
29.50-29.53	1	Joint	20				Undulating	Rough	with occasional black specks and orangish brown surface staining (possible sponges)
29.58	1	Joint	5				Stepped	Rough	with many black specks and occasional grey clay smear
30.06	1	Joint	5		1	Marl	Stepped	Rough	with many black specks and grey surface staining

AGS

Dip recorded as measured perpendicular to the core axis.

Stratum boundary

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH72402	1.20	69.75	S	-	4	6	8	9	9	9	35	
BH72402	2.20	68.75	S	-	3	7	7	7	5	4	23	
BH72402	3.20	67.75	S	-	1	1	1	1	2	2	6	
BH72402	4.30	66.65	C	-	1	2	3	2	2	2	9	
BH72402	5.55	65.40	S	300	-	-	-	-	1	1	2	
BH72402	7.05	63.90	S	-	-	1	1	1	1	1	4	
BH72402	8.55	62.40	S	-	1	1	2	3	2	2	9	
BH72402	10.10	60.85	S	-	4	3	4	2	2	2	10	
BH72402	11.70	59.25	S	-	6	6	7	7	6	5	25	
BH72402	12.40	58.55	S	-	2	3	3	3	5	5	16	

Driller	Craig Roberts
Hammer No.	AR2475
Energy Ratio, Er (%)	76.00
Calibration Date	30/09/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' (10 20 30 40 50)
BH72402	14.10	56.85	S	-	2	8	8	11	16	19	54	>
BH72402	15.60	55.35	S	-	5	9	18	14	24	26	82	>

Driller	Stuart Proudlock
Hammer No.	SPT1
Energy Ratio, Er (%)	57.00
Calibration Date	09/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		
BH72402	18.00	52.95	S	-	5	6	9	17	16	14	56	>
BH72402	19.00	51.95	S	-	10	11	10	11	15	18	54	>
BH72402	20.00	50.95	S	-	9	11	9	11	10	15	45	*

Driller	David Cowling
Hammer No.	AR1962
Energy Ratio, Er (%)	66.00
Calibration Date	31/10/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH72403	1.20	70.09	S	-	6	8	8	10	7	7	32	
BH72403	2.20	69.09	S	-	2	3	3	4	5	5	17	
BH72403	3.30	67.99	C	-	2	1	2	2	2	2	8	
BH72403	4.30	66.99	C	-	3	4	4	3	2	4	13	
BH72403	5.55	65.74	C	-	-	-	1	2	3	3	9	
BH72403	7.05	64.24	S	-	2	1	1	2	2	2	7	
BH72403	8.60	62.69	S	-	1	2	1	2	2	1	6	
BH72403	10.10	61.19	S	-	1	1	3	2	2	2	9	
BH72403	11.55	59.74	S	-	3	2	2	1	2	2	7	
BH72403	13.05	58.24	S	-	7	8	7	8	8	6	29	
BH72403	14.65	56.64	S	-	3	3	5	4	6	5	20	
BH72403	15.30	55.99	S	-	3	5	6	9	9	9	33	

Driller	Craig Roberts
Hammer No.	AR2475
Energy Ratio, Er (%)	76.00
Calibration Date	30/09/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		
BH72403	16.00	55.29	S	-	4	4	7	9	11	11	38	
BH72403	17.50	53.79	S	-	3	12	15	14	17	20	66	
BH72403	19.00	52.29	S	-	17	18	20	27	31	21/20	99/245	
BH72403	20.00	51.29	S	-	15	19	19	24	29	38/25	110/250	

Driller	Stuart Proudlock
Hammer No.	SPT1
Energy Ratio, Er (%)	57.00
Calibration Date	09/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH72404	1.20	70.04	S	-	1	2	1	3	3	4	11	*
BH72404	2.20	69.04	S	-	1	1	1	1	2	1	5	*
BH72404	3.20	68.04	S	-	2	3	3	6	5	4	18	*
BH72404	4.30	66.94	C	-	2	2	3	3	3	5	14	*
BH72404	5.55	65.69	S	-	-	1	1	1	1	1	4	*
BH72404	7.05	64.19	S	-	2	1	1	2	1	1	5	*
BH72404	8.50	62.74	S	-	1	-	1	2	2	1	6	*
BH72404	10.05	61.19	S	-	1	2	1	2	2	3	8	*
BH72404	11.55	59.69	S	-	1	2	1	3	3	3	10	*
BH72404	13.20	58.04	S	-	2	2	2	3	3	4	12	*
BH72404	14.60	56.64	S	-	2	2	2	3	3	6	14	*
BH72404	16.10	55.14	S	-	7	7	6	6	7	10	29	*
BH72404	17.60	53.64	S	-	7	9	7	8	12	14	41	*
BH72404	19.40	51.84	S	-	9	11	11	11	11	12	45	*
BH72404	20.95	50.29	S	-	11	11	14	16	20/70		50/220	>

Driller	Craig Roberts
Hammer No.	AR2475
Energy Ratio, Er (%)	76.00
Calibration Date	30/09/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive 0-75 (mm)	Seating Drive 75-150 (mm)	Test Drive 0-75 (mm)	Test Drive 75-150 (mm)	Test Drive 150-225 (mm)	Test Drive 225-300 (mm)	SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
BH72405	1.20	71.10	S	-	1	2	2	3	2	3	10	
BH72405	2.20	70.10	S	-	3	6	7	9	9	9	34	
BH72405	3.00	69.30	S	-	5	6	6	6	4	2	18	
BH72405	4.00	68.30	S	-	1	1	2	3	4	6	15	
BH72405	4.80	67.50	C	-	1	1	3	2	2	3	10	
BH72405	6.00	66.30	C	-	1	1	1	1	2	2	6	
BH72405	7.50	64.80	S	-	1	1	1	1	1	1	4	
BH72405	9.00	63.30	S	-	1	1	1	1	2	1	5	
BH72405	10.50	61.80	S	-	1	1	1	1	1	2	5	
BH72405	12.00	60.30	S	-	2	1	4	3	4	4	15	
BH72405	13.50	58.80	S	-	3	13	7	5	4	4	20	
BH72405	15.00	57.30	S	-	9	6	11	10	10	15	46	

Driller	David Cowling
Hammer No.	AR1962
Energy Ratio, Er (%)	66.00
Calibration Date	31/10/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		
BH72405	16.50	55.80	S	-	4	6	10	15	15	19	59	
BH72405	17.50	54.80	S	-	5	7	14	15	16	16	61	
BH72405	19.00	53.30	S	-	12	17	36	36	20/28		92/178	
BH72405	20.00	52.30	S	-	15	19	28	32			60/150	

Driller	Stuart Proudlock
Hammer No.	SPT1
Energy Ratio, Er (%)	57.00
Calibration Date	09/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH72406	1.30	71.36	S	-	5	5	6	6	10	18	40	
BH72406	2.30	70.36	S	-	4	6	6	8	7	8	29	
BH72406	3.30	69.36	S	-	4	5	4	4	3	3	14	
BH72406	4.30	68.36	S	-	1	1	1	2	1	1	5	
BH72406	5.20	67.46	C	-	1	1	2	3	2	2	9	
BH72406	6.70	65.96	C	-	2	3	3	3	4	4	14	
BH72406	8.00	64.66	S	-	1	1	1	2	1	1	5	
BH72406	9.50	63.16	S	-	1	1	2	2	2	2	8	
BH72406	10.50	62.16	S	-	2	2	1	1	1	1	4	
BH72406	12.00	60.66	S	-	1	2	2	2	1	1	6	
BH72406	13.50	59.16	S	-	4	2	3	3	2	2	10	
BH72406	15.00	57.66	S	-	2	1	1	1	2	3	7	
BH72406	16.50	56.16	S	-	3	3	5	3	3	3	14	
BH72406	18.00	54.66	S	-	2	4	6	5	5	8	24	
BH72406	19.00	53.66	S	-	3	4	5	6	12	10	33	
BH72406	20.00	52.66	S	-	3	8	8	7	12	15	42	

Driller	David Cowling
Hammer No.	AR1962
Energy Ratio, Er (%)	66.00
Calibration Date	31/10/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth	Level	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
	m bgl	m OD			0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH72501	1.20	70.09	S	-	5	6	8	10	9	10	37	
BH72501	2.20	69.09	S	-	1	3	3	2	3	5	13	
BH72501	3.20	68.09	S	-	2	3	4	4	5	4	17	
BH72501	4.30	66.99	C	-	1	1	1	2	1	2	6	
BH72501	5.35	65.94	S	-	-	1	-	-	-	1	1	
BH72501	6.90	64.39	S	-	1	1	1	-	1	1	3	
BH72501	8.45	62.84	S	-	1	-	1	1	1	2	5	
BH72501	10.05	61.24	S	-	2	3	-	1	1	1	3	
BH72501	11.50	59.79	S	-	1	1	1	2	-	1	4	
BH72501	13.25	58.04	S	-	4	2	4	5	5	5	19	
BH72501	14.75	56.54	S	-	5	8	8	9	6	8	31	
BH72501	15.55	55.74	S	-	4	5	5	8	8	10	31	

Driller	Craig Roberts
Hammer No.	AR2475
Energy Ratio, Er (%)	76.00
Calibration Date	30/09/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		
BH72501	18.00	53.29	S	-	6	6	12	15	32	22	81	>
BH72501	19.90	51.39	S	-	4	7	9	13	22	30	74	>
BH72501	21.40	49.89	S	-	4	5	7	11	22	29	69	>
BH72501	22.90	48.39	S	-	1	4	10	11	12	17	50	*
BH72501	24.40	46.89	S	-	5	7	12	13	13	19	57	>
BH72501	25.90	45.39	S	-	8	5	17	19	27	16	79	>
BH72501	27.40	43.89	S	-	5	13	20	17	16	25	78	>
BH72501	28.90	42.39	S	-	19	15	15	25	20	21	81	>
BH72501	30.40	40.89	S	-	8	38	24	50	26/30		100/180	>

Driller	Aarron Williamson
Hammer No.	SPT2
Energy Ratio, Er (%)	53.00
Calibration Date	09/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH72502	1.20	70.27	S	-	3	5	5	7	8	12	32	*
BH72502	2.20	69.27	S	-	5	9	8	10	10	11	39	*
BH72502	3.20	68.27	S	-	1	3	3	8	9	8	28	*
BH72502	4.30	67.17	C	-	1	3	4	3	4	3	14	*
BH72502	5.30	66.17	S	-	1	-	-	1	-	-	1	*
BH72502	7.00	64.47	S	-	1	1	2	2	2	3	9	*
BH72502	8.50	62.97	S	-	1	1	1	1	2	2	6	*
BH72502	10.00	61.47	S	-	2	1	1	2	2	2	7	*
BH72502	11.50	59.97	S	-	1	1	2	1	1	1	5	*
BH72502	13.00	58.47	S	-	1	1	5	8	6	6	25	*
BH72502	14.50	56.97	S	-	8	9	8	6	5	7	26	*

Driller	David Cowling
Hammer No.	AR1962
Energy Ratio, Er (%)	66.00
Calibration Date	31/10/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		
BH72502	16.40	55.07	S	-	5	8	10	11	11	16	48	*
BH72502	17.90	53.57	S	-	10	14	34	38	28/40		100/190	>
BH72502	19.40	52.07	C	-	7	27	18	30	39	18/5	105/230	>
BH72502	22.50	48.97	C	-	3	12	65	35/5			100/80	>
BH72502	24.00	47.47	C	-	7	17	52	48/15			100/90	>
BH72502	25.50	45.97	C	-	10	26	100/70				100/70	>
BH72502	27.00	44.47	C	-	12	19	62	38/30			100/105	>
BH72502	28.50	42.97	C	-	11	38	100/60				100/60	>
BH72502	30.00	41.47	C	-	9	25	100/70				100/70	>

Driller	Aarron Williamson
Hammer No.	SPT2
Energy Ratio, Er (%)	53.00
Calibration Date	09/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N'
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		10 20 30 40 50
BH72504	2.05	68.71	S	-	4	5	5	7	6	6	24	*
BH72504	3.10	67.66	C	-	1	2	2	1	2	2	7	*
BH72504	4.10	66.66	C	-	4	3	3	3	3	3	12	*
BH72504	5.40	65.36	S	-	1	1	1	1	2	2	6	*
BH72504	7.10	63.66	S	-	1	1	1	2	1	2	6	*
BH72504	8.55	62.21	S	-	1	1	1	2	3	5	11	*
BH72504	9.80	60.96	S	-	1	2	1	1	1	1	4	*
BH72504	11.55	59.21	S	-	3	2	3	3	2	3	11	*
BH72504	13.05	57.71	S	-	3	2	2	2	5	7	16	*

Driller	Craig Roberts
Hammer No.	AR2475
Energy Ratio, Er (%)	76.00
Calibration Date	30/09/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Fieldwork Results - SPT Results Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No PC197708

Client HIGHWAYS ENGLAND

Hole	Depth m bgl	Level m OD	Type	SWP (mm)	Seating Drive		Test Drive				SPT 'N' Value	Uncorrected SPT 'N' 10 20 30 40 50
					0-75 (mm)	75-150 (mm)	0-75 (mm)	75-150 (mm)	150-225 (mm)	225-300 (mm)		
BH72504	15.00	55.76	S	-	5	6	6	11	16	14	47	*
BH72504	16.70	54.06	S	-	5	3	5	11	13	19	48	*
BH72504	18.20	52.56	S	-	3	5	8	14	13	9	44	*
BH72504	19.70	51.06	S	-	6	5	22	24	33	17	96	>
BH72504	21.20	49.56	S	-	12	14	25	20	24	23	92	>
BH72504	22.70	48.06	S	-	9	19	20	24	40	15/70	99/295	>
BH72504	24.20	46.56	S	-	5	13	59	41/25			100/100	>
BH72504	27.20	43.56	C	-	1	3	23	46	31/30		100/180	>
BH72504	28.70	42.06	C	-	46	4/73	100/60				100/60	>
BH72504	30.20	40.56	C	-	45	5/5	63	33/20			96/95	>

Driller	Aarron Williamson
Hammer No.	SPT2
Energy Ratio, Er (%)	53.00
Calibration Date	09/05/2019

Remarks
Equipment checked and calibration carried out in accordance with BS EN ISO 22476-3: 2005

-/- Blows/penetration (mm) after seating
-*/- Total blows/penetration (mm)
SWP Penetration under own weight (mm)

S - Standard Penetration Test (SPT)
C - SPT with cone
L - Split Spoon with liner used

GEOTECHNICS

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72402 12.60-14.10m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72403 16.00-19.00m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72403 19.00-20.00m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72405 16.50-17.50m

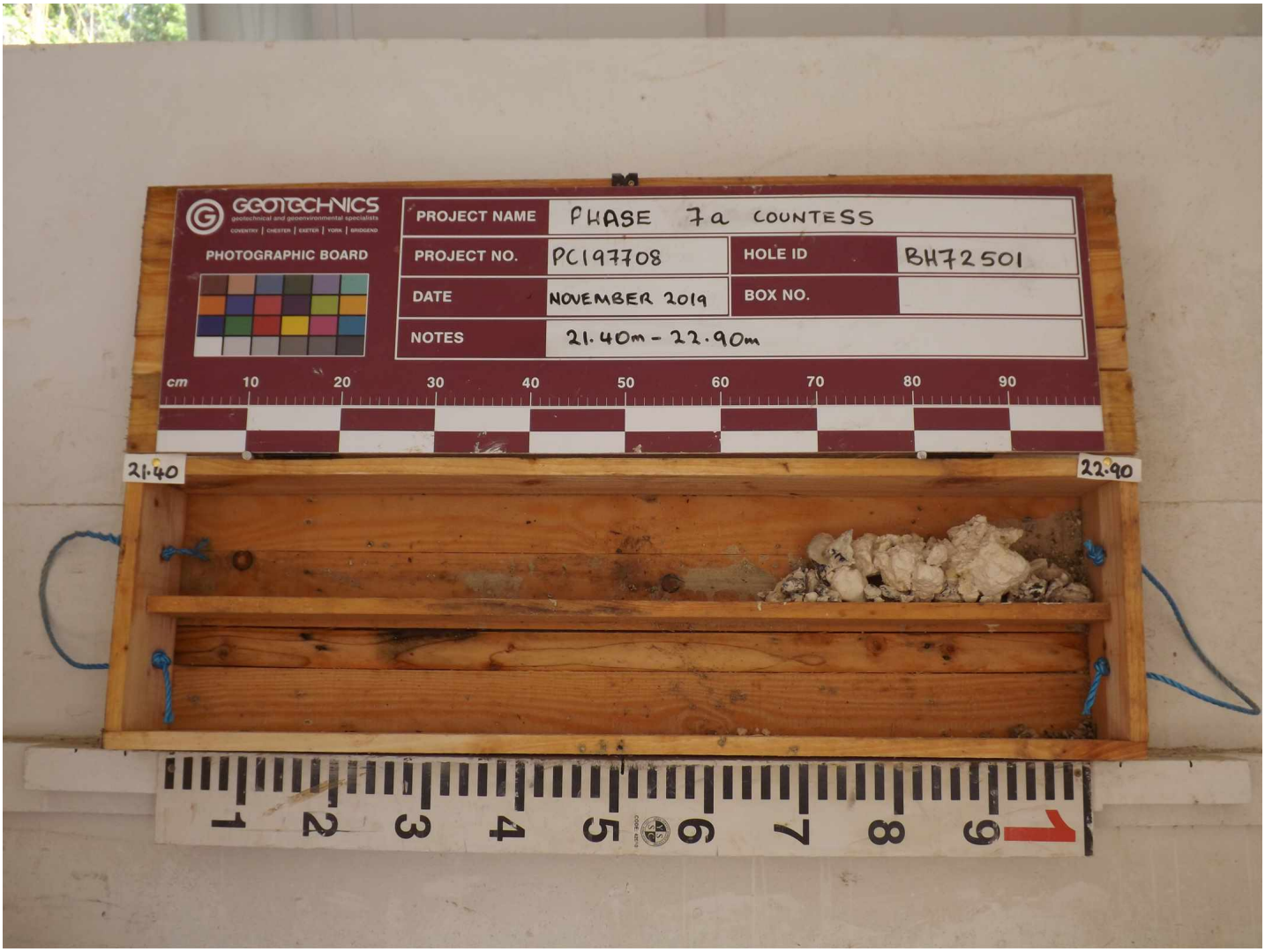
Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72405 17.50-20.00m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess



BH72501 21.40-22.90m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72501 22.90-24.40m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72501 24.40-25.90m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72501 25.90-27.40m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72501 27.40-28.90m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72501 28.90-30.40m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72502 15.00-16.40m

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Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72502 16.40-17.90m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72502 17.90-19.40m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72502 19.40-21.00m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72502 21.00-22.50m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72502 22.50-24.00m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72502 24.00-25.50m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72502 25.50-27.00m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72502 27.00-28.50m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72502 28.50-30.00m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72504 15.00-16.70m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72504 16.70-18.20m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72504 18.20-19.70m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72504 19.70-21.20m

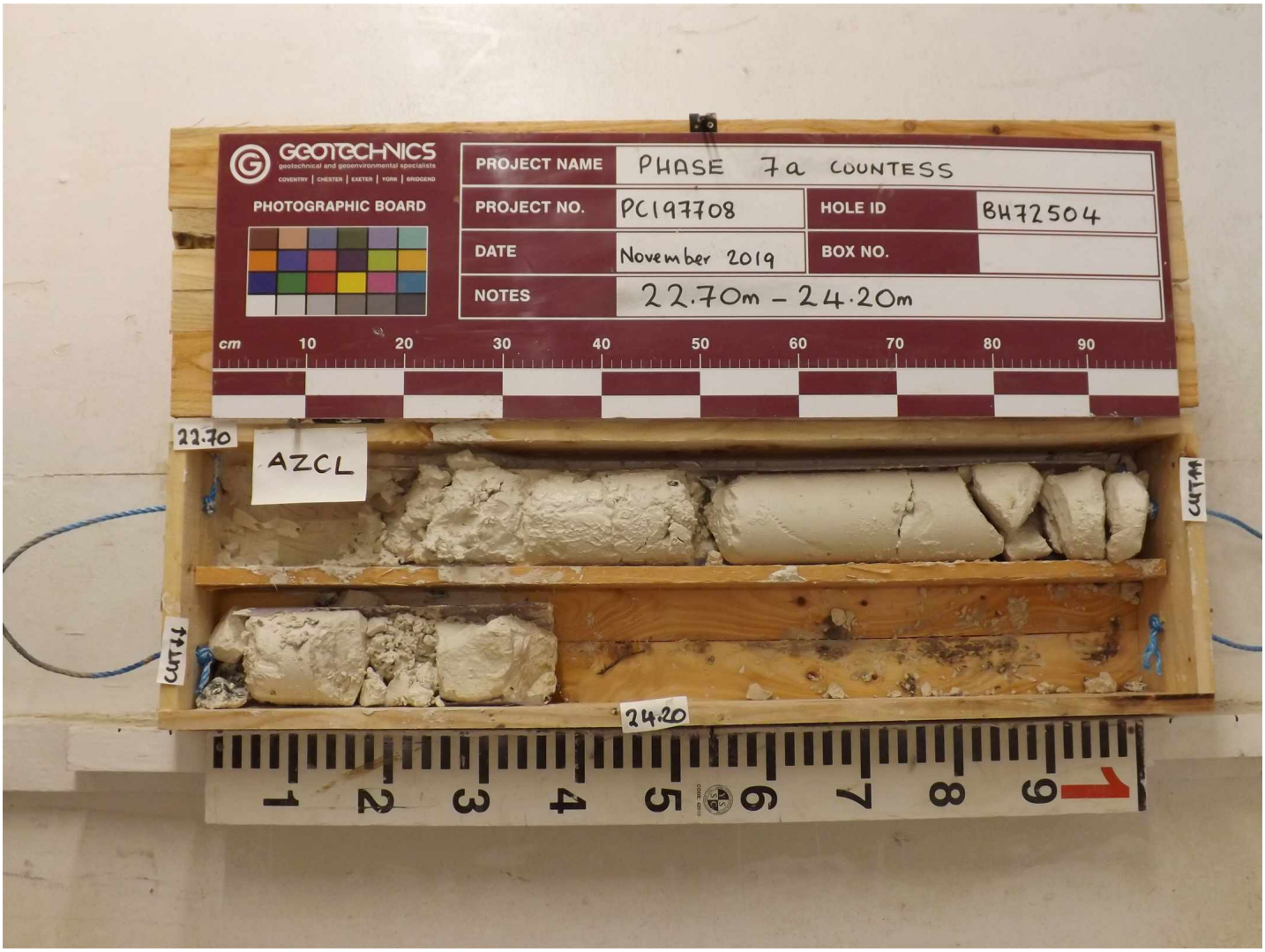
Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72504 21.20-22.70m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess



BH72504 22.70-24.20m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72504 24.20-25.70m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72504 25.70-27.20m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72504 27.20-28.70m

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

BH72504 28.70-30.20m

APPENDIX 5

Window Sample Borehole Records

DATA SHEET - Symbols and Abbreviations used on Records

Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecone Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content

(All other strengths from undrained triaxial testing)

S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration
( )	Extrapolated value

Groundwater

Water Strike

Depth Water Rose To

Instrumentation

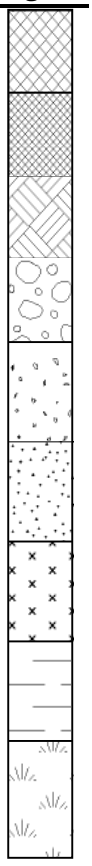
Seal

Filter

Seal

Strata

Legend



Made Ground Granular

Made Ground Cohesive

Topsoil

Cobbles and Boulders

Gravel

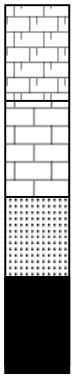
Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols



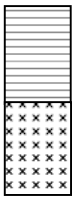
Chalk

Limestone

Sandstone

Coal

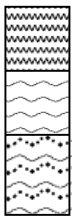
Strata, Continued



Mudstone

Siltstone

Metamorphic Rock

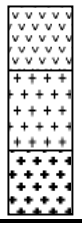


Fine Grained

Medium Grained

Coarse Grained

Igneous Rock



Fine Grained

Medium Grained

Coarse Grained

Backfill Materials

Arisings

Bentonite Seal

Concrete

Fine Gravel Filter

General Fill

Gravel Filter

Grout

Sand Filter

Tarmacadam

Rotary Core

RQD	Rock Quality Designation (% of intact core >100mm)
FRACTURE INDEX	Fractures/metre
FRACTURE SPACING (m)	Maximum Minimum
NI	Non-intact core
NR	No core recovery
AZCL	Assumed zone of core loss

(where core recovery is unknown it is assumed to be at the base of the run)

BOREHOLE RECORD – Dynamic Sampler

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS
Engineer: AECOM
Borehole: WS72402
Project No: PC197708
Client: HIGHWAYS ENGLAND
National Grid Coordinates: 415263.9 E, 142036.9 N
Ground Level: 71.12 m OD
Scale: 1:25

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
						G.L.		71.12
0.00- 0.15	D				PROBABLE MADE GROUND: Soft brown slightly sandy slightly gravelly silt with occasional rootlets. Gravel is angular to subrounded fine to coarse chalk and flint.	0.15		70.97
0.30- 0.50	B							
0.30	D				PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt. Gravel is angular to subangular fine to coarse chalk with occasional flint fragments (up to 40mm in size). Between 0.15-1.20m, excavation difficult due to compacted strata.			
0.50- 1.20	B							
1.20- 2.00	B							
1.20	D							
1.50	D							
2.00- 2.80	B							
2.50	D			21				
2.80- 4.60	B				Light greenish grey slightly gravelly clayey SAND. Gravel is subangular to subrounded fine to coarse chalk and flint.	2.80		68.32
3.00	D							
4.00	D							
4.60- 6.00	B				CHALK, recovered as slightly sandy gravelly SILT. Clasts are extremely weak to very weak, low density, white and angular to subangular. Matrix is light greyish brown. With occasional angular to subangular small flint fragments (up to 40mm in size).	4.60		66.52
5.00	D			21				

Boring

Depth	Hole Dia	Technique	Crew
0.15		Inspection Pit	Arch
1.20		Inspection Pit	DR/MM
2.00	0.10	Dynamic Sampler	DR/MM
3.00	0.09	Dynamic Sampler	DR/MM
4.00	0.08	Dynamic Sampler	DR/MM
5.00	0.07	Dynamic Sampler	DR/MM

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			11/11/19	08:00
0.15	NIL	DRY	11/11/19	18:00
0.15	NIL	DRY	02/12/19	08:00
6.00	NIL	DRY	02/12/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					Damp strata between 4.00-5.00m.

Remarks

Inspection pit hand excavated to 0.15m by archeologist and extended to 1.20m depth by Geotechnics. No services were found.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Backfill details from base of hole: bentonite up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by: JR/SI
Checked by: CPL
Figure: 1 of 2
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geotechnics

BOREHOLE RECORD – Dynamic Sampler

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS**
Engineer **AECOM**
Borehole **WS72402**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**
National Grid Coordinates **415263.9** E **142036.9** N
Ground Level **71.12** m OD

Scale 1:25

Sampling			Properties		Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
					End of Borehole	**6.00**		**65.12**

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
6.00	**0.06**	**Dynamic Sampler**	**DR/MM**											

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/SI**
Checked by **CPL**
Figure **2 of 2**
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geotechnics

BOREHOLE RECORD - Dynamic Sampler

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS
Engineer: AECOM
Borehole: WS72403
Project No: PC197708
Client: HIGHWAYS ENGLAND
National Grid Coordinates: 415543.8 E, 142070.0 N
Ground Level: 72.77 m OD
Scale: 1:25

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
						G.L.		72.77
0.00- 0.20	B				MADE GROUND: Soft brown slightly sandy slightly gravelly silt with occasional rootlets. Gravel is angular to subrounded fine to coarse chalk and flint.			
0.00- 0.20	D							
0.00- 0.20	ES					0.20		72.57
0.00- 0.20			PID=3.2ppm					
0.40- 0.60	B				MADE GROUND: Cream and brown very gravelly silty sand with occasional pockets (up to 100mm in size) of white slightly sandy slightly gravelly silt. Gravel is angular to subrounded fine to coarse chalk and flint.			
0.40- 0.60	D							
0.40- 0.60	ES							
0.40- 0.60			PID=3.3ppm					
						0.85		71.92
1.00- 1.20	B				MADE GROUND: Cream and brown very sandy very silty gravel with a low cobble content of angular to subangular brick and concrete. Gravel is angular to subrounded fine to coarse brick, chalk, concrete and flint. At 1.00m, a black geotextile sheet.			
1.00- 1.20	D			21				
1.00- 1.20	ES							
1.00- 1.20			PID=3.3ppm			1.20		71.57
1.20- 2.00	B				PROBABLE MADE GROUND: Light greyish white gravelly silt. Gravel is angular to subangular fine to coarse chalk with occasional flint fragments (up to 30mm in size) and occasional relic roots (up to 5mm in size).			
1.50	ES							
1.50			PID=2.2ppm					
1.80	D			24				
2.00- 3.70	B				PROBABLE MADE GROUND: Light brownish grey gravelly SILT. Gravel is angular to subangular fine to coarse chalk with occasional flint fragments (up to 60mm in size).	2.00		70.77
2.50	ES							
2.50			PID=2.0ppm					
3.00	D			25				
						3.70		69.07
3.70- 4.60	B				Light greenish grey very sandy very clayey GRAVEL. Gravel is subangular to subrounded fine to coarse chalk and flint.			
4.00	ES							
4.00			PID=2.2ppm					
4.50	D			14	Below 4.60m, becoming gravelly and slightly clayey.			

Boring

Depth	Hole Dia	Technique	Crew
1.20	0.40	Inspection Pit	Arch
2.00	0.12	Dynamic Sampler	DR/MM
3.00	0.09	Dynamic Sampler	DR/MM
4.00	0.08	Dynamic Sampler	DR/MM
5.00	0.07	Dynamic Sampler	DR/MM
6.00	0.06	Dynamic Sampler	DR/MM

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			12/11/19	08:00
1.20	NIL	DRY	12/11/19	18:00
1.20	NIL	DRY	02/12/19	08:00
6.00	NIL	DRY	02/12/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					Damp strata between 3.00-4.00m.

Remarks

Inspection pit hand excavated to 1.20m by archeologist, no services encountered.
ES sample = 2 x vial, 1 x plastic jar and 1 x amber jar
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Backfill details from base of hole: bentonite up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by: JR/SI
Checked by: CPL
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BOREHOLE RECORD – Dynamic Sampler

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Borehole	WS72403
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415543.8 E 142070.0 N	Ground Level	72.77 m OD

Scale 1:25

Sampling			Properties		Strata			
Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
5.50	ES							
5.50			PID=2.0ppm					
5.80	D							
					End of Borehole	6.00		66.77

Boring				Progress					Groundwater					
Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by JR/SI
Checked by CPL
Figure 2 of 2
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BOREHOLE RECORD - Dynamic Sampler

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS
Engineer: AECOM
Borehole: WS72404
Project No: PC197708
Client: HIGHWAYS ENGLAND
National Grid Coordinates: 415678.0 E, 142105.7 N
Ground Level: 72.04 m OD
Scale: 1:25

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
						G.L.		72.04
0.00- 0.20	B				PROBABLE MADE GROUND: Soft brown slightly sandy slightly gravelly silt with many rootlets and roots (up to 8mm thick). Gravel is angular to subrounded fine to coarse chalk and flint.	0.20		71.84
0.00- 0.20	D							
0.20- 0.40	B				PROBABLE MADE GROUND: Cream and brown, with occasional pockets (up to 80mm in size) of white, slightly sandy slightly gravelly silt with rare roots (up to 7mm thick). Gravel is angular to subrounded fine to coarse chalk and flint.	0.40		71.64
0.20- 0.40	D							
0.40- 1.20	B				PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt. Gravel is angular to subangular fine to coarse chalk with occasional flint fragments (up to 50mm in size).			
1.20- 2.00	B							
1.20	D			19				
1.50	D							
2.00- 3.60	B							
2.50	D							
3.00	D							
3.60- 4.50	B				Light greenish grey very sandy clayey GRAVEL. Gravel is subangular to subrounded fine to coarse chalk and flint. Below 3.60m, grading to a very sandy clayey gravel.	3.60		68.44
4.50- 6.00	B							
4.50	D							
5.00	D							

Boring

Depth	Hole Dia	Technique	Crew
0.40	0.40	Inspection Pit	Arch
1.20	0.40	Inspection Pit	DR/MM
2.00	0.10	Dynamic Sampler	DR/MM
3.00	0.09	Dynamic Sampler	DR/MM
4.00	0.08	Dynamic Sampler	DR/MM
5.00	0.07	Dynamic Sampler	DR/MM

Progress

Depth of Hole	Depth Cased	Depth to Water	Date	Time
G.L.			12/11/19	08:00
0.40	NIL	DRY	12/11/19	18:00
0.40	NIL	DRY	02/12/19	08:00
6.00	NIL	DRY	02/12/19	18:00

Groundwater

Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
					Damp strata between 4.00-5.00m.

Remarks

Inspection pit hand excavated to 0.40m by archeologist and extended to 1.20m depth by Geotechnics. No services were found.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Backfill details from base of hole: bentonite up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by: JR/SI
Checked by: CPL
Figure: 1 of 2
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geotechnics

BOREHOLE RECORD – Dynamic Sampler

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS**
Engineer **AECOM**
Borehole **WS72404**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**
National Grid Coordinates **415678.0** E **142105.7** N
Ground Level **72.04** m OD

Sampling | Properties | Strata — Scale 1:25

Depth	Sample Type	Depth Cased & (to Water)	Strength kPa	w %	Description	Depth	Legend	Level m OD
					End of Borehole	**6.00**		**66.04**

Boring | Progress | Groundwater

Depth	Hole Dia	Technique	Crew	Depth of Hole	Depth Cased	Depth to Water	Date	Time	Depth Struck	Depth Cased	Rose to	in Mins	Depth Sealed	Remarks on Groundwater
6.00	**0.06**	**Dynamic Sampler**	**DR/MM**											

Remarks

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **JR/SI**
Checked by **CPL**
Figure **2 of 2**
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APPENDIX 6

Trial Pit Records

DATA SHEET - Symbols and Abbreviations used on Records

Sample Types

B	Bulk disturbed sample
BLK	Block sample
C	Core sample
D	Small disturbed sample (tub/jar)
E	Environmental test sample
ES	Environmental soil sample
EW	Environmental water sample
G	Gas sample
L	Liner sample
LB	Large bulk disturbed sample
P	Piston sample (PF - failed P sample)
TW	Thin walled push in sample
U	Open Tube - 102mm diameter with blows to take sample. (UF - failed U sample)
UT	Thin wall open drive tube sampler - 102mm diameter with blows to take sample. (UTF - failed UT sample)
V	Vial sample
W	Water sample
#	Sample Not Recovered

Insitu Testing / Properties

CBRP	CBR using TRL probe
CHP	Constant Head Permeability Test
COND	Electrical conductivity
TC	Thermal Conductivity
TR	Thermal Resistivity
HV	Strength from Hand Vane
ICBR	CBR Test
IDEN	Density Test
IRES	Resistivity Test
MEX	CBR using Mexecone Probe Test
PKR	Packer Permeability Test
PLT	Plate Load Test
PP	Strength from Pocket Penetrometer
Temp	Temperature
VHP	Variable Head Permeability Test
VN	Strength from Insitu Vane
w%	Water content

(All other strengths from undrained triaxial testing)

S	Standard Penetration Test (SPT)
C	SPT with cone
N	SPT Result
-/-	Blows/penetration (mm) after seating drive
-*/- (mm)	Total blows/penetration
( )	Extrapolated value

Groundwater

Water Strike

Depth Water Rose To

Instrumentation

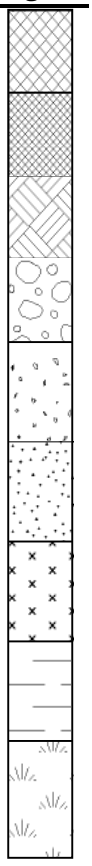
Seal

Filter

Seal

Strata

Legend



Made Ground Granular

Made Ground Cohesive

Topsoil

Cobbles and Boulders

Gravel

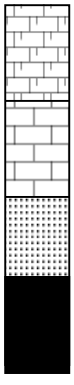
Sand

Silt

Clay

Peat

Note: Composite soil types shown by combined symbols



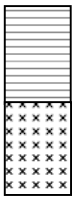
Chalk

Limestone

Sandstone

Coal

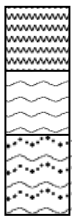
Strata, Continued



Mudstone

Siltstone

Metamorphic Rock

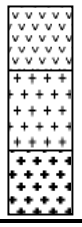


Fine Grained

Medium Grained

Coarse Grained

Igneous Rock



Fine Grained

Medium Grained

Coarse Grained

Backfill Materials

Arisings

Bentonite Seal

Concrete

Fine Gravel Filter

General Fill

Gravel Filter

Grout

Sand Filter

Tarmacadam

Rotary Core

RQD	Rock Quality Designation (% of intact core >100mm)
FRACTURE INDEX	Fractures/metre
FRACTURE SPACING (m)	Maximum Minimum
NI	Non-intact core
NR	No core recovery
AZCL	Assumed zone of core loss

(where core recovery is unknown it is assumed to be at the base of the run)

TRIAL PIT RECORD *Trial Pit*

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** Engineer **AECOM**

Trial Pit **STP72401**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**

National Grid Coordinates **415205.6** E **142045.0** N

Ground Level **70.98** m OD

Samples and Tests | Strata | Scale 1:25

Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		70.98
0.10	D			**MADE GROUND:** Grass over soft brown slightly gravelly sandy clay with many rootlets and roots (up to 8mm in size). Gravel is angular to subangular fine to coarse chalk and plastic.	0.15		70.83
0.50- 0.60	B			**PROBABLE MADE GROUND:** Light greyish brown silty gravel with a low subangular chalk cobble content. Gravel is angular to subangular fine to coarse chalk with occasional flint fragments (up to 80mm in size).			
0.50- 0.60	D						
0.70- 1.20	B			**CHALK,** recovered as sandy very silty angular to subangular fine to coarse GRAVEL with a medium subangular cobble content. Clasts are very weak, low to medium density and white. Matrix is white, locally light greyish brown. With occasional angular to subangular small to medium flint fragments (up to 90mm in size).	0.70		70.28
1.20	D			**End of Excavation**	1.20		69.78

Excavation

Plant **JCB 3CX**
Date **25/11/2019**
Shoring **None.**
Stability **Stable during excavation.**

Width (B) **0.90**
Length (C) **3.00**
Orientation **100 deg**
Date Backfilled **25/11/2019**

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered during excavation.

Remarks

A Plate Load Test was carried out at a depth of 0.50m.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Backfill details from base of hole: arisings up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **SI**
Checked by **CPL**
Figure **1 of 1**
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TRIAL PIT RECORD *Trial Pit*

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** Engineer **AECOM**

Trial Pit **STP72402**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**

National Grid Coordinates **415331.0** E **142017.0** N

Ground Level **71.14** m OD

Scale 1:25

Samples and Tests

Depth	Type	Stratum No	Results
0.00- 0.15	B		
0.10	D		
0.15- 0.40	B		
0.50- 0.60	B		
0.50- 0.60	D		
0.80- 1.20	B		
1.20	D		

Strata

Description	Depth	Legend	Level m OD
	G.L.		71.14
MADE GROUND: Grass over soft brown slightly gravelly sandy clay. Gravel is angular to subangular fine to coarse chalk, flint and plastic fragments.	0.15		70.99
PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt with a low subangular chalk cobble content. Gravel is angular to subangular fine to coarse chalk with occasional flint fragments (up to 80mm in size). Between 0.15-1.20m, excavation difficult as chalk was compacted and very dry.			
End of Excavation	1.20		69.94

Excavation

Plant **JCB 3CX**
Date **25/11/2019**
Shoring **None.**
Stability **Stable during excavation.**

Width (B) **0.90**
Length (C) **2.80**
Orientation **170 deg**
Date Backfilled **25/11/2019**

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered during excavation.

Remarks

A Plate Load Test was carried out at a depth of 0.50m.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Backfill details from base of hole: arisings up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **SI**
Checked by **CPL**
Figure **1 of 1**
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TRIAL PIT RECORD *Trial Pit*

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** Engineer **AECOM**

Trial Pit **STP72403**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**

National Grid Coordinates **415469.3** E **142048.4** N

Ground Level **72.05** m OD

Scale 1:25

Samples and Tests				Strata			
Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		72.05
0.05	D			MADE GROUND: Soft light greyish brown slightly gravelly sandy clay with many rootlets and roots (up to 5mm in size). Gravel is angular to subangular fine to coarse chalk, flint, plastic and sandstone.	0.10		71.95
0.10- 0.40	B						
0.30	D			MADE GROUND: Light greyish brown slightly gravelly silty sand with a low subangular chalk cobble content. Gravel is angular to subangular fine to coarse chalk with occasional fragments (up to 60mm in size).			
0.50- 0.60	B						
0.50- 0.60	D						
				Between 0.75-0.80m, soft brown slightly gravelly sandy clay. Gravel is angular to subangular fine to coarse sandstone.	0.80		71.25
1.00- 1.20	B			At 0.80m, geotextile membrane.			
1.20	D			PROBABLE MADE GROUND: Light grey sandy very silty gravel with a medium subangular chalk cobble content. Gravel is angular to subangular fine to coarse chalk with occasional flint fragments (up to 70mm in size).	1.20		70.85
				End of Excavation			

Excavation

Plant **JCB 3CX**
Date **25/11/2019**
Shoring **None.**
Stability **Stable during excavation.**

Width (B) **0.90**
Length (C) **3.00**
Orientation **086 deg**
Date Backfilled **25/11/2019**

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered during excavation.

Remarks

A Plate Load Test was carried out at a depth of 0.50m.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Backfill details from base of hole: arisings up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **SI**
Checked by **CPL**
Figure **1 of 1**
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TRIAL PIT RECORD *Trial Pit*

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** Engineer **AECOM**

Trial Pit **STP72404**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**

National Grid Coordinates **415612.7** E **142102.1** N

Ground Level **72.05** m OD

Scale 1:25

Samples and Tests				Strata			
Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		72.05
0.10	D			MADE GROUND: Grass over soft light greyish brown slightly gravelly sandy clay with many rootlets and roots (up to 10mm in size). Gravel is angular to subangular fine to coarse chalk, flint and plastic fragments.	0.20		71.85
0.50- 0.60	B			MADE GROUND: Light greyish brown sandy silty gravel with a low subangular chalk cobble content. Gravel is angular to subangular fine to coarse chalk with occasional flint fragments (up to 100mm in size).			
0.50- 0.60	D						
0.80- 1.20	B			At 0.65m, subangular gravel and cobbles of asphalt.			
1.20	D			End of Excavation	1.20		70.85

Excavation

Plant **JCB 3CX**
Date **26/11/2019**
Shoring **None.**
Stability **Stable during excavation.**

Width (B) **0.90**
Length (C) **3.00**
Orientation **070 deg**
Date Backfilled **25/11/2019**

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered during excavation.

Remarks

A Plate Load Test was carried out at a depth of 0.50m.
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Backfill details from base of hole: arisings up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by **SI**
Checked by **CPL**
Figure **1 of 1**
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geotechnics

TRIAL PIT RECORD *Trial Pit*

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Engineer	AECOM	Trial Pit	STP72501
				Project No	PC197708
Client	HIGHWAYS ENGLAND	National Grid Coordinates	415357.4 E, 142007.2 N	Ground Level	70.75 m OD

Scale 1:25

Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		70.75
0.00- 0.12	B			MADE GROUND: Grass over soft brown slightly gravelly sandy clay. Gravel is angular to subangular fine to coarse chalk and flint.	0.12		70.63
0.10	D						
0.10	ES						
0.10			PID=3.0 ppm				
0.12- 0.30	B			MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt with a low subangular chalk cobble content. Gravel is angular to subangular fine to coarse chalk with occasional flint fragments (up to 50mm in size).			
0.30	D						
0.30	ES						
0.30			PID=3.3 ppm				
0.50- 1.20	B						
0.60	D		mc=16%	Below 0.12m, excavation difficult due to strata being compacted and very dry.			
1.00	ES						
1.00			PID=2.6 ppm				
1.20	D			End of Excavation	1.20		69.55

Excavation

Plant: Hand Tools
Date: 26/11/2019
Shoring: None.
Stability: Stable during excavation.
Width (B): 0.60
Length (C): 0.60
Date Backfilled: 26/11/2019

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered during excavation.

Remarks

A Plate Load Test was carried out at a depth of 0.30m.
ES sample = 2 x vial, 2 x plastic jar and 2 x amber jar
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Backfill details from base of hole: arisings up to ground level.

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

Logged by SI
Checked by CPL
Figure 1 of 1
12/05/2020

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TRIAL PIT RECORD *Trial Pit*

Project **A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS** Engineer **AECOM**

Trial Pit **STP72502**
Project No **PC197708**

Client **HIGHWAYS ENGLAND**

National Grid Coordinates **415432.2** E **142046.8** N

Ground Level **70.89** m OD

Scale 1:25

Depth	Type	Stratum No	Results	Description	Depth	Legend	Level m OD
					G.L.		70.89
0.00- 0.15	B			MADE GROUND: Grass over soft light greyish brown slightly gravelly sandy clay with many rootlets. Gravel is angular to subangular fine to coarse chalk, flint and plastic.	0.15		70.74
0.10	D						
0.10	ES						
0.10			PID=2.6ppm				
0.15- 0.30	B			MADE GROUND: Light greyish brown slightly sandy silty gravel with a low subangular chalk cobble content. Gravel is angular to subangular fine to coarse chalk with occasional flint fragments (up to 70mm in size).			
0.30	D						
0.30	ES						
0.30			PID=3.0ppm				
0.70- 1.20	B			Below 0.15m, excavation difficult due to strata being compacted and very dry.	0.70		70.19
1.00	ES			PROBABLE MADE GROUND: Light greyish brown slightly sandy gravelly silt. Gravel is angular to subangular fine to coarse chalk with occasional flint fragments (up to 60mm in size).			
1.00			PID=2.0ppm				
1.20	D			End of Excavation	1.20		69.69

Excavation

Plant **Hand Tools**
Date **26/11/2019**
Shoring **None.**
Stability **Stable during excavation.**

Width (B) **0.60**
Length (C) **0.60**
Date Backfilled **26/11/2019**

Groundwater

Depth Observed	Depth of Pit	Details
		None encountered during excavation.

Remarks

A Plate Load Test was carried out at a depth of 0.30m.
ES sample = 2 x vial, 2 x plastic jar and 2 x amber jar
Chalk logged in accordance with CIRIA Report C574, 2002. Flints described as in "Logging the Chalk", Appendix B (R.N. Mortimore, 2014, Whittles Publishing). Intact dry density determined from hand pressure on standard size samples or, where undertaken, from laboratory test results.
Backfill details from base of hole: arisings up to ground level.

Logged by **SI**
Checked by **CPL**
Figure **1 of 1**
12/05/2020

Symbols and abbreviations are explained on the accompanying key sheet.

All dimensions are in metres.

Logged in accordance with BS5930:2015

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PHOTOGRAPHS

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72401 Photo 1

geotechnics

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72401 Photo 2

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72401 Photo 3

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72402 Photo 1

geotechnics

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72402 Photo 2

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72402 Photo 3

geotechnics

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72403 Photo 1

geotechnics

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72403 Photo 2

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72403 Photo 3

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72403 Photo 4

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72404 Photo 1

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72404 Photo 2

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72404 Photo 3

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72501 Photo 1

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72501 Photo 2

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72501 Photo 3

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72501 Photo 4

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72502 Photo 1

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72502 Photo 2

Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72502 Photo 3

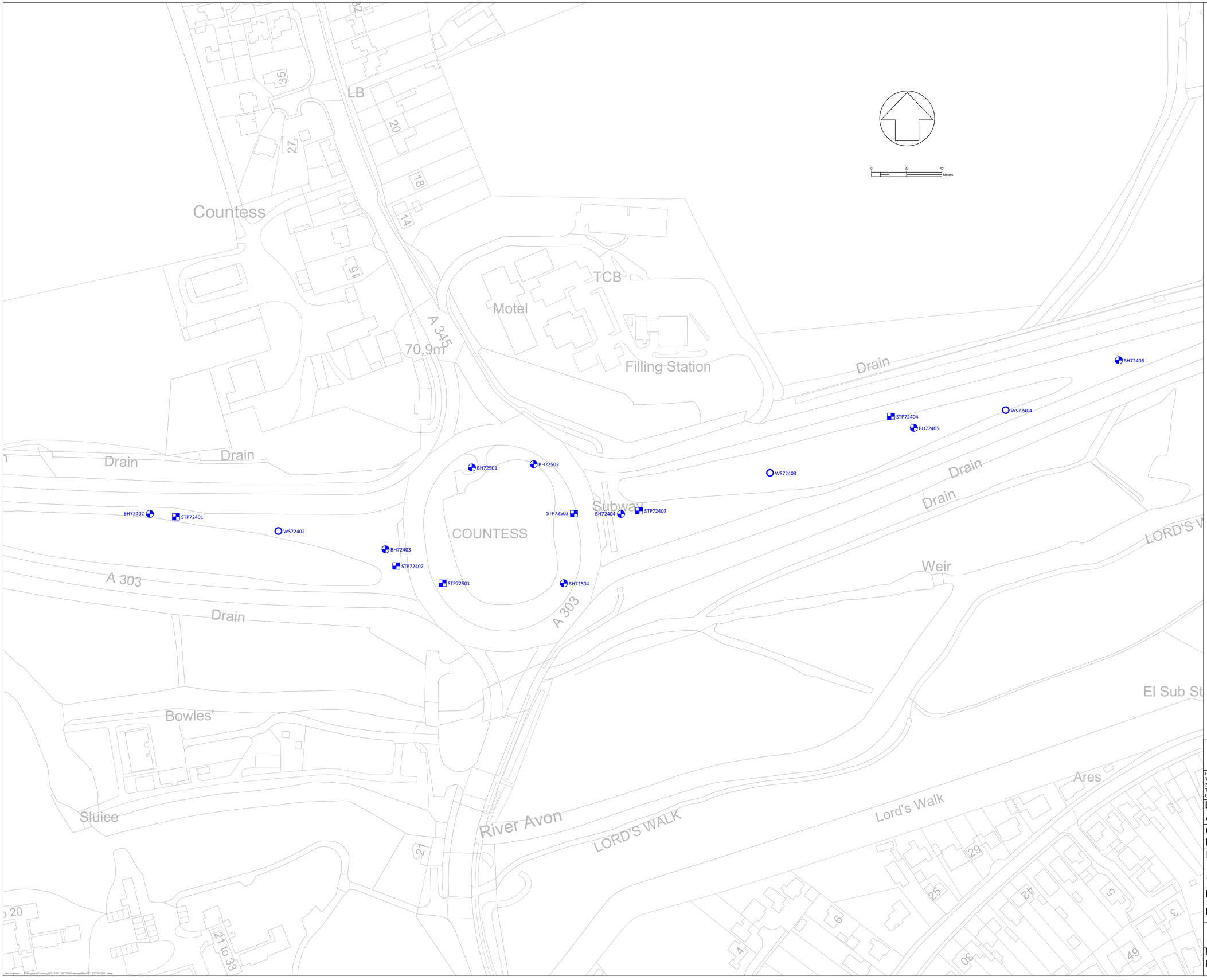
Project Number : PC197708

Project : A303 Amesbury to Berwick Down - Phase 7a Countess

STP72502 Photo 4

APPENDIX 7

Exploratory Hole Location Plan



Key

- Borehole
- Dynamic Sample Borehole
- Trial Pit

Hole ID	Easting (mE)	Northing (mN)	Level (mOD)
BH72402	415190.7	142046.7	70.95
BH72403	415324.9	142016.4	71.29
BH72404	415459.0	142046.6	71.24
BH72405	415625.7	142056.5	72.30
BH72406	415742.4	142134.1	72.66
BH72501	415374.1	142073.0	71.29
BH72502	415485.2	142074.9	71.47
BH72504	415426.4	142007.1	70.76
STP72401	415205.6	142045.0	70.98
STP72402	415331.0	142017.0	71.14
STP72403	415469.3	142048.4	72.05
STP72404	415612.7	142102.1	72.05
STP72501	415357.4	142087.2	70.75
STP72502	415432.2	142046.8	70.89
WS72402	415263.9	142038.9	71.12
WS72403	415543.8	142070.0	72.77
WS72404	415678.0	142105.7	72.04

GEOTECHNICS
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Tile Hill,
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Phone: 024 7669 4664
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Email mail@geotechnics.co.uk

Engineer:
AECOM

Client:
Highways England

Project:
A303 Amesbury to Berwick Down - Phase 7a
Countess Roundabout

Drawing Title:
EXPLORATORY HOLE LOCATION PLAN

Scale: 1:1000@A1	Date: December 2019
Project No: PC197708	File Name: Geo-PC197708-001(1)

APPENDIX 8

In Situ Permeability Test Results

INSITU TESTING - *Permeability (Borehole)*

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS	Borehole	BH72402
		Project No	PC197708
		Test No	1
Client	Highways England	Date	21/11/2019

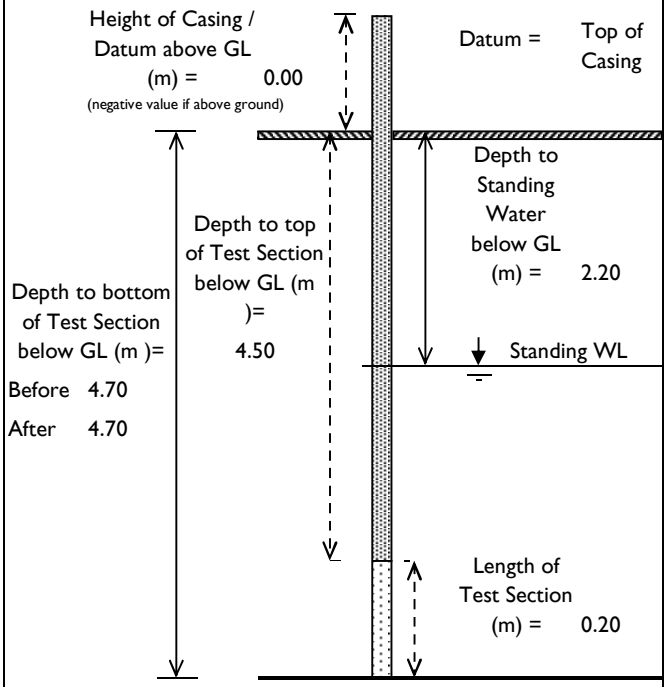
Water Permeability Test in a Borehole using Open Systems in accordance with BS EN ISO 22282-2:2012

Borehole Details	
Inclination	Vertical
Method of Drilling	Cable Percussion
Co-ordinates (m)	E 415190.7
	N 142046.7
Level (m OD)	70.95

Test Details	
Test Type	Variable Head - Falling
Hydrogeological Conditions	Test Section Saturated
Type of Filter	None
Isolation Device	None
Test Section Dia. (m)	0.20
Measuring Tube Dia. (m)	0.20

Test Measurements

Elapsed Time (minutes)	Depth of Water below Top of Casing (m)	Elapsed Time (Continued) (minutes)	Depth of Water below Top of Casing (continued) (m)
0.0	0.00		
0.5	0.00		
1.0	0.00		
1.5	0.00		
2.0	0.00		
2.5	0.00		
3.0	0.00		
3.5	0.00		
4.0	0.01		
4.5	0.01		
5.0	0.01		
6.0	0.01		
7.0	0.02		
8.0	0.02		
9.0	0.02		
10.0	0.03		
15.0	0.04		
20.0	0.05		
25.0	0.05		
30.0	0.06		
40.0	0.06		
50.0	0.07		
60.0	0.09		



Depth to Standing Water Level below Datum	2.20 m
Depth to Induced Water Level below Datum	0.00 m
Differential head at start of Test (H_o)	2.20 m
Differential Head at end of Test (H_f)	2.11 m
Time Elapsed at end of test (t_f)	60.0 mins

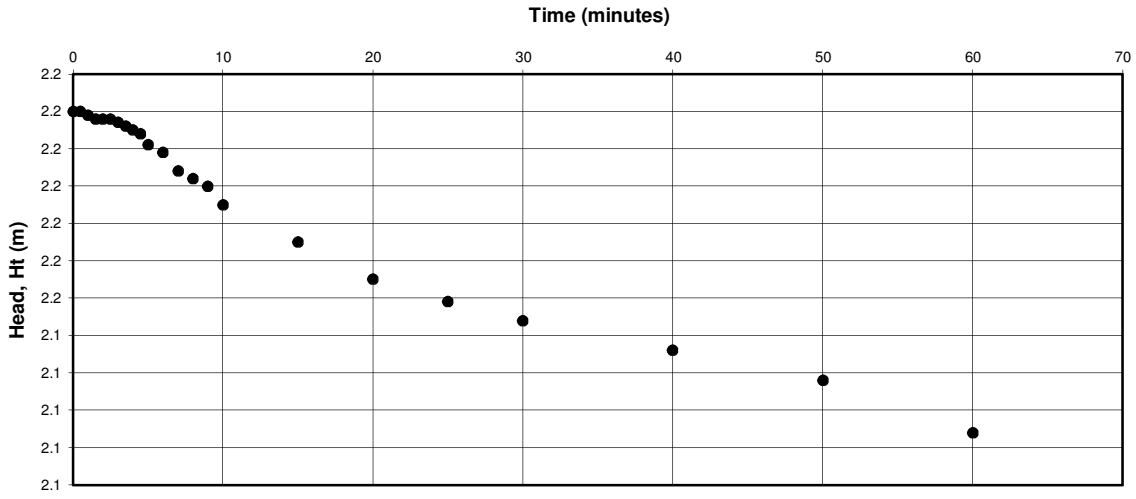
Weather during Test	Dry
Test Carried Out By	J. Davison
Test Checked By	C. Lange
Description of Test Section	Sand & Gravel

INSITU TESTING - *Permeability (Borehole)*

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTES	Borehole	BH72402
		Project No	PC197708
		Test No	1
Client	Highways England	Date	21/11/2019

Test Results

Time (mins)	Measured Depth (m)	Relative Depth (m bgl)	Ht (m)	ΔH (m)
0.0	0.00	0.00	2.20	0.00
0.5	0.00	0.00	2.20	1.00
1.0	0.00	0.00	2.20	1.00
1.5	0.00	0.00	2.20	1.00
2.0	0.00	0.00	2.20	1.00
2.5	0.00	0.00	2.20	1.00
3.0	0.00	0.00	2.20	1.00
3.5	0.00	0.00	2.20	1.00
4.0	0.01	0.01	2.20	1.00
4.5	0.01	0.01	2.19	1.00
5.0	0.01	0.01	2.19	1.00
6.0	0.01	0.01	2.19	1.00
7.0	0.02	0.02	2.18	0.99
8.0	0.02	0.02	2.18	0.99
9.0	0.02	0.02	2.18	0.99
10.0	0.03	0.03	2.18	0.99
15.0	0.04	0.04	2.17	0.98
20.0	0.05	0.05	2.16	0.98
25.0	0.05	0.05	2.15	0.98
30.0	0.06	0.06	2.14	0.97
40.0	0.06	0.06	2.14	0.97
50.0	0.07	0.07	2.13	0.97
60.0	0.09	0.09	2.11	0.96



Remarks and Additional Information

Depth to standing water taken as the water level recorded immediately prior to the test.

INSITU TESTING - *Permeability (Borehole)*

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTES	Borehole	BH72405
		Project No	PC197708
		Test No	1
Client	Highways England	Date	27/11/2019

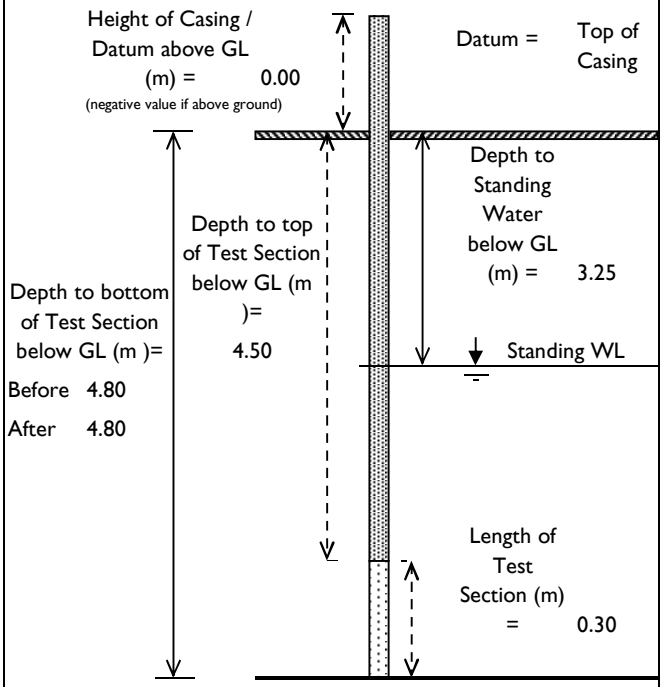
Water Permeability Test in a Borehole using Open Systems in accordance with BS EN ISO 22282-2:201

Borehole Details	
Inclination	Vertical
Method of Drilling	Cable Percussion
Co-ordinates (m)	E 415625.7
	N 142095.6
Level (m OD)	72.30

Test Details	
Test Type	Variable Head - Falling
Hydrogeological Conditions	Test Section Saturated
Type of Filter	None
Isolation Device	None
Test Section Dia. (m)	0.20
Measuring Tube Dia. (m)	0.20

Test Measurements

Elapsed Time (minutes)	Depth of Water below Top of Casing (m)	Elapsed Time (Continued) (minutes)	Depth of Water below Top of Casing (continued) (m)
0.0	0.00		
1.0	0.01		
2.0	0.02		
3.0	0.02		
4.0	0.02		
5.0	0.02		
6.0	0.02		
8.0	0.02		
10.0	0.02		
15.0	0.03		
20.0	0.04		
25.0	0.04		
30.0	0.05		
35.0	0.05		
40.0	0.05		
50.0	0.06		
60.0	0.06		



Depth to Standing Water Level below Datum	3.25 m
Depth to Induced Water Level below Datum	0.00 m
Differential head at start of Test (H_o)	3.25 m
Differential Head at end of Test (H_f)	3.19 m
Time Elapsed at end of test (t_f)	60.0 mins

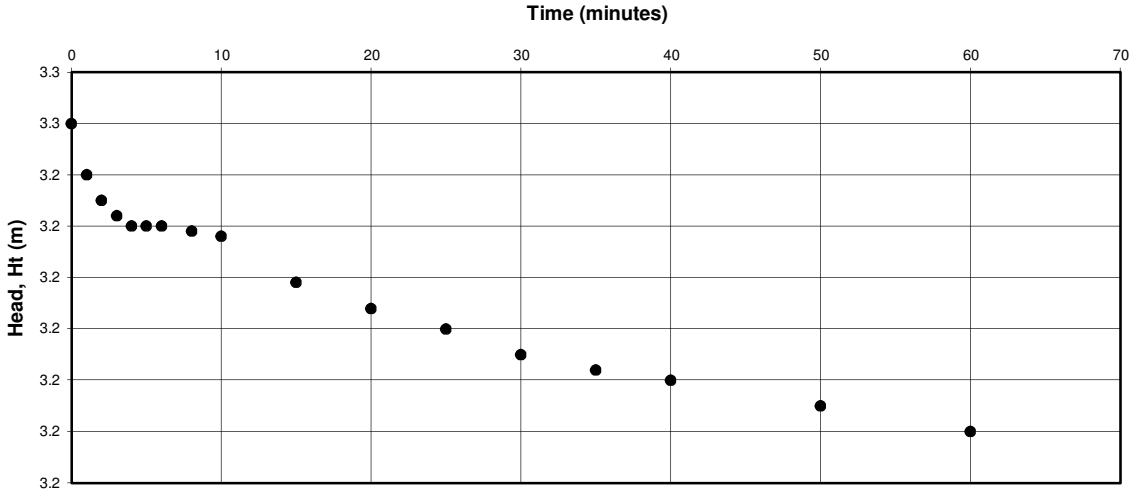
Weather during Test	Dry
Test Carried Out By	D Cowling
Test Checked By	C. Lange
Description of Test Section	Sandy slightly silty GRAVEL with a low cobble content.

INSITU TESTING - *Permeability (Borehole)*

Project	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTES	Borehole	BH72405
		Project No	PC197708
		Test No	1
Client	Highways England	Date	27/11/2019

Test Results

Time (mins)	Measured Depth (m)	Relative Depth (m bgl)	Ht (m)	ΔH (m)	Time (mins)	Measured Depth (m)	Relative Depth (m bgl)	Ht (m)	ΔH (m)
0.0	0.00	0.00	3.25	0.00					
1.0	0.01	0.01	3.24	1.00					
2.0	0.02	0.02	3.24	1.00					
3.0	0.02	0.02	3.23	0.99					
4.0	0.02	0.02	3.23	0.99					
5.0	0.02	0.02	3.23	0.99					
6.0	0.02	0.02	3.23	0.99					
8.0	0.02	0.02	3.23	0.99					
10.0	0.02	0.02	3.23	0.99					
15.0	0.03	0.03	3.22	0.99					
20.0	0.04	0.04	3.21	0.99					
25.0	0.04	0.04	3.21	0.99					
30.0	0.05	0.05	3.21	0.99					
35.0	0.05	0.05	3.20	0.99					
40.0	0.05	0.05	3.20	0.98					
50.0	0.06	0.06	3.20	0.98					
60.0	0.06	0.06	3.19	0.98					



Remarks and Additional Information

Depth to standing water taken as the water level recorded immediately prior to the test.

APPENDIX 9

Plate Load Tests Results

Hixtra Ltd
Milton Keynes
MK4 4GQ
[redacted]
01908 505 833

Certificate for the Determination of the Equivalent CBR Value of Soil by the Incremental Plate Loading Test to BS 1377 Part 9: 1990

Report No: HS3557-3
Client: Geotechnics Ltd
Address: Unit 1 Borders Industrail Park,
River Lane, Saltney,
Chester,
CH4 8RJ
Site: A303 Stonehenge, SP4 7HW

Report Date: 25/11/2019

Test Details

Test Location: STP72401
Description: White Chalk
Material Class: Formation
Layer: 0.5M BGL

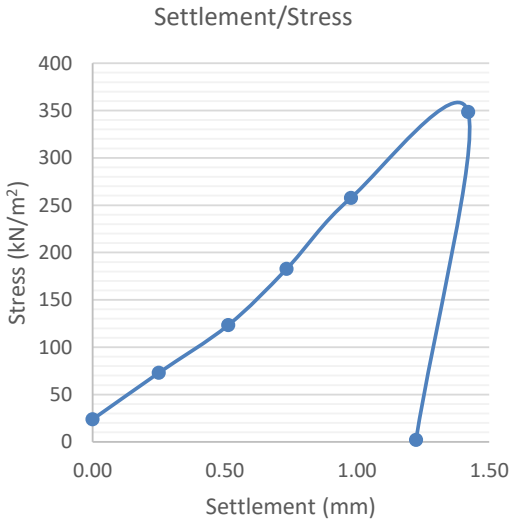
Date of Test: 25/11/2019
Reaction Load: 8 Tonne Excavator
Weather & Ambient Temp. (°C): Wet
Plate Diameter (mm): 297

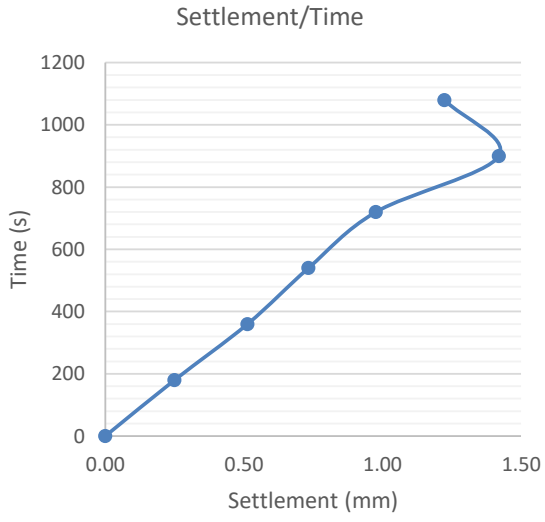
Test Results

Time (s)	Settlement (mm)	Plate Stress (kN/m^2)
0	0.00	24
180	0.25	73
360	0.51	123
540	0.73	183
720	0.98	258
900	1.42	349
1080	1.22	2

Maximum Applied Stress (kN/m^2):	349
Maximum Settlement (mm):	1.42
Equivalent CBR Value (%):	33
Modulus of Subgrade Reaction, k_{762} (MN/m2/m):	110

Note: Supplemental test method and calculation of Equivalent CBR Value and Modulus of Subgrade Reaction: Interim Advice Note 73/06 (2009) Design Guidance for Road Pavement Foundations (Draft H25)





For and on Behalf of Hixtra Ltd

[redacted]

Kevin Shorthouse
Project Manager

Issued subject to Hixtra Terms and Conditions available [redacted]

Hixtra Ltd
Milton Keynes
MK4 4GQ
[redacted]
01908 505 833

Certificate for the Determination of the Equivalent CBR Value of Soil by the Incremental Plate Loading Test to BS 1377 Part 9: 1990

Report No: HS3557-1r1
Client: Geotechnics Ltd
Address: Unit 1 Borders Industrail Park,
River Lane, Saltney,
Chester,
CH4 8RJ
Site: A303 Stonehenge, SP4 7HW

Report Date: 26/11/2019

Test Details

Test Location: STP72402
Description: White Chalk
Material Class: Formation
Layer: 0.5M BGL

Date of Test: 25/11/2019
Reaction Load: 8 Tonne Excavator
Weather & Ambient Temp. (°C): Wet
Plate Diameter (mm): 297

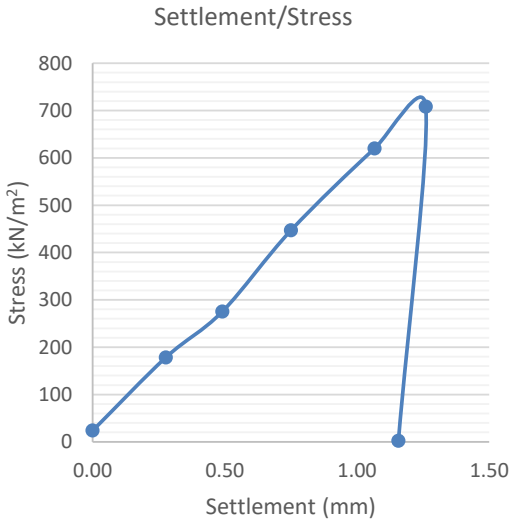
Test Results

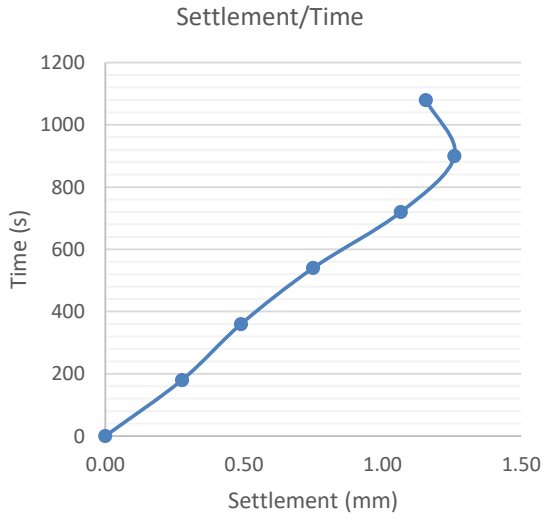
Time (s)	Settlement (mm)	Plate Stress (kN/m^2)
0	0.00	24
180	0.28	178
360	0.49	275
540	0.75	447
720	1.07	620
900	1.26	708
1080	1.16	2

Maximum Applied Stress (kN/m^2):	708
Maximum Settlement (mm):	1.26
Equivalent CBR Value (%):	135
Modulus of Subgrade Reaction, k_{762} (MN/m2/m):	247

Note: Supplemental test method and calculation of Equivalent CBR Value and Modulus of Subgrade Reaction: Interim Advice Note 73/06 (2009) Design Guidance for Road Pavement Foundations (Draft H25)

Note: Location amended





For and on Behalf of Hixtra Ltd

[redacted]

Kevin Shorthouse
Project Manager

Hixtra Ltd
Milton Keynes
MK4 4GQ
[redacted]
01908 505 833

Certificate for the Determination of the Equivalent CBR Value of Soil by the Incremental Plate Loading Test to BS 1377 Part 9: 1990

Report No: HS3557-2
Client: Geotechnics Ltd
Address: Unit 1 Borders Industrail Park, River Lane, Saltney, Chester, CH4 8RJ
Site: A303 Stonehenge, SP4 7HW

Report Date: 25/11/2019

Test Details

Test Location: STP72403
Description: Grey gravelly Chalk
Material Class: Formation
Layer: 0.5M BGL

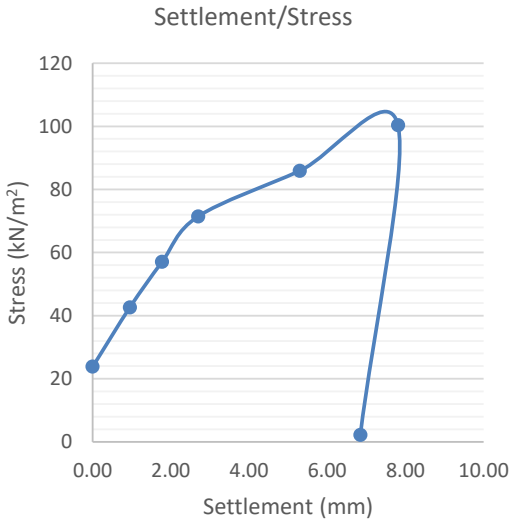
Date of Test: 25/11/2019
Reaction Load: 8 Tonne Excavator
Weather & Ambient Temp. (°C): Wet
Plate Diameter (mm): 297

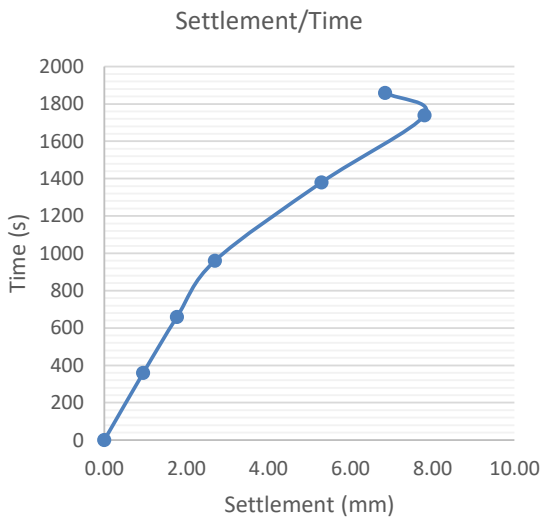
Test Results

Time (s)	Settlement (mm)	Plate Stress (kN/m^2)
0	0.00	24
360	0.95	43
660	1.77	57
960	2.70	71
1380	5.30	86
1740	7.81	100
1860	6.85	2

Maximum Applied Stress (kN/m^2):	100
Maximum Settlement (mm):	7.81
Equivalent CBR Value (%):	1
Modulus of Subgrade Reaction, k_{762} (MN/m2/m):	17

Note: Supplemental test method and calculation of Equivalent CBR Value and Modulus of Subgrade Reaction: Interim Advice Note 73/06 (2009) Design Guidance for Road Pavement Foundations (Draft H25)





For and on Behalf of Hixtra Ltd

[redacted]

Kevin Shorthouse
Project Manager

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Hixtra Ltd
Milton Keynes
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[redacted]
01908 505 833

Certificate for the Determination of the Equivalent CBR Value of Soil by the Incremental Plate Loading Test to BS 1377 Part 9: 1990

Report No: HS3567-1
Client: Geotechnics Ltd
Address: Unit 1 Borders Industrail Park,
River Lane, Saltney,
Chester,
CH4 8RJ
Site: A303 Stonehenge, SP4 7HW

Report Date: 26/11/2019

Test Details

Test Location: STP72404
Description: White Chalk
Material Class: Formation
Layer: 0.5M BGL

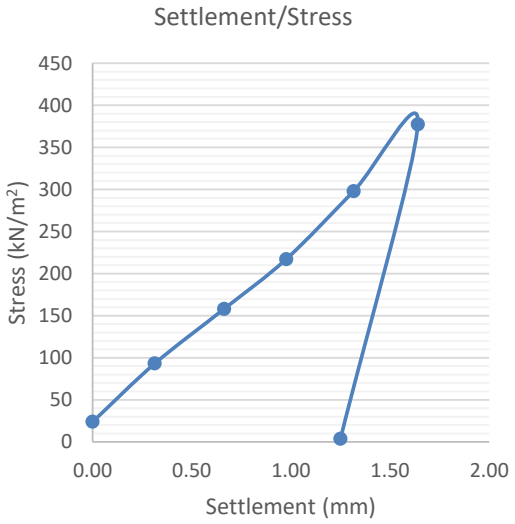
Date of Test: 26/11/2019
Reaction Load: 8 Tonne Excavator
Weather & Ambient Temp. (°C): Wet
Plate Diameter (mm): 297

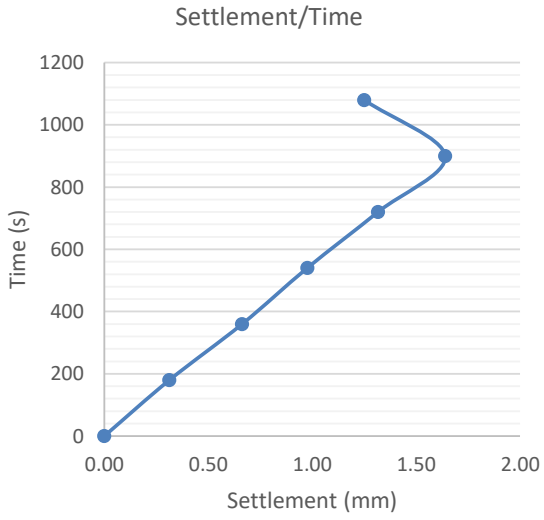
Test Results

Time (s)	Settlement (mm)	Plate Stress (kN/m^2)
0	0.00	24
180	0.31	93
360	0.66	158
540	0.98	217
720	1.32	298
900	1.64	377
1080	1.25	4

Maximum Applied Stress (kN/m^2):	377
Maximum Settlement (mm):	1.64
Equivalent CBR Value (%):	28
Modulus of Subgrade Reaction, k_{762} (MN/m2/m):	99

Note: Supplemental test method and calculation of Equivalent CBR Value and Modulus of Subgrade Reaction: Interim Advice Note 73/06 (2009) Design Guidance for Road Pavement Foundations (Draft H25)





For and on Behalf of Hixtra Ltd

[redacted]

Kevin Shorthouse
Project Manager

Issued subject to Hixtra Terms and Conditions available [redacted]

Hixtra Ltd
Milton Keynes
MK4 4GQ
[redacted]
01908 505 833

Certificate for the Determination of the Equivalent CBR Value of Soil by the Incremental of Plate Loading Test to BS 1377 Part 9: 1990

Report No: HS3567-2
Client: Geotechnics Ltd
Address: Unit 1 Borders Industrail Park,
River Lane, Saltney,
Chester,
CH4 8RJ
Site: A303 Stonehenge, SP4 7HW

Report Date: 26/11/2019

Test Details

Test Location: STP72501
Description: White Chalk
Material Class: Formation
Layer: 0.3M BGL

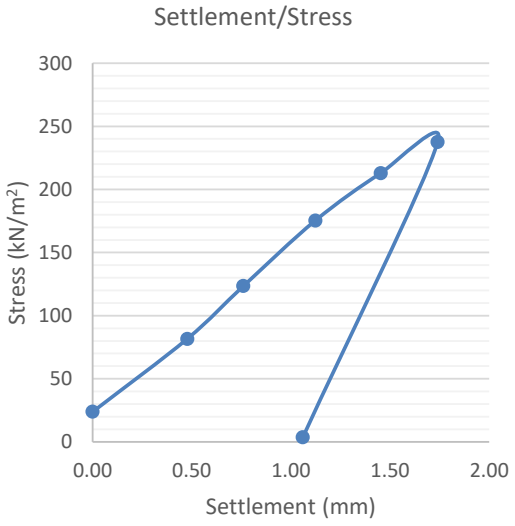
Date of Test: 26/11/2019
Reaction Load: 8 Tonne Excavator
Weather & Ambient Temp. (°C): Wet
Plate Diameter (mm): 297

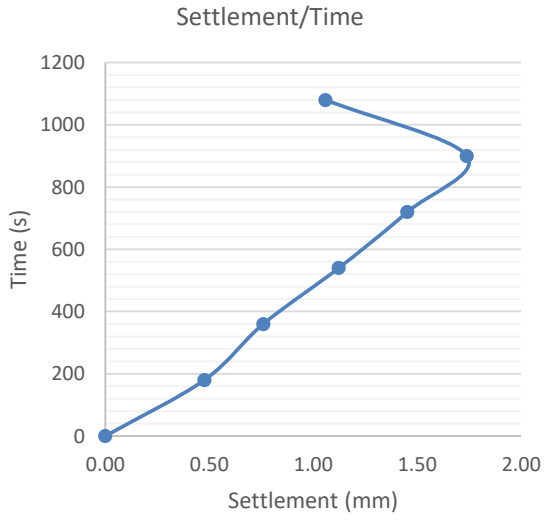
Test Results

Time (s)	Settlement (mm)	Plate Stress (kN/m^2)
0	0.00	24
180	0.48	82
360	0.76	123
540	1.12	175
720	1.45	213
900	1.74	237
1080	1.06	4

Maximum Applied Stress (kN/m^2):	237
Maximum Settlement (mm):	1.74
Equivalent CBR Value (%):	14
Modulus of Subgrade Reaction, k_{762} (MN/m2/m):	67

Note: Supplemental test method and calculation of Equivalent CBR Value and Modulus of Subgrade Reaction: Interim Advice Note 73/06 (2009) Design Guidance for Road Pavement Foundations (Draft H25)





For and on Behalf of Hixtra Ltd

[redacted]

Kevin Shorthouse
Project Manager

Issued subject to Hixtra Terms and Conditions available [redacted]

Hixtra Ltd
Milton Keynes
MK4 4G
[redacted]
01908 505 833

Certificate for the Determination of the Equivalent CBR Value of Soil by the Incremental of Plate Loading Test to BS 1377 Part 9: 1990

Report No: HS3567-3
Client: Geotechnics Ltd
Address: Unit 1 Borders Industrail Park,
River Lane, Saltney,
Chester,
CH4 8RJ
Site: A303 Stonehenge, SP4 7HW

Report Date: 26/11/2019

Test Details

Test Location: STP72502
Description: White Chalk
Material Class: Formation
Layer: 0.3M BGL

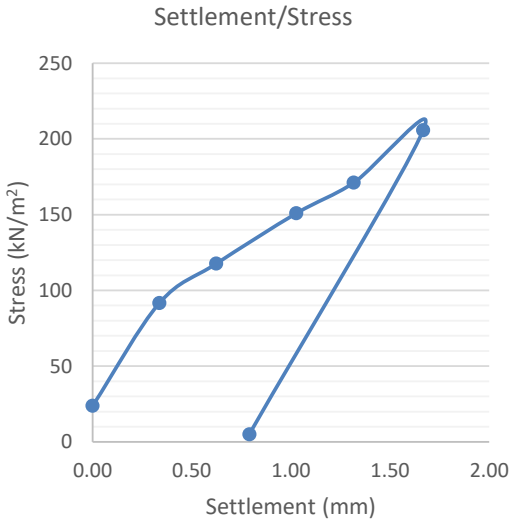
Date of Test: 26/11/2019
Reaction Load: 8 Tonne Excavator
Weather & Ambient Temp. (°C): Wet
Plate Diameter (mm): 297

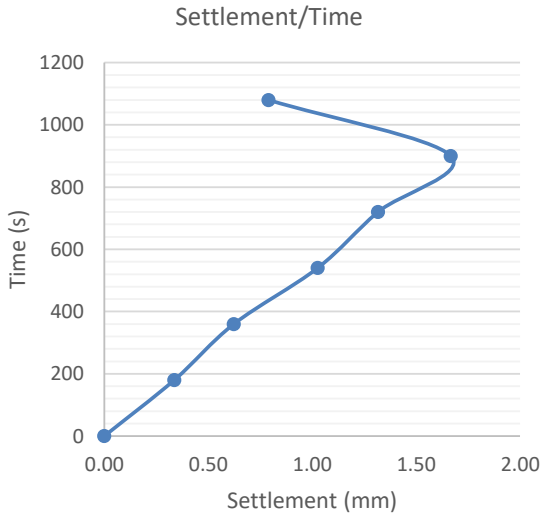
Test Results

Time (s)	Settlement (mm)	Plate Stress (kN/m^2)
0	0.00	24
180	0.34	92
360	0.62	118
540	1.03	151
720	1.32	171
900	1.67	206
1080	0.79	5

Maximum Applied Stress (kN/m^2):	206
Maximum Settlement (mm):	1.67
Equivalent CBR Value (%):	11
Modulus of Subgrade Reaction, k_{762} (MN/m2/m):	58

Note: Supplemental test method and calculation of Equivalent CBR Value and Modulus of Subgrade Reaction: Interim Advice Note 73/06 (2009) Design Guidance for Road Pavement Foundations (Draft H25)





For and on Behalf of Hixtra Ltd

[redacted]

Kevin Shorthouse
Project Manager

Issued subject to Hixtra Terms and Conditions available [redacted]

APPENDIX 10

Laboratory Test Results - Geotechnical

DATA SHEET - Laboratory Test Symbols

Classification and Strength

Symbol	**C - Clay**	**M - Silt**
	(0 - containing organic matter)	
	Plasticity	L - Low
		I - Intermediate
		H - High
		V - Very High
		E - Extremely High
Ip	Plasticity Index	
%	% retained on 425 µm sieve, shown under Ip value	
w_L	Liquid Limit	
w_P	Plastic Limit	
NP	Non-Plastic	
NAT	Sample tested in natural state	
w	Water Content	
P_d	Particle Density	
Test	**Quick undrained triaxial tests**	
	SS	Single stage - 102mm diameter.
	S3	Single stage - set of 3 38mm diameter.
	MS	Multistage - 102mm diameter.
	D	Drained Test
	HV	Hand Vane
	PP	Pocket Penetrometer (kg/cm²)
	NST	Not suitable for test
γ_b	Bulk Density	
σ_3	Triaxial Cell Pressure	
$\sigma_1 - \sigma_3$	Deviator Stress	
##	Excessive Strain	
c_u	Undrained Cohesion	
c	Cohesion Intercept	
ϕ	Angle of Shearing Resistance	
Linear Shrink	Linear Shrinkage	
Stab add-	Stabiliser which is added	

Consolidation

m_v	Coefficient of Volume Compressibility
c_{v50}	Coefficient of Consolidation - Log t
c_{v90}	Coefficient of Consolidation - $\sqrt{t}$

Rock

UF	Unacceptable Failure

Chemical Analysis

Acid Soluble	Total sulphate in specimen, expressed as SO_3 %, value in brackets expressed as SO_4 %
Water Soluble	Soluble sulphate in 2:1 water : soil extract, expressed as SO_3 g/l, value in brackets expressed as SO_4 g/l
In Water	Sulphate content of groundwater, expressed as SO_3 g/l, value in brackets expressed as SO_4 g/l
pH	pH value
Organic content	Organic content expressed as a percentage of dry weight
Chloride	Chloride Ion content expressed as a percentage of dry weight

MCV, Compaction, CBR

MCV	Moisture Condition Value at natural water content
MCC	Moisture Condition Calibration
CCV	Chalk Crushing Value

Compaction

Type	2.5	= 2.5 kg Rammer
	4.5	= 4.5 kg Rammer
	V	= Vibrating Hammer
γ_b	Bulk Density	
γ_d	Dry Density	

CBR California Bearing Ratio

Type	2.5	= Test on Specimen Recompacted using 2.5 kg Rammer
	4.5	= As above but using 4.5 kg Rammer
	V	= As above but using Vibrating Hammer
	M	= Test on open drive mould specimen cut in field
	S	= Soaked Specimen
Top	CBR at top of mould	
Bottom	CBR at bottom of mould	
ND	None Detected	
*	In the Sample Description denotes a laboratory only description	

Laboratory Test Certificate

Form REP008 Rev 3

Issued To	Geotechnics Ltd The Geotechnical Centre 203 Torrington Avenue Tile Hill Coventry, CV4 9AP	**Date of issue**	29/01/2020
		Issue No.	1
		Client Ref. No.	-
		Samples / Material Source	
		Samples Recv'd	02/12/19 TO 18/12/19
Testing Start Date	02/12/2019	Sample State	As received
Testing Complete	29/01/2020	Sampled by	Geotechnics Limited
Comments	Rock Moisture Content performed according In-House procedure, not to IRSM accredited Method		
Project No	PC197708		
Project Name	A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS		

Summary of Tests

Standard	Test Description	Test Quantity	UKAS
BS EN ISO 17892-1:2014	Water Content	48	Yes
BS EN ISO 17892-12:2018 Cl. 5.3 & 5.5	Liquid Limit and Plastic Limit	15	Yes
BS 1377-7:1990 Cl. 9	Shear Strength by Quick Undrained Triaxial Test - Multistage	6	Yes
BS 1377-2:1990 Cl. 3.3	Saturation Moisture Content of Chalk	44	Yes
ISRM Suggested Method (1985)	Point Load Strength of Rock	6	Yes
BS EN ISO 17892-4:2016 Cl. 5.2	Particle Size Distribution by Sieving Method	39	Yes
BS EN ISO 17892-4:2016 Cl. 5.4	Particle Size Distribution by Pipette Method	31	Yes
BS EN ISO 17892-5:2017	Incremental Loading Oedometer	5	Yes

Note: Any descriptions, opinions or interpretations are outside the scope of UKAS accreditation.
The results within this report relate only to the samples tested and received from the client.

UKAS TESTING
1365

Test Results checked and approved for issue.
Signed for and on behalf of Geotechnics Limited

[redacted]

Stephane Schiano (Laboratory Testing Manager)

GEOTECHNICS
geotechnical and geoenvironmental specialists

203 Torrington Avenue, Tile Hill,
Coventry, CV4 9UT

LABORATORY RESULTS - Classification and Strength

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS **Project No:** PC197708

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
BH72402	3.00 (3.00)	D	C30312	Brownish green slightly sandy slightly gravelly CLAY.	CI	29 (32%)	50	21	25.4						
BH72402	4.00 (4.00)	D	C30319	Light brown very sandy slightly clayey GRAVEL.					17.3						
BH72402	17.50-17.95 (17.50-17.60)	UT	C30812	See Detailed Sample Description.					26.7 26.7 26.7	MS	1.99 1.99 1.99	170 340 680	577 822 1101	289 411 550	417
BH72402	18.95-19.00 (18.95)	D	C30747	CHALK.					26.9						
BH72402	19.50-19.95 (19.50-19.65)	UT	C30811	See Detailed Sample Description.					24.4 24.4 24.4	MS	2.02 2.02 2.02	190 380 760	335 392 448	167 196 224	196
BH72402	19.95-20.00 (19.95)	D	C30750	CHALK.					27.5						
BH72403	1.00-1.10 (1.00)	D	C30123	PROBABLE MADE GROUND: White very gravelly silty sand with a low cobble content.					20.9						
BH72403	3.00 (3.00)	D	C30322	Brown sandy slightly clayey GRAVEL.		(78%)	25	NP	22.8						
BH72403	19.00-19.40 (19.00)	D	C30591	CHALK.					26.1						
BH72404	1.20-1.65 (1.20)	D	C30632	PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly clay.	CL	13 (48%)	28	15	14.4						
BH72404	2.80 (2.80)	D	C30631	Greyish green slightly sandy gravelly CLAY.	CI	18 (63%)	38	20	19.7						
BH72404	3.80 (3.80)	D	C30636	Light brownish green sandy slightly clayey GRAVEL.					16.4						
BH72404	15.55-16.00 (15.60)	UT	C30566	See Detailed Sample Description Sheet.					29.7 29.7 29.7	MS	1.84 1.84 1.84	150 300 600	373 588 824	187 294 412	298
BH72404	18.80-19.25 (19.05)	UT	C30815	See Detailed Sample Description Sheet.					26.8 26.8 26.8	MS	2.01 2.01 2.01	190 380 760	319 327 341	160 164 170	165
BH72404	20.40-20.85 (20.45)	UT	C30814	See Detailed Sample Description Sheet.					26.9 26.9 26.9	MS	2.03 2.03 2.03	200 400 800	707 853 941	354 427 471	417

Remarks NST - Not suitable for Test
For Standards followed see Laboratory Test Certficate
w% - ^ = Rock water content test; x = Aggregate moisture content test
QUT Water Contents: <Failure Zone>, [After test]

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LABORATORY RESULTS - *Classification and Strength*

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS **Project No:** PC197708

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
BH72405	1.10-1.20 (1.10)	D	C30576	PROBABLE MADE GROUND: Cream slightly sandy gravelly SILT.		(54%)	29	NP	13.5						
BH72405	3.50-3.60 (3.50)	D	C30629	Greenish grey mottled brown slightly gravelly sandy CLAY.	CI	20 (26%)	41	21	27.5						
BH72405	4.80-4.90 (4.80)	D	C30627	Brown and grey sandy slightly silty GRAVEL.					6.9						
BH72405	16.50-16.95 (16.50)	D	C30719	CHALK.					27.7						
BH72405	17.50-17.95 (17.50)	D	C30721	CHALK.					24.9						
BH72405	19.00-19.33 (19.00)	D	C30720	CHALK.					25.7						
BH72406	1.80-1.90 (1.80)	D	C30611	MADE GROUND: Cream slightly sandy slightly gravelly silt.		(39%)	31	NP	28.9						
BH72406	4.90-5.00 (4.90)	D	C30580	POSSIBLE MADE GROUND: Soft greyish brown mottled grey slightly sandy gravelly CLAY.	CI	25 (52%)	43	18	36.7						
BH72406	6.30-6.40 (6.30)	D	C30581	Grey and brown sandy slightly silty GRAVEL.					6.3						
BH72406	19.50-19.95 (19.50)	UT	C30564	See Detailed Sample Description Sheet.					30.3 30.3 30.3	MS	1.95 1.95 1.95	190 380 760	250	125 ##	125
BH72501	3.00 (3.00)	D	C30669	Brownish green slightly gravelly sandy CLAY.	CI	20 (27%)	36	16	20.9						
BH72501	4.00 (4.00)	D	C30668	Brownish green very sandy very clayey GRAVEL.					22.9						
BH72501	21.40-22.90 (21.40)	D	C30876	CHALK.					22.3						
BH72501	23.60-23.77 (23.60)	C	C30776	CHALK.					25.4						
BH72501	26.97-27.15 (26.97)	C	C30777	CHALK.					26.0						

Remarks AGS

NST - Not suitable for Test
For Standards followed see Laboratory Test Certficate
w% - ^ = Rock water content test; x = Aggregate moisture content test
QUT Water Contents: <Failure Zone>, [After test]

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LABORATORY RESULTS - *Classification and Strength*

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS **Project No:** PC197708

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1-\sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
BH72502	2.00-2.10 (2.00)	D	C30717	PROBABLE MADE GROUND: White, locally light brown, slightly sandy slightly gravelly silt.					23.3						
BH72502	3.00-3.10 (3.00)	D	C30875	Greyish brown slightly sandy gravelly CLAY with a low cobble content.	CL	16 (60%)	31	15	10.9						
BH72502	4.30-4.40 (4.30)	D	C30709	Greyish brown sandy GRAVEL.					5.6						
BH72502	17.67-17.75 (17.67)	C	C30780	CHALK.					23.3						
BH72502	18.53-18.63 (18.53)	C	C30782	CHALK.					25.6						
BH72502	19.35-20.50 (19.35)	C	C30783	CHALK.					24.1						
BH72502	21.92-22.00 (21.92)	C	C30819	CHALK.					24.2						
BH72504	3.00 (3.00)	D	C30341	Light greenish grey sandy slightly clayey GRAVEL.					13.5						
BH72504	4.00 (4.00)	D	C30344	Light brownish grey very sandy GRAVEL.					9.7						
BH72504	21.79-21.96 (21.79)	C	C30464	CHALK.					27.6						
STP72501	0.60 (0.60)	D	C30600	MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt.					15.5						
WS72402	2.50 (2.50)	D	C30767	PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt.					20.6						
WS72402	5.00 (5.00)	D	C30769	CHALK.		(37%)	24	NP	21.4						
WS72403	1.00-1.20 (1.00)	D	C30352	MADE GROUND: Cream and brown very sandy very silty gravel.	MH	21 (49%)	53	32	21.1						
WS72403	1.80 (1.80)	D	C30762	PROBABLE MADE GROUND: Light greyish grey white gravelly silt.		(44%)	33	NP	24.4						
WS72403	3.00 (3.00)	D	C30761	PROBABLE MADE GROUND: Light brownish grey gravelly silt.		(32%)	30	NP	25.2						

Remarks NST - Not suitable for Test
For Standards followed see Laboratory Test Certficate
w% - ^ = Rock water content test; x = Aggregate moisture content test
QUT Water Contents: <Failure Zone>, [After test]

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LABORATORY RESULTS - *Classification and Strength*

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS **Project No:** PC197708

Sample					Classification					Strength					
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Symbol	I_p (>425) %	w_L %	w_p %	w (p_d) %	Test	γ_b (γ_d) Mg/m^3	σ_3 kN/m^2	$\sigma_1 - \sigma_3$ kN/m^2	c_u kN/m^2	c_{Avg} kN/m^2
WS72403	4.50 (4.50)	D	C30763	Light greenish grey very sandy very clayey GRAVEL					14.3						
WS72404	1.20 (1.20)	D	C30736	PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt.		(23%)	29	NP	18.9						

Remarks AGS

NST - Not suitable for Test
For Standards followed see Laboratory Test Certficate
w% - ^ = Rock water content test; x = Aggregate moisture content test
QUT Water Contents: <Failure Zone>, [After test]

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LABORATORY RESULTS - Atterberg Limit

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS **Project No:** PC197708

Sample					Results								
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Symbol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
BH72402	3.00 (3.00)	D	C30312	Brownish green slightly sandy slightly gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	29	32%	50	21
BH72403	3.00 (3.00)	D	C30322	Brown sandy slightly clayey GRAVEL.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					78%	25	NP
BH72404	1.20-1.65 (1.20)	D	C30632	PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly clay.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	13	48%	28	15
BH72404	2.80 (2.80)	D	C30631	Greyish green slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	18	63%	38	20
BH72405	1.10-1.20 (1.10)	D	C30576	PROBABLE MADE GROUND: Cream slightly sandy gravelly SILT.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					54%	29	NP
BH72405	3.50-3.60 (3.50)	D	C30629	Greenish grey mottled brown slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	20	26%	41	21
BH72406	1.80-1.90 (1.80)	D	C30611	MADE GROUND: Cream slightly sandy slightly gravelly silt.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					39%	31	NP
BH72406	4.90-5.00 (4.90)	D	C30580	POSSIBLE MADE GROUND: Soft greyish brown mottled grey slightly sandy gravelly CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	25	52%	43	18
BH72501	3.00 (3.00)	D	C30669	Brownish green slightly gravelly sandy CLAY.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CI	20	27%	36	16
BH72502	3.00-3.10 (3.00)	D	C30875	Greyish brown slightly sandy gravelly CLAY with a low cobble content.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			CL	16	60%	31	15
WS72402	5.00 (5.00)	D	C30769	CHALK.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					37%	24	NP

Remarks AGS

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LABORATORY RESULTS - Atterberg Limit

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS **Project No:** PC197708

Sample					Results							
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Test Type	Point Data		Symbol	þ %	>425 sieve µm	w_L %	w_p %
						Cone Pene.	Water % (Factor)					
WS72403	1.00-1.20 (1.00)	D	C30352	MADE GROUND: Cream and brown very sandy very silty gravel.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve			MH	21	49%	53	32
WS72403	1.80 (1.80)	D	C30762	PROBABLE MADE GROUND: Light greyish grey white gravelly silt.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					44%	33	NP
WS72403	3.00 (3.00)	D	C30761	PROBABLE MADE GROUND: Light brownish grey gravelly silt.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					32%	30	NP
WS72404	1.20 (1.20)	D	C30736	PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt.	Fall Cone 4pt with increasing water content, cone type: 80g/30, washed over 425um sieve					23%	29	NP

Remarks AGS

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LABORATORY RESULTS - Classification Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS **Project No:** PC197708

Sample														Unconfined Compressive Strength Test			
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Sat. w %	γ_d Mg/m^3	CCV	Linear Shrink (>425) %	γ_d Max/ Min Mg/m^3				UCS kPa	w %	γ_b Mg/m^3	γ_d Mg/m^3
BH72402	5.55-6.00 (5.55-6.00)	B	C30421	CHALK.	28.5	1.53										
BH72402	7.05-7.50 (7.05-7.50)	B	C30422	CHALK.	27.6	1.55										
BH72402	8.55-9.00 (8.55-9.00)	B	C30430	CHALK.	26.1	1.58										
BH72402	10.10-11.10 (10.10-11.10)	B	C30431	CHALK.	26.2	1.58										
BH72402	18.00-19.00 (18.00-19.00)	B	C30786	CHALK.	24.6	1.62										
BH72403	2.20-2.65 (2.20-2.65)	B	C30415	PROBABLE MADE GROUND: Cream slightly sandy slightly gravelly silt with a medium cobble content.	17.7	1.83										
BH72403	5.55-6.00 (5.55-6.00)	B	C30405	CHALK.	25.2	1.61										
BH72403	10.10-11.50 (10.10-11.50)	B	C30413	CHALK.	22.7	1.67										
BH72403	13.05-14.30 (13.05-14.30)	B	C30418	CHALK.	25.0	1.61										
BH72403	19.34-19.43 (19.34-19.43)	C	C30770	CHALK.	30.6	1.48										
BH72404	7.05-8.50 (7.05-8.50)	B	C30556	CHALK.	28.0	1.54										

Remarks AGS NST - Not suitable for Test
For Standards followed see Laboratory Test Certificate

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LABORATORY RESULTS - Classification Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS **Project No:** PC197708

Sample														Unconfined Compressive Strength Test			
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Sat. w %	γ_d Mg/m^3	CCV	Linear Shrink (>425) %	γ_d Max/ Min Mg/m^3				UCS kPa	w %	γ_b Mg/m^3	γ_d Mg/m^3
BH72404	11.55-13.00 (11.55-13.00)	B	C30557	CHALK.	25.0	1.61										
BH72404	17.60-18.80 (17.60-18.80)	B	C30797	CHALK.	24.6	1.62										
BH72404	19.40-20.40 (19.40-20.40)	B	C30798	CHALK.	24.7	1.62										
BH72405	6.00-6.70 (6.00-6.70)	B	C30506	CHALK.	20.1	1.75										
BH72405	7.50-8.00 (7.50-8.00)	B	C30489	CHALK.	29.5	1.50										
BH72405	10.50-11.00 (10.50-11.00)	B	C30507	CHALK.	28.0	1.54										
BH72406	8.00-8.50 (8.00-8.50)	B	C30529	CHALK.	28.2	1.53										
BH72406	10.50-12.00 (10.50-12.00)	B	C30524	CHALK.	25.5	1.60										
BH72406	13.50-15.00 (13.50-15.00)	B	C30520	CHALK.	26.8	1.57										
BH72501	5.35-5.80 (5.35-5.80)	B	C30517	CHALK.	27.7	1.54										
BH72501	8.45-9.50 (8.45-9.50)	B	C30522	CHALK.	27.3	1.55										

Remarks NST - Not suitable for Test
For Standards followed see Laboratory Test Certificate

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LABORATORY RESULTS - Classification Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS **Project No:** PC197708

Sample														Unconfined Compressive Strength Test			
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Sat. w %	γ_d Mg/m^3	CCV	Linear Shrink (>425) %	γ_d Max/ Min Mg/m^3				UCS kPa	w %	γ_b Mg/m^3	γ_d Mg/m^3
BH72501	11.50-12.50 (11.50-12.50)	B	C30558	CHALK.	26.7	1.57										
BH72501	14.75-15.55 (14.75-15.55)	B	C30512	CHALK.	24.2	1.63										
BH72501	26.97-27.15 (26.97-27.15)	C	C30777	CHALK.	27.1	1.56										
BH72501	28.44-28.65 (28.44-28.65)	C	C30778	CHALK.	28.5	1.53										
BH72502	5.30-6.00 (5.30-6.00)	B	C30795	CHALK.	24.7	1.62										
BH72502	8.50-9.00 (8.50-9.00)	B	C30802	CHALK.	27.5	1.55										
BH72502	11.50-12.00 (11.50-12.00)	B	C30800	CHALK.	25.7	1.59										
BH72502	18.53-18.63 (18.53-18.63)	C	C30782	CHALK.	27.0	1.56										
BH72502	19.35-20.50 (19.35-20.50)	C	C30783	CHALK.	23.7	1.65										
BH72502	23.30-23.45 (23.30-23.45)	C	C30817	CHALK.	27.2	1.56										
BH72504	5.40-5.85 (5.40-5.85)	B	C30428	CHALK.	23.6	1.65										

Remarks NST - Not suitable for Test
For Standards followed see Laboratory Test Certificate

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LABORATORY RESULTS - Classification Summary

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS **Project No:** PC197708

Sample														Unconfined Compressive Strength Test			
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	Sat. w %	γ_d Mg/m^3	CCV	Linear Shrink (>425) %	γ_d Max/ Min Mg/m^3				UCS kPa	w %	γ_b Mg/m^3	γ_d Mg/m^3
BH72504	8.55-9.20 (8.55-9.20)	B	C30408	CHALK.	23.4	1.66										
BH72504	11.55-12.00 (11.55-12.00)	B	C30412	CHALK.	23.8	1.64										
BH72504	17.83-17.92 (17.83-17.92)	C	C30462	CHALK.	26.7	1.57										
BH72504	20.80-20.97 (20.80-20.97)	C	C30465	CHALK.	25.4	1.60										
BH72504	26.38-26.48 (26.38-26.48)	C	C30773	CHALK.	24.9	1.61										
STP72401	1.20 (1.20)	D	C30660	CHALK.	28.2	1.53										
STP72402	1.20 (1.20)	D	C30664	PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt.	26.9	1.56										
STP72403	1.20 (1.20)	D	C30657	PROBABLE MADE GROUND: Light grey sandy very silty gravel.	31.7	1.46										
STP72502	0.70-1.20 (0.70-1.20)	B	C30523	PROBABLE MADE GROUND: Light greyish brown slightly sandy gravelly silt.	25.2	1.61										
WS72403	2.00-3.70 (2.00-3.70)	B	C30789	PROBABLE MADE GROUND: Light brownish grey gravelly silt.	26.0	1.59										
WS72404	1.20-2.00 (1.20-2.00)	B	C30801	PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt.	28.4	1.53										

Remarks NST - Not suitable for Test
For Standards followed see Laboratory Test Certificate

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LABORATORY RESULTS - Particle Size Distribution

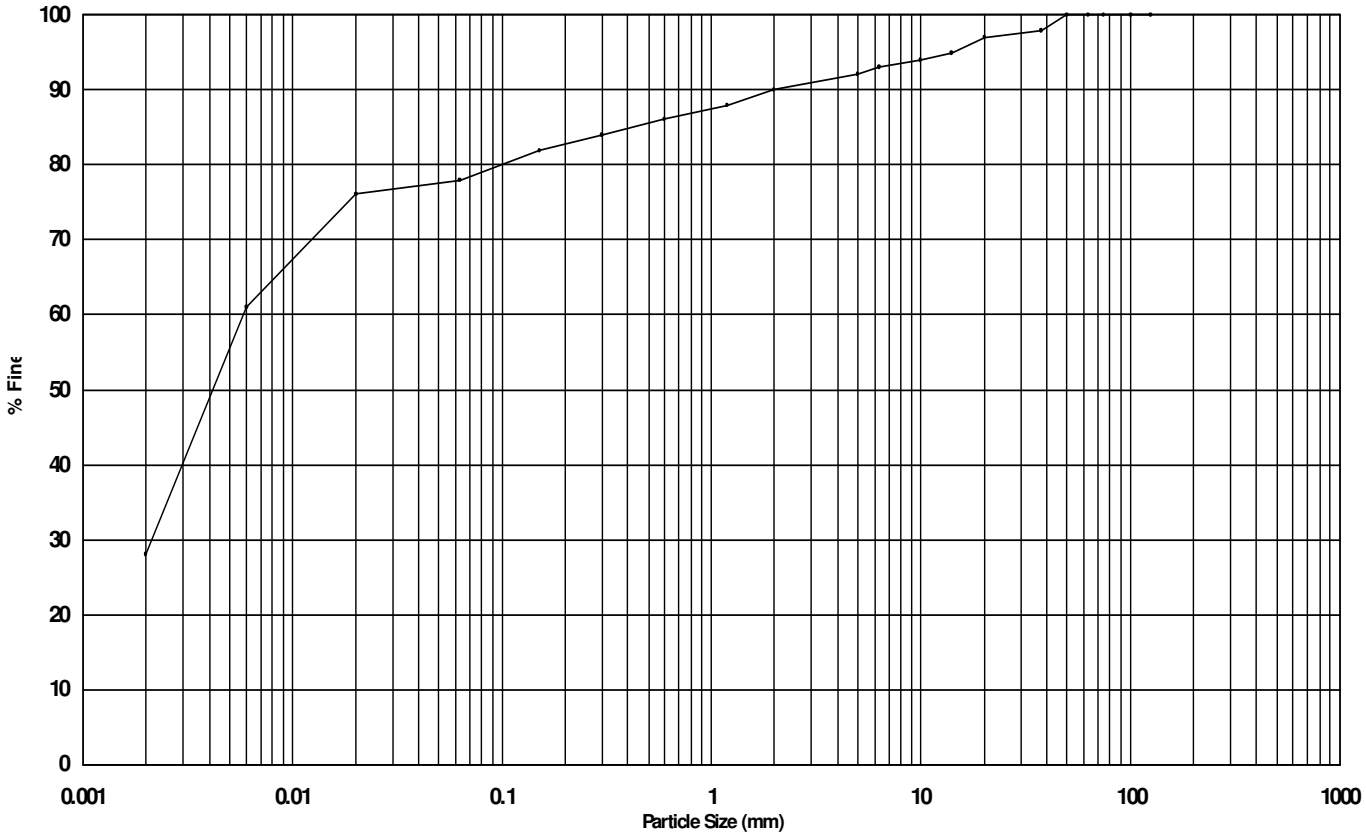
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72402
Sample Depth 1.20-1.65m
Sample Type B
Sample Ref C30423

Sample Description

PROBABLE MADE GROUND: Cream slightly sandy slightly gravelly silt.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	28
SILT	50
SAND	12
GRAVEL	10
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	98
20 mm	97
14 mm	95
10 mm	94
6.3 mm	93
5 mm	92
2 mm	90
1.18 mm	88
600 µm	86
300 µm	84
150 µm	82

Size	% Finer
63 µm	78
20 µm	76
6 µm	61
2 µm	28

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

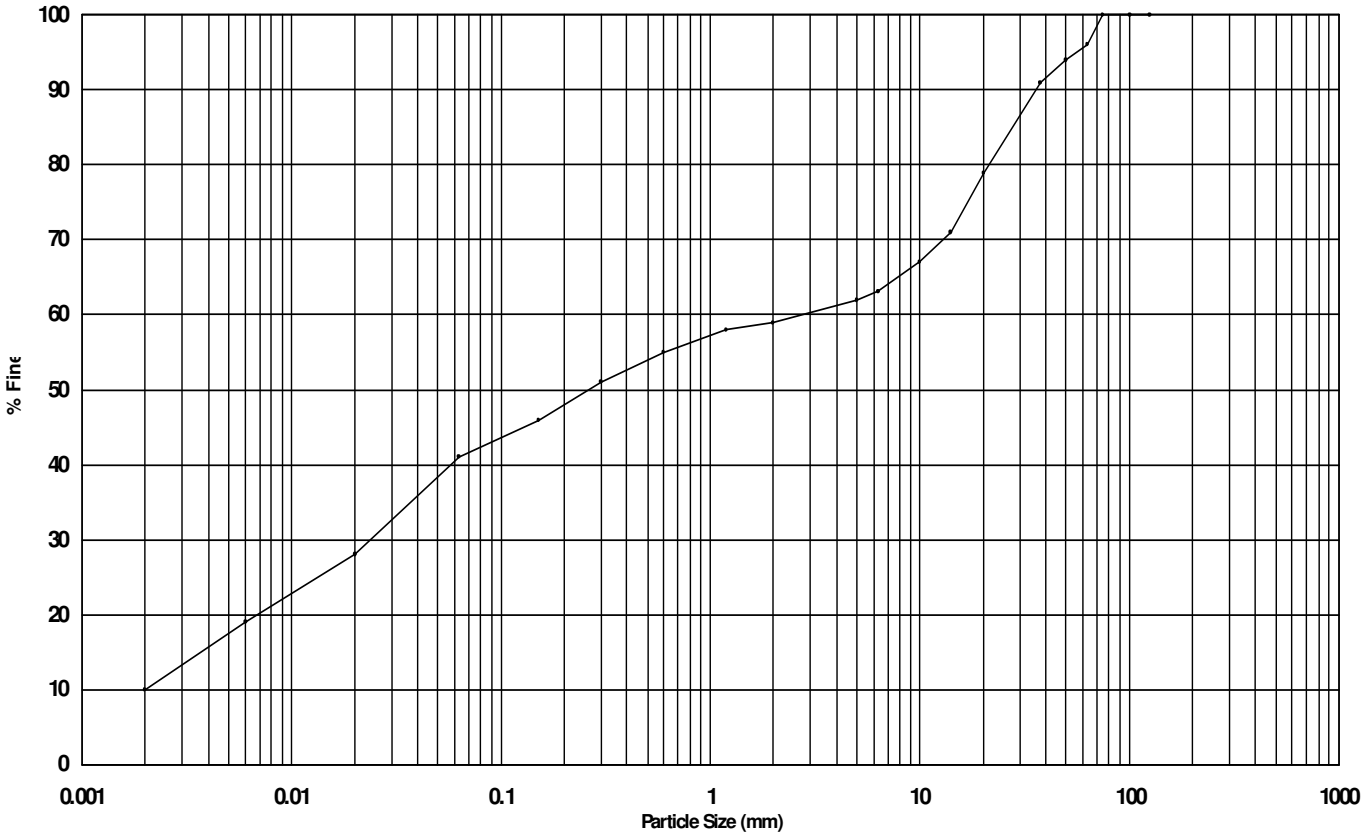
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72402
Sample Depth 3.30-3.70m
Sample Type B
Sample Ref C30425

Sample Description

Brownish green slightly sandy gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	10
SILT	31
SAND	18
GRAVEL	37
COBBLES	4
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	96
50 mm	94
37.5 mm	91
20 mm	79
14 mm	71
10 mm	67
6.3 mm	63
5 mm	62
2 mm	59
1.18 mm	58
600 µm	55
300 µm	51
150 µm	46

Size	% Finer
63 µm	41
20 µm	28
6 µm	19
2 µm	10

Uniformity Coefficient
1250.28

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

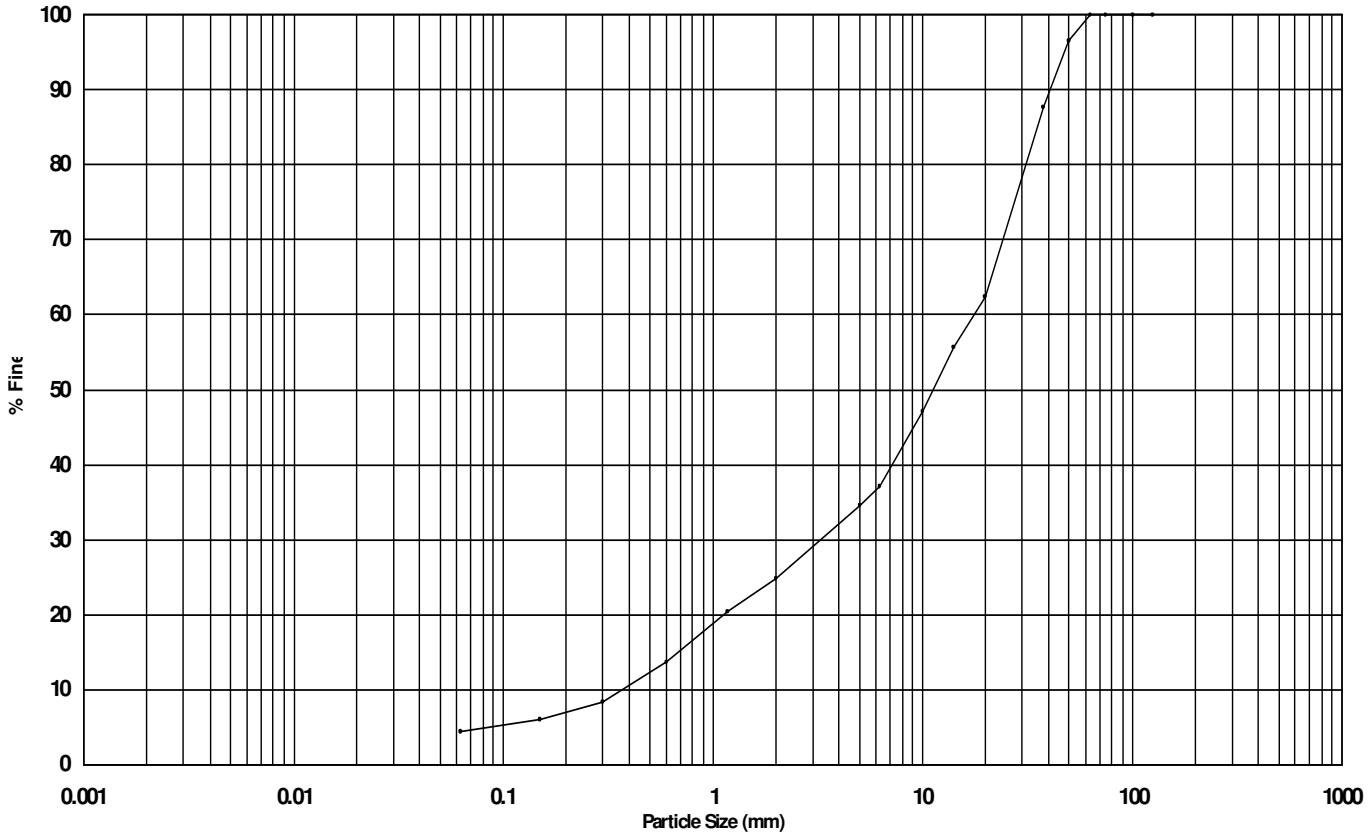
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72402
Sample Depth 4.30-4.70m
Sample Type B
Sample Ref C30424

Sample Description

Light brown very sandy slightly clayey GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	4
SAND	21
GRAVEL	75
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	88
20 mm	62
14 mm	56
10 mm	47
6.3 mm	37
5 mm	35
2 mm	25
1.18 mm	20
600 µm	14
300 µm	8
150 µm	6

Size	% Finer
63 µm	4

Uniformity Coefficient
47.67

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

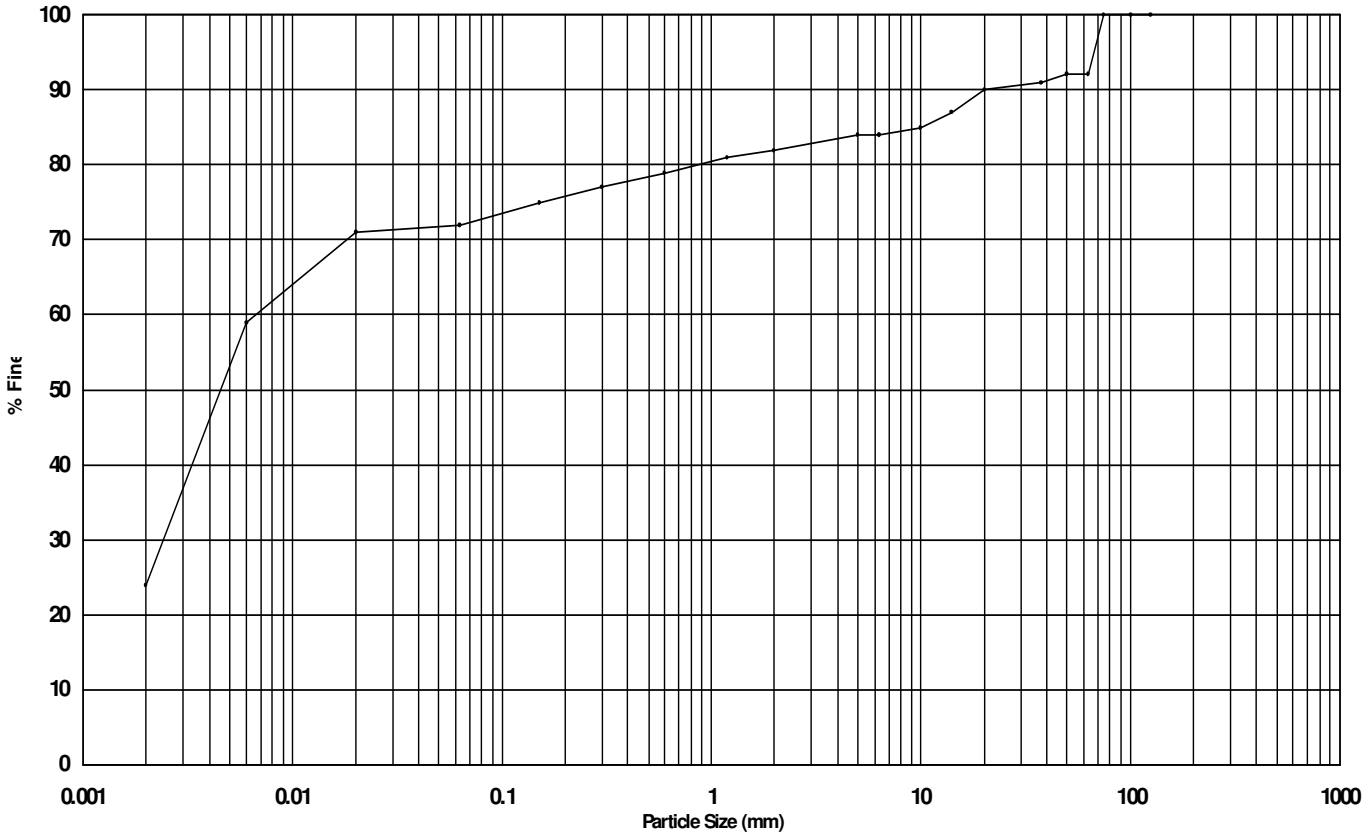
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole	BH72403
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	C30407

Sample Description

PROBABLE MADE GROUND: Cream slightly sandy slightly gravelly silt with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	24
SILT	48
SAND	10
GRAVEL	10
COBBLES	8
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	92
50 mm	92
37.5 mm	91
20 mm	90
14 mm	87
10 mm	85
6.3 mm	84
5 mm	84
2 mm	82
1.18 mm	81
600 µm	79
300 µm	77
150 µm	75

Size	% Finer
63 µm	72
20 µm	71
6 µm	59
2 µm	24

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

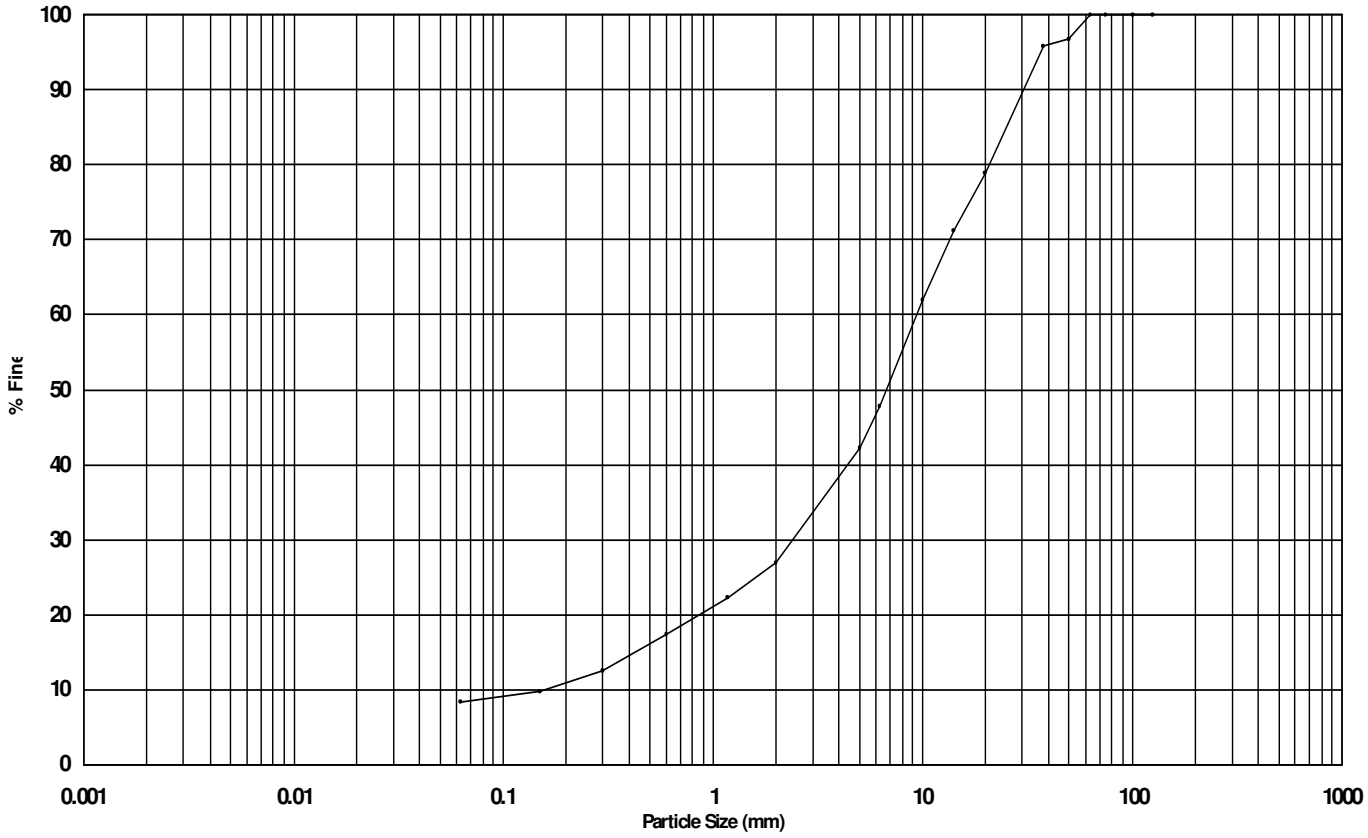
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72403
Sample Depth 3.30-3.75m
Sample Type B
Sample Ref C30406

Sample Description

Brown sandy slightly clayey GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	8
SAND	19
GRAVEL	73
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	96
20 mm	79
14 mm	71
10 mm	62
6.3 mm	48
5 mm	42
2 mm	27
1.18 mm	22
600 µm	17
300 µm	13
150 µm	10

Size	% Finer
63 µm	8

Uniformity Coefficient
58.59

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

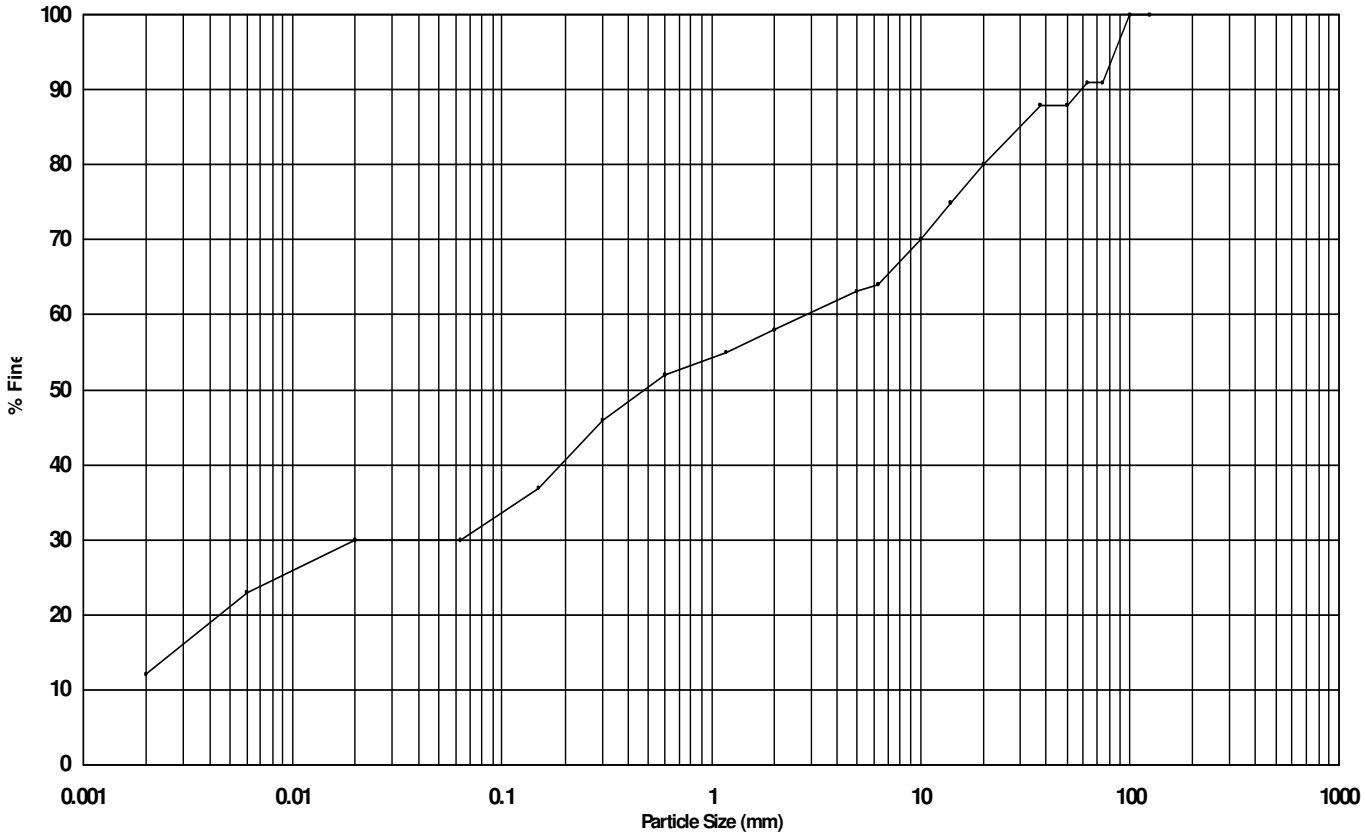
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole	BH72404
Sample Depth	1.20-1.65m
Sample Type	B
Sample Ref	C30534

Sample Description

PROBABLE MADE GROUND: Greyish brown slightly sandy slightly gravelly clay with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	12
SILT	18
SAND	28
GRAVEL	33
COBBLES	9
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	91
63 mm	91
50 mm	88
37.5 mm	88
20 mm	80
14 mm	75
10 mm	70
6.3 mm	64
5 mm	63
2 mm	58
1.18 mm	55
600 µm	52
300 µm	46
150 µm	37

Size	% Finer
63 µm	30
20 µm	30
6 µm	23
2 µm	12

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

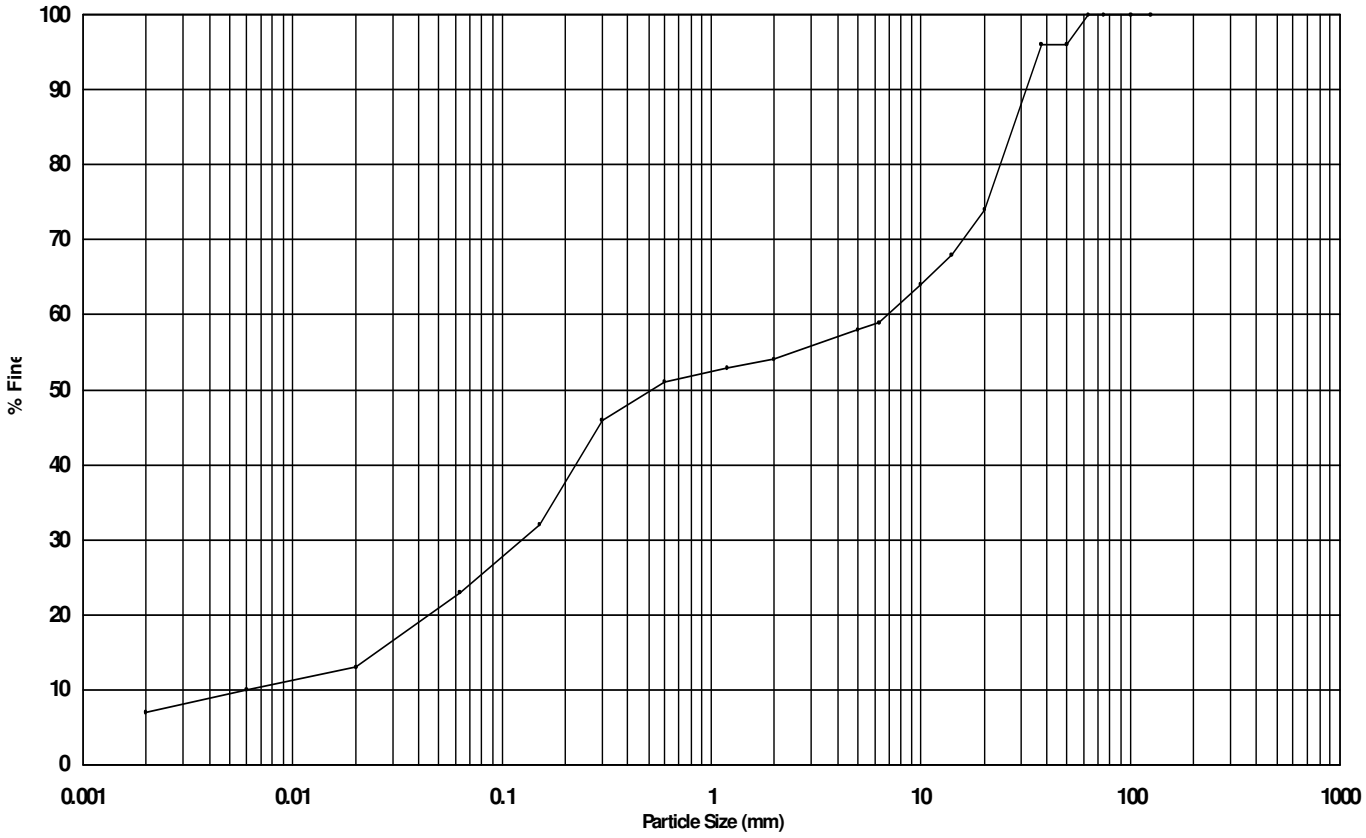
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72404
Sample Depth 2.40-2.80m
Sample Type B
Sample Ref C30531

Sample Description

Greyish green slightly sandy gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	7
SILT	16
SAND	31
GRAVEL	46
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	96
37.5 mm	96
20 mm	74
14 mm	68
10 mm	64
6.3 mm	59
5 mm	58
2 mm	54
1.18 mm	53
600 µm	51
300 µm	46
150 µm	32

Size	% Finer
63 µm	23
20 µm	13
6 µm	10
2 µm	7

Uniformity Coefficient
1008.74

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

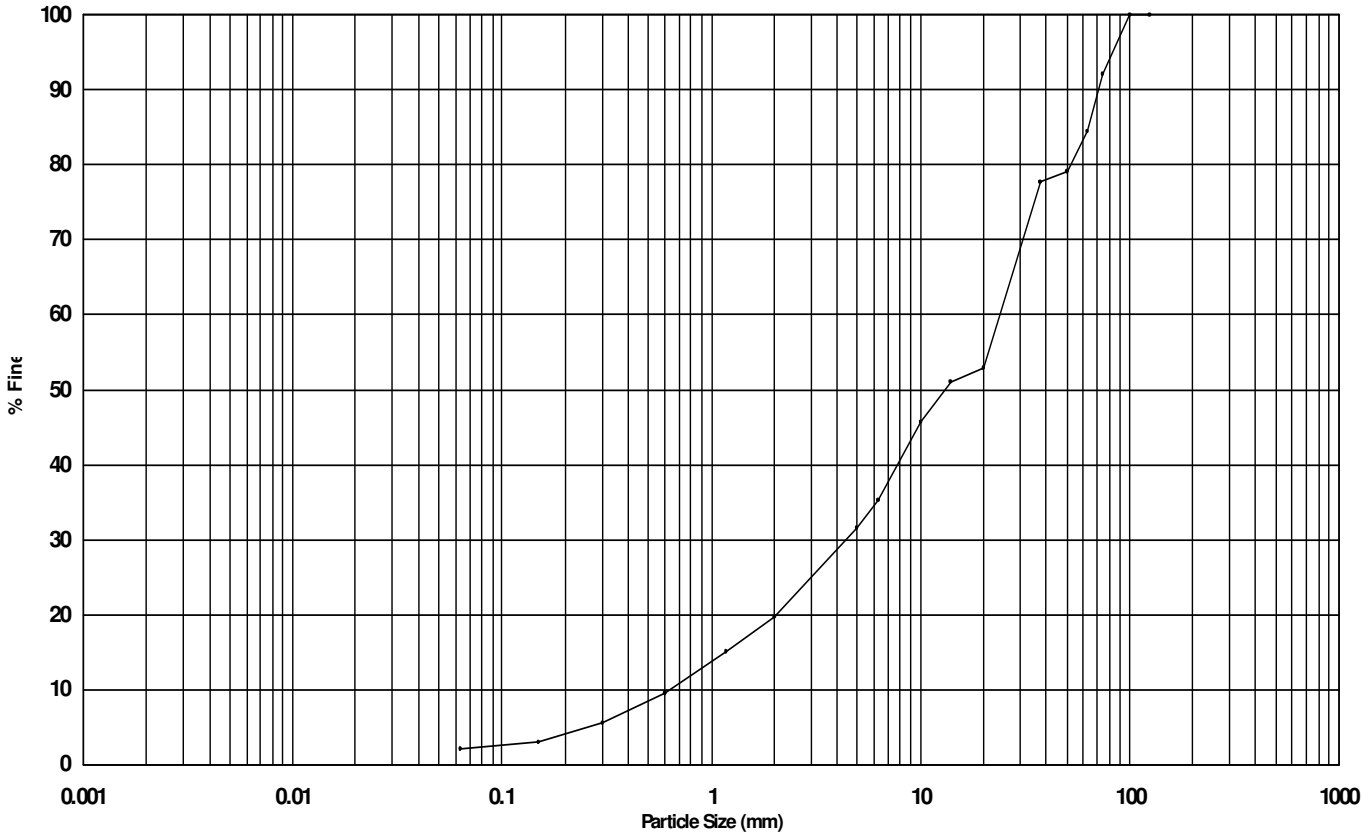
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole	BH72404
Sample Depth	4.30-4.75m
Sample Type	B
Sample Ref	C30516

Sample Description

Light brownish green sandy slightly clayey GRAVEL with a medium cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	2
SAND	18
GRAVEL	64
COBBLES	16
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	92
63 mm	84
50 mm	79
37.5 mm	78
20 mm	53
14 mm	51
10 mm	46
6.3 mm	35
5 mm	32
2 mm	20
1.18 mm	15
600 µm	9
300 µm	5
150 µm	3

Size	% Finer
63 µm	2

Uniformity Coefficient
37.48
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

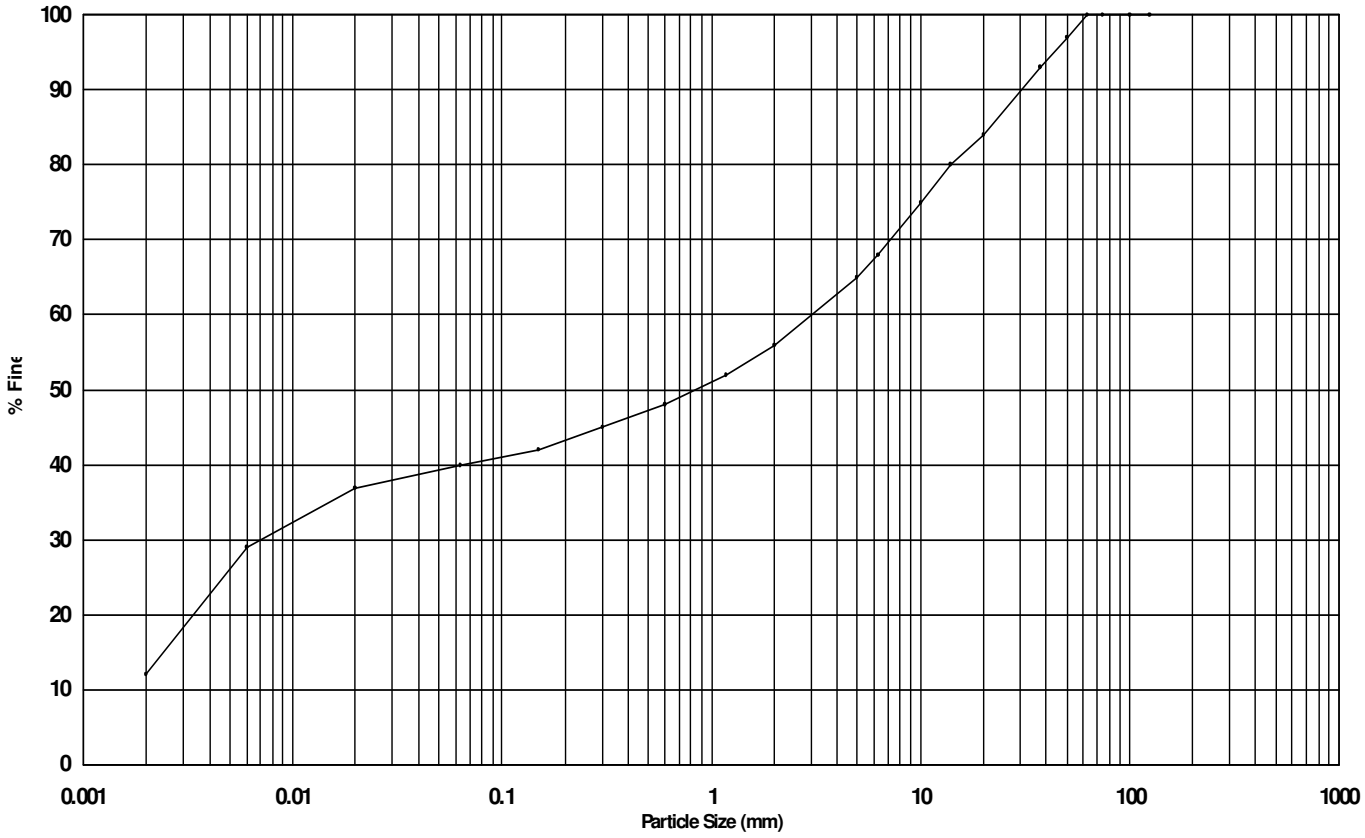
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole	BH72405
Sample Depth	1.20-1.70m
Sample Type	B
Sample Ref	C30497

Sample Description

PROBABLE MADE GROUND: Cream slightly sandy gravelly SILT.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	12
SILT	28
SAND	16
GRAVEL	44
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	93
20 mm	84
14 mm	80
10 mm	75
6.3 mm	68
5 mm	65
2 mm	56
1.18 mm	52
600 µm	48
300 µm	45
150 µm	42

Size	% Finer
63 µm	40
20 µm	37
6 µm	29
2 µm	12

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

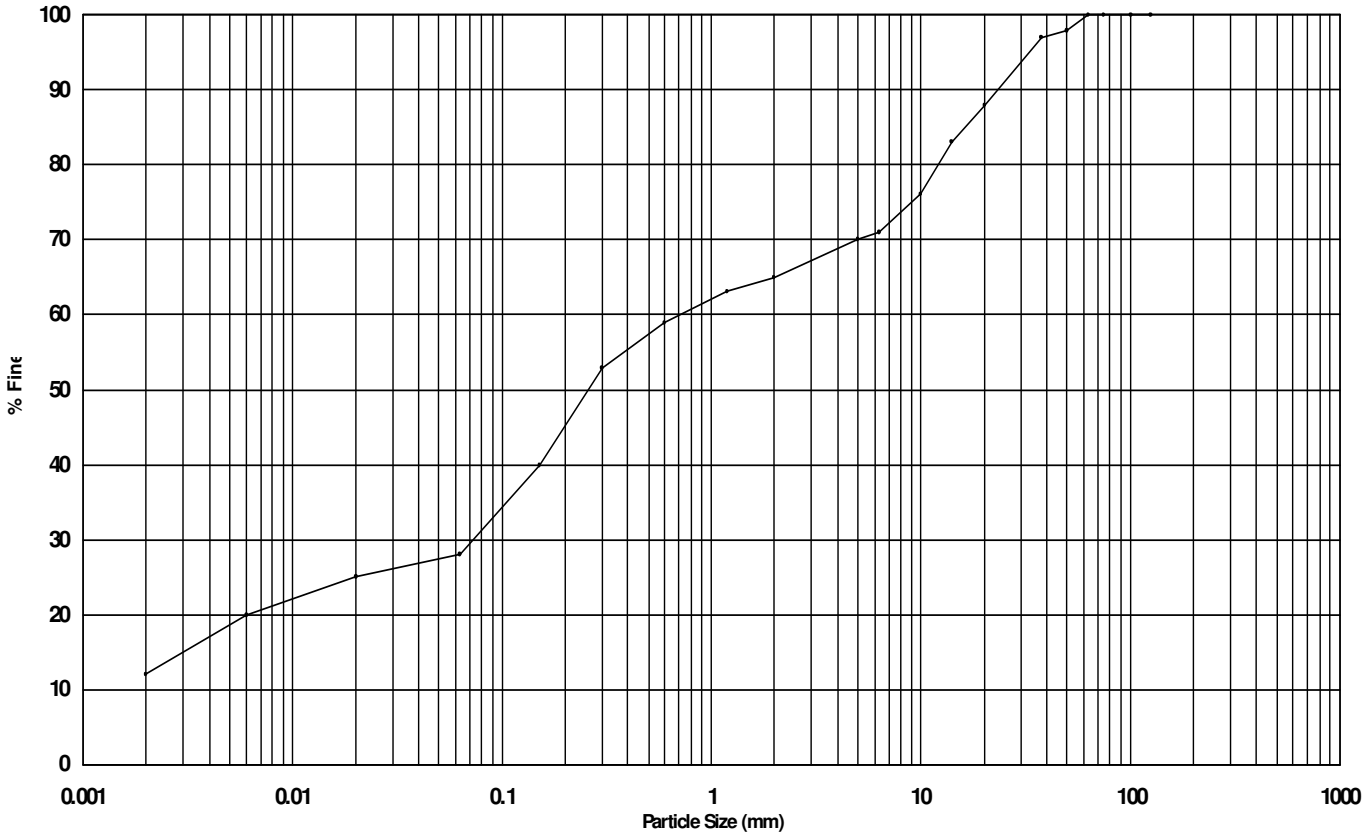
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole	BH72405
Sample Depth	3.60-4.00m
Sample Type	B
Sample Ref	C30493

Sample Description

Greenish grey mottled brown clayey SAND and GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	12
SILT	16
SAND	37
GRAVEL	35
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	98
37.5 mm	97
20 mm	88
14 mm	83
10 mm	76
6.3 mm	71
5 mm	70
2 mm	65
1.18 mm	63
600 µm	59
300 µm	53
150 µm	40

Size	% Finer
63 µm	28
20 µm	25
6 µm	20
2 µm	12

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

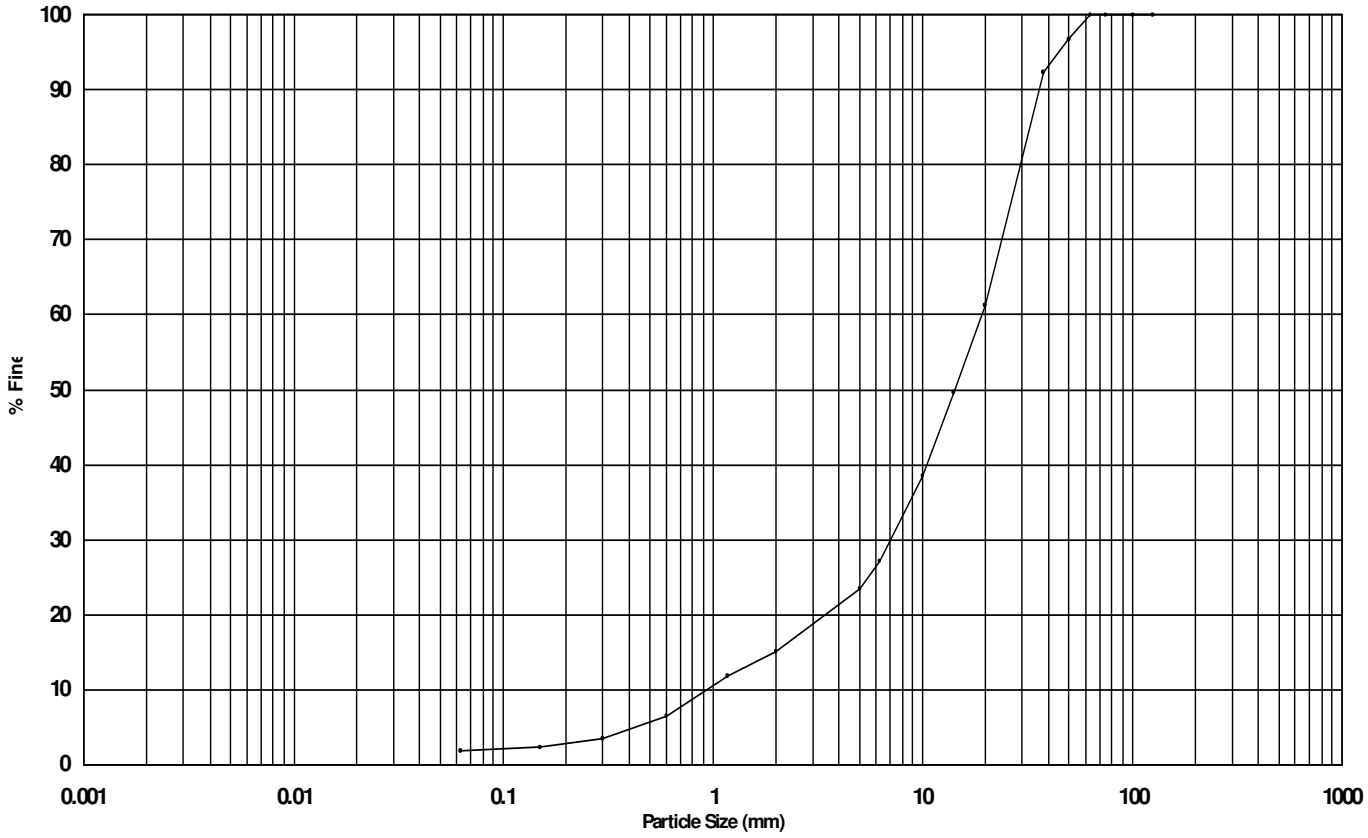
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72405
Sample Depth 4.80-5.30m
Sample Type B
Sample Ref C30494

Sample Description

Brown and grey sandy slightly silty GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	2
SAND	13
GRAVEL	85
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	92
20 mm	61
14 mm	50
10 mm	39
6.3 mm	27
5 mm	23
2 mm	15
1.18 mm	12
600 µm	6
300 µm	3
150 µm	2

Size	% Finer
63 µm	2

Uniformity Coefficient
20.38

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

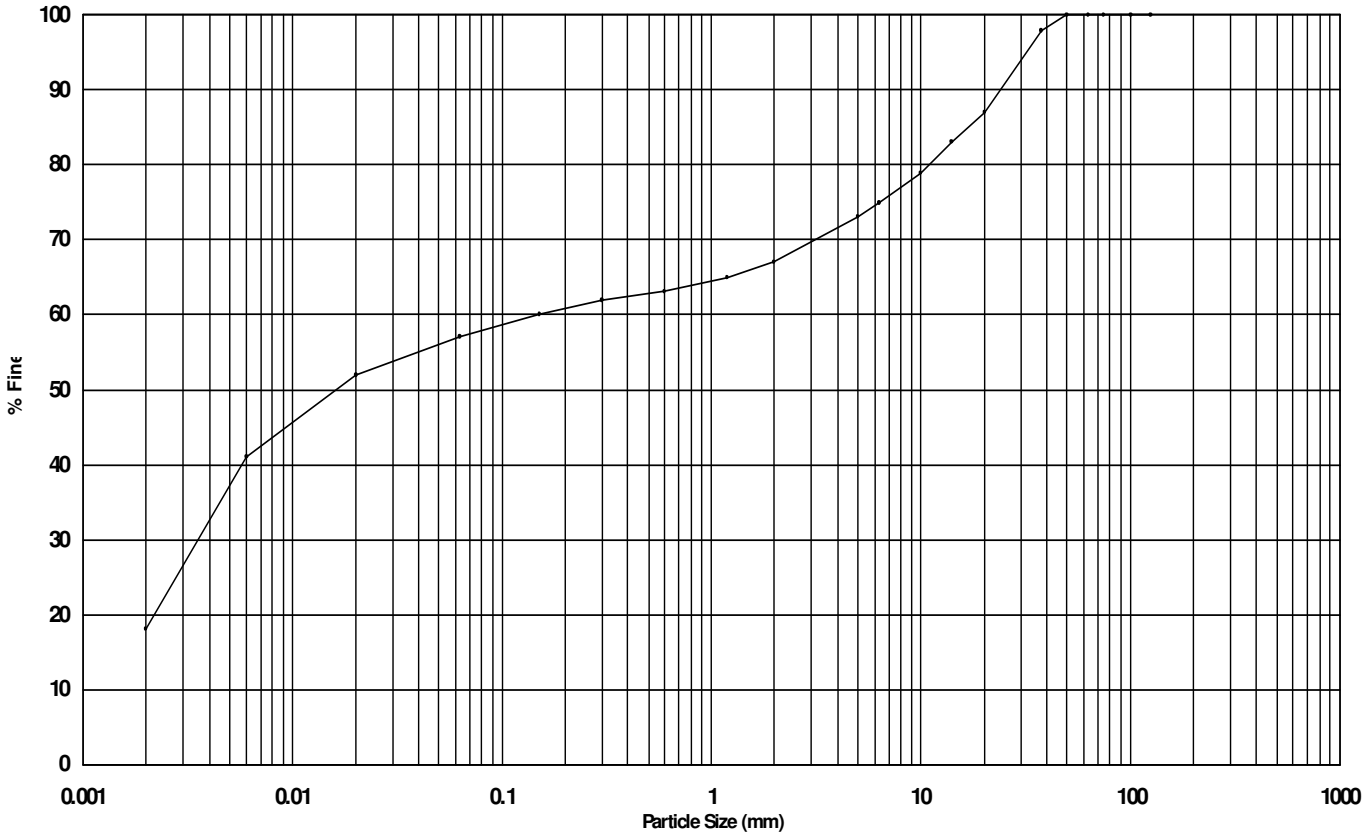
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72406
Sample Depth 1.30-1.80m
Sample Type B
Sample Ref C30554

Sample Description

MADE GROUND: Cream slightly sandy slightly gravelly silt.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	18
SILT	39
SAND	10
GRAVEL	33
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	98
20 mm	87
14 mm	83
10 mm	79
6.3 mm	75
5 mm	73
2 mm	67
1.18 mm	65
600 µm	63
300 µm	62
150 µm	60

Size	% Finer
63 µm	57
20 µm	52
6 µm	41
2 µm	18

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

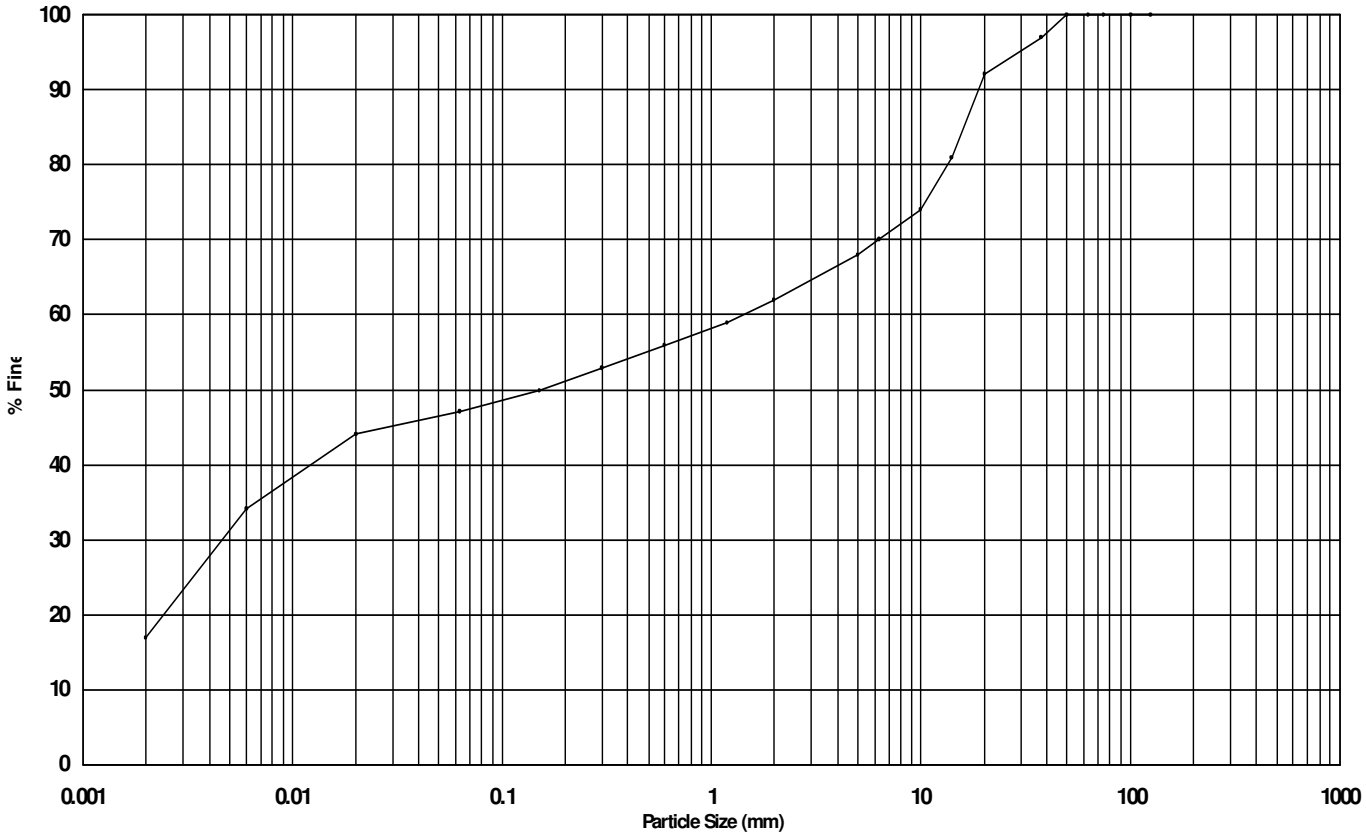
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole	BH72406
Sample Depth	4.30-4.80m
Sample Type	B
Sample Ref	C30555

Sample Description

POSSIBLE MADE GROUND: Greyish brown mottled grey slightly sandy gravelly CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	17
SILT	30
SAND	15
GRAVEL	38
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	97
20 mm	92
14 mm	81
10 mm	74
6.3 mm	70
5 mm	68
2 mm	62
1.18 mm	59
600 µm	56
300 µm	53
150 µm	50

Size	% Finer
63 µm	47
20 µm	44
6 µm	34
2 µm	17

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

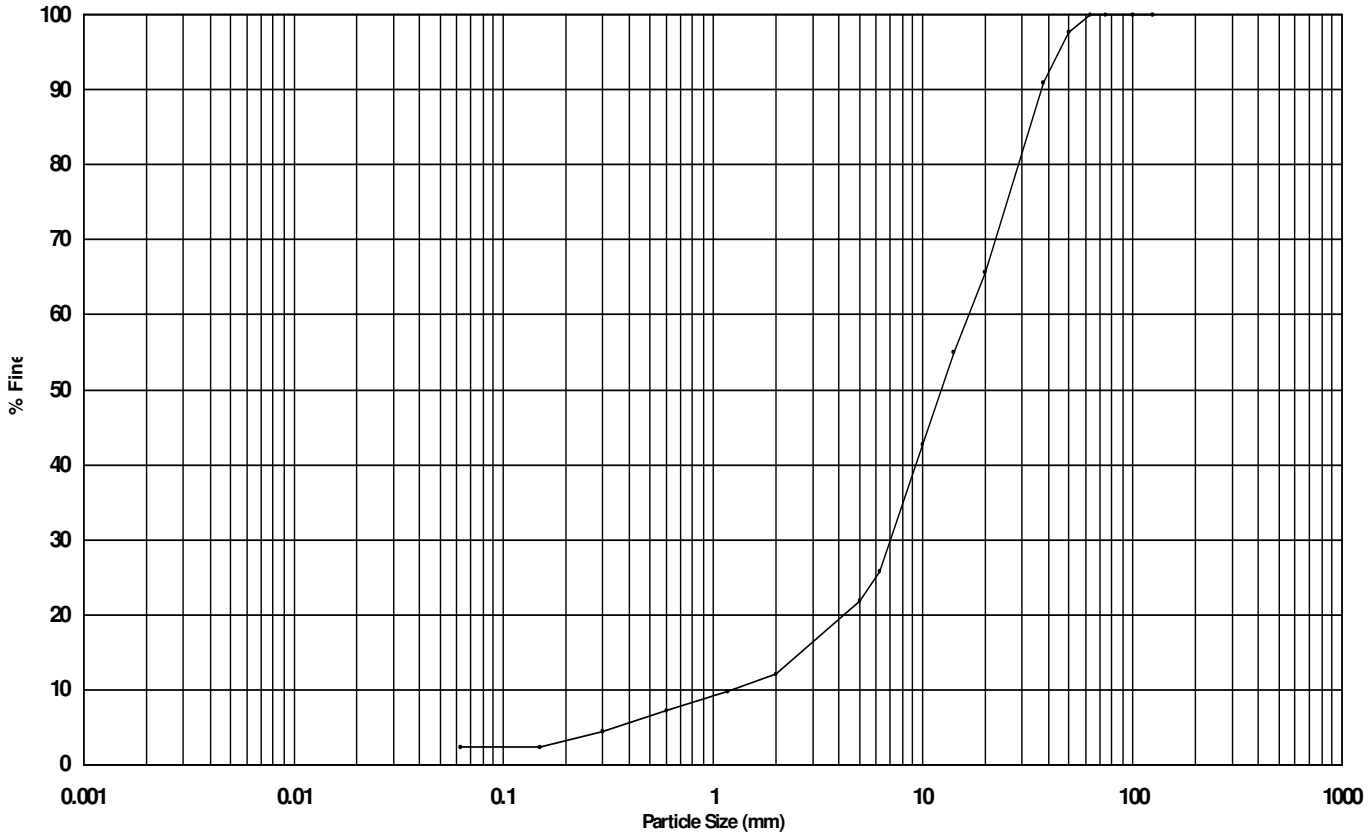
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72406
Sample Depth 6.70-7.20m
Sample Type B
Sample Ref C30527

Sample Description

Grey and brown sandy slightly silty GRAVEL.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	2
SAND	10
GRAVEL	88
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	98
37.5 mm	91
20 mm	66
14 mm	55
10 mm	43
6.3 mm	26
5 mm	22
2 mm	12
1.18 mm	10
600 µm	7
300 µm	4
150 µm	2

Size	% Finer
63 µm	2

Uniformity Coefficient
13.29

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

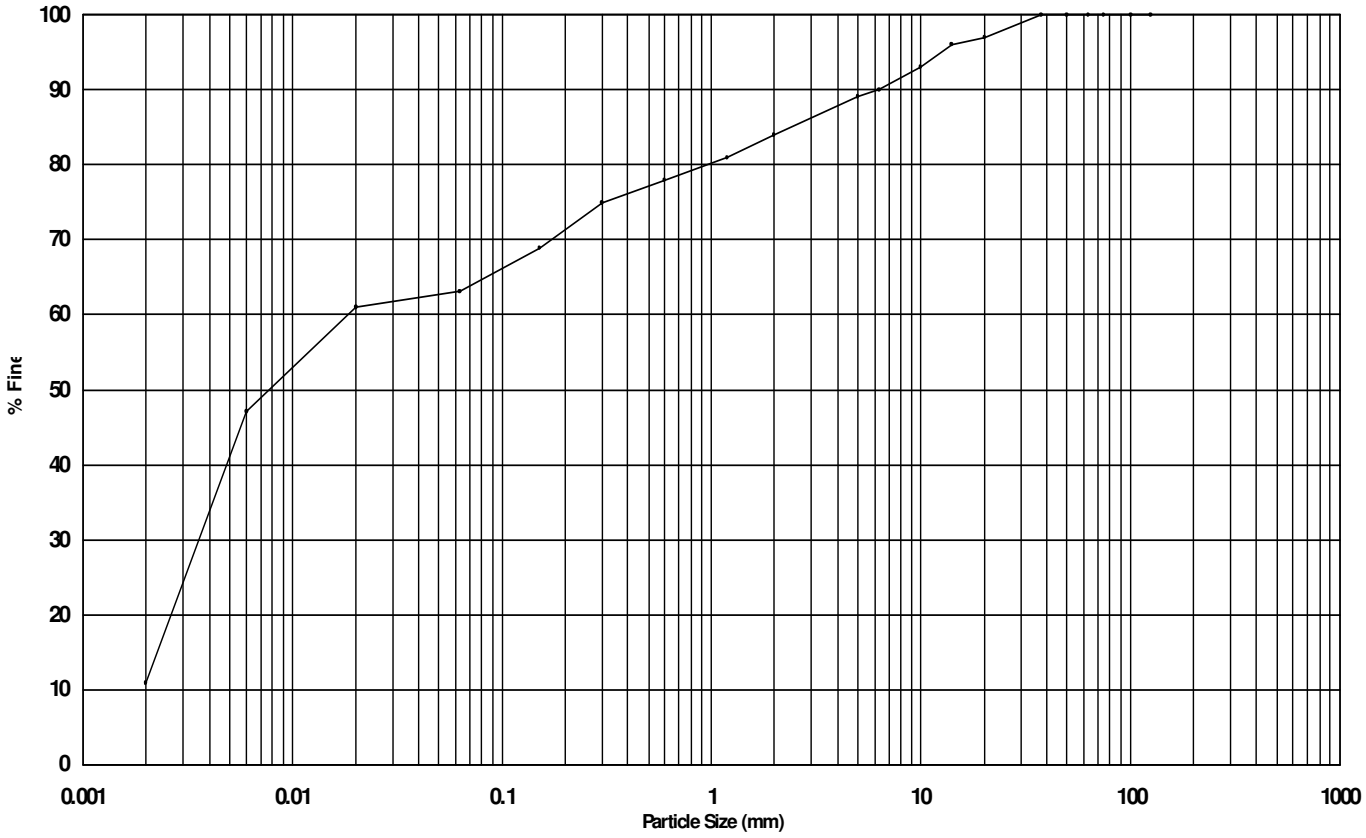
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72501
Sample Depth 1.20-1.65m
Sample Type B
Sample Ref C30528

Sample Description

PROBABLE MADE GROUND: Creamish white slightly sandy slightly gravelly silt.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	11
SILT	52
SAND	21
GRAVEL	16
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	97
14 mm	96
10 mm	93
6.3 mm	90
5 mm	89
2 mm	84
1.18 mm	81
600 µm	78
300 µm	75
150 µm	69

Size	% Finer
63 µm	63
20 µm	61
6 µm	47
2 µm	11

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

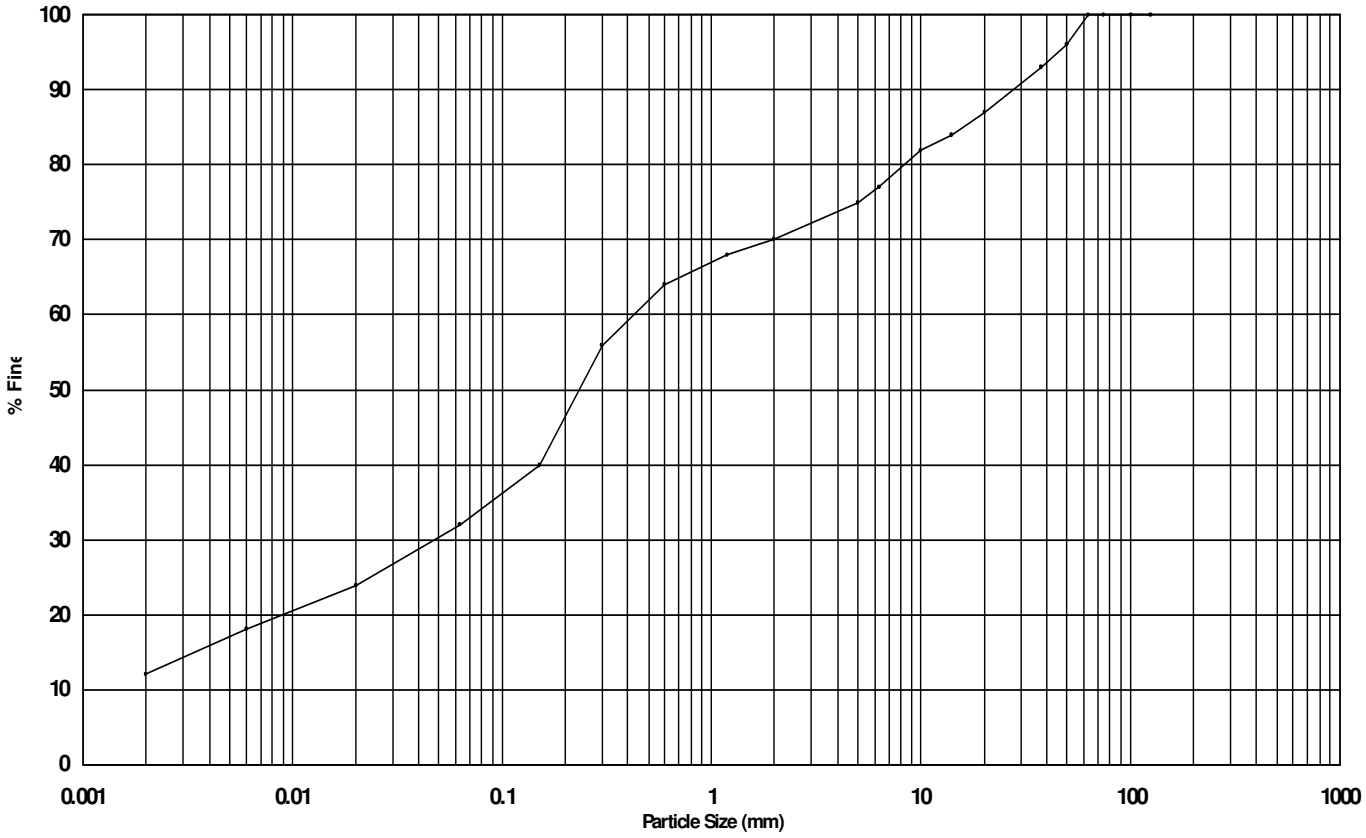
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72501
Sample Depth 3.20-3.65m
Sample Type B
Sample Ref C30530

Sample Description

Brownish green slightly gravelly sandy CLAY.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	12
SILT	20
SAND	38
GRAVEL	30
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	96
37.5 mm	93
20 mm	87
14 mm	84
10 mm	82
6.3 mm	77
5 mm	75
2 mm	70
1.18 mm	68
600 µm	64
300 µm	56
150 µm	40

Size	% Finer
63 µm	32
20 µm	24
6 µm	18
2 µm	12

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

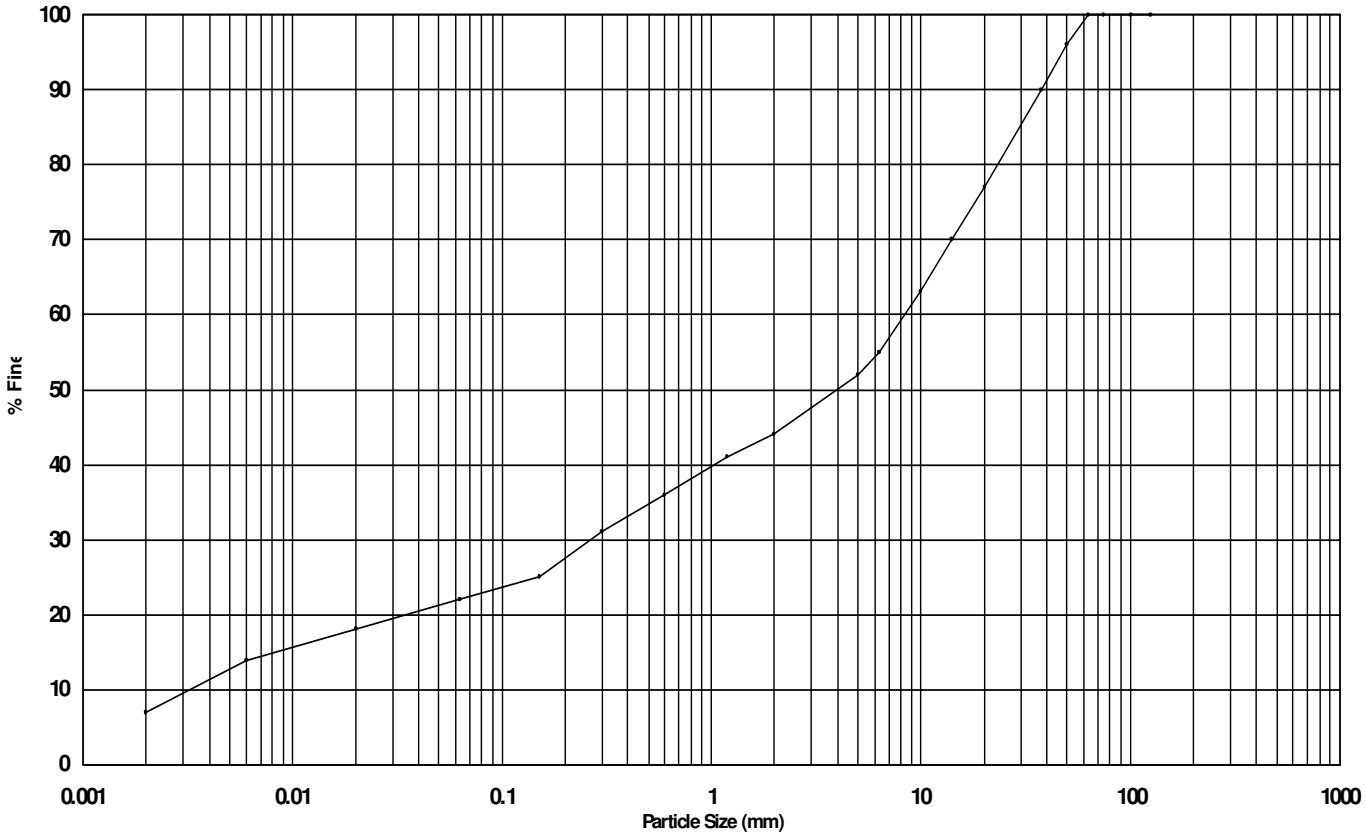
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72501
Sample Depth 4.30-4.60m
Sample Type B
Sample Ref C30518

Sample Description

Brownish green very sandy very clayey GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	7
SILT	15
SAND	22
GRAVEL	56
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	96
37.5 mm	90
20 mm	77
14 mm	70
10 mm	63
6.3 mm	55
5 mm	52
2 mm	44
1.18 mm	41
600 µm	36
300 µm	31
150 µm	25

Size	% Finer
63 µm	22
20 µm	18
6 µm	14
2 µm	7

Uniformity Coefficient
2703.06

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

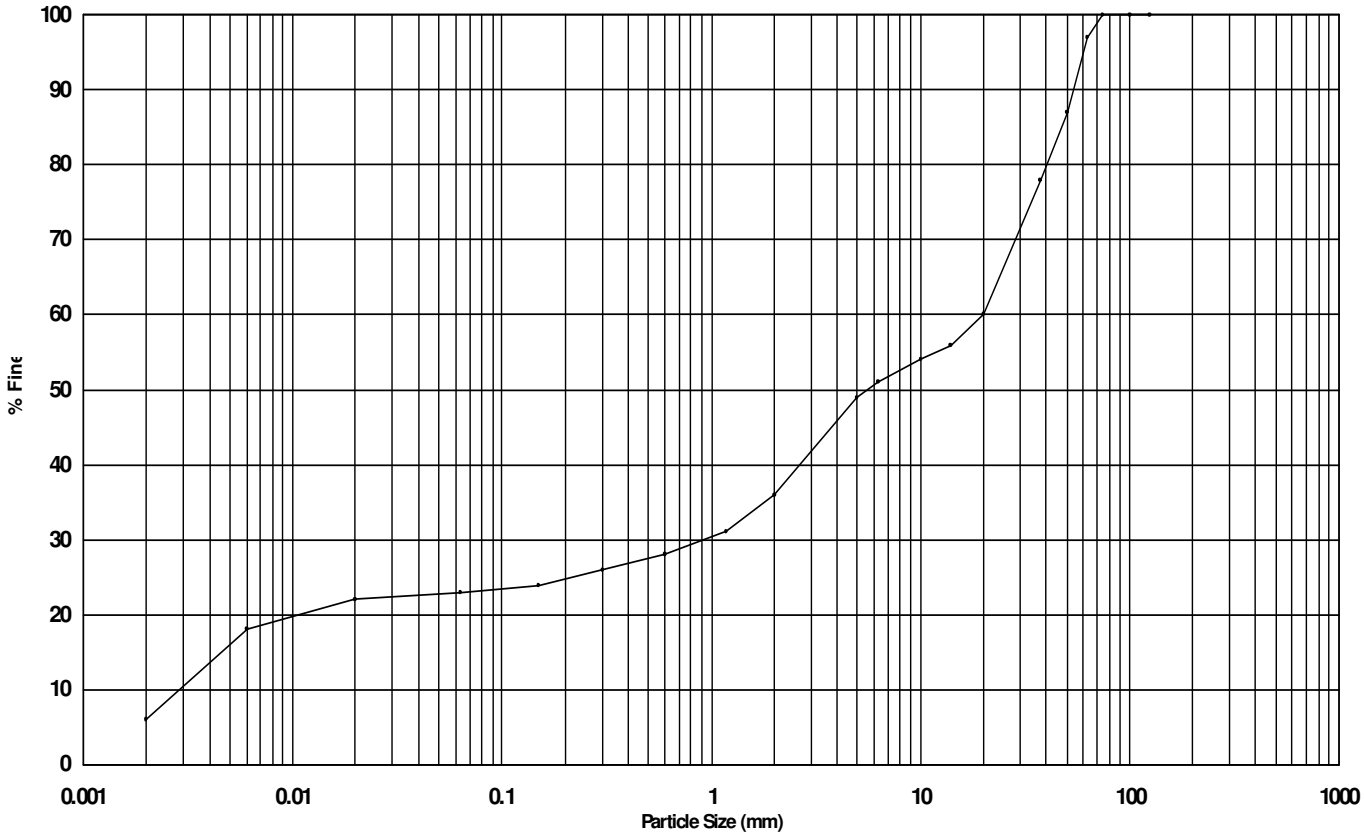
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72501
Sample Depth 6.90-7.90m
Sample Type B
Sample Ref C30526

Sample Description

CHALK, recovered as sandy very silty gravel with a low cobble content..



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	6
SILT	17
SAND	13
GRAVEL	61
COBBLES	3
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	97
50 mm	87
37.5 mm	78
20 mm	60
14 mm	56
10 mm	54
6.3 mm	51
5 mm	49
2 mm	36
1.18 mm	31
600 µm	28
300 µm	26
150 µm	24

Size	% Finer
63 µm	23
20 µm	22
6 µm	18
2 µm	6

Uniformity Coefficient
6862.13

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

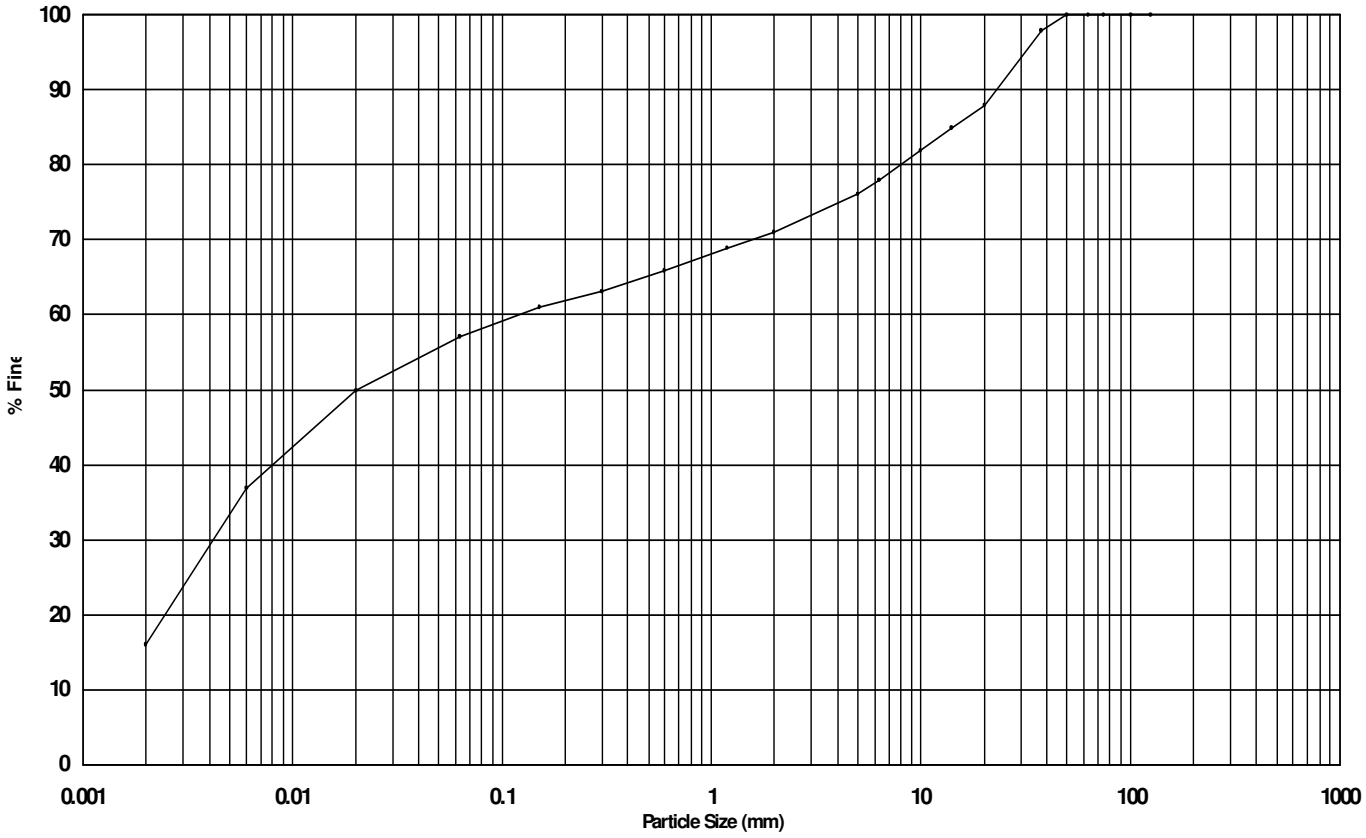
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72502
Sample Depth 1.20-1.70m
Sample Type B
Sample Ref C30805

Sample Description

PROBABLE MADE GROUND: White, locally light brown, slightly sandy slightly gravelly silt.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	16
SILT	41
SAND	14
GRAVEL	29
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	98
20 mm	88
14 mm	85
10 mm	82
6.3 mm	78
5 mm	76
2 mm	71
1.18 mm	69
600 µm	66
300 µm	63
150 µm	61

Size	% Finer
63 µm	57
20 µm	50
6 µm	37
2 µm	16

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

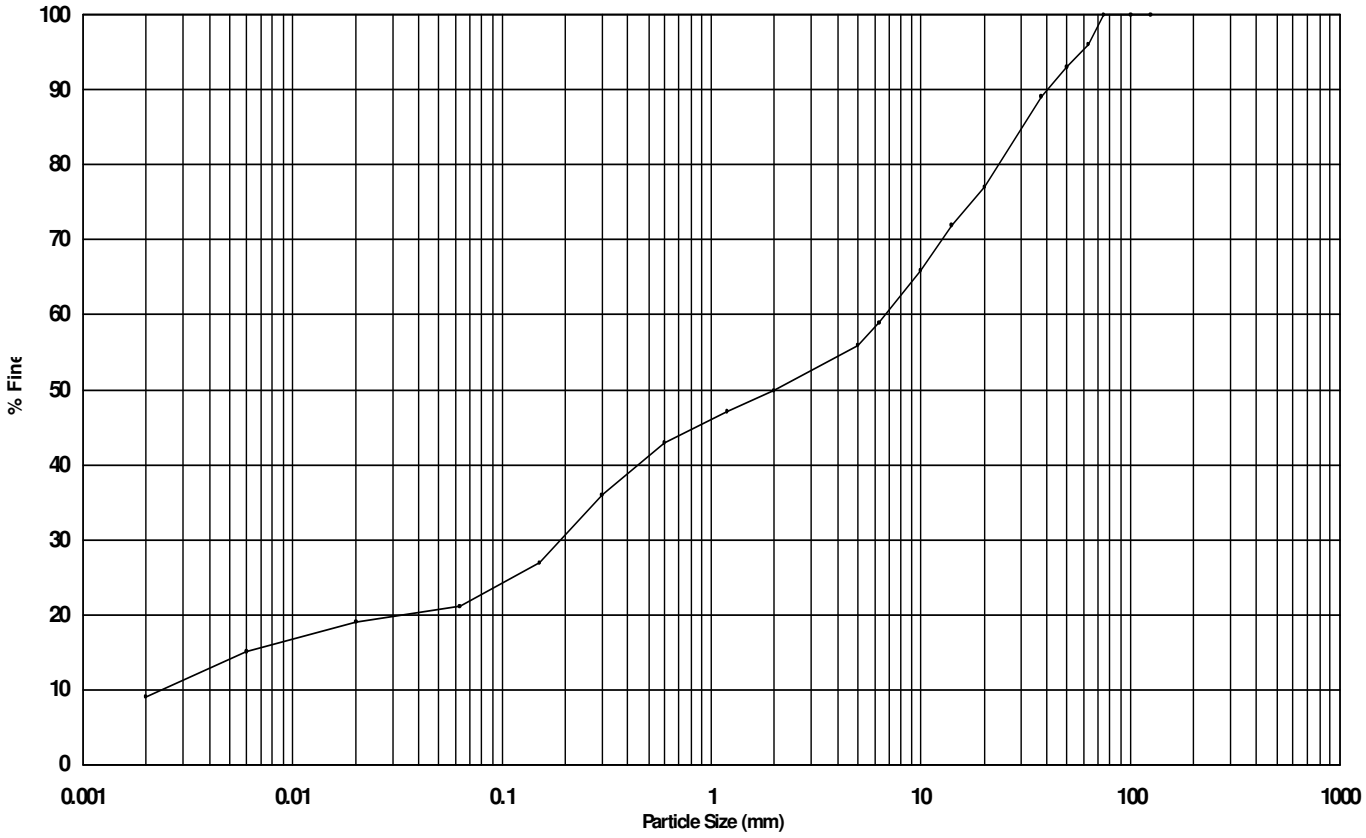
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72502
Sample Depth 3.20-3.70m
Sample Type B
Sample Ref C30799

Sample Description

Greyish brown slightly sandy gravelly CLAY with a low cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	9
SILT	12
SAND	29
GRAVEL	46
COBBLES	4
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	96
50 mm	93
37.5 mm	89
20 mm	77
14 mm	72
10 mm	66
6.3 mm	59
5 mm	56
2 mm	50
1.18 mm	47
600 µm	43
300 µm	36
150 µm	27

Size	% Finer
63 µm	21
20 µm	19
6 µm	15
2 µm	9

Uniformity Coefficient
2838.41

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

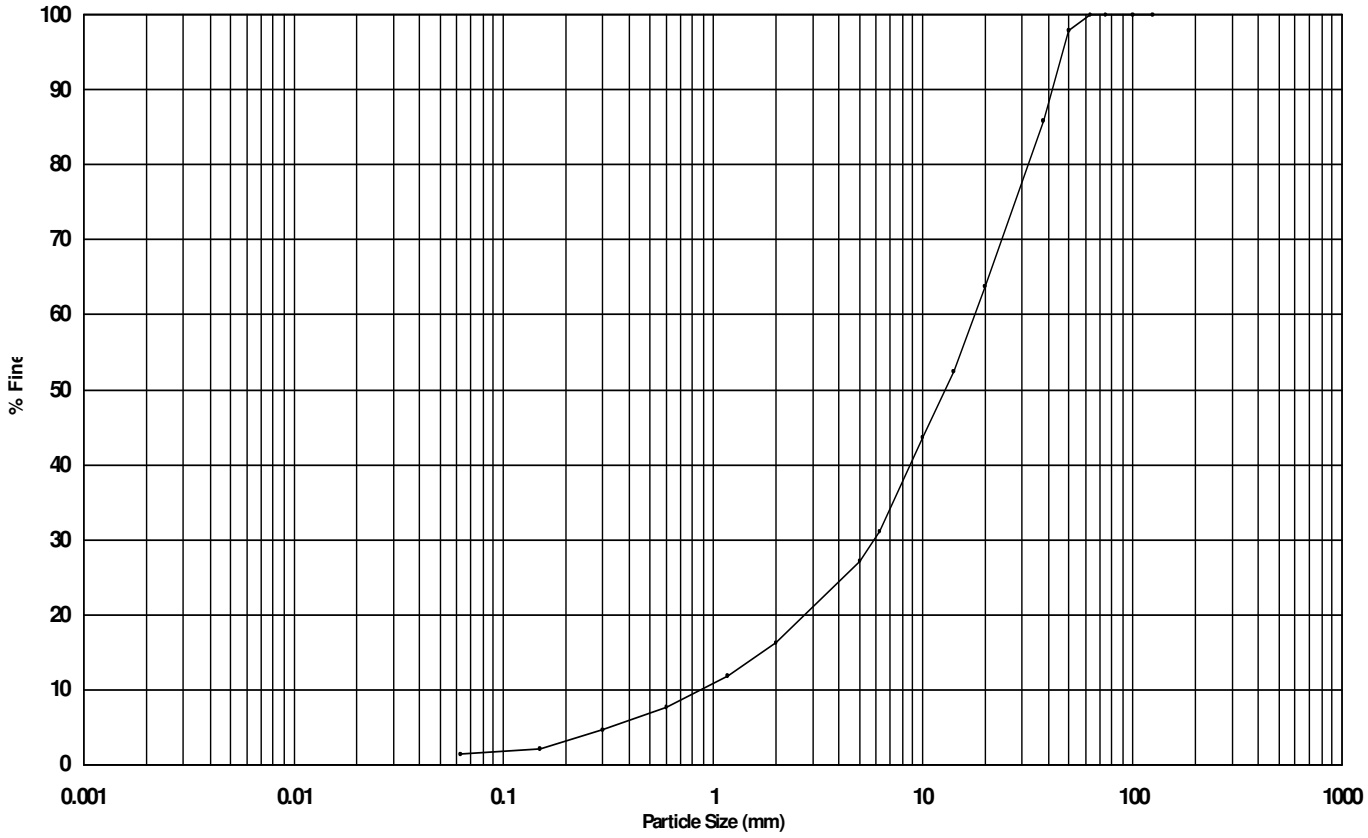
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole	BH72502
Sample Depth	4.30-4.80m
Sample Type	B
Sample Ref	C30803

Sample Description

Greyish brown sandy GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	1
SAND	15
GRAVEL	84
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	98
37.5 mm	86
20 mm	64
14 mm	52
10 mm	44
6.3 mm	31
5 mm	27
2 mm	16
1.18 mm	12
600 µm	8
300 µm	5
150 µm	2

Size	% Finer
63 µm	1

Uniformity Coefficient
20.21

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

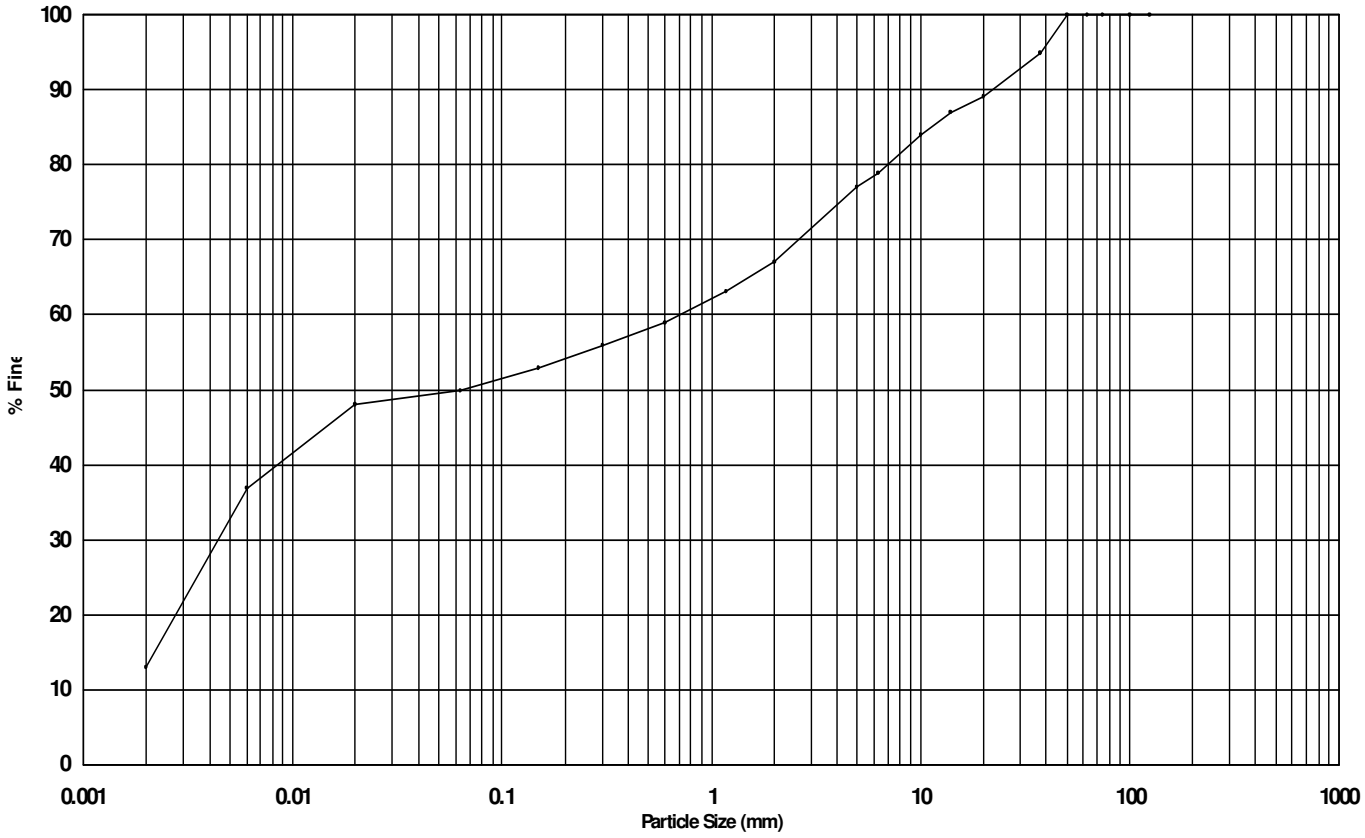
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72504
Sample Depth 1.50-1.60m
Sample Type B
Sample Ref C30164

Sample Description

PROBABLE MADE GROUND: White slightly sandy slightly gravelly silt.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	13
SILT	37
SAND	17
GRAVEL	33
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	95
20 mm	89
14 mm	87
10 mm	84
6.3 mm	79
5 mm	77
2 mm	67
1.18 mm	63
600 µm	59
300 µm	56
150 µm	53

Size	% Finer
63 µm	50
20 µm	48
6 µm	37
2 µm	13

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

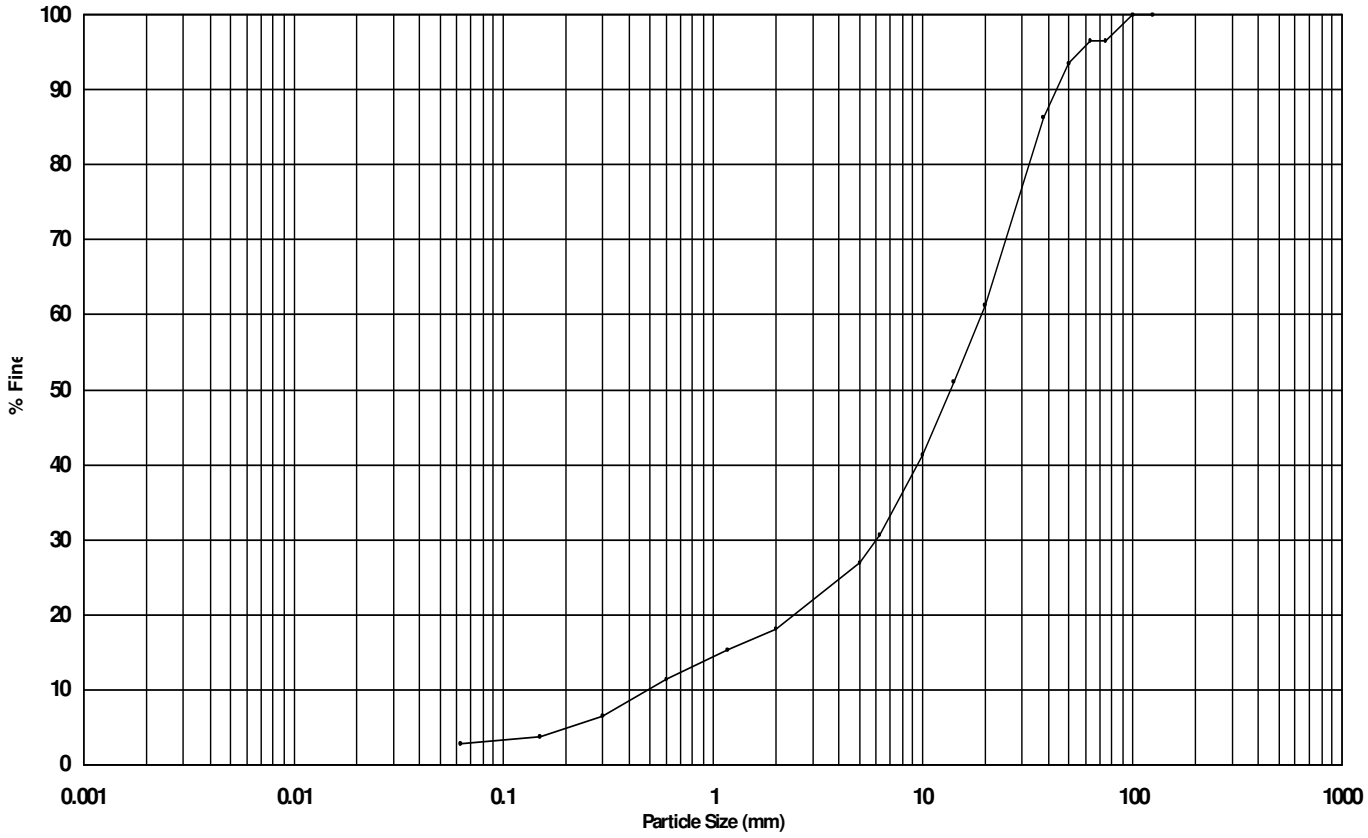
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72504
Sample Depth 3.10-3.60m
Sample Type B
Sample Ref C30409

Sample Description

Light greenish grey sandy slightly clayey GRAVEL with a low cobble content.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	3
SAND	15
GRAVEL	79
COBBLES	3
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	97
63 mm	97
50 mm	94
37.5 mm	86
20 mm	61
14 mm	51
10 mm	41
6.3 mm	31
5 mm	27
2 mm	18
1.18 mm	15
600 µm	11
300 µm	6
150 µm	4

Size	% Finer
63 µm	3

Uniformity Coefficient
39.02

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

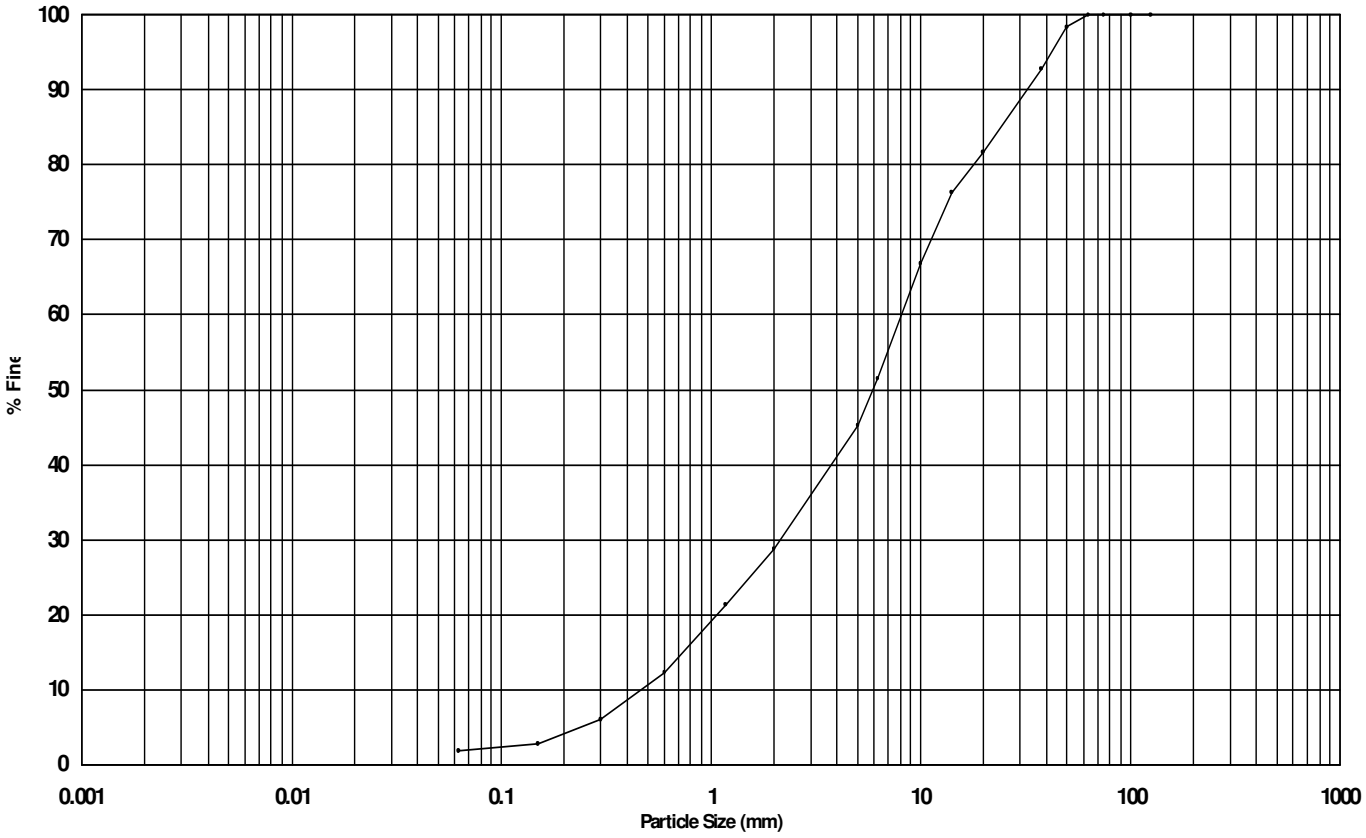
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72504
Sample Depth 4.10-4.55m
Sample Type B
Sample Ref C30410

Sample Description

Light brownish grey very sandy GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
SILT (including CLAY)	2
SAND	27
GRAVEL	71
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	98
37.5 mm	93
20 mm	82
14 mm	76
10 mm	67
6.3 mm	52
5 mm	45
2 mm	29
1.18 mm	21
600 µm	12
300 µm	6
150 µm	3

Size	% Finer
63 µm	2

Uniformity Coefficient
17.54
Sieving Method
Wet sieve
Fine Particle Analysis

Method	
Pre-treated with	
% loss on Pre-treatment	
Particle Density	

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

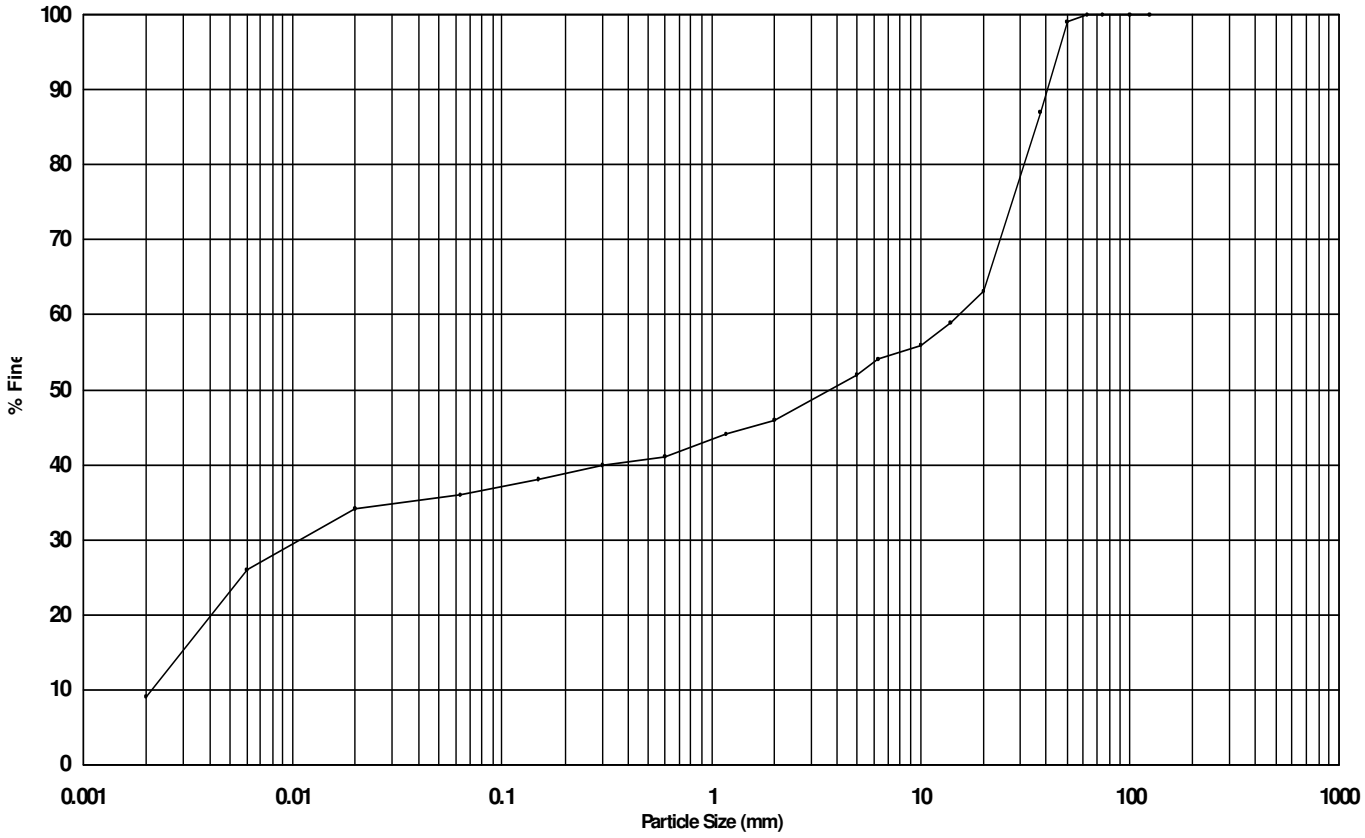
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole BH72504
Sample Depth 9.80-10.50m
Sample Type B
Sample Ref C30420

Sample Description

CHALK, recovered as sandy very silty gravel.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	9
SILT	27
SAND	10
GRAVEL	54
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	99
37.5 mm	87
20 mm	63
14 mm	59
10 mm	56
6.3 mm	54
5 mm	52
2 mm	46
1.18 mm	44
600 µm	41
300 µm	40
150 µm	38

Size	% Finer
63 µm	36
20 µm	34
6 µm	26
2 µm	9

Uniformity Coefficient
6742.26

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

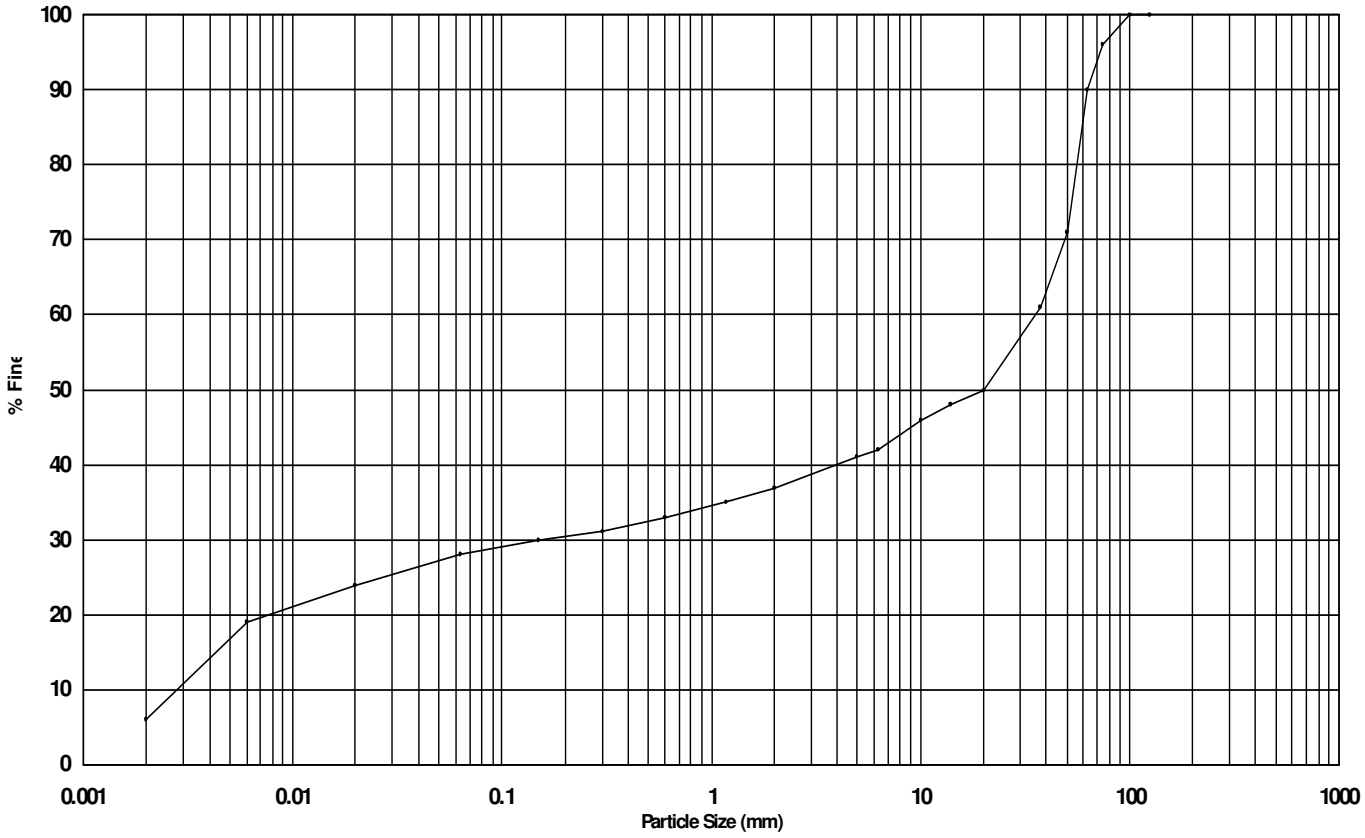
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole STP72401
Sample Depth 0.70-1.20m
Sample Type B
Sample Ref C30498

Sample Description

CHALK, recovered as sandy very silty gravel with a medium cobble content.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	6
SILT	22
SAND	9
GRAVEL	53
COBBLES	10
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	96
63 mm	90
50 mm	71
37.5 mm	61
20 mm	50
14 mm	48
10 mm	46
6.3 mm	42
5 mm	41
2 mm	37
1.18 mm	35
600 µm	33
300 µm	31
150 µm	30

Size	% Finer
63 µm	28
20 µm	24
6 µm	19
2 µm	6

Uniformity Coefficient
12723.56

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

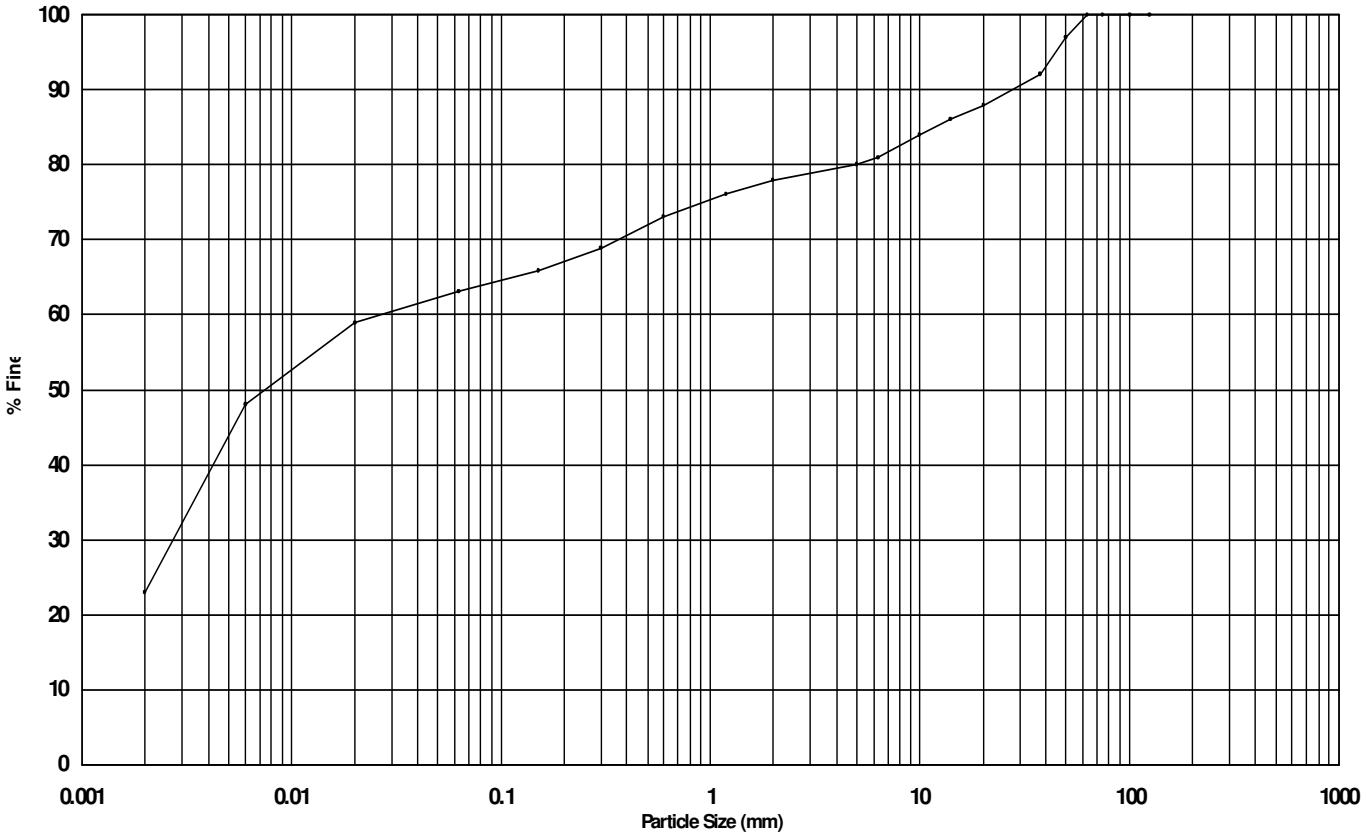
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole STP72402
Sample Depth 0.80-1.20m
Sample Type B
Sample Ref C30500

Sample Description

PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	23
SILT	40
SAND	15
GRAVEL	22
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	92
20 mm	88
14 mm	86
10 mm	84
6.3 mm	81
5 mm	80
2 mm	78
1.18 mm	76
600 µm	73
300 µm	69
150 µm	66

Size	% Finer
63 µm	63
20 µm	59
6 µm	48
2 µm	23

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

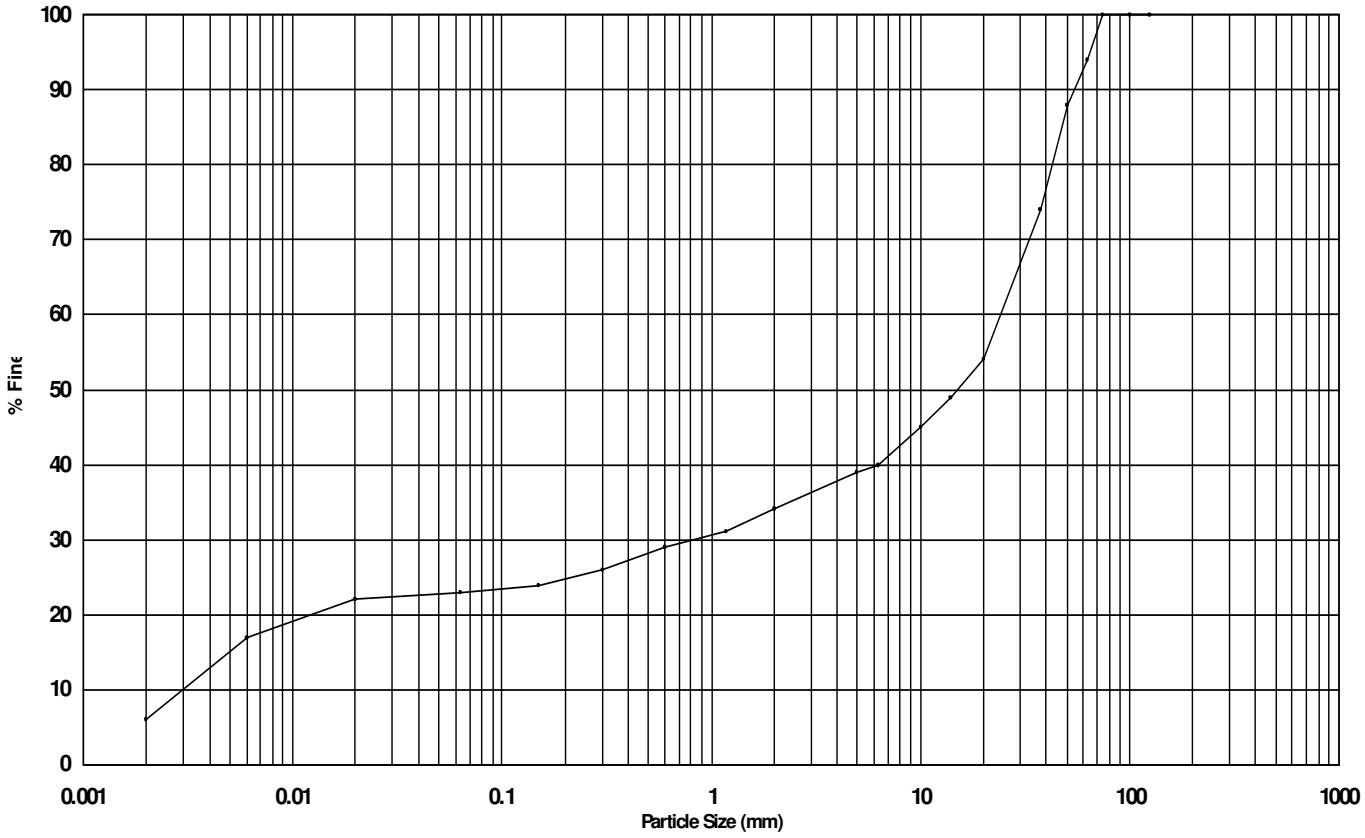
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole STP72403
Sample Depth 1.00-1.20m
Sample Type B
Sample Ref C30553

Sample Description

PROBABLE MADE GROUND: Light grey sandy very silty gravel with a medium cobble content.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	6
SILT	17
SAND	11
GRAVEL	60
COBBLES	6
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	94
50 mm	88
37.5 mm	74
20 mm	54
14 mm	49
10 mm	45
6.3 mm	40
5 mm	39
2 mm	34
1.18 mm	31
600 µm	29
300 µm	26
150 µm	24

Size	% Finer
63 µm	23
20 µm	22
6 µm	17
2 µm	6

Uniformity Coefficient
8255.81
Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

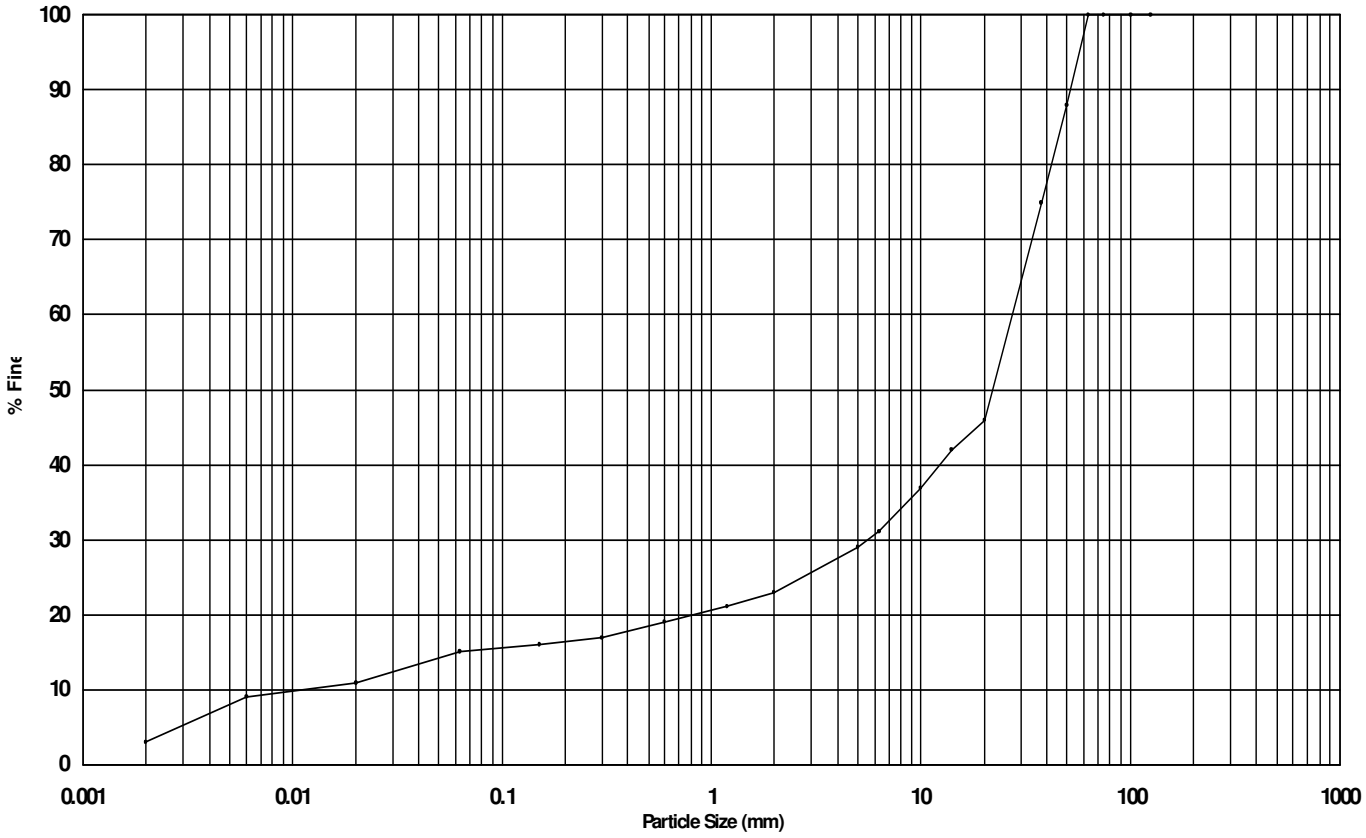
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole STP72404
Sample Depth 0.80-1.20m
Sample Type B
Sample Ref C30544

Sample Description

MADE GROUND: Light greyish brown sandy silty gravel.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	3
SILT	12
SAND	8
GRAVEL	77
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	88
37.5 mm	75
20 mm	46
14 mm	42
10 mm	37
6.3 mm	31
5 mm	29
2 mm	23
1.18 mm	21
600 µm	19
300 µm	17
150 µm	16

Size	% Finer
63 µm	15
20 µm	11
6 µm	9
2 µm	3

Uniformity Coefficient
2333.75

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

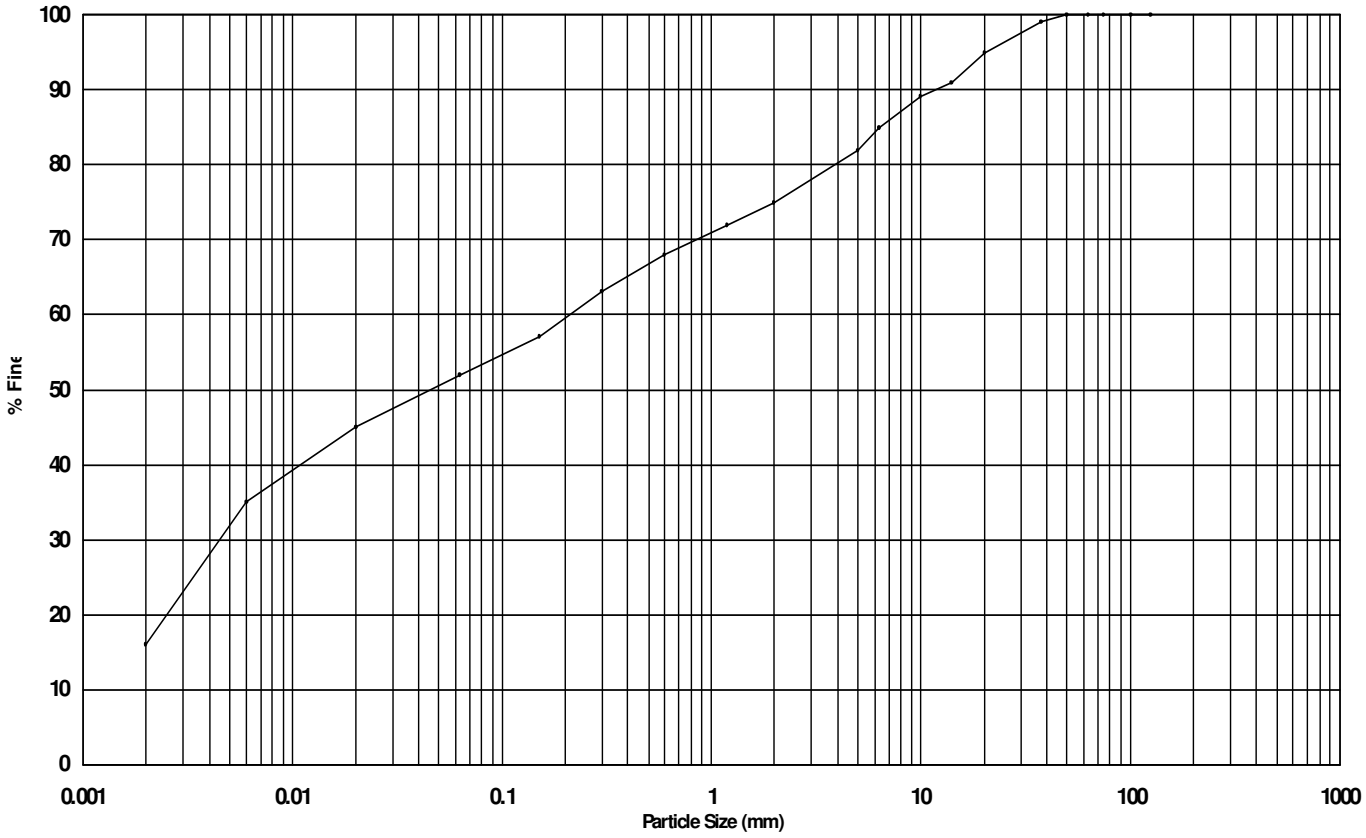
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole	STP72501
Sample Depth	0.50-1.20m
Sample Type	B
Sample Ref	C30521

Sample Description

MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	16
SILT	36
SAND	23
GRAVEL	25
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	99
20 mm	95
14 mm	91
10 mm	89
6.3 mm	85
5 mm	82
2 mm	75
1.18 mm	72
600 µm	68
300 µm	63
150 µm	57

Size	% Finer
63 µm	52
20 µm	45
6 µm	35
2 µm	16

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.31
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

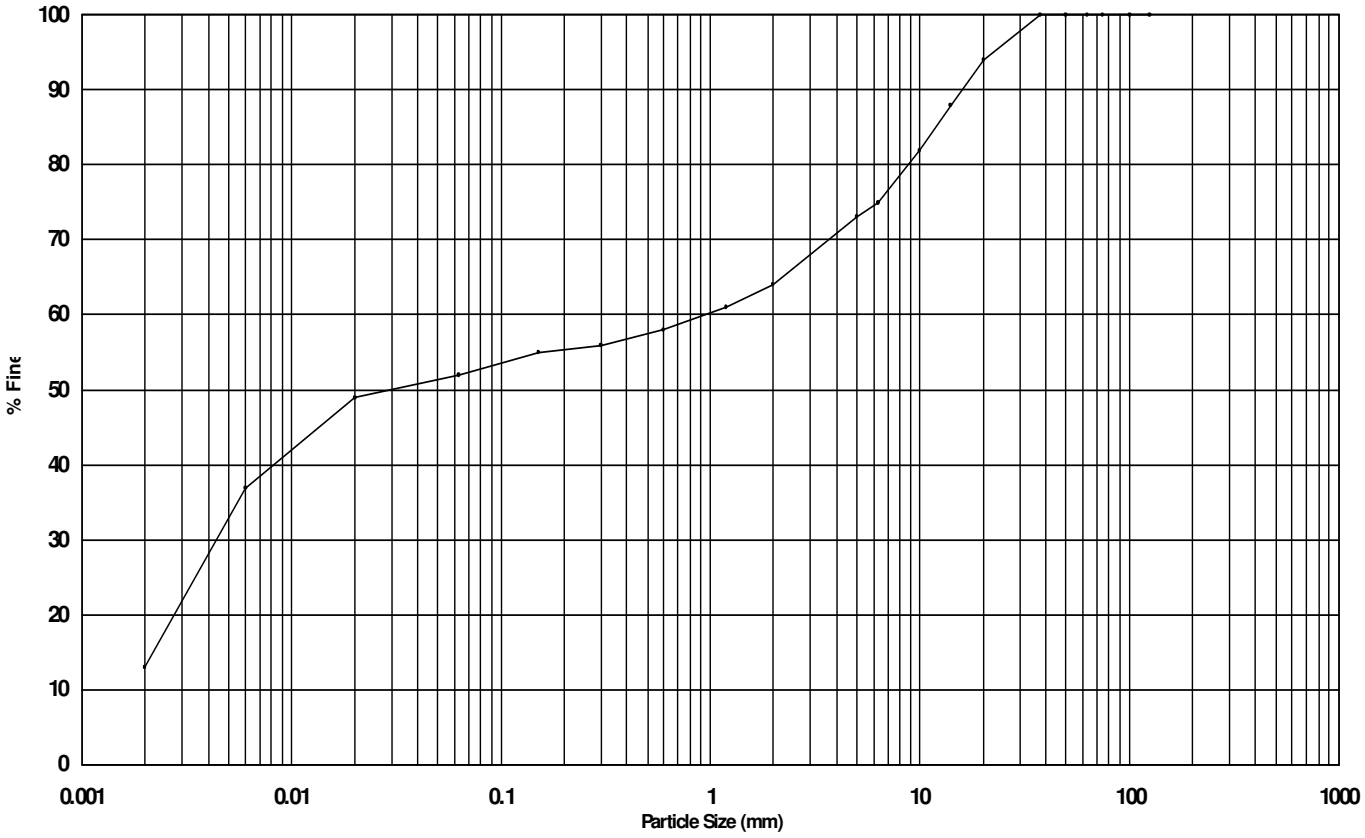
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole STP72502
Sample Depth 0.70-1.20m
Sample Type B
Sample Ref C30523

Sample Description

PROBABLE MADE GROUND: Light greyish brown slightly sandy gravelly silt.



Classification	CLAY	SILT			SAND			Gravel			Cobbles	Boulders
		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse		

Classification	% of each
CLAY	13
SILT	39
SAND	12
GRAVEL	36
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	94
14 mm	88
10 mm	82
6.3 mm	75
5 mm	73
2 mm	64
1.18 mm	61
600 µm	58
300 µm	56
150 µm	55

Size	% Finer
63 µm	52
20 µm	49
6 µm	37
2 µm	13

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

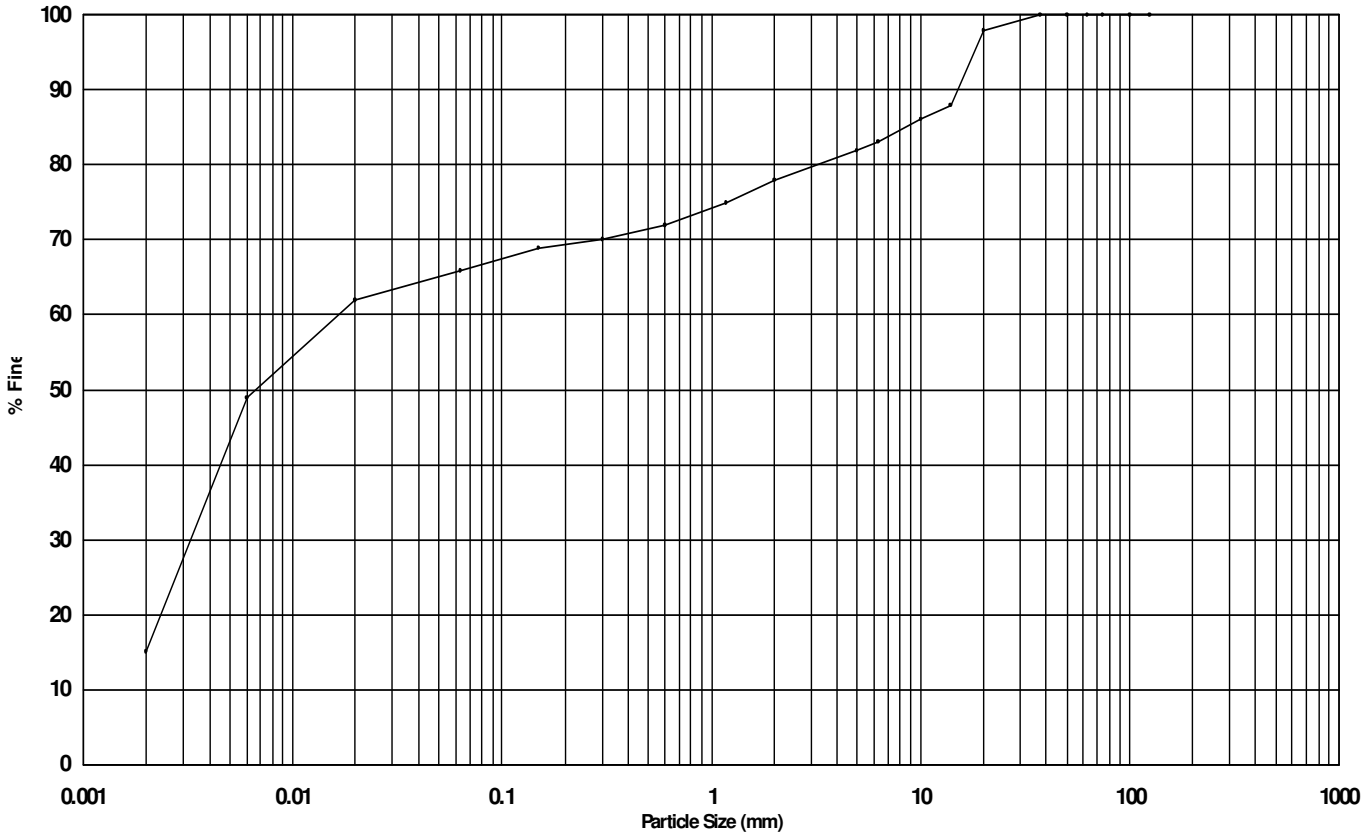
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole WS72402
Sample Depth 1.20-2.00m
Sample Type B
Sample Ref C30807

Sample Description

PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	15
SILT	51
SAND	12
GRAVEL	22
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	98
14 mm	88
10 mm	86
6.3 mm	83
5 mm	82
2 mm	78
1.18 mm	75
600 µm	72
300 µm	70
150 µm	69

Size	% Finer
63 µm	66
20 µm	62
6 µm	49
2 µm	15

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - Particle Size Distribution

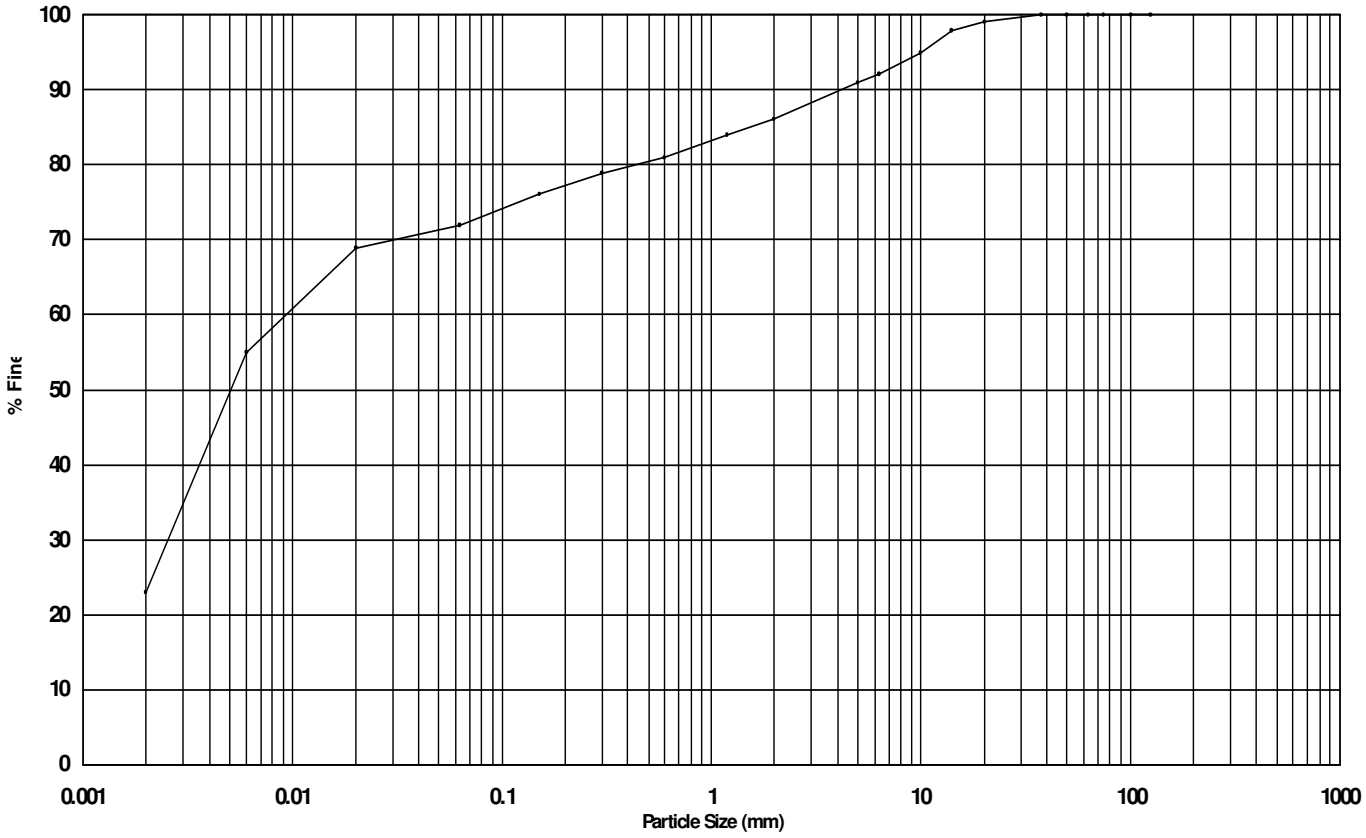
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole WS72402
Sample Depth 2.00-2.80m
Sample Type B
Sample Ref C30806

Sample Description

PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	23
SILT	49
SAND	14
GRAVEL	14
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	99
14 mm	98
10 mm	95
6.3 mm	92
5 mm	91
2 mm	86
1.18 mm	84
600 µm	81
300 µm	79
150 µm	76

Size	% Finer
63 µm	72
20 µm	69
6 µm	55
2 µm	23

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

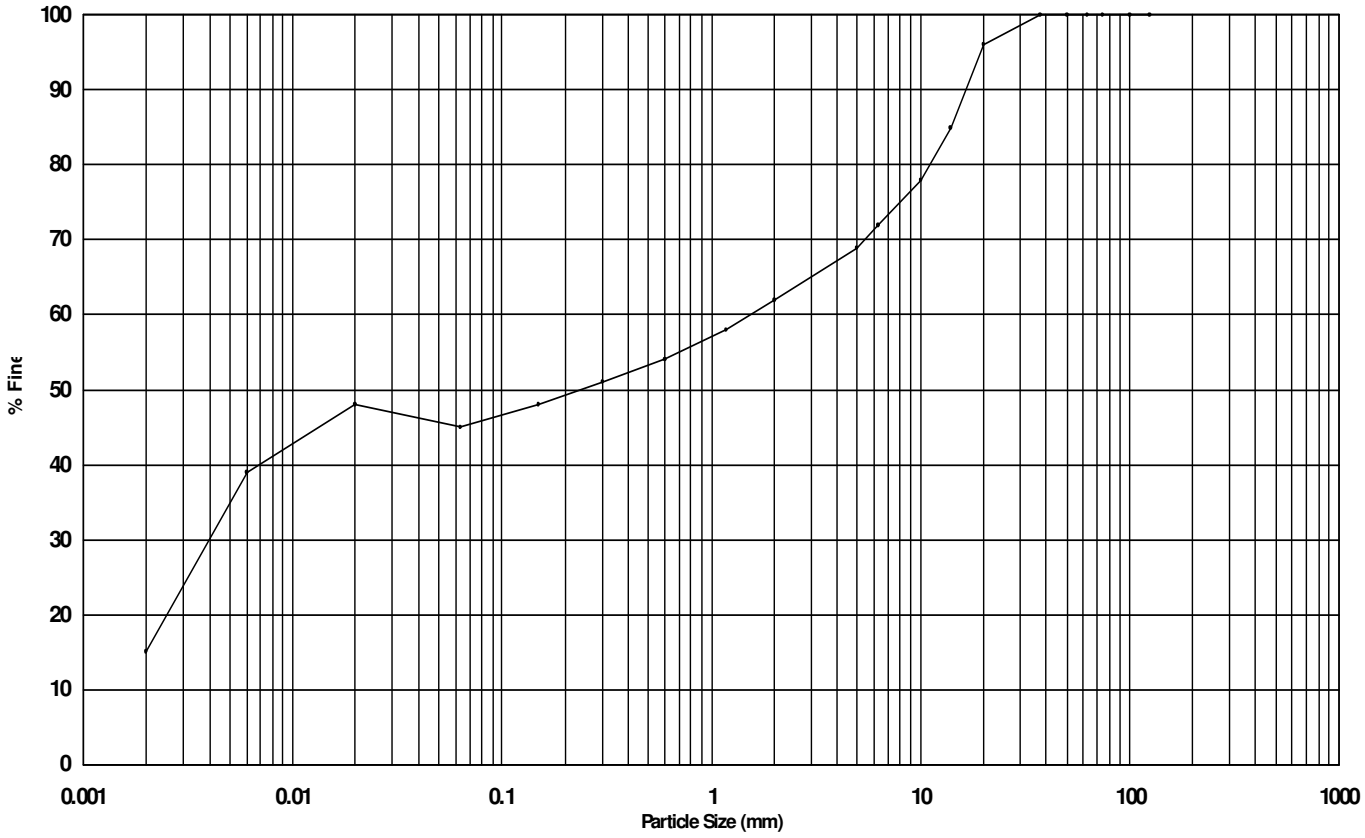
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole WS72402
Sample Depth 4.60-6.00m
Sample Type B
Sample Ref C30792

Sample Description

CHALK, recovered as slightly sandy gravelly silt.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	15
SILT	30
SAND	17
GRAVEL	38
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	96
14 mm	85
10 mm	78
6.3 mm	72
5 mm	69
2 mm	62
1.18 mm	58
600 µm	54
300 µm	51
150 µm	48

Size	% Finer
63 µm	45
20 µm	48
6 µm	39
2 µm	15

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

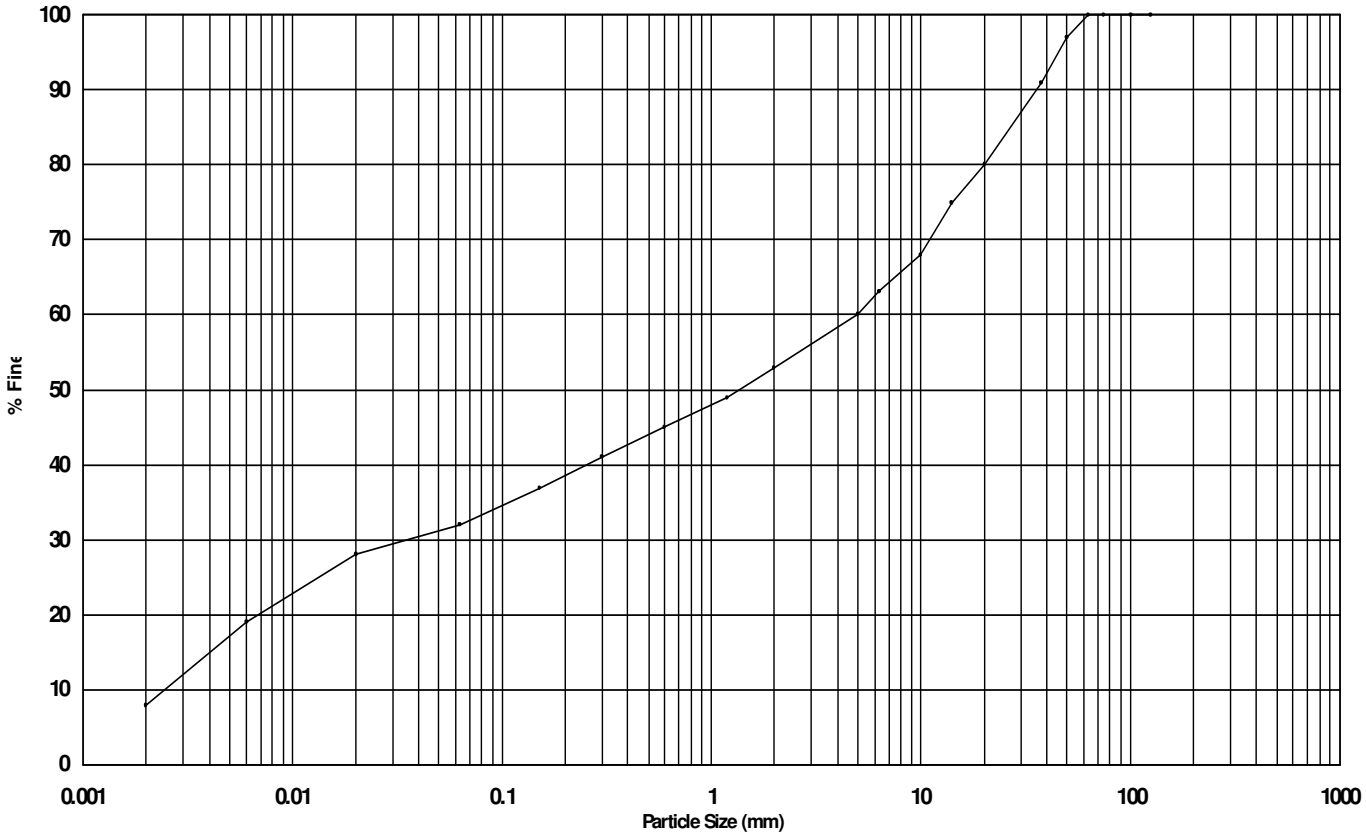
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole WS72403
Sample Depth 1.00-1.20m
Sample Type B
Sample Ref C30157

Sample Description

MADE GROUND: Cream and brown very sandy very silty gravel.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	8
SILT	24
SAND	21
GRAVEL	47
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	97
37.5 mm	91
20 mm	80
14 mm	75
10 mm	68
6.3 mm	63
5 mm	60
2 mm	53
1.18 mm	49
600 µm	45
300 µm	41
150 µm	37

Size	% Finer
63 µm	32
20 µm	28
6 µm	19
2 µm	8

Uniformity Coefficient
1922.19

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

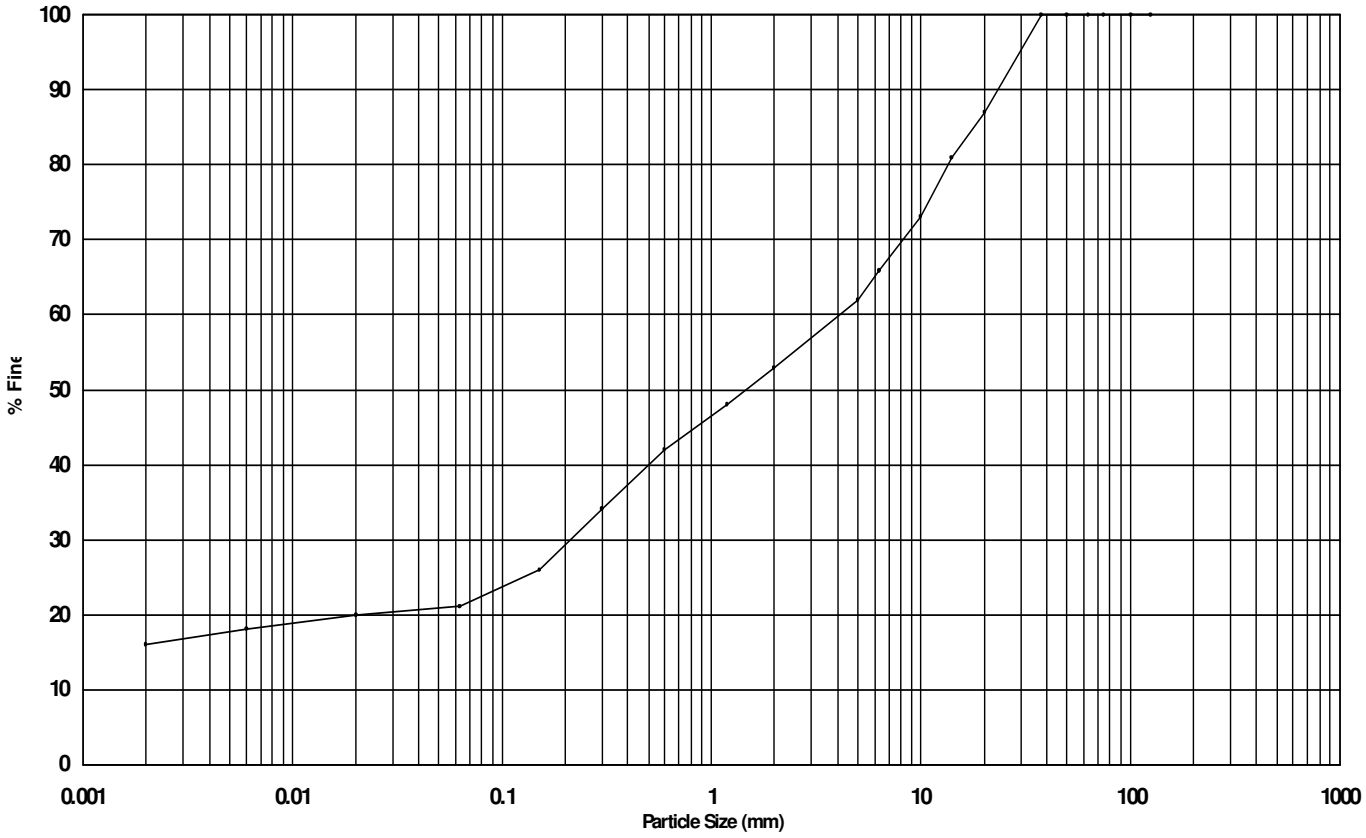
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole	WS72403
Sample Depth	3.70-4.60m
Sample Type	B
Sample Ref	C30809

Sample Description

Light greenish grey very sandy very clayey GRAVEL.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	16
SILT	5
SAND	32
GRAVEL	47
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	87
14 mm	81
10 mm	73
6.3 mm	66
5 mm	62
2 mm	53
1.18 mm	48
600 µm	42
300 µm	34
150 µm	26

Size	% Finer
63 µm	21
20 µm	20
6 µm	18
2 µm	16

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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GEOTECHNICS
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LABORATORY RESULTS - Particle Size Distribution

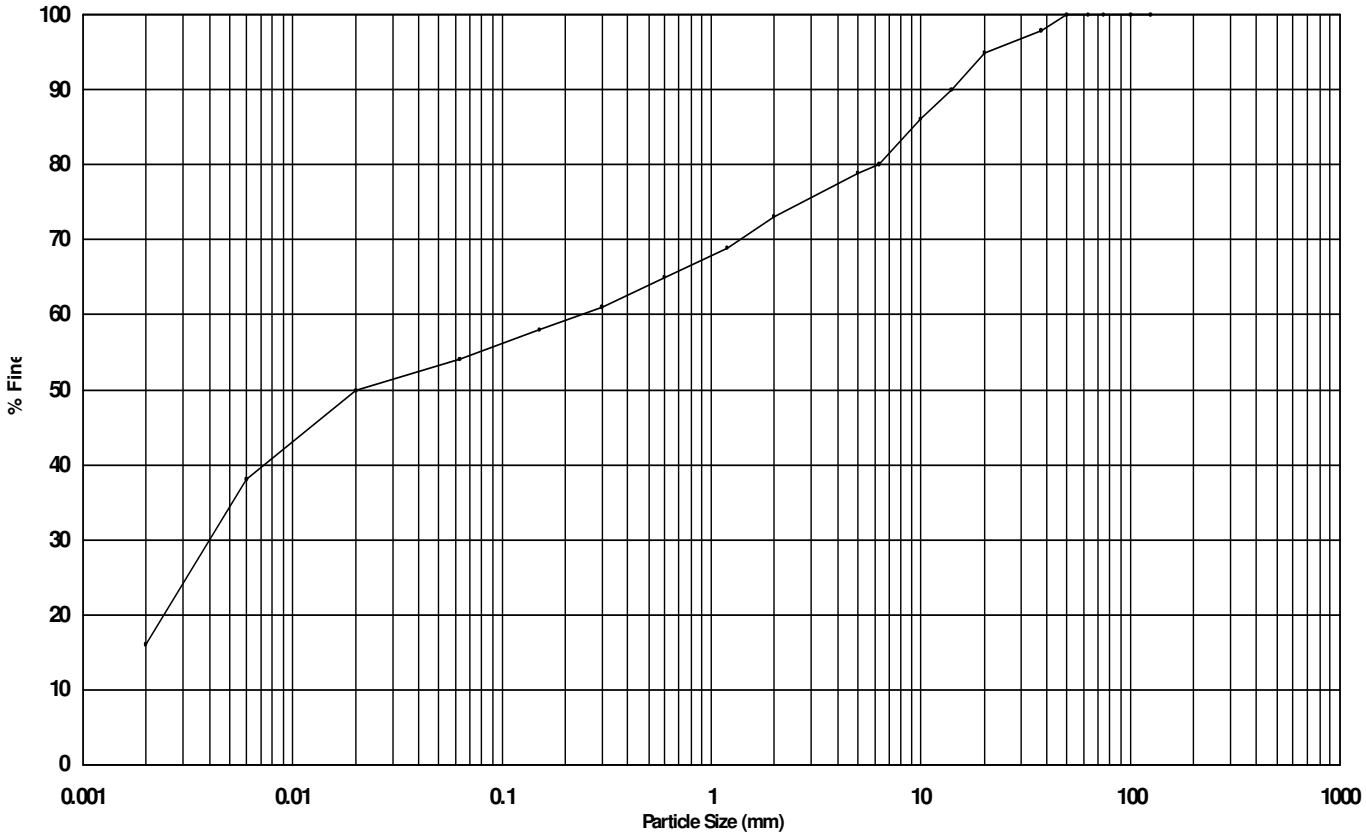
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole	WS72404
Sample Depth	0.20-0.40m
Sample Type	B
Sample Ref	C30168

Sample Description

PROBABLE MADE GROUND: Cream and brown slightly sandy slightly gravelly silt and rare roots.



Classification		Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
	CLAY	SILT			SAND			Gravel				

Classification	% of each
CLAY	16
SILT	38
SAND	19
GRAVEL	27
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	98
20 mm	95
14 mm	90
10 mm	86
6.3 mm	80
5 mm	79
2 mm	73
1.18 mm	69
600 µm	65
300 µm	61
150 µm	58

Size	% Finer
63 µm	54
20 µm	50
6 µm	38
2 µm	16

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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GEOTECHNICS
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LABORATORY RESULTS - Particle Size Distribution

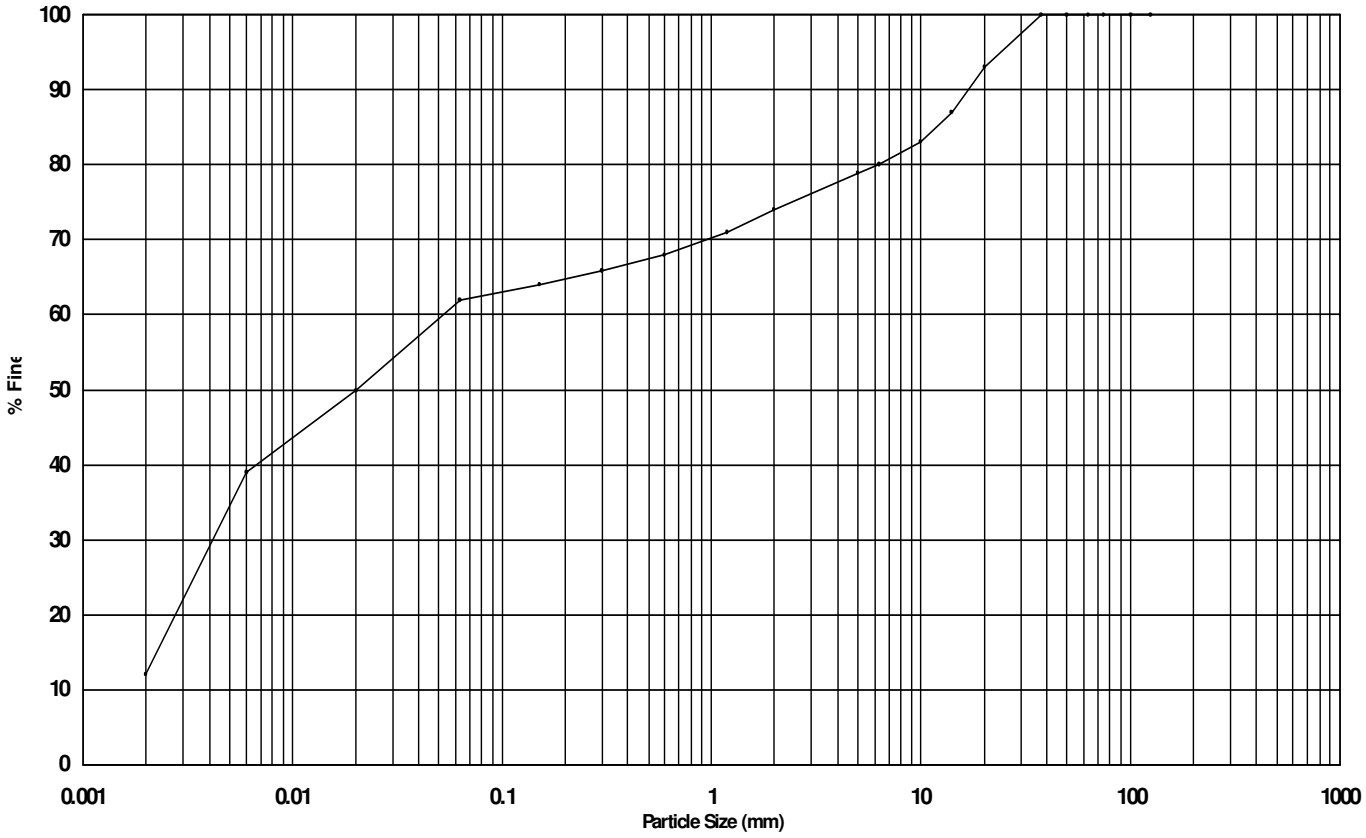
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole WS72404
Sample Depth 1.20-2.00m
Sample Type B
Sample Ref C30801

Sample Description

PROBABLE MADE GROUND: Light greyish brown slightly sandy slightly gravelly silt.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	12
SILT	50
SAND	12
GRAVEL	26
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
20 mm	93
14 mm	87
10 mm	83
6.3 mm	80
5 mm	79
2 mm	74
1.18 mm	71
600 µm	68
300 µm	66
150 µm	64

Size	% Finer
63 µm	62
20 µm	50
6 µm	39
2 µm	12

Uniformity Coefficient
Not Available

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

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LABORATORY RESULTS - *Particle Size Distribution*

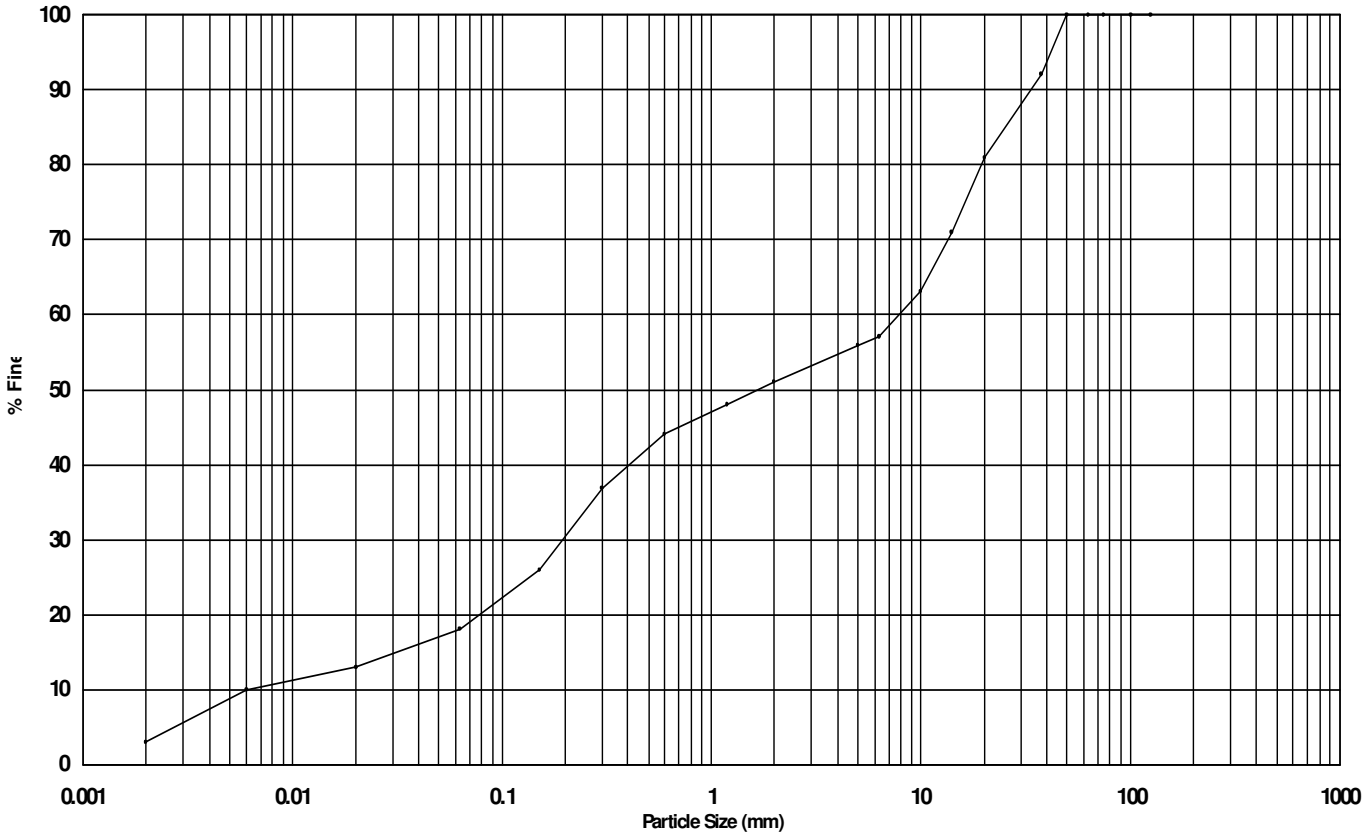
Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

Hole WS72404
Sample Depth 3.60-4.50m
Sample Type B
Sample Ref C30788

Sample Description

Light greenish grey clayey very sandy GRAVEL.



Classification	CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	Cobbles	Boulders
		SILT			SAND			Gravel				

Classification	% of each
CLAY	3
SILT	15
SAND	33
GRAVEL	49
COBBLES	0
BOULDERS	0

Size	% Finer
125 mm	100
100 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	92
20 mm	81
14 mm	71
10 mm	63
6.3 mm	57
5 mm	56
2 mm	51
1.18 mm	48
600 µm	44
300 µm	37
150 µm	26

Size	% Finer
63 µm	18
20 µm	13
6 µm	10
2 µm	3

Uniformity Coefficient
1308.43

Sieving Method
Wet sieve

Fine Particle Analysis	
Method	Pipette
Pre-treated with	Hydrogen Peroxide
% loss on Pre-treatment	0.00
Particle Density	2.65 (Assumed)

Remarks AGS Sieve:-Test performed in accordance with BS EN ISO 17892-4:2016
Pipette:-Test performed in accordance with BS EN ISO 17892-4:2016

27/01/2020

GEOTECHNICS
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LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

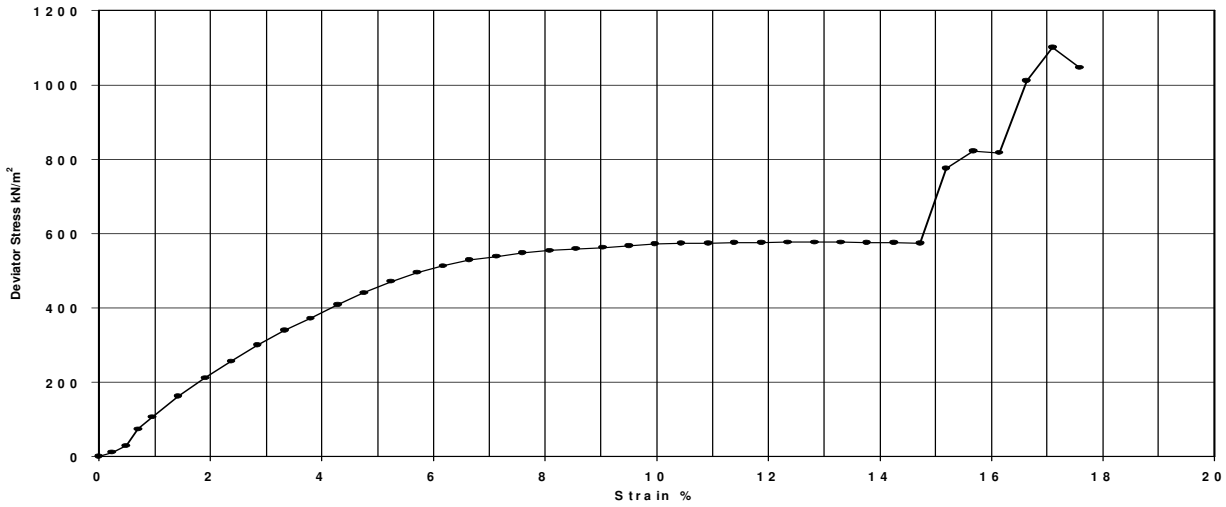
Hole BH72402
Sample Depth 17.50-17.95m
Sample Type UT
Sample Ref C30812

Sample Description

See Detailed Sample Description

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 9.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	102.89	102.89	102.89
Initial Length	(mm)	210.48	210.48	210.48
Initial Water Content	(%)	26.7	26.7	26.7
Initial Bulk Density	(Mg/m³)	1.99	1.99	1.99
Initial Dry Density	(Mg/m³)	1.57	1.57	1.57
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	170	340	680
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.30 / 0.78	0.30 / 0.94	0.30 / 0.94
Rate of Strain	(%/min)	1.95	1.95	1.95
Corrected Deviator Stress	(kPa)	577	822	1101
Undrained Shear Strength	(kPa)	289	411	550
Strain at Failure	(%)	12.8	15.7	17.1
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Intermediate	Intermediate	Intermediate

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	11.4	10.0	572.4
0.5	28.1	10.5	573.3
0.7	74.3	10.9	574.0
1.0	106.3	11.4	574.5
1.4	162.1	11.9	575.6
1.9	211.5	12.4	577.1
2.4	256.3	12.8	577.3
2.9	300.3	13.3	577.3
3.3	340.1	13.8	575.8
3.8	371.3	14.3	575.0
4.3	408.6	14.7	574.0
4.8	440.8	15.2	775.4
5.2	471.2	15.7	822.4
5.7	494.9	16.2	817.3
6.2	512.2	16.6	1010.7
6.7	528.2	17.1	1100.8
7.1	537.6	17.6	1045.8
7.6	547.4		
8.1	554.9		
8.6	558.6		
9.0	563.0		
9.5	567.2		

Remarks

27/01/2020

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

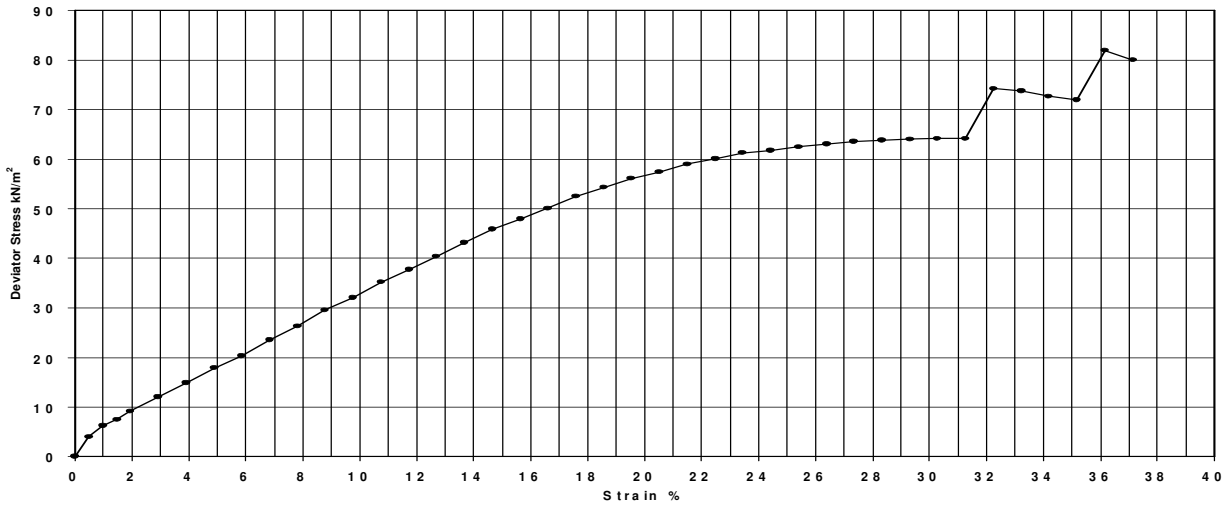
Hole BH72402
Sample Depth 19.50-19.95m
Sample Type UT
Sample Ref C30811

Sample Description

See Detailed Sample Description

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 9.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	209.63	209.63	209.63
Initial Length	(mm)	102.34	102.34	102.34
Initial Water Content	(%)	24.4	24.4	24.4
Initial Bulk Density	(Mg/m^3)	0.98	0.98	0.98
Initial Dry Density	(Mg/m^3)	0.79	0.79	0.79
Particle Density	(Mg/m^3)			
Cell Pressure	(kPa)	190	380	760
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.31 / 0.79	0.31 / 0.84	0.31 / 0.93
Rate of Strain	(%/min)	1.95	1.95	1.95
Corrected Deviator Stress	(kPa)	64	74	82
Undrained Shear Strength	(kPa)	32	37	41
Strain at Failure	(%)	30.3	32.3	36.2
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic	Plastic	Plastic

Strain %	Corrected Deviator Stress kN/m^2	Strain %	Corrected Deviator Stress kN/m^2
0.5	3.9	20.5	57.5
1.0	6.2	21.5	59.0
1.5	7.5	22.5	60.1
2.0	9.2	23.5	61.2
2.9	12.0	24.4	61.8
3.9	14.9	25.4	62.5
4.9	17.9	26.4	63.1
5.9	20.3	27.4	63.6
6.8	23.6	28.3	63.8
7.8	26.3	29.3	64.1
8.8	29.6	30.3	64.1
9.8	32.1	31.3	64.1
10.7	35.2	32.2	74.3
11.7	37.7	33.2	73.7
12.7	40.4	34.2	72.7
13.7	43.1	35.2	72.0
14.7	45.9	36.2	82.0
15.6	48.0	37.1	80.0
16.6	50.1		
17.6	52.5		
18.6	54.4		
19.5	56.2		

Remarks

27/01/2020

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

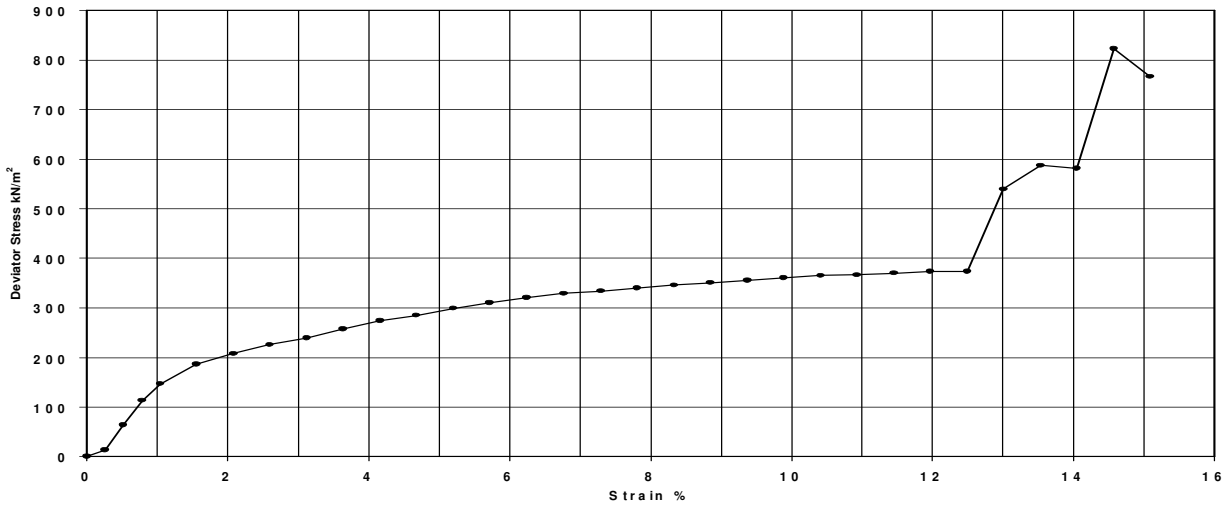
Hole BH72404
Sample Depth 15.55-16.00m
Sample Type UT
Sample Ref C30566

Sample Description

CHALK.

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 9.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	103.83	103.83	103.83
Initial Length	(mm)	192.16	192.16	192.16
Initial Water Content	(%)	29.7	29.7	29.7
Initial Bulk Density	(Mg/m³)	1.84	1.84	1.84
Initial Dry Density	(Mg/m³)	1.42	1.42	1.42
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	150	300	600
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.32 / 0.76	0.32 / 0.88	0.32 / 0.94
Rate of Strain	(%/min)	1.95	1.95	1.95
Corrected Deviator Stress	(kPa)	373	588	824
Undrained Shear Strength	(kPa)	187	294	412
Strain at Failure	(%)	12.0	13.5	14.6
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Intermediate	Intermediate	Intermediate

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.3	13.4	10.9	366.3
0.5	63.2	11.4	370.5
0.8	112.7	12.0	373.2
1.0	146.4	12.5	373.1
1.6	185.7	13.0	539.1
2.1	208.4	13.5	588.0
2.6	226.0	14.1	581.2
3.1	239.6	14.6	823.7
3.6	257.4	15.1	767.0
4.2	273.8		
4.7	284.2		
5.2	299.0		
5.7	310.5		
6.2	321.0		
6.8	328.7		
7.3	334.1		
7.8	340.4		
8.3	345.7		
8.8	351.4		
9.4	356.2		
9.9	360.8		
10.4	365.4		

Remarks

27/01/2020

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

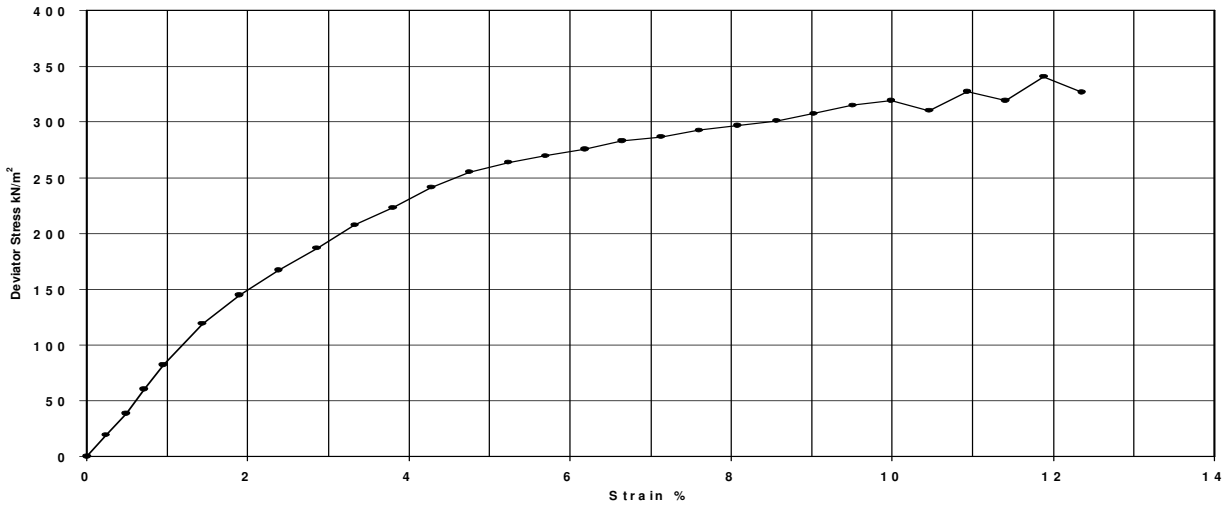
Hole BH72404
Sample Depth 18.80-19.25m
Sample Type UT
Sample Ref C30815

Sample Description

CHALK.

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 9.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	102.79	102.79	102.79
Initial Length	(mm)	210.40	210.40	210.40
Initial Water Content	(%)	26.8	26.8	26.8
Initial Bulk Density	(Mg/m³)	2.01	2.01	2.01
Initial Dry Density	(Mg/m³)	1.58	1.58	1.58
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	190	380	760
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.33 / 0.73	0.33 / 0.79	0.33 / 0.79
Rate of Strain	(%/min)	1.95	1.95	1.95
Corrected Deviator Stress	(kPa)	319	327	341
Undrained Shear Strength	(kPa)	160	164	170
Strain at Failure	(%)	10.0	10.9	11.9
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Brittle	Brittle	Brittle

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	19.4	10.0	319.4
0.5	38.7	10.5	310.4
0.7	60.4	10.9	327.3
1.0	82.5	11.4	319.5
1.4	119.1	11.9	340.6
1.9	144.5	12.4	327.1
2.4	167.1		
2.9	187.0		
3.3	207.9		
3.8	223.5		
4.3	241.5		
4.8	255.4		
5.2	264.0		
5.7	269.8		
6.2	275.8		
6.7	283.2		
7.1	286.6		
7.6	292.5		
8.1	296.9		
8.6	301.3		
9.0	307.5		
9.5	315.1		

Remarks

27/01/2020

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

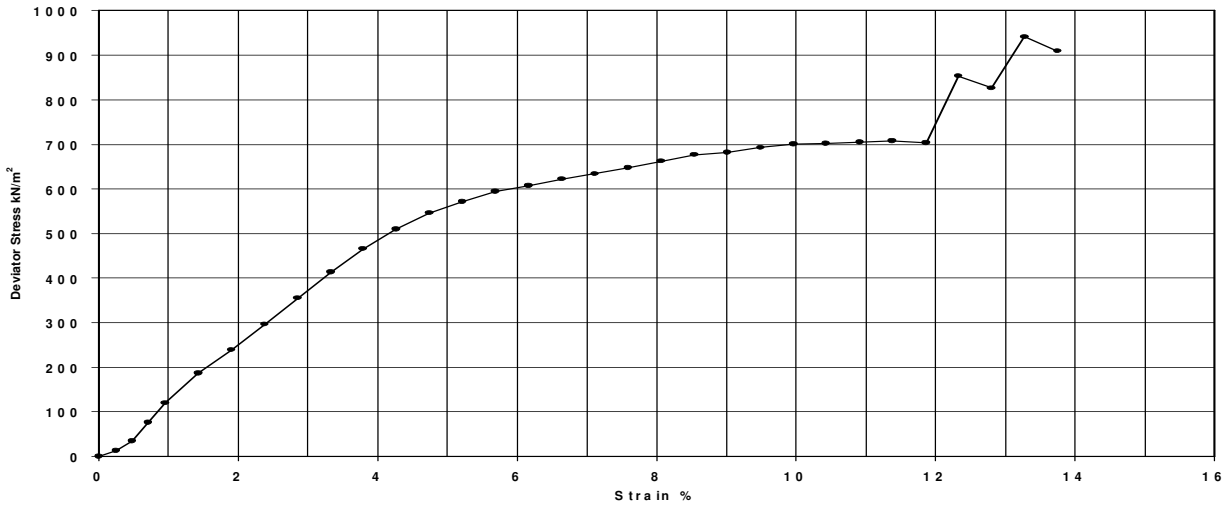
Hole BH72404
Sample Depth 20.40-20.85m
Sample Type UT
Sample Ref C30814

Sample Description

CHALK.

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 9.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	102.84	102.84	102.84
Initial Length	(mm)	210.83	210.83	210.83
Initial Water Content	(%)	26.9	26.9	26.9
Initial Bulk Density	(Mg/m³)	2.03	2.03	2.03
Initial Dry Density	(Mg/m³)	1.60	1.60	1.60
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	200	400	800
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.34 / 0.82	0.34 / 0.88	0.34 / 0.94
Rate of Strain	(%/min)	1.95	1.95	1.95
Corrected Deviator Stress	(kPa)	707	853	941
Undrained Shear Strength	(kPa)	354	427	471
Strain at Failure	(%)	11.4	12.3	13.3
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Intermediate	Intermediate	Intermediate

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	13.8	10.0	700.5
0.5	34.7	10.4	702.2
0.7	75.6	10.9	705.5
0.9	119.8	11.4	707.5
1.4	187.4	11.9	704.0
1.9	238.6	12.3	853.4
2.4	296.7	12.8	826.4
2.8	355.8	13.3	941.5
3.3	413.9	13.8	909.7
3.8	465.7		
4.3	509.6		
4.7	546.2		
5.2	571.1		
5.7	593.9		
6.2	607.0		
6.6	622.2		
7.1	634.8		
7.6	647.7		
8.1	662.2		
8.5	676.6		
9.0	682.0		
9.5	693.0		

Remarks

27/01/2020

GEOTECHNICS

LABORATORY RESULTS - Unconsolidated Undrained Triaxial Test

Project: A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Project No: PC197708

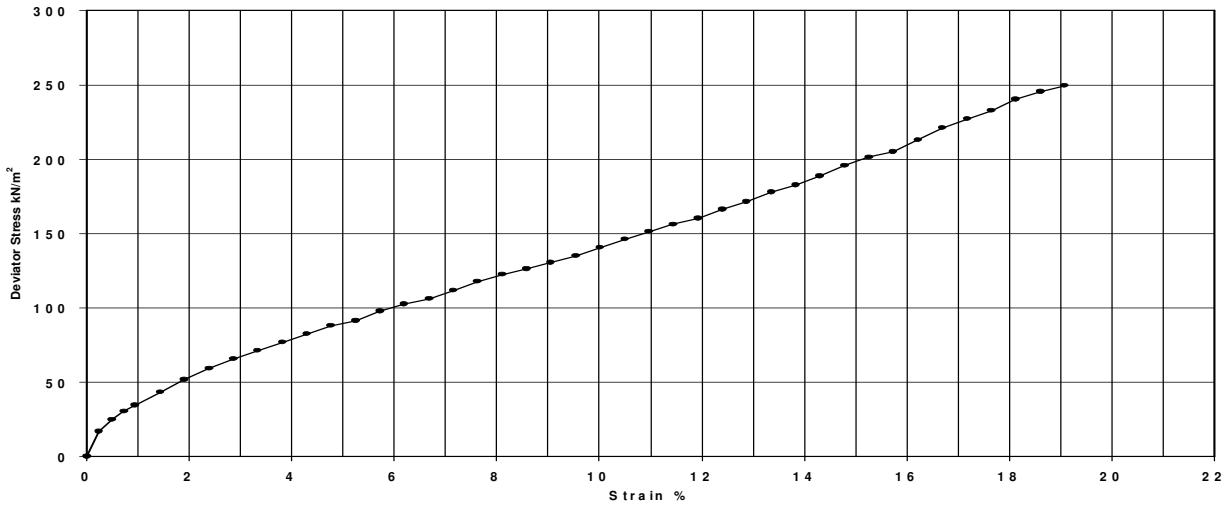
Hole BH72406
Sample Depth 19.50-19.95m
Sample Type UT
Sample Ref C30564

Sample Description

CHALK.

The following samples were combined to perform this test:

BS1377 Part 8 1990 : Clause 8.0



		Stage 1	Stage 2	Stage 3
Sample Condition		Undisturbed		
Orientation of sample		Vertical		
Initial Diameter	(mm)	100.41	100.41	100.41
Initial Length	(mm)	209.60	209.60	209.60
Initial Water Content	(%)	30.3	30.3	30.3
Initial Bulk Density	(Mg/m³)	1.95		
Initial Dry Density	(Mg/m³)	1.50		
Particle Density	(Mg/m³)			
Cell Pressure	(kPa)	190		
'Specimen Height' at start of Shearing Stage	(mm)			
Membrane Thickness/Correction	(mm/kPa)	0.31 / 1.11	0.31 /	0.31 /
Rate of Strain	(%/min)	1.95	1.95	1.95
Corrected Deviator Stress	(kPa)	250		
Undrained Shear Strength	(kPa)	125		
Strain at Failure	(%)	19 (excess)		
Failure Zone Water Content	(%)			
Water Content (after test)	(%)			
Mode of Failure		Plastic	Plastic	Plastic

Strain %	Corrected Deviator Stress kN/m²	Strain %	Corrected Deviator Stress kN/m²
0.2	16.8	10.0	140.5
0.5	24.8	10.5	146.2
0.7	30.3	11.0	151.2
1.0	34.4	11.5	156.0
1.4	43.1	11.9	160.2
1.9	51.5	12.4	166.3
2.4	59.1	12.9	171.5
2.9	65.6	13.4	177.9
3.3	71.2	13.8	182.6
3.8	77.0	14.3	188.8
4.3	82.4	14.8	196.0
4.8	88.2	15.3	201.4
5.2	91.4	15.7	204.9
5.7	97.8	16.2	213.1
6.2	102.6	16.7	221.1
6.7	106.0	17.2	227.0
7.2	111.6	17.7	232.8
7.6	117.6	18.1	240.4
8.1	122.5	18.6	245.3
8.6	126.1	19.1	249.6
9.1	130.5		
9.5	135.1		

Remarks

27/01/2020

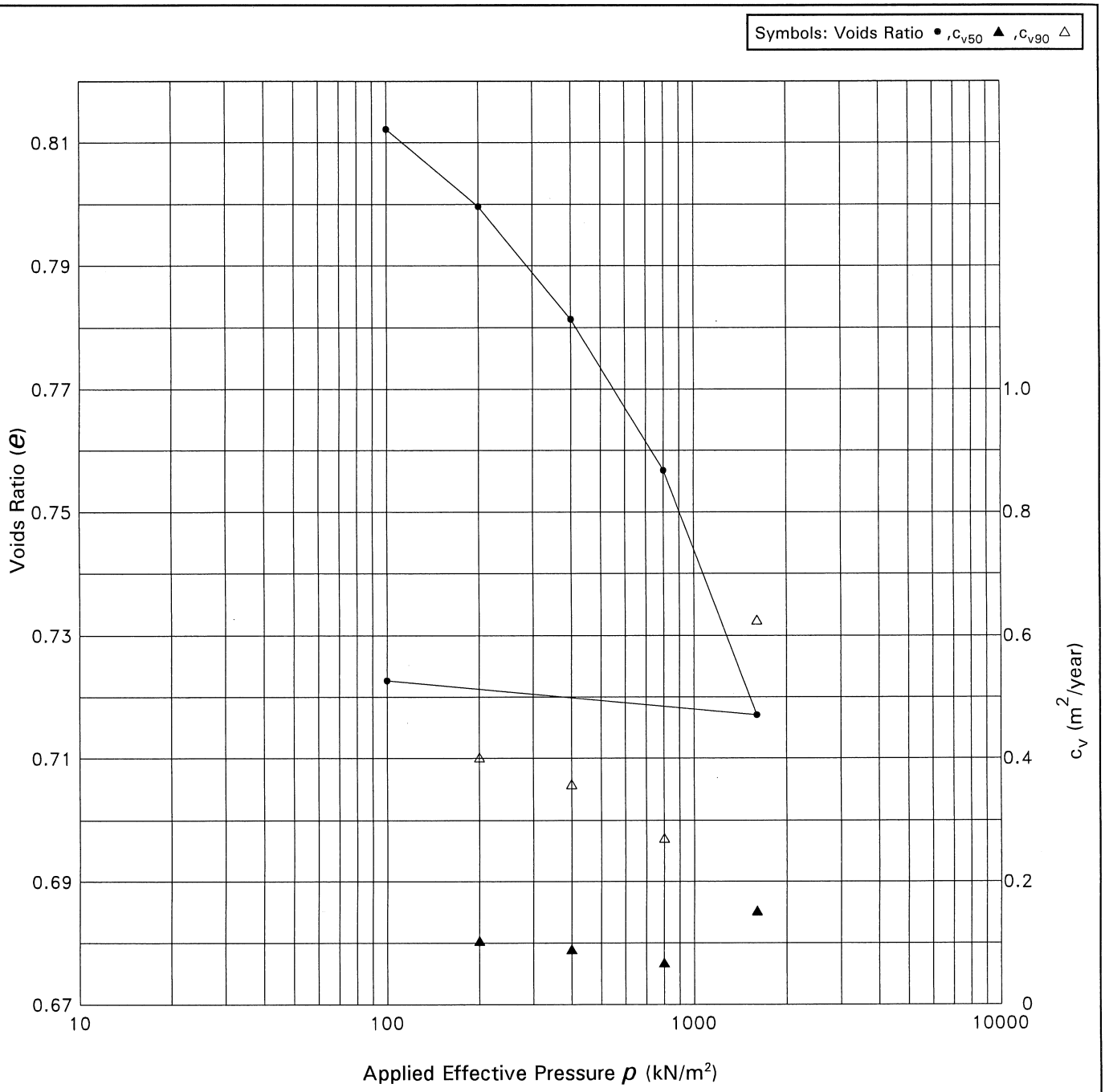
GEOTECHNICS

LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A303 Amesbury to Berwick Down - Phase 7A
Countess

Client

Project No PC197708
Borehole BH72402
Sample Depth 18.50 - 18.95 m
Sample Type UT



Applied Pressure kN/m²	0-100	100-200	200-400	400-800	800-1600	1600-100				
m_v m^2/MN	0.24	0.07	0.05	0.03	0.03	.00				
c_{v50} Log Time m^2/yr	-	0.10	0.09	0.07	0.15	-				
c_{v90} Root Time m^2/yr	-	0.40	0.36	0.27	0.63	-				
Voids Ratio	0.812	0.800	0.781	0.757	0.717	0.723				

Description
C30810 CHALK

Specimen Diameter	74.930	mm
Initial Height	18.890	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.857	

Initial Water Content	31.66	%
Final Water Content	28.36	%
Initial Saturation	97.94	%
Initial Bulk Density	1.88	Mg/m^3
Initial Dry Density	1.43	Mg/m^3

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

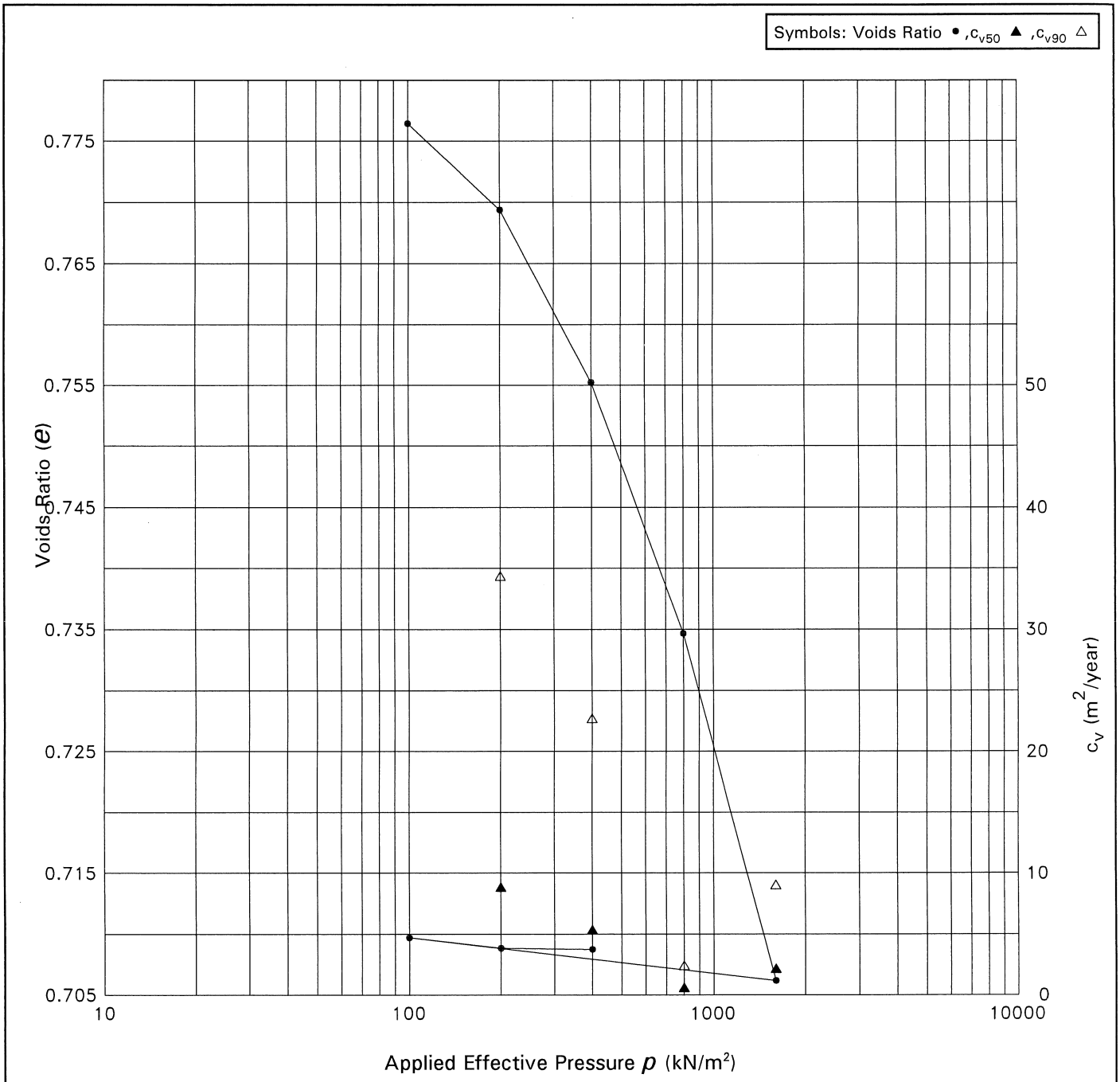
geotechnics

LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A303 Amesbury to Berwick Down - Phase 7A
Countess

Client

Project No PC197708
Borehole BH72404
Sample Depth 14.05 - 14.50 m
Sample Type UT



Applied Pressure	kN/m²	0-100	100-200	200-400	400-800	800-1600	1600-100	100-200	200-400		
m_v	m^2/MN	0.14	0.04	0.04	0.03	0.02	.00	0.01	.00		
c_{v50} Log Time	m^2/yr	-	8.85	5.35	0.60	2.16	-	-	-		
c_{v90} Root Time	m^2/yr	-	34.38	22.71	2.42	9.03	-	-	-		
Voids Ratio		0.776	0.769	0.755	0.735	0.706	0.710	0.709	0.709		

Description
C30567 CHALK

Specimen Diameter	74.800	mm
Initial Height	18.840	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.801	

Initial Water Content	30.36	%
Final Water Content	28.34	%
Initial Saturation	100	%
Initial Bulk Density	1.92	Mg/m^3
Initial Dry Density	1.47	Mg/m^3

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

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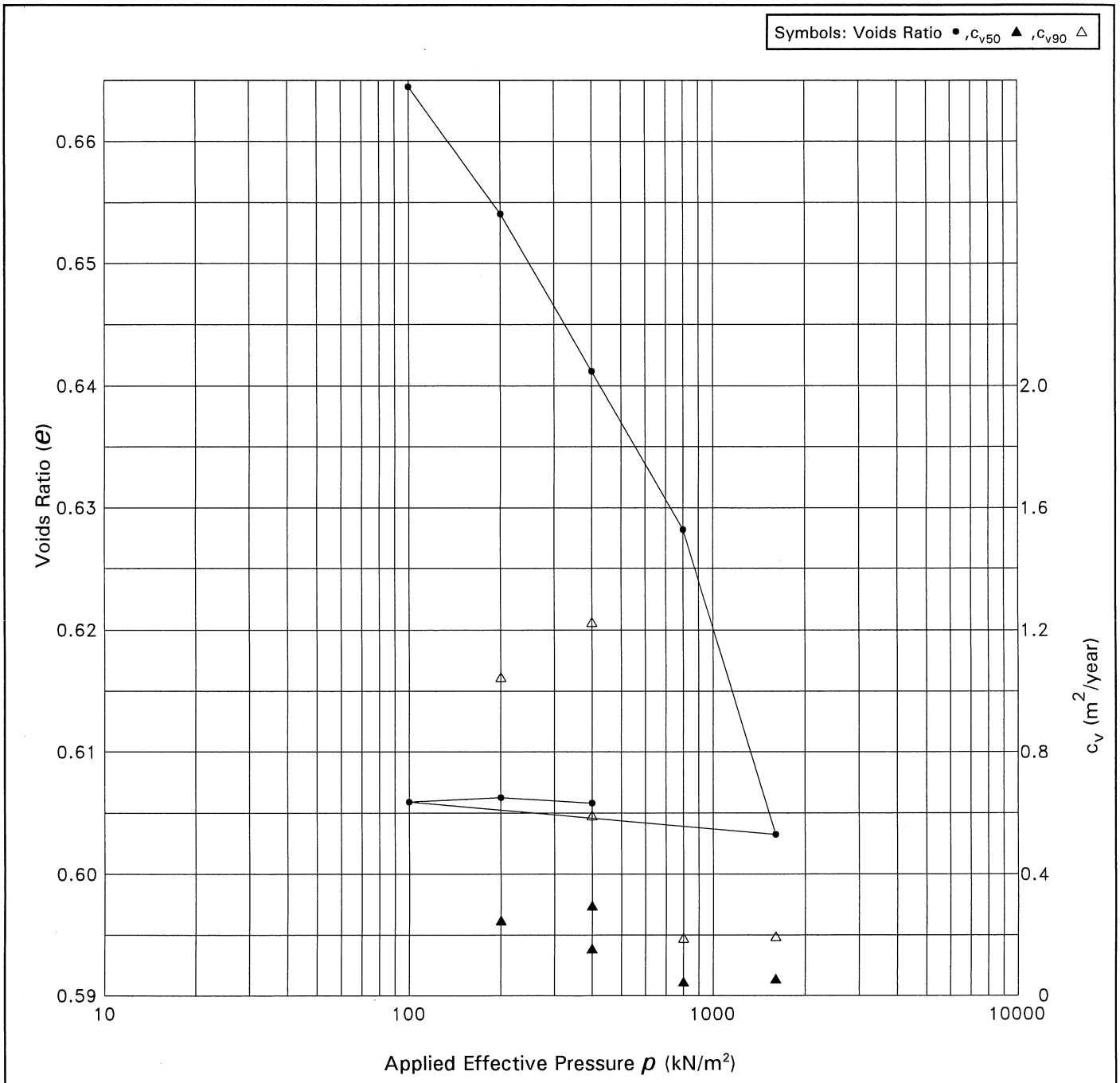
LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A303 Amesbury to Berwick Down - Phase 7A
Countess

Client

Project No PC197708
Borehole BH72405
Sample Depth 14.50 - 14.95 m
Sample Type UT



Applied Pressure kN/m²	0-100	100-200	200-400	400-800	800-1600	1600-100	100-200	200-400		
m_v m^2/MN	0.38	0.06	0.04	0.02	0.02	.00	-.00	.00		
c_{v50} Log Time m^2/yr	-	0.25	0.15	0.05	0.05	-	-	0.30		
c_{v90} Root Time m^2/yr	-	1.05	0.59	0.19	0.19	-	-	1.23		
Voids Ratio	0.664	0.654	0.641	0.628	0.603	0.606	0.606	0.606		

Description
C30565 CHALK

Specimen Diameter	74.550	mm
Initial Height	18.930	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.730	

Initial Water Content	29.05	%
Final Water Content	23.67	%
Initial Saturation	100	%
Initial Bulk Density	1.98	Mg/m^3
Initial Dry Density	1.53	Mg/m^3

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

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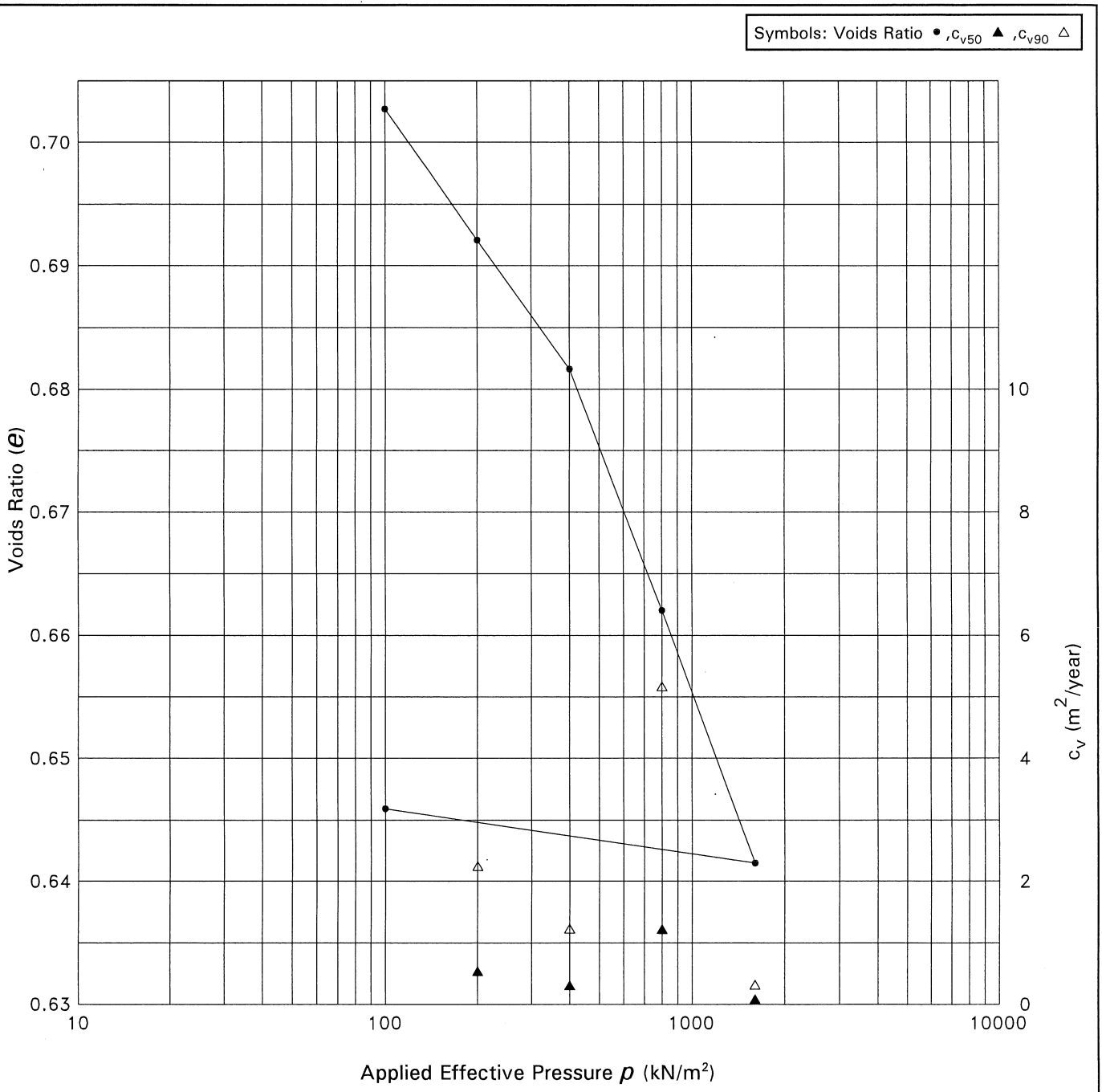
LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A303 Amesbury to Berwick Down - Phase 7A
Countess

Client

Project No PC197708
Borehole BH72406 A
Sample Depth 18.50 - 18.95 m
Sample Type UT



Applied Pressure kN/m²	0-100	100-200	200-400	400-800	800-1600	1600-100				
m_v m^2/MN	0.24	0.06	0.03	0.03	0.02	.00				
c_{v50} Log Time m^2/yr	-	0.54	0.30	1.22	0.08	-				
c_{v90} Root Time m^2/yr	-	2.25	1.23	5.17	0.31	-				
Voids Ratio	0.703	0.692	0.682	0.662	0.641	0.646				

Description
C30563 CHALK

Specimen Diameter	74.510	mm
Initial Height	18.860	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.744	

Initial Water Content	28.56	%
Final Water Content	25.76	%
Initial Saturation	100	%
Initial Bulk Density	1.95	Mg/m^3
Initial Dry Density	1.52	Mg/m^3

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

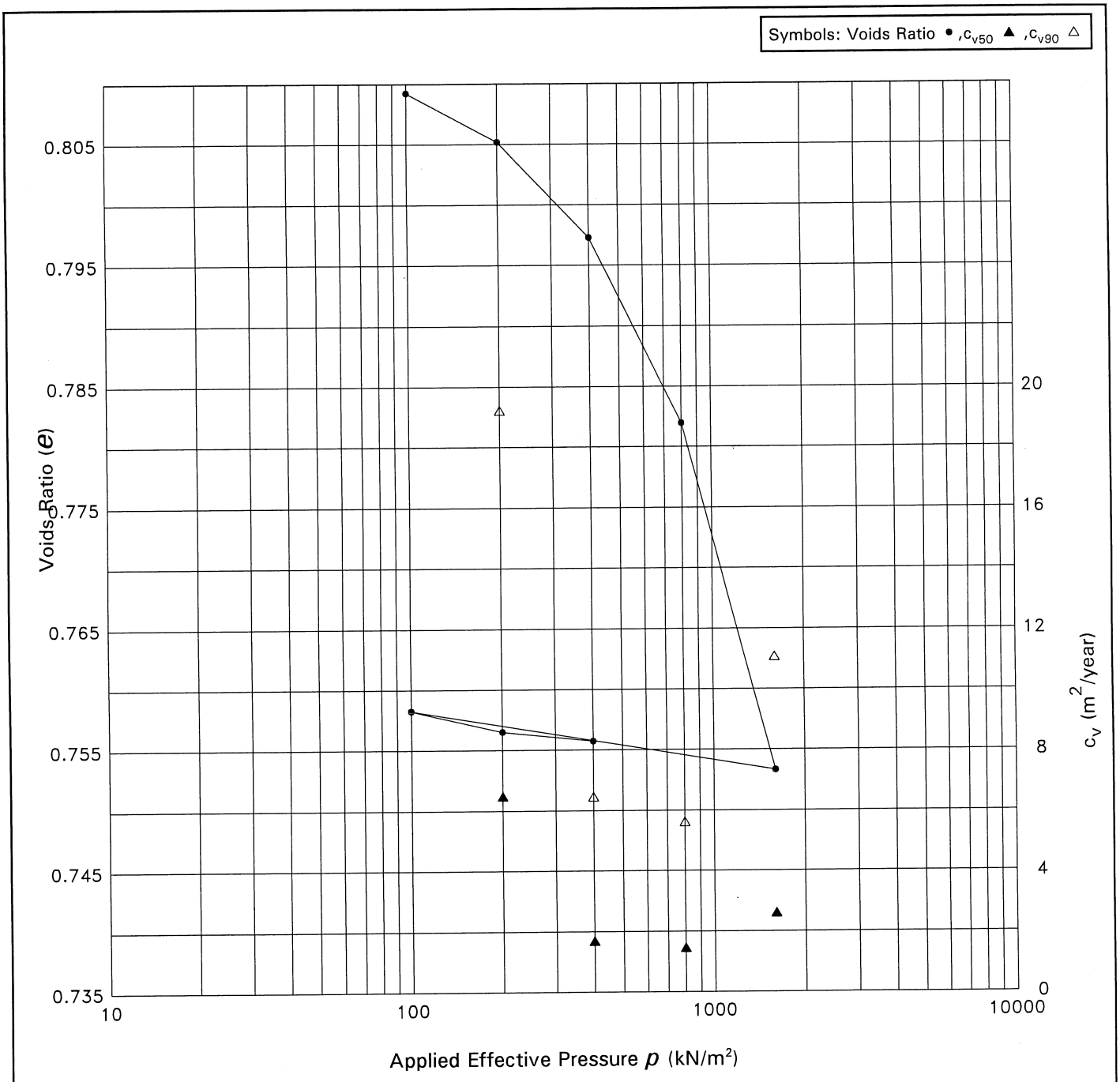
geotechnics

LABORATORY RESULTS - *Consolidation e/logp Plot*

Project A303 Amesbury to Berwick Down - Phase 7A
Countess

Client

Project No PC197708
Borehole BH72404
Sample Depth 17.05 - 17.50 m
Sample Type UT



Applied Pressure kN/m²	0-100	100-200	200-400	400-800	800-1600	1600-100	100-200	200-400		
m_v m²/MN	0.06	0.02	0.02	0.02	0.02	.00	0.01	.00		
c_{v50} Log Time m²/yr	-	6.48	1.68	1.45	2.61	-	-	-		
c_{v90} Root Time m²/yr	-	19.22	6.46	5.63	11.07	-	-	-		
Voids Ratio	0.809	0.805	0.797	0.782	0.753	0.758	0.757	0.756		

Description
C30813 CHALK

Specimen Diameter	74.540	mm
Initial Height	18.880	mm
Particle Density	2.65 Assumed	
Initial Voids Ratio	0.820	

Initial Water Content	28.78	%
Final Water Content	21.80	%
Initial Saturation	93.02	%
Initial Bulk Density	1.88	Mg/m³
Initial Dry Density	1.46	Mg/m³

Remarks Laboratory temperature 20°C ± 3°C
Specimen cut vertically from base of sample
Test performed in accordance with BS EN ISO 17892-5:2017

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LABORATORY RESULTS - Point Load Strength Determination

Project A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS **Project No:** PC197708

Sample					w	W	D	Fail Load	Test Type/ Direction	De	De^2	Is	F	Is_{50}
Hole	Depth (Specimen Depth) m	Type	Sample Ref	Description	%	mm	mm	kN		mm	mm^2	MN/m^2		MN/m^2
BH72403	18.42-18.49 (18.42-18.49)	C	C30461	CHALK.	26.0	100	68	0.64	A/PD	93.05	8658	0.073	1.323	0.097
BH72501	23.60-23.77 (23.60-23.77)	C	C30776	CHALK.	26.9	95	95	0.24	D/PL	95.00	9025	0.027	1.335	0.035
						95	92	0.67	A/PD	105.49	11128	0.060	1.399	0.085
						95	74	0.30	A/PD	94.61	8951	0.033	1.332	0.044
BH72501	26.97-27.15 (26.97-27.15)	C	C30777	CHALK.	27.2	100	100	0.54	D/PL	100.00	10000	0.054	1.366	0.073
						100	76	0.33	A/PD	98.37	9677	0.035	1.356	0.047
						100	59	0.82	A/PD	86.67	7512	0.109	1.281	0.140
BH72502	17.67-17.75 (17.67-17.75)	C	C30780	CHALK.	25.7	100	99	0.73	D/PL	99.00	9801	0.074	1.360	0.101
						99	64	0.57	A/PD	89.82	8067	0.071	1.302	0.092
						99	59	0.48	A/PD	86.24	7437	0.064	1.278	0.082
BH72502	19.35-20.50 (19.35-20.50)	C	C30783	CHALK.	26.5	100	100	0.73	D/PL	100.00	10000	0.073	1.366	0.100
						100	64	0.64	A/PD	90.27	8149	0.078	1.305	0.102
						100	39	0.68	A/PD	70.47	4966	0.136	1.167	0.159
BH72504	21.79-21.96 (21.79-21.96)	C	C30464	CHALK.	27.2	100	100	0.63	D/PL	100.00	10000	0.063	1.366	0.087
						100	78	0.54	A/PD	99.66	9931	0.055	1.364	0.075
						100	75	0.62	A/PD	97.72	9549	0.065	1.352	0.088

Remarks AGS

Test Type D - Diametral, A - Axial, I - Lump or Irregular Test
Direction PL - parallel to planes of weakness, R - Random or unknown orientation, PD - perpendicular to planes of weakness
Fail Load UF - unacceptable failure
For Standards followed see Laboratory Test Certificate

GEOTECHNICS
geotechnical and geoenvironmental specialists

Certificate of Analysis

Certificate Number	19-25385
	19-Dec-19
Client	Geotechnics LTD 203 Torrington Avenue Tile Hill Coventry CV4 9AP
Our Reference	19-25385
Client Reference	PC197708
Order No	AUTH-OL23840
Contract Title	A303 Amesbury to Berwick Down
Description	4 Soil samples, 7 Water samples.
Date Received	11-Dec-19
Date Started	11-Dec-19
Date Completed	19-Dec-19
Test Procedures	Identified by prefix DETSn (details on request).
Notes	Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 By [redacted]

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis

Soil Samples

Our Ref 19-25385
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down

			Lab No	1611840	1611841	1611842	1611843
			Sample ID	STP72401	STP72402	STP72403	STP72404
			Depth	0.50-0.60	0.50-0.60	0.50	0.50-0.60
			Other ID				
			Sample Type	D	D	D	D
			Sampling Date	25/11/19	25/11/19	25/11/19	26/11/19
			Sampling Time	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Inorganics							
pH	DETSC 2008#		pH	8.4	8.2	8.2	8.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	26	< 10	20	13

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis

Water Samples

Our Ref 19-25385
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down

			Lab No	1611833	1611834	1611835	1611836	1611837	1611838
			Sample ID	BH72402	BH72403	BH72405	BH72406	BH72501	BH72501
			Depth	2.20	2.54	3.30	3.70	1.34	4.75
			Other ID						
			Sample Type	W	W	W	W	W	W
			Sampling Date	21/11/19	19/11/19	27/11/19	25/11/19	26/11/19	26/11/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Inorganics									
pH	DETSC 2008		pH	7.2	7.2	7.3	7.3	7.6	7.3
Sulphate as SO4	DETSC 2055	0.1	mg/l	11000	16000	16000	14000	13000	14000

Key: n/s -not supplied.

Summary of Chemical Analysis

Water Samples

Our Ref 19-25385
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down

Lab No	1611839
Sample ID	BH72504
Depth	2.25
Other ID	
Sample Type	W
Sampling Date	18/11/19
Sampling Time	n/s

Test	Method	LOD	Units	
Inorganics				
pH	DETSC 2008		pH	7.4
Sulphate as SO4	DETSC 2055	0.1	mg/l	14000

Key: n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-25385
Client Ref PC197708
Contract A303 Amesbury to Berwick Down

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1611833	BH72402 2.20 WATER	21/11/19	GB 1L	pH/Cond/TDS (1 days)	
1611834	BH72403 2.54 WATER	19/11/19	GB 1L	pH/Cond/TDS (1 days)	
1611835	BH72405 3.30 WATER	27/11/19	PT 1L	pH/Cond/TDS (1 days)	
1611836	BH72406 3.70 WATER	25/11/19	GB 1L	pH/Cond/TDS (1 days)	
1611837	BH72501 1.34 WATER	26/11/19	GB 1L	pH/Cond/TDS (1 days)	
1611838	BH72501 4.75 WATER	26/11/19	PT 1L	pH/Cond/TDS (1 days)	
1611839	BH72504 2.25 WATER	18/11/19	GB 1L	pH/Cond/TDS (1 days)	
1611840	STP72401 0.50-0.60 SOIL	25/11/19	PT 1L	pH + Conductivity (7 days)	
1611841	STP72402 0.50-0.60 SOIL	25/11/19	PT 1L	pH + Conductivity (7 days)	
1611842	STP72403 0.50 SOIL	25/11/19	PT 1L	pH + Conductivity (7 days)	
1611843	STP72404 0.50-0.60 SOIL	26/11/19	PT 1L	pH + Conductivity (7 days)	

Key: G-Glass B-Bottle P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-25387

19-Dec-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-25387

Client Reference PC197708

Order No AUTH-OL23841

Contract Title A303 Amesbury to Berwick Down

Description One Soil sample.

Date Received 11-Dec-19

Date Started 11-Dec-19

Date Completed 19-Dec-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 By [redacted]

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis

Soil Samples

Our Ref 19-25387
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down

Lab No	1611845
Sample ID	BH72405
Depth	3.50-3.60
Other ID	
Sample Type	D
Sampling Date	n/s
Sampling Time	n/s

Test	Method	LOD	Units	
Inorganics				
Loss on Ignition at 440oC	DETSC 2003#	0.01	%	4.1

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-25387
Client Ref PC197708
Contract A303 Amesbury to Berwick Down

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1611845	BH72405 3.50-3.60 SOIL		PT 1L	Sample date not supplied, Loss on Ignition (730 days)	

Key: P-Plastic T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-25622

16-Dec-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-25622

Client Reference PC197708

Order No OC23614

Contract Title A303 Amesbury tp Berwick Down Phase 7a

Description One Soil sample.

Date Received 13-Dec-19

Date Started 13-Dec-19

Date Completed 16-Dec-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 By [redacted]

Adam Fenwick
Contracts Manager

UKAS TESTING
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Summary of Chemical Analysis
Soil Samples

Our Ref 19-25622
Client Ref PC197708
Contract Title A303 Amesbury tp Berwick Down Phase 7a

Lab No	1613342
Sample ID	STP72502
Depth	1.00
Other ID	
Sample Type	ES
Sampling Date	28/11/19
Sampling Time	n/s

Test	Method	LOD	Units	
Preparation				
Moisture Content	DETSC 1004	0.1	%	21

Key: n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-25622
Client Ref PC197708
Contract A303 Amesbury tp Berwick Down Phase 7a

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1613342	STP72502 1.00 SOIL	28/11/19	GJ 250ml, GJ 60ml x3, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

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Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-25728

02-Jan-20

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-25728

Client Reference PC197708

Order No AUTH-OL23900

Contract Title A303 Amesbury to Berwick Down

Description 3 Soil samples, 2 Water samples.

Date Received 16-Dec-19

Date Started 16-Dec-19

Date Completed 02-Jan-20

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 By [redacted]

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 19-25728
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down

			Lab No	1613925	1613926	1613927
			Sample ID	WS72402	WS72403	WS72404
			Depth	1.50	2.00-3.70	2.00-3.60
			Other ID			
			Sample Type	D	B	B
			Sampling Date	13/12/19	13/12/19	13/12/19
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Inorganics						
pH	DETSC 2008#		pH	8.6	8.1	8.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	< 10	12	12

Key: # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Water Samples

Our Ref 19-25728
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down

			Lab No	1613928	1613929
			Sample ID	BH72404	BH72502
			Depth	3.20	3.60
			Other ID		
			Sample Type	W	W
			Sampling Date	13/12/19	13/12/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Inorganics					
pH	DETSC 2008		pH	7.8	7.2
Sulphate as SO4	DETSC 2055	0.1	mg/l	25	28

Key: n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 19-25728
Client Ref PC197708
Contract A303 Amesbury to Berwick Down

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1613925	WS72402 1.50 SOIL	13/12/19	PT 1L		
1613926	WS72403 2.00-3.70 SOIL	13/12/19	PT 1L		
1613927	WS72404 2.00-3.60 SOIL	13/12/19	PT 1L		
1613928	BH72404 3.20 WATER	13/12/19	PT 1L	pH/Cond/TDS (1 days)	
1613929	BH72502 3.60 WATER	13/12/19	GB 1L	pH/Cond/TDS (1 days)	

Key: P-Plastic T-Tub G-Glass B-Bottle

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details				Density				Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
								Mean after prep.							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Diameter (mm)	Height (mm)	H/D Ratio	Load at Failure (kN)	UCS (MPa) 3 sig. fig.	Failure Sketch	D. Tested	Remarks
BH72504		23.30-23.52	White CHALK	26	96.9	1.97	1.57	99.60	200.20	2.0	20.5	2.63		07/01/20	
BH72504		28.48-28.70	White CHALK	18	79.2	1.99	1.69	101.40	222.10	2.2	26.3	3.26		07/01/20	
BH72504		29.58-30.08	White CHALK	24	92.2	1.96	1.58	100.60	259.50	2.6	18.9	2.38		07/01/20	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are not met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 09/01/2020

Project Number:

GEO / 30395

Project Name:

A303 Amesbury to Berwick Down - Phase 7A GI

PC197708

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UKAS TESTING 1982

ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNCONFINED COMPRESSIVE STRENGTH

Borehole Ref.:	BH72504
Sample Ref.:	-
Depth (m):	23.30-23.52

Description:
White CHALK

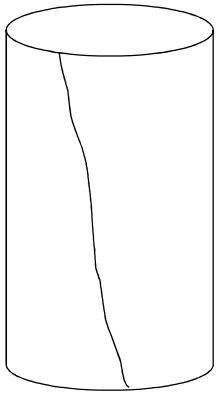
LF0879C (1000kN) compression frame used

Diameter	99.60 mm
Height	200.20 mm
Bulk Density	1.97 Mg/m³
Dry Density	1.57 Mg/m³
Water Content	26 %

Degree of Saturation: 96.9 % Specific Gravity: 2.7 Mg/m³ (Assumed)

Failure Sketch

Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

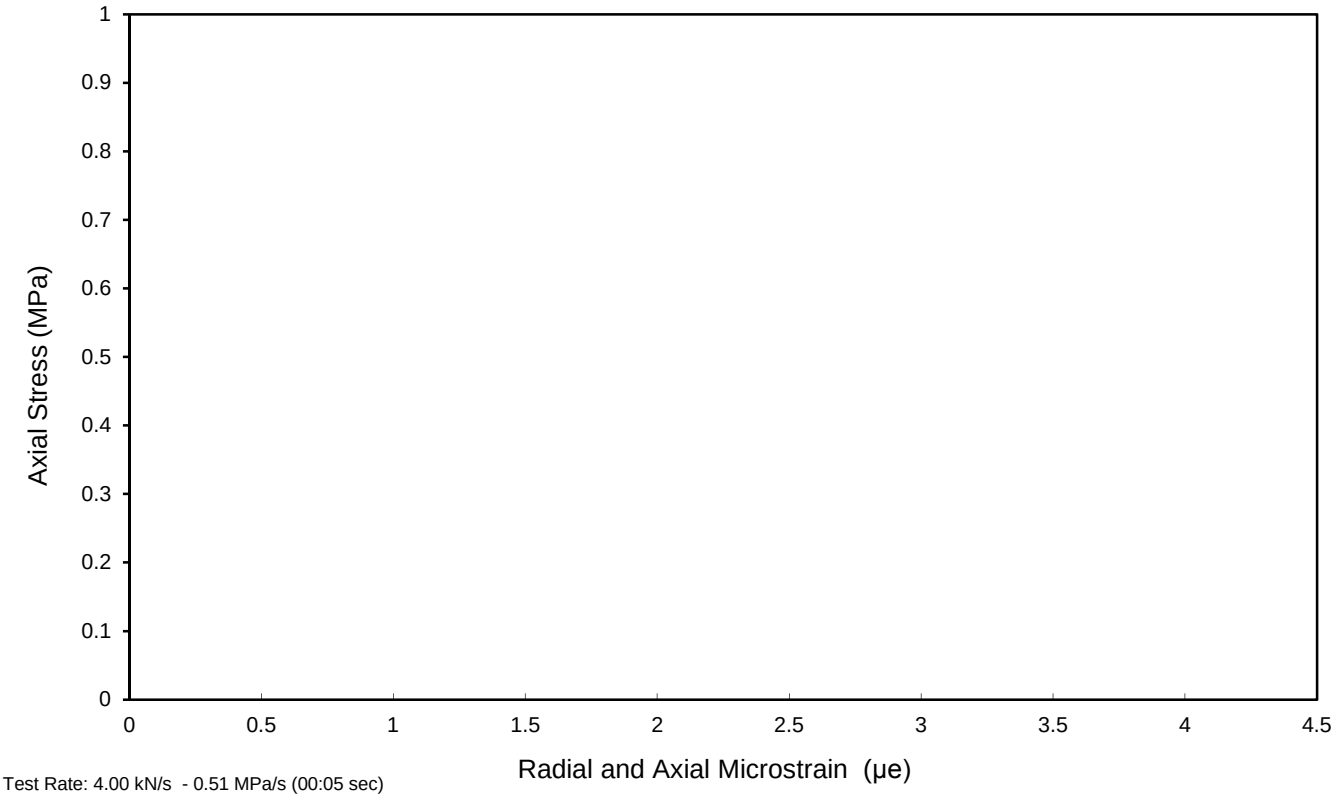
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Date tested: 07/01/2020

Sample type	C

Test results

Unconfined Compressive Strength	2.63 MPa
Young's Modulus (tangential at 50% failure load)	n/a
Poisson's Ratio (tangential at 50% failure load)	n/a
Young's Modulus (secant at 10% failure load)	n/a
Poisson's Ratio (secant at 10% failure load)	n/a



Test Rate: 4.00 kN/s - 0.51 MPa/s (00:05 sec)

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are not met.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 09/01/2020

Project Number:

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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNCONFINED COMPRESSIVE STRENGTH

Borehole Ref.:	BH72504
Sample Ref.:	-
Depth (m):	28.48-28.70

Description:
White CHALK

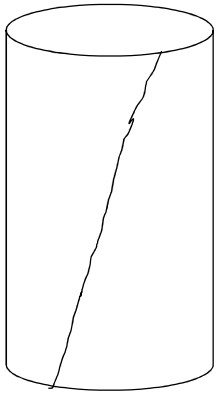
LF0879C (1000kN) compression frame used

Diameter	101.40 mm
Height	222.10 mm
Bulk Density	1.99 Mg/m³
Dry Density	1.69 Mg/m³
Water Content	18 %

Degree of Saturation: 79.2 % Specific Gravity: 2.7 Mg/m³ (Assumed)

Failure Sketch

Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

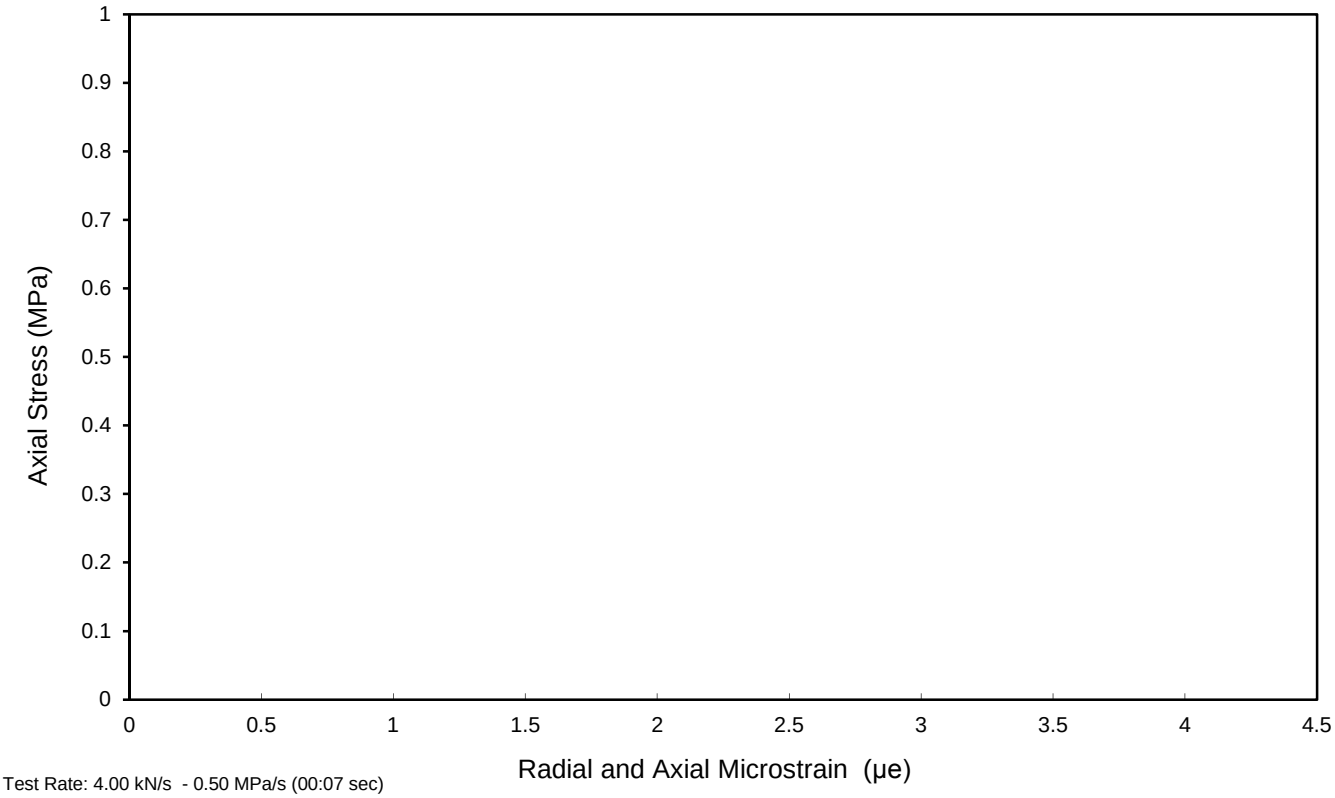
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 120°

Date tested: 07/01/2020

Sample type	C

Test results

Unconfined Compressive Strength	3.26 MPa
Young's Modulus (tangential at 50% failure load)	n/a
Poisson's Ratio (tangential at 50% failure load)	n/a
Young's Modulus (secant at 10% failure load)	n/a
Poisson's Ratio (secant at 10% failure load)	n/a



Test Rate: 4.00 kN/s - 0.50 MPa/s (00:07 sec)

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are not met.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 09/01/2020

Project Number:

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PC197708

GEOLABS

UKAS TESTING 1982

ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS

Borehole Ref.:	BH72504
Sample Ref.:	-
Depth (m):	29.58-30.08

Description:
White CHALK

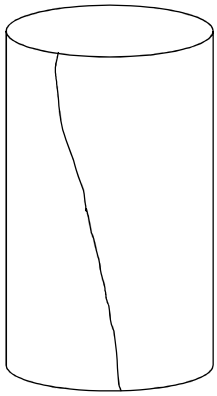
LF0879C (1000kN) compression frame used

Diameter	100.60 mm
Height	259.50 mm
Bulk Density	1.96 Mg/m³
Dry Density	1.58 Mg/m³
Water Content	24 %

Degree of Saturation: 92.2 % Specific Gravity: 2.7 Mg/m³ (Assumed)

Failure Sketch

Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

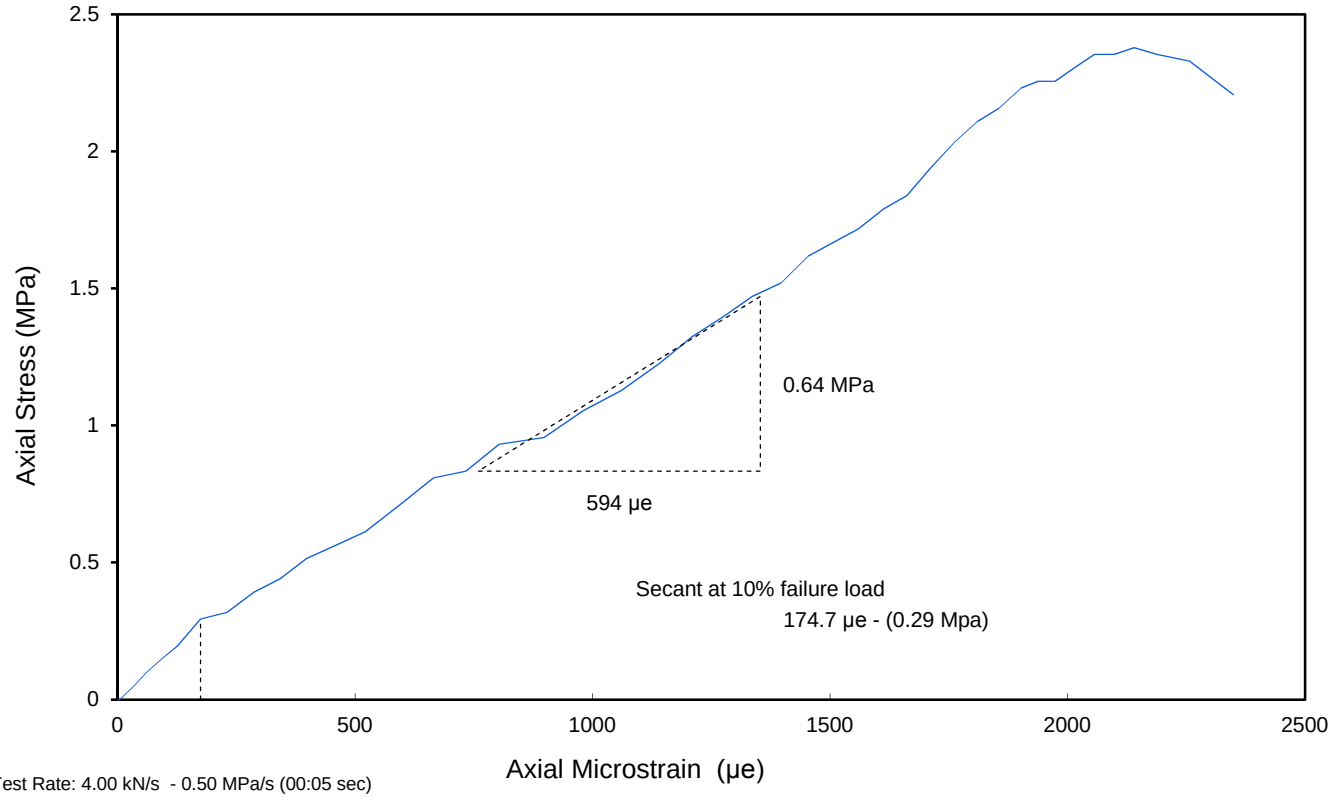
Date tested: 07/01/2020

Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Sample type	C

Test results

Unconfined Compressive Strength	2.38 MPa
Young's Modulus (tangential at 50% failure load)	1.07 GPa
Poisson's Ratio (tangential at 50% failure load)	n/a
Young's Modulus (secant at 10% failure load)	1.68 GPa
Poisson's Ratio (secant at 10% failure load)	n/a



Test Rate: 4.00 kN/s - 0.50 MPa/s (00:05 sec)

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are not met.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 09/01/2020

Project Number:

GEO / 30395

Project Name:

A303 Amesbury to Berwick Down - Phase 7A GI

PC197708

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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNIAXIAL COMPRESSIVE STRENGTH OF ROCK MATERIALS

Sample details						Density		Uniaxial Compression Test (LF0879C (1000kN) compression frame used)							
								Mean after prep.							
Borehole Ref.	Sample Ref.	Depth (m)	Description	MC (%)	Degree of Saturation (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Diameter (mm)	Height (mm)	H/D Ratio	Load at Failure (kN)	UCS (MPa) 3 sig. fig.	Failure Sketch	D. Tested	Remarks
BH72501		25.48-25.70	White CHALK	26	100	2.08	1.65	95.40	189.30	2.0	20.4	2.85		07/01/20	
BH72501		29.86-30.26	White CHALK	24	100	2.03	1.63	97.60	243.80	2.5	26.3	3.52		07/01/20	
BH72502		25.70-25.95	White CHALK	27	100	2.00	1.57	99.70	252.70	2.5	28.5	3.65		07/01/20	
BH72502		27.40-27.70	White CHALK	24	91.7	1.97	1.59	96.60	237.50	2.5	17.3	2.36		07/01/20	
BH72502		29.46-29.77	White CHALK	27	95.5	1.94	1.52	100.80	205.80	2.0	13.3	1.67		07/01/20	

Note: The dimensional requirements of flatness (<0.02 mm), perpendicularity (<0.05 / 50 mm) and straightness (0.3 mm deviation) are not met. Specific Gravity used for Degree of Saturation is assumed unless specified by the client.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 09/01/2020

Project Number:

GEO / 30396

Project Name:

A303 Amesbury to Berwick Down - Phase 7A GI

PC197708

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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNCONFINED COMPRESSIVE STRENGTH

Borehole Ref.:	BH72501
Sample Ref.:	-
Depth (m):	25.48-25.70

Description:
White CHALK

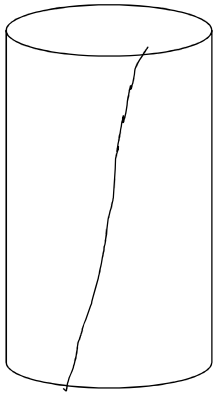
LF0879C (1000kN) compression frame used

Diameter	95.40 mm
Height	189.30 mm
Bulk Density	2.08 Mg/m³
Dry Density	1.65 Mg/m³
Water Content	26 %

Degree of Saturation: 100 % Specific Gravity: 2.7 Mg/m³ (Assumed)

Failure Sketch

Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

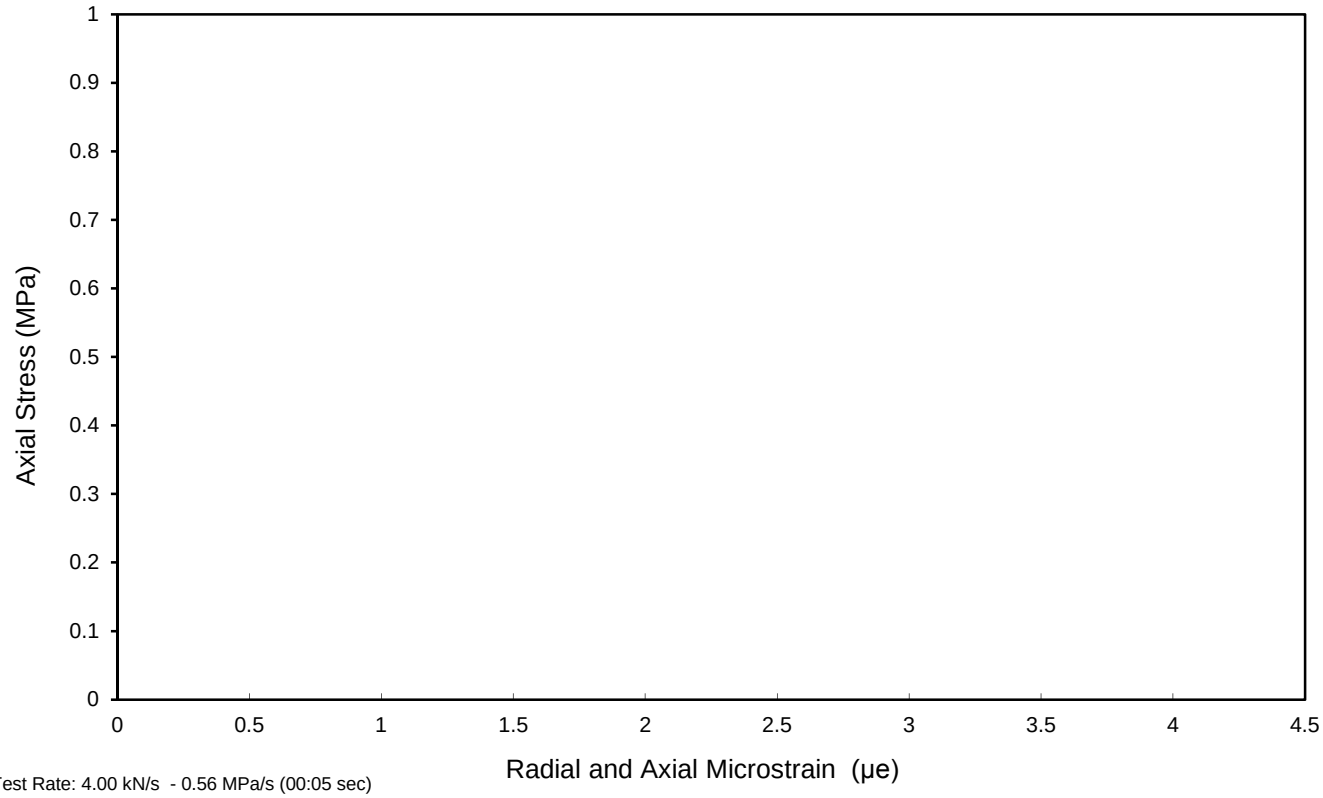
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 100°

Date tested: 07/01/2020

Test results

Unconfined Compressive Strength	2.85 MPa
Young's Modulus (tangential at 50% failure load)	n/a
Poisson's Ratio (tangential at 50% failure load)	n/a
Young's Modulus (secant at 10% failure load)	n/a
Poisson's Ratio (secant at 10% failure load)	n/a

Sample type	**C**



Test Rate: 4.00 kN/s - 0.56 MPa/s (00:05 sec)

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are not met.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 09/01/2020

Project Number:

GEO / 30396

Project Name:

A303 Amesbury to Berwick Down - Phase 7A GI

PC197708

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UKAS TESTING 1982

ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNCONFINED COMPRESSIVE STRENGTH

Borehole Ref.:	BH72501
Sample Ref.:	-
Depth (m):	29.86-30.26

Description:
White CHALK

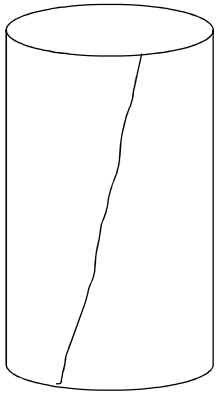
LF0879C (1000kN) compression frame used

Diameter	97.60 mm
Height	243.80 mm
Bulk Density	2.03 Mg/m³
Dry Density	1.63 Mg/m³
Water Content	24 %

Degree of Saturation: 100 % Specific Gravity: 2.7 Mg/m³ (Assumed)

Failure Sketch

Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

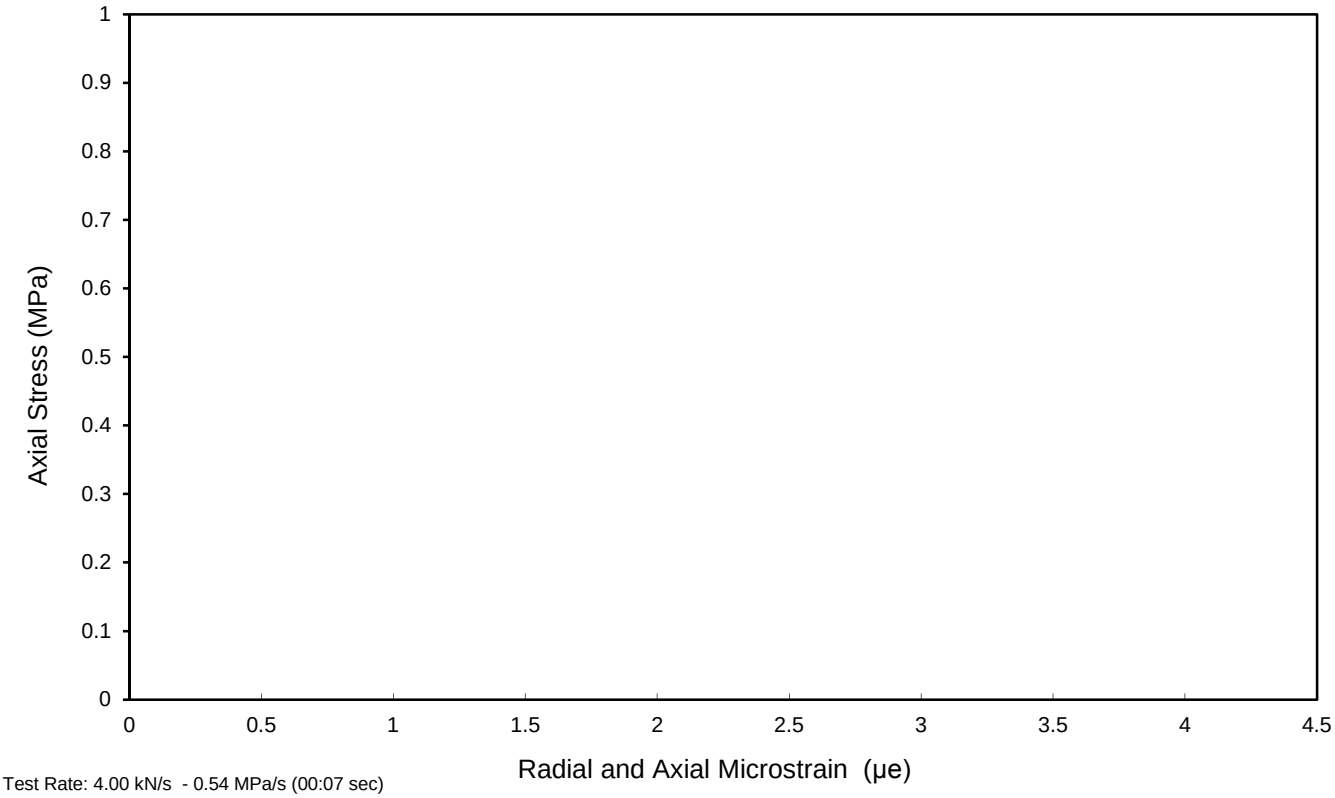
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 105°

Date tested: 07/01/2020

Sample type	C

Test results

Unconfined Compressive Strength	3.52 MPa
Young's Modulus (tangential at 50% failure load)	n/a
Poisson's Ratio (tangential at 50% failure load)	n/a
Young's Modulus (secant at 10% failure load)	n/a
Poisson's Ratio (secant at 10% failure load)	n/a



Test Rate: 4.00 kN/s - 0.54 MPa/s (00:07 sec)

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are not met.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 09/01/2020

Project Number:

GEO / 30396

Project Name:

A303 Amesbury to Berwick Down - Phase 7A GI

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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNCONFINED COMPRESSIVE STRENGTH

Borehole Ref.:	BH72502
Sample Ref.:	-
Depth (m):	25.70-25.95

Description:
White CHALK

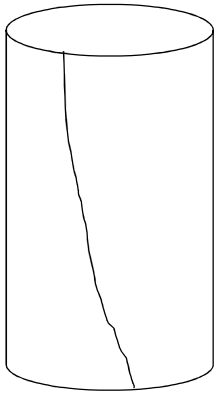
LF0879C (1000kN) compression frame used

Diameter	99.70 mm
Height	252.70 mm
Bulk Density	2.00 Mg/m³
Dry Density	1.57 Mg/m³
Water Content	27 %

Degree of Saturation: 100 % Specific Gravity: 2.7 Mg/m³ (Assumed)

Failure Sketch

Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

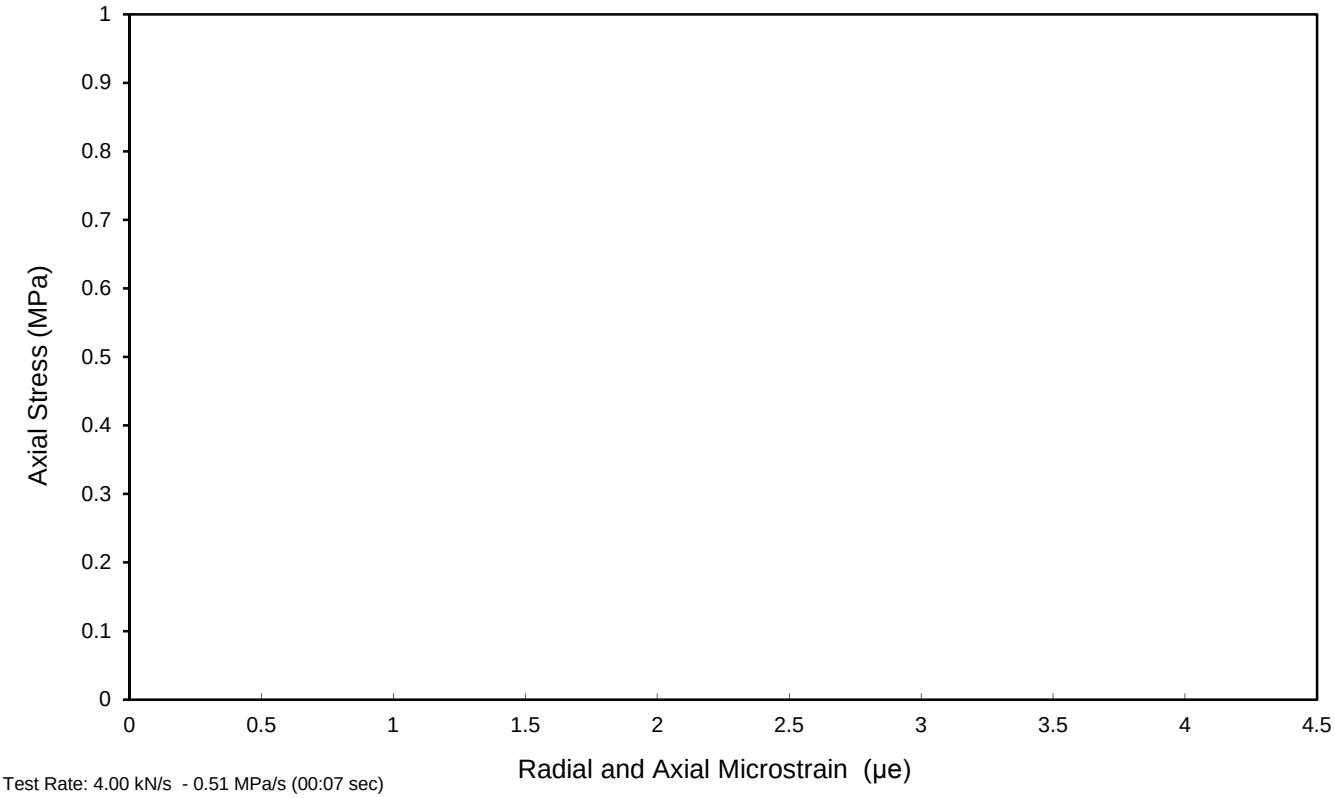
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Date tested: 07/01/2020

Sample type	C

Test results

Unconfined Compressive Strength	3.65 MPa
Young's Modulus (tangential at 50% failure load)	n/a
Poisson's Ratio (tangential at 50% failure load)	n/a
Young's Modulus (secant at 10% failure load)	n/a
Poisson's Ratio (secant at 10% failure load)	n/a



Test Rate: 4.00 kN/s - 0.51 MPa/s (00:07 sec)

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are not met.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 09/01/2020

Project Number:

GEO / 30396

Project Name:

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PC197708

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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNCONFINED COMPRESSIVE STRENGTH WITH YOUNG'S MODULUS

Borehole Ref.:	BH72502
Sample Ref.:	-
Depth (m):	27.40-27.70

Description:
White CHALK

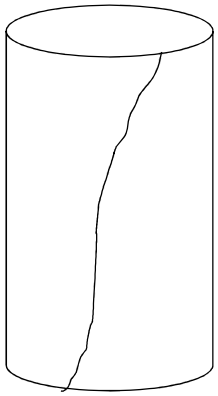
LF0879C (1000kN) compression frame used

Diameter	96.60 mm
Height	237.50 mm
Bulk Density	1.97 Mg/m³
Dry Density	1.59 Mg/m³
Water Content	24 %

Degree of Saturation: 91.7 % Specific Gravity: 2.7 Mg/m³ (Assumed)

Failure Sketch

Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

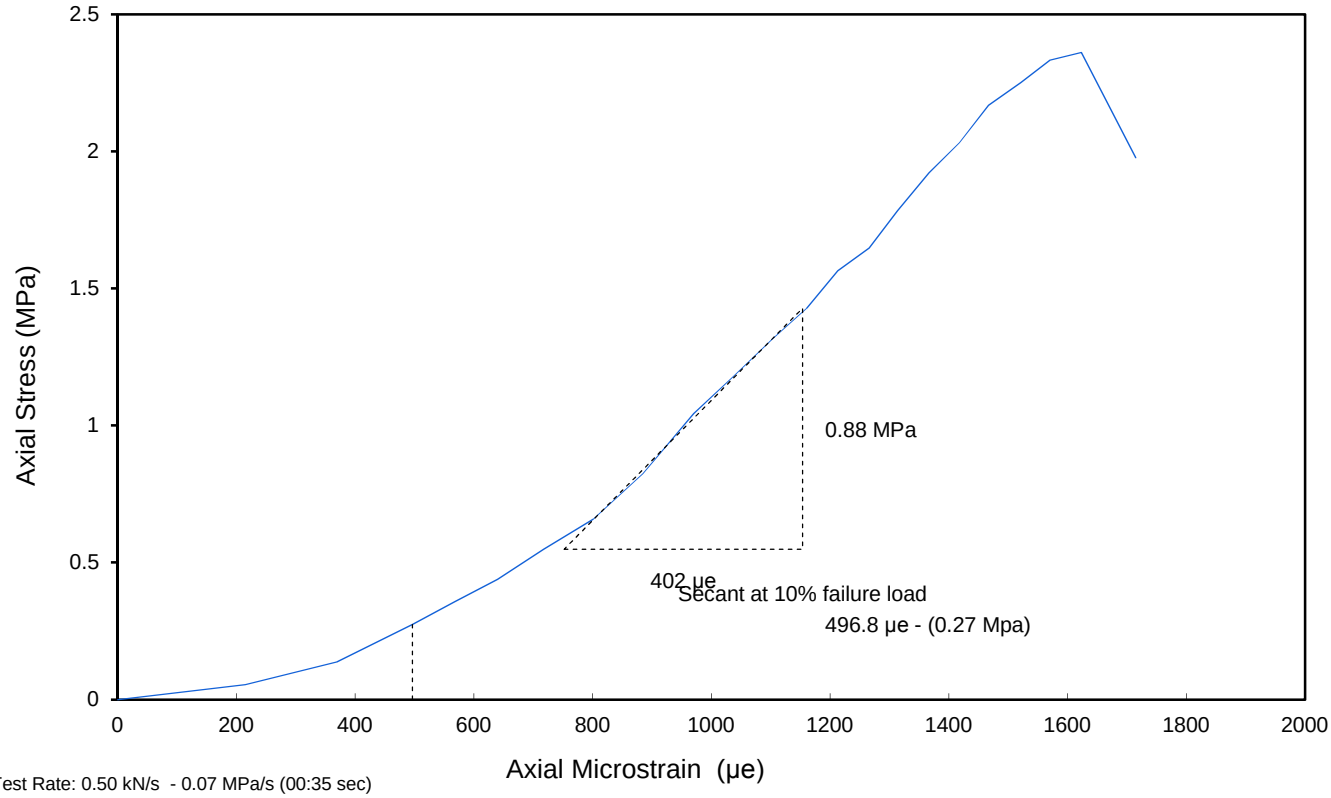
Date tested: 07/01/2020

Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 110°

Sample type	C

Test results

Unconfined Compressive Strength	2.36 MPa
Young's Modulus (tangential at 50% failure load)	2.19 GPa
Poisson's Ratio (tangential at 50% failure load)	n/a
Young's Modulus (secant at 10% failure load)	0.552 GPa
Poisson's Ratio (secant at 10% failure load)	n/a



Test Rate: 0.50 kN/s - 0.07 MPa/s (00:35 sec)

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are not met.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 09/01/2020

Project Number:

GEO / 30396

Project Name:

A303 Amesbury to Berwick Down - Phase 7A GI

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ISRM Suggested Methods – Rock Characterization Testing and Monitoring 1974 - 2006

UNCONFINED COMPRESSIVE STRENGTH

Borehole Ref.:	BH72502
Sample Ref.:	-
Depth (m):	29.46-29.77

Description:
White CHALK

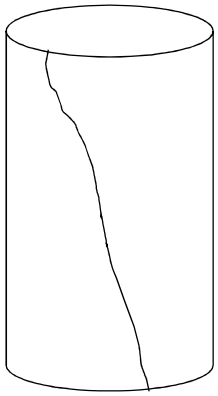
LF0879C (1000kN) compression frame used

Diameter	100.80 mm
Height	205.80 mm
Bulk Density	1.94 Mg/m³
Dry Density	1.52 Mg/m³
Water Content	27 %

Degree of Saturation: 95.5 % Specific Gravity: 2.7 Mg/m³ (Assumed)

Failure Sketch

Mode of failure: Diagonal shearing



Solid lines for material failures.
Dashed lines for apparent weakness failure.

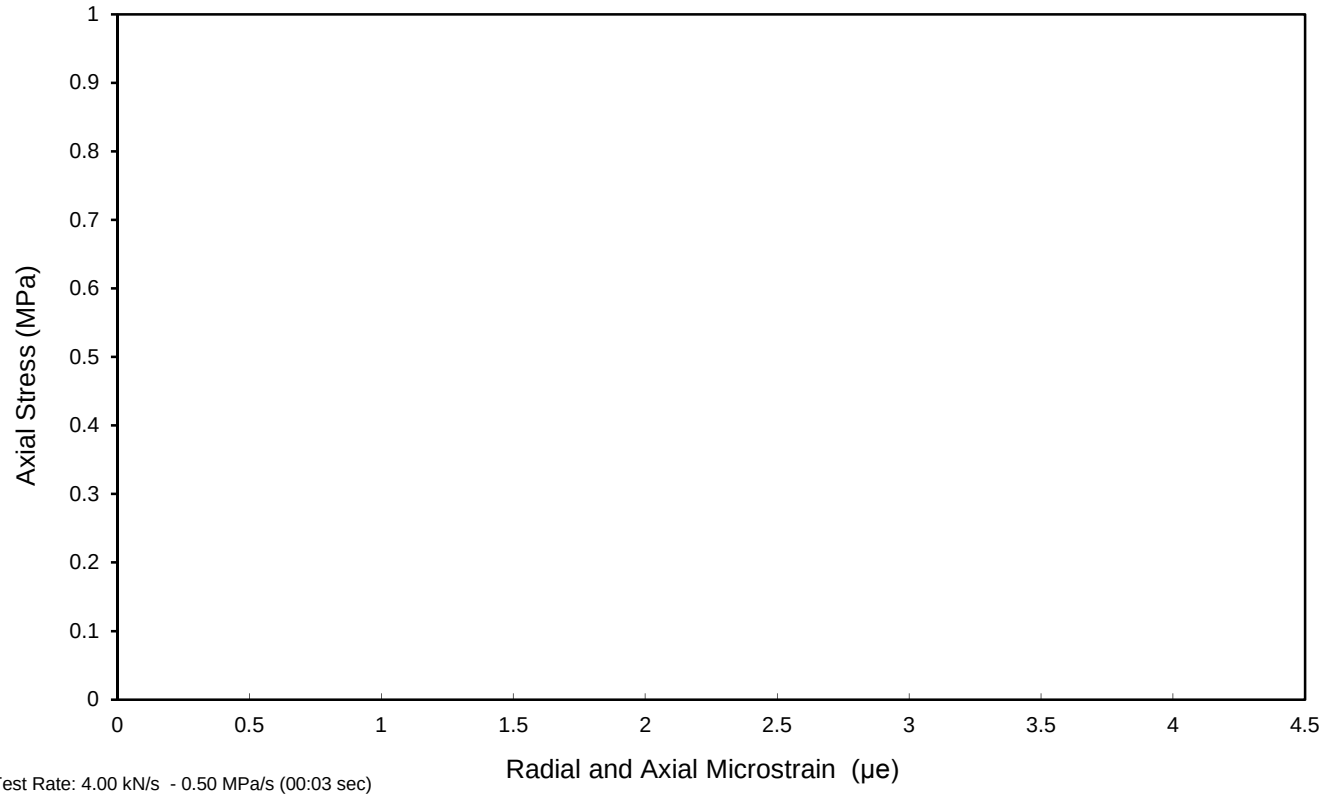
Angle of foliation/Horizontal: n/a
Angle of shear plane/Horizontal: 75°

Date tested: 07/01/2020

Test results

Unconfined Compressive Strength	1.67 MPa
Young's Modulus (tangential at 50% failure load)	n/a
Poisson's Ratio (tangential at 50% failure load)	n/a
Young's Modulus (secant at 10% failure load)	n/a
Poisson's Ratio (secant at 10% failure load)	n/a

Sample type	**C**



Test Rate: 4.00 kN/s - 0.50 MPa/s (00:03 sec)

Note: The dimensional requirements of Flatness (<0.02 mm), Perpendicularity (<0.05 / 50 mm) and Straightness (0.3 mm deviation) are not met.

Checked and Approved by

CC

C Clergeaud (Snr. Geologist)

Date: 09/01/2020

Project Number:

GEO / 30396

Project Name:

A303 Amesbury to Berwick Down - Phase 7A GI

PC197708

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UKAS TESTING 1982

APPENDIX 11

Laboratory Test Results - Contamination

Certificate of Analysis

Certificate Number 19-23362

22-Nov-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-23362

Client Reference PC197708

Order No OC23614

Contract Title A303 Amesbury to Berwick Down Phase 7a Countess

Description 2 Soil samples.

Date Received 18-Nov-19

Date Started 18-Nov-19

Date Completed 22-Nov-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 By [redacted]

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 19-23362
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down Phase 7a Countess

			Lab No	1598934	1598935
			Sample ID	WS72403	WS72403
			Depth	0.40-0.60	1.00-1.20
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	12/11/19	12/11/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Antimony	DETSC 2301*	1	mg/kg	< 1.0	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	4.1	4.0
Beryllium	DETSC 2301#	0.2	mg/kg	< 0.2	< 0.2
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	< 0.2	0.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.9	0.5
Chromium III	DETSC 2301*	0.15	mg/kg	3.8	6.7
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	5.2	8.5
Iron	DETSC 2301	25	mg/kg	2900	6600
Lead	DETSC 2301#	0.3	mg/kg	21	16
Manganese	DETSC 2301#	20	mg/kg	290	310
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	< 0.4	< 0.4
Nickel	DETSC 2301#	1	mg/kg	3.5	5.2
Phosphorus	DETSC 2301*	1	mg/kg	390	430
Selenium	DETSC 2301#	0.5	mg/kg	1.1	< 0.5
Zinc	DETSC 2301#	1	mg/kg	47	34
Inorganics					
pH	DETSC 2008#		pH	8.5	8.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1
Total Organic Carbon	DETSC 2002	0.1	%	0.4	1.6
Ammoniacal Nitrogen as N	DETSC 2119#	0.5	mg/kg	3.3	4.5
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	43	19
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 19-23362
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down Phase 7a Countess

			Lab No	1598934	1598935
			Sample ID	WS72403	WS72403
			Depth	0.40-0.60	1.00-1.20
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	12/11/19	12/11/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	0.25	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	0.24	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	2.8	0.14
Anthracene	DETSC 3303	0.03	mg/kg	2.7	0.14
Fluoranthene	DETSC 3303#	0.03	mg/kg	2.4	0.38
Pyrene	DETSC 3303#	0.03	mg/kg	1.8	0.34
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.53	0.12
Chrysene	DETSC 3303	0.03	mg/kg	0.52	0.16
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.38	0.16
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.18	0.06
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.32	0.12
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.13	0.07
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.12	0.07
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	12	1.8
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 19-23362
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down Phase 7a Countess

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1598934	WS72403 0.40-0.60	SOIL	NAD	none	Luke Donaghy
1598935	WS72403 1.00-1.20	SOIL	NAD	none	Luke Donaghy

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-23362
Client Ref PC197708
Contract A303 Amesbury to Berwick Down Phase 7a Countess

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1598934	WS72403 0.40-0.60 SOIL	12/11/19	GJ 250ml, GJ 60ml, PT 1L		
1598935	WS72403 1.00-1.20 SOIL	12/11/19	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-24827

11-Dec-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-24827

Client Reference PC197708

Order No OC23614

Contract Title A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Description 2 Soil samples.

Date Received 05-Dec-19

Date Started 05-Dec-19

Date Completed 11-Dec-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 By [redacted]

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 19-24827
Client Ref PC197708
Contract Title A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

			Lab No	1607980	1607981
			Sample ID	BH72404	BH72502
			Depth	0.10-0.20	0.10-0.20
			Other ID		
			Sample Type	ES	ES
			Sampling Date	13/11/19	14/11/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
Metals					
Antimony	DETSC 2301*	1	mg/kg	4.7	2.8
Arsenic	DETSC 2301#	0.2	mg/kg	3.4	1.6
Beryllium	DETSC 2301#	0.2	mg/kg	< 0.2	< 0.2
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.4	0.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	0.6
Chromium III	DETSC 2301*	0.15	mg/kg	5.6	4.1
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	8.2	5.4
Iron	DETSC 2301	25	mg/kg	4800	2200
Lead	DETSC 2301#	0.3	mg/kg	33	27
Manganese	DETSC 2301#	20	mg/kg	280	140
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	< 0.4	< 0.4
Nickel	DETSC 2301#	1	mg/kg	5.9	2.8
Phosphorus	DETSC 2301*	1	mg/kg	450	160
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	110	39
Inorganics					
pH	DETSC 2008#		pH	8.0	8.0
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.1	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1
Total Organic Carbon	DETSC 2002	0.1	%	1.3	0.7
Ammoniacal Nitrogen as N	DETSC 2119#	0.5	mg/kg	2.9	4.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	78	14
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	2.4	1.4
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 19-24827
Client Ref PC197708
Contract Title A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

			Lab No	1607980	1607981
			Sample ID	BH72404	BH72502
			Depth	0.10-0.20	0.10-0.20
			Other ID		
			Sample Type	ES	ES
			Sampling Date	13/11/19	14/11/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	0.41	0.08
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.05	0.04
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.12	0.09
Pyrene	DETSC 3303#	0.03	mg/kg	0.11	0.09
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.05	0.04
Chrysene	DETSC 3303	0.03	mg/kg	0.07	0.05
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.11	0.06
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.09	0.04
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.07	0.04
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.06	0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.79	0.50
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 19-24827
Client Ref PC197708
Contract Title A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1607980	BH72404 0.10-0.20	SOIL	NAD	none	Keith Wilson
1607981	BH72502 0.10-0.20	SOIL	NAD	none	Keith Wilson

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-24827
Client Ref PC197708
Contract A303 AMESBURY TO BERWICK DOWN - PHASE 7A COUNTESS

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1607980	BH72404 0.10-0.20 SOIL	13/11/19	GJ 250ml, GJ 60ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days)	
1607981	BH72502 0.10-0.20 SOIL	14/11/19	GJ 250ml, PT 1L	Aliphatics/Aromatics (14 days), BTEX (14 days), Naphthalene (14 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (14 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Certificate of Analysis

Certificate Number 19-25097

16-Dec-19

Client Geotechnics LTD
203 Torrington Avenue
Tile Hill
Coventry
CV4 9AP

Our Reference 19-25097

Client Reference PC197708

Order No OC23614

Contract Title A303 Amesbury to Berwick Down Phase 7a Countess

Description 8 Soil samples.

Date Received 05-Dec-19

Date Started 05-Dec-19

Date Completed 16-Dec-19

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. 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 By [redacted]

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Soil Samples

Our Ref 19-25097
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down Phase 7a Countess

				Lab No	1609633	1609634	1609635	1609636	1609637	1609638
				Sample ID	BH72501	BH72501	STP72501	STP72501	STP72502	STP72502
				Depth	0.30	0.50	0.10	0.30	0.10	0.30
				Other ID						
				Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Sampling Date	25/11/19	25/11/19	26/11/19	26/11/19	26/11/19	26/11/19
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Metals										
Antimony	DETSC 2301*	1	mg/kg	1.6	< 1.0	< 1.0	< 1.0	1.1	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	4.5	4.1	4.2	2.7	4.4	3.1
Beryllium	DETSC 2301#	0.2	mg/kg	0.3	0.3	0.3	0.2	0.2	< 0.2
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.5	0.5	0.6	0.3	0.8	0.4
Cadmium	DETSC 2301#	0.1	mg/kg	0.3	0.3	0.6	0.4	0.6	0.4
Chromium III	DETSC 2301*	0.15	mg/kg	8.0	8.7	9.7	4.2	8.6	5.7
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	6.7	6.7	17	6.8	19	7.5
Iron	DETSC 2301	25	mg/kg	7100	7900	7500	3600	7600	5700
Lead	DETSC 2301#	0.3	mg/kg	57	20	45	15	48	20
Manganese	DETSC 2301#	20	mg/kg	240	240	390	210	390	310
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	0.22	0.21
Molybdenum	DETSC 2301#	0.4	mg/kg	< 0.4	< 0.4	0.5	< 0.4	0.5	< 0.4
Nickel	DETSC 2301#	1	mg/kg	6.5	6.6	7.1	4.7	7.0	5.4
Phosphorus	DETSC 2301*	1	mg/kg	1100	490	880	400	760	620
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.6	< 0.5	< 0.5
Zinc	DETSC 2301#	1	mg/kg	33	34	100	42	120	46
Inorganics										
pH	DETSC 2008#		pH	9.5	10.4	7.9	10.5	7.8	8.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	0.1	< 0.1	0.2	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Total Organic Carbon	DETSC 2002	0.1	%	0.7	0.6	3.5	0.6	3.4	1.1
Ammoniacal Nitrogen as N	DETSC 2119#	0.5	mg/kg	2.3	2.0	6.4	4.2	5.9	2.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	52	65	28	29	27	21
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 19-25097
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down Phase 7a Countess

			Lab No	1609633	1609634	1609635	1609636	1609637	1609638
			Sample ID	BH72501	BH72501	STP72501	STP72501	STP72502	STP72502
			Depth	0.30	0.50	0.10	0.30	0.10	0.30
			Other ID						
			Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sampling Date	25/11/19	25/11/19	26/11/19	26/11/19	26/11/19	26/11/19
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10	< 10	< 10	< 10	< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
PAHs									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.04	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.05	0.06	< 0.03	< 0.03	0.28	0.36
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	0.07	0.06
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.12	0.19	0.07	0.05	0.41	0.77
Pyrene	DETSC 3303#	0.03	mg/kg	0.10	0.19	0.06	0.05	0.35	0.66
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.05	0.11	< 0.03	< 0.03	0.10	0.22
Chrysene	DETSC 3303	0.03	mg/kg	0.06	0.16	< 0.03	< 0.03	0.11	0.28
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.07	0.23	< 0.03	0.03	0.10	0.24
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.07	< 0.03	< 0.03	< 0.03	0.10
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.05	0.18	< 0.03	< 0.03	0.07	0.18
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	0.03	0.09	< 0.03	< 0.03	< 0.03	0.11
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	0.04	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	0.03	0.11	< 0.03	< 0.03	0.04	0.12
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.55	1.4	0.13	0.13	1.6	3.1
Phenols									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	1.0	0.6	1.0	< 0.3	0.5	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 19-25097
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down Phase 7a Countes

	Lab No	1609639	1609640
	Sample ID	WS72403	BH72501
	Depth	1.50	2.20
	Other ID		
	Sample Type	SOIL	SOIL
	Sampling Date	02/12/19	26/11/19
	Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Metals					
Antimony	DETSC 2301*	1	mg/kg	< 1.0	< 1.0
Arsenic	DETSC 2301#	0.2	mg/kg	1.3	4.9
Beryllium	DETSC 2301#	0.2	mg/kg	< 0.2	< 0.2
Boron, Water Soluble	DETSC 2311#	0.2	mg/kg	0.2	< 0.2
Cadmium	DETSC 2301#	0.1	mg/kg	0.4	0.5
Chromium III	DETSC 2301*	0.15	mg/kg	2.8	10
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	3.7	8.9
Iron	DETSC 2301	25	mg/kg	2200	3100
Lead	DETSC 2301#	0.3	mg/kg	5.7	1.3
Manganese	DETSC 2301#	20	mg/kg	400	300
Mercury	DETSC 2325#	0.05	mg/kg	0.08	< 0.05
Molybdenum	DETSC 2301#	0.4	mg/kg	< 0.4	0.7
Nickel	DETSC 2301#	1	mg/kg	4.3	5.2
Phosphorus	DETSC 2301*	1	mg/kg	460	690
Selenium	DETSC 2301#	0.5	mg/kg	0.6	8.1
Zinc	DETSC 2301#	1	mg/kg	27	18
Inorganics					
pH	DETSC 2008#		pH	8.6	8.7
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1
Cyanide, Free	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1
Total Organic Carbon	DETSC 2002	0.1	%	0.4	< 0.1
Ammoniacal Nitrogen as N	DETSC 2119#	0.5	mg/kg	2.0	1.7
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	31	21
Petroleum Hydrocarbons					
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6	< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10	< 10

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 19-25097
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down Phase 7a Countes

			Lab No	1609639	1609640
			Sample ID	WS72403	BH72501
			Depth	1.50	2.20
			Other ID		
			Sample Type	SOIL	SOIL
			Sampling Date	02/12/19	26/11/19
			Sampling Time	n/s	n/s
Test	**Method**	**LOD**	**Units**		
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg	< 10	< 10
Benzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Ethylbenzene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Toluene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
Xylene	DETSC 3321#	0.01	mg/kg	< 0.01	< 0.01
MTBE	DETSC 3321	0.01	mg/kg	< 0.01	< 0.01
PAHs					
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	0.09	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	0.19	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	0.16	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	0.08	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	0.05	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	0.04	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	0.65	< 0.10
Phenols					
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Asbestos Analysis
Soil Samples

Our Ref 19-25097
Client Ref PC197708
Contract Title A303 Amesbury to Berwick Down Phase 7a Countess

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
1609633	BH72501 0.30	SOIL	NAD	none	Luke Donaghy
1609634	BH72501 0.50	SOIL	NAD	none	Luke Donaghy
1609635	STP72501 0.10	SOIL	NAD	none	Luke Donaghy
1609636	STP72501 0.30	SOIL	NAD	none	Luke Donaghy
1609637	STP72502 0.10	SOIL	NAD	none	Luke Donaghy
1609638	STP72502 0.30	SOIL	NAD	none	Luke Donaghy
1609639	WS72403 1.50	SOIL	NAD	none	Luke Donaghy
1609640	BH72501 2.20	SOIL	NAD	none	Luke Donaghy

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: * - not included in laboratory scope of accreditation.

Information in Support of the Analytical Results

Our Ref 19-25097
Client Ref PC197708
Contract A303 Amesbury to Berwick Down Phase 7a Countess

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1609633	BH72501 0.30 SOIL	25/11/19	GJ 250ml x2, GJ 60ml x2, PT 1L x2	pH + Conductivity (7 days)	
1609634	BH72501 0.50 SOIL	25/11/19	GJ 250ml x2, GJ 60ml x2, PT 1L x2	pH + Conductivity (7 days)	
1609635	STP72501 0.10 SOIL	26/11/19	GJ 60ml x2, PT 1L	pH + Conductivity (7 days)	
1609636	STP72501 0.30 SOIL	26/11/19	GJ 250ml, GJ 60ml x2, PT 1L	pH + Conductivity (7 days)	
1609637	STP72502 0.10 SOIL	26/11/19	GJ 250ml, GJ 60ml x2, PT 1L	pH + Conductivity (7 days)	
1609638	STP72502 0.30 SOIL	26/11/19	GJ 250ml, GJ 60ml x2, PT 1L	pH + Conductivity (7 days)	
1609639	WS72403 1.50 SOIL	02/12/19	GJ 250ml, GJ 60ml x2, PT 1L		
1609640	BH72501 2.20 SOIL	26/11/19	GJ 250ml x2, GJ 60ml x2, PT 1L x2	pH + Conductivity (7 days)	

Key: G-Glass P-Plastic J-Jar T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

APPENDIX 12

Investigation Techniques and General Notes

INVESTIGATION TECHNIQUES

INTRODUCTION

The following brief review of Ground Investigation techniques, generally used as part of most Site Investigations in the UK, summarises their methodology, advantages and limitations. Detailed descriptions of the techniques are available and can be provided on request. This review should be read in conjunction with the accompanying General Notes.

TRIAL PITS

The trial pit is amongst the simplest yet most effective means of identifying shallow ground conditions on a site. Its advantages include simplicity, speed, potential accuracy and cost-effectiveness. The trial pit is most commonly formed using a back-acting excavator which can typically determine ground conditions to some 4 metres below ground level. Hand excavation is often used to locate, expose and detail existing foundations, features or services. In general, it is difficult to extend pits significantly below the water table in predominantly granular soils, where flows can cause instability. Unless otherwise stated, the trial pits will not have been provided with temporary side support during their construction. Under such circumstances, entrance into the pit is not permitted and hence observations will have been made from the ground surface and samples taken from the excavator bucket.

Where access for personnel is required to allow close observation of the exposed strata, the taking of samples and the carrying out of in situ tests, the sides of the trial pits (Observation Pits in BS 5930:2015) will be made safe using temporary supports or the sides battered back to a stable angle. Some limited access to such Trial Pits (Observation Pits) at depths less than 1m may be allowed in stable conditions or where the sides are benched or battered back to a safe angle.

Trends in strata type, level and thickness can be determined, shear surfaces identified and the behaviour of plant, excavation sides and excavated materials can be related to the construction process. They are particularly valuable in land slip investigations. Some types of in situ test can be undertaken in such pits and large disturbed or block samples obtained.

CABLE PERCUSSION BORING

The light Cable Percussion technique of soft ground boring, typically at a diameter of 150mm, is a well-established simple and flexible method of boring vertical holes and generally allows data to be obtained in respect of strata conditions other than rock. A tubular cutter (for cohesive soils) or shell with a flap valve (for granular soils) is repeatedly lifted and dropped using a winch and rope operating from an "A" frame. Soil which enters these tools is regularly removed and either sampled for subsequent examination or test, or laid to one side for later removal off site and licensed disposal or, if permitted by the Client, use as backfill. Steel casing will have been used to prevent collapse of the borehole sides where necessary. A degree of disturbance of soil and mixing of layers is inevitable and the presence of very thin layers of different soils within a particular stratum may not be identified. Changes in strata type can only be detected on recognition of a change in soil samples at the surface, after the interface has been passed. For the foregoing reasons, depth measurements should not be considered to be more accurate than 0.10 metre. The technique can determine ground conditions to depths in excess of 30 metres under suitable circumstances and usually causes less surface disturbance than trial pitting.

In cohesive soils cylindrical samples are retrieved by driving or pushing in 100mm nominal diameter tubes. In soft soils, piston sampling or vane testing may be undertaken. In granular soils and often in cohesive materials, in situ Standard Penetration Tests (SPT's) are performed. The SPT records the number of standard blows required to drive a 50mm diameter open or cone ended probe for 300mm after an initial 150mm penetration. A modified method of recording is used in denser strata. Small disturbed samples are obtained throughout.

ROTARY DRILLING

Rotary Drilling to produce cores by rotating an annular diamond-impregnated tube or barrel into the ground is the technique most appropriate to the forming of site investigation boreholes through rock or other hard strata. It has the advantage of being able to be used vertically or at an angle. Core diameters of less than 100mm are most common for site investigation purposes. Core is normally retrieved in plastic lining tubes. A flushing fluid such as air, water or foam is used to cool the bit and carry cuttings to the surface. Depths in excess of 60 metres can be achieved under suitable circumstances using rotary techniques, with minimal surface disturbance.

Examination of cores allows detailed rock description and generally enables angled discontinuity surfaces to be observed. However, vertical holes do not necessarily reveal the presence of vertical or near-vertical fissures or joint discontinuities. The core type and/or techniques used will depend on the ground conditions. Where open hole rotary drilling is employed, descriptions of strata result from examination at the surface of small particles ejected from the borehole in the flushing medium. In consequence, no indication of fissuring, bedding, consistency or degree of weathering can be obtained.

DYNAMIC SAMPLING

This technique involves the driving of an open-ended tube into the ground and retrieval of the soil which enters the tube. It was previously called window or windowless sampling. The term "window sample" arose from the original device which had a "window" or slot cut into the side of the tube through which samples were taken. This was superseded by the use of a thin-walled plastic liner to retrieve the soil sample from within a sampler (windowless sampling) which has a solid wall. Line diameters range from 36 to 86mm. Such samples can be used for qualitative logging, selection of samples for classification and chemical analysis and for obtaining a rudimentary assessment of strength.

Driving devices can be hand-held or machine mounted and the drive tubes are typically in 1m lengths. Depending on the type of rig used, the hole formed can be cased to prevent collapse of the borehole sides. Where the type of rig does not allow the insertion of casing, the success of this technique can be limited when soils and groundwater conditions are such that the sides of the hole collapse on withdrawal of the sampler. Obstructions within the ground, the density of the material or its strength can also limit the depth and rate of penetration of this light-weight investigation technique. Nevertheless, it is a valuable tool where access is constrained such as within buildings or on embankments. Depths of up to 10m can be achieved in suitable circumstances depending on the rig type but depths of 5m to 6m are more common.

EXPLORATORY HOLE RECORDS

The data obtained by these techniques are generally presented on Trial Pit, Borehole, Drillhole or Dynamic Sample Records. The descriptions of strata result from information gathered from a number of sources which may include published geological data, preliminary field observations and descriptions, in situ test results, laboratory test results and specimen descriptions. A key to the symbols and abbreviations used accompanies the records. The descriptions on the exploratory hole records accommodate but may not necessarily be identical to those on any preliminary records or the laboratory summaries.

The records show ground conditions at the exploratory hole locations. The degree to which they can be used to represent conditions between or beyond such holes, however, is a matter for geological interpretation rather than factual reporting and the associated uncertainties must be recognised.

DYNAMIC PROBING

This technique typically measures the number of blows of a standard weight falling over a standard height to advance a cone-ended rod over sequential standard distances (typically 100mm). Some devices measure the penetration of the probe per standard blow. It is essentially a profiling tool and is best used in conjunction with other investigation techniques where site-specific correlation can be used to delineate the distribution of soft or loose soils or the upper horizon of a dense or strong layer such as rock.

Both machine-driven and hand-driven equipment is available, the selection depending upon access restrictions and the depth of penetration required. It is particularly useful where access for larger equipment is not available, disturbance is to be minimised or where there are cost constraints. No samples are recovered and some techniques leave a sacrificial cone head in the ground. As with other lightweight techniques, progress is limited in strong or dense soils. The results are presented both numerically and graphically. Depths of up to 10m are commonly achieved in suitable circumstances.

The hand-driven DCP probing device has been calibrated by the Highways Agency to provide a profile of CBR values over a range of depths.

INSTRUMENTATION

The most common form of instrument used in site investigation is either the standpipe or else the standpipe piezometer which can be installed in investigation holes. They are used to facilitate monitoring of groundwater levels and water sampling over a period of time following site work. Normally a standpipe would be formed using rigid plastic tubing which has been perforated or slotted over much of its length whilst a standpipe piezometer would have a filter tip which would be placed at a selected level and the hole sealed above and sometimes below to isolate the zone of interest. Groundwater levels are determined using an electronic "dip meter" to measure the depth to the water surface from ground level. Piezometers can also be used to measure permeability. They are simple and inexpensive instruments for long term monitoring but response times can limit their use in tidal areas and access to the ground surface at each instrument is necessary. Remote reading requires more sophisticated hydraulic, electronic or pneumatic equipment.

Settlement can be monitored using surface or buried target plates whilst lateral movement over a range of depths is monitored using slip indicator or inclinometer equipment.

GENERAL NOTES

1. *The report is prepared for the exclusive use of the Client named in the document and copyright subsists with Geotechnics Limited. Prior written permission must be obtained to reproduce all or part of the report. It is prepared on the understanding that its contents are only disclosed to parties directly involved in the current investigation, preparation and development of the site.*

2. *Further copies may be obtained with the Client's written permission, from Geotechnics Limited with whom the master copy of the document will be retained.*

3. *The report and/or opinion is prepared for the specific purpose stated in the document and in relation to the nature and extent of proposals made available to Geotechnics Limited at that time. Re-consideration will be necessary should those details change. The recommendations should not be used for other schemes on or adjacent to the site without further reference to Geotechnics Limited.*

4. *The assessment of the significance of the factual data, where called for, is provided to assist the Client and their Engineer and/or Advisers in the preparation of their designs.*

5. *The report is based on the ground conditions encountered in the exploratory holes together with the results of field and laboratory testing in the context of the proposed development. The data from any commissioned desk study and site reconnaissance are also drawn upon. There may be special conditions appertaining to the site, however, which are not revealed by the investigation and which may not be taken into account in the report.*

6. *Methods of construction and/or design other than those proposed by the designers or referred to in the report may require consideration during the evolution of the proposals and further assessment of the geotechnical and any geoenvironmental data would be required to provide discussion and evaluations appropriate to these methods.*

7. *The accuracy of results reported depends upon the technique of measurement, investigation and test used and these values should not be regarded necessarily as characteristics of the strata as a whole (see accompanying notes on Investigation Techniques). Where such measurements are critical, the technique of investigation will need to be reviewed and supplementary investigation undertaken in accordance with the advice of the Company where necessary.*

8. *The samples selected for laboratory test are prepared and tested in accordance with the relevant Clauses and Parts of BS EN ISO 17892 and BS 1377 Parts 1 to 8, where appropriate, in Geotechnics Limited's UKAS accredited Laboratory, where possible. A list of tests is given.*

9. *Tests requiring the use of another laboratory having UKAS accreditation where possible are identified.*

10. *Any unavoidable variations from specified procedures are identified in the report.*

11. *Specimens are cut vertically, where this is relevant and can be identified, unless otherwise stated*

12. *All the data required by the test procedures are recorded on individual test sheets but the results in the report are presented in summary form to aid understanding and assimilation for design purposes. Where all details are required, these can be made available.*

13. *Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes, or on the possible presence of features based on either visual, verbal, written, cartographical, photographic or published evidence, this is for guidance only and no liability can be accepted for its accuracy.*

14. *The Code of Practice for Ground Investigations – BS 5930:2015 calls for man-made soils to be described as Anthropogenic Ground with soils placed in an un-controlled manner classified as Made Ground and soils placed in a controlled manner as Fill. In view of the difficulty in always accurately determining the origin of man-made soils in exploratory holes, Geotechnics Limited classify such materials as Made Ground. Where soils can be clearly identified as being placed in a controlled manner then further classification of the soils as Fill has been added to the Exploratory Hole Records.*

15. *Classification of man-made soils is based on the inspection of retrieved samples or exposed excavations. Where it is obvious that foreign matter such as paper, plastic or metal is present, classification is clear. Frequently, however, for man-made soils that arise from the adjacent ground or from the backfilling of excavations, their visual characteristics can closely resemble those of undisturbed ground. Other evidence such as site history, exploratory hole location or other tests may need to be drawn upon to provide clarification. For these reasons, classification of soils on the exploratory hole records as either Made Ground or naturally occurring strata, the boundary between them and any interpretation that this gives rise to should be regarded as provisional and subject to re-evaluation in the light of further data.*

16. *The classification of materials as Topsoil is generally based on visual description and should not be interpreted to mean that the material so described complies with the criteria for Topsoil used in BS 3882:2015. Specific testing would be necessary where such a definition is a requirement.*

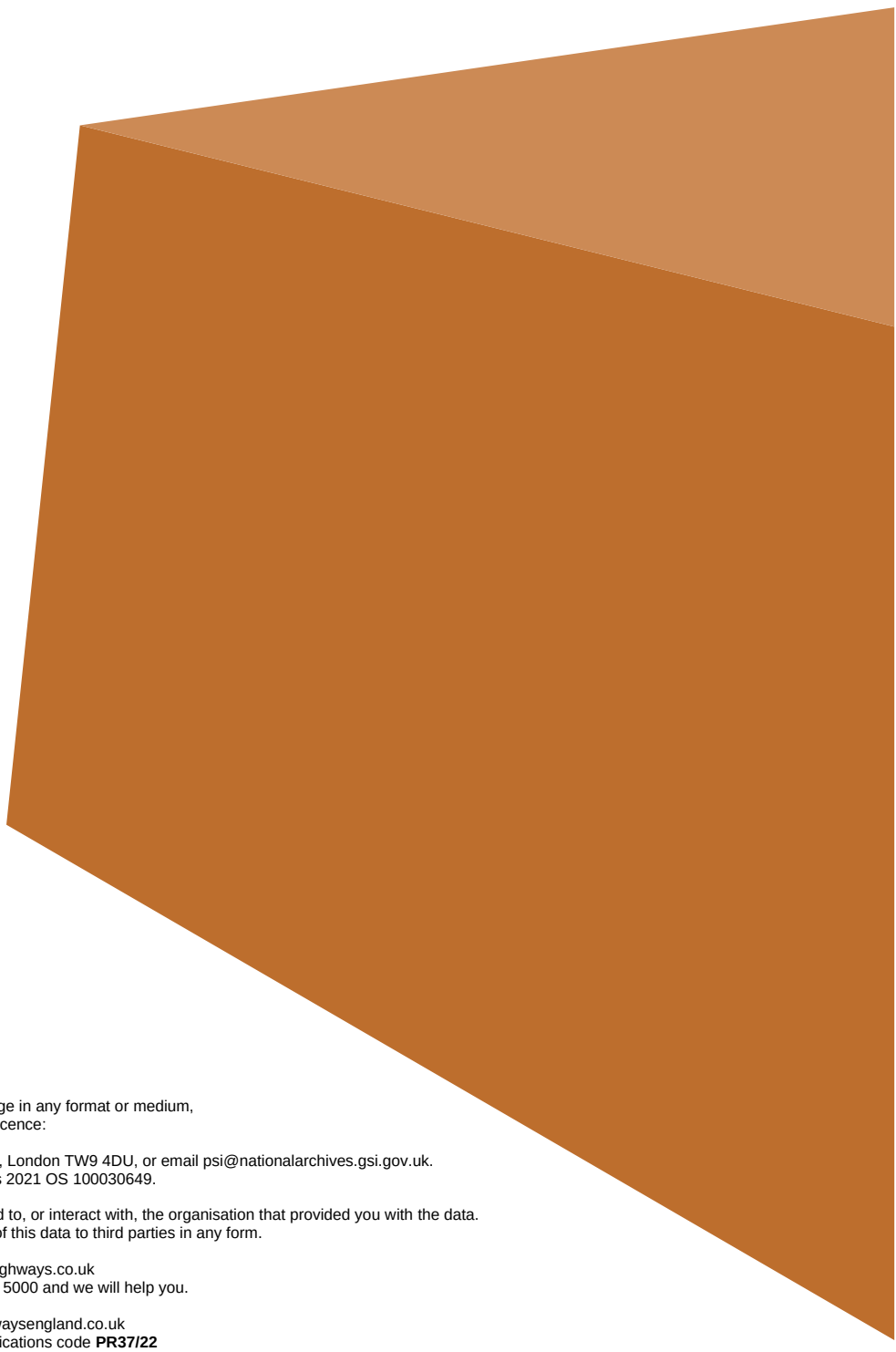
17. *Ground conditions should be monitored during the construction of the works and the report should be re-evaluated in the light of these data by the supervising geotechnical engineers.*

18. *Any comments on groundwater conditions are based on observations made at the time of the investigation, unless specifically stated otherwise. It should be noted, however, that the observations are subject to the method and speed of boring, drilling or excavation and that groundwater levels will vary due to seasonal or other effects.*

19. *Any bearing capacities for conventional spread foundations which are given in the report and interpreted from the investigation are for bases at a minimum depth of 1m below finished ground level in naturally occurring strata and at broadly similar levels throughout individual structures, unless otherwise stated. Typically they are based on serviceability criteria taking account of an assessment of the shear strength and/or density data obtained by the investigation. The foundations should be designed in accordance with the good practice embodied in BS 8004:2015 - Foundations, supplemented for housing by NHBC Standards. Foundation design is an iterative process and bearing pressures may need adjustment or other measures may need to be taken in the context of final layouts and levels prior to finalisation of proposals.*

20. *Unless specifically stated, the investigation does not take account of the possible effects of mineral extraction or of gases from fill or natural sources within, below or outside the site.*

21. *The costs or economic viability of the proposals referred to in the report, or of the solutions put forward to any problems encountered, will depend on very many factors in addition to geotechnical or geoenvironmental considerations and hence their evaluation is outside the scope of the report.*



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